FOREWORD

This publication is a comprehensive report on Tibet's environment and development issues, produced by the Environment and Development Desk, Department of Information and International Relations, Central Tibetan Administration. The first comprehensive report was published in 1992, and the second in 2000. This third report, *Tibet: A Human Development and Environment Report*, is the first to offer readers an insight into the well-being of both the land and people of Tibet, from environment and development perspectives, with a particular focus on human development issues. Through in-depth analysis, this report describes China's futile attempts to transform Tibet, and how its developmentalist ideology and production-oriented activities have actually given rise to a drastic inequality of wealth. The report also discusses the paradoxes involved in economic growth, the current development trends in Tibet, and the ramifications that these trends have on Tibet's environment and people.

Prior to the Chinese occupation, Tibet was ecologically stable. Covering an area of 2.5 million square kilometres, Tibet is one of the earth's most sensitive environments and a unique bio-geographical zone of our planet. Despite its cold environment, for thousands of years the Tibetan people occupied this plateau and created cultural landscapes based on the principles of simplicity and non-violence that are in harmony with the environment. Open grasslands account for 70 per cent of the landmass of Tibet and have sustained Tibetans and their pastoral herds for centuries.

Today there is expert consensus that Tibet's grasslands are degrading. China has historically remained ignorant of the dynamics of grassland ecosystems and the positive land stewardship of the nomads and farmers. China's ignorance has often resulted in misinformed and misguided policies, such as the forcible relocation of Tibetan herders, which have harmed rather than helped the restoration of the grasslands.

Mistakes were made that undermined sustainable livelihoods, but these could now be corrected. A feature of this report is its emphasis on positive, alternative approaches that will enable China to catch up with the advanced, international standards of today's world. After the invasion of Tibet, the nature-friendly livelihoods of the Tibetan people were usurped by a materialist, productivist Chinese ideology that insisted on making the fragile alpine environment produce more than is sustainable. The Chinese occupation was followed by widespread environmental destruction in Tibet, including deforestation, overgrazing, uncontrolled mining, soil erosion, widespread rangeland degradation, and landslides, the effects of which are felt far beyond its borders.

Since the economic reforms in Tibet, open exploitation of its highland plateau has been done in the name of economic development, and paraded in front of the world as benefiting the Tibetan people. In reality, all the plans and management decisions are top-down, and designed only to meet the Chinese government's vested political and military interests. These actions further entrench Chinese control over Tibetan areas by integrating Tibet into the Chinese economy as a supplier of raw materials.

China is investing huge efforts in geological exploration by mapping mineral deposits all over Tibet in order to supply its own demand for metals and hydropower. This report gives us plenty of cause to be alarmed at the pace with which Chinese migrant workers are settling in Tibet's urban centres, and at the exploitation of Tibet's mineral resources, all of which undermine the ability of the Tibetan people to hold on to their distinct cultural heritage. The Beijing-Lanzhou-Siling-Gormo-Lhasa railway, operational since July 2006, has made dramatic changes to the economics of mineral exploitation in Tibet. It has accelerated the rate of Chinese migrants coming into Tibet, thereby causing further expansion of urban areas, with a rapid increase in hotels, discos, karaoke bars, brothels and shopping malls.

Some of the most pressing issues in Tibet today are education, health, employment and the improvement of livelihoods in rural and nomadic areas. Adequate and affordable healthcare is not available to the majority of Tibetans. Systematic discrimination in the spheres of employment, health, housing, education and political representation continues to restrict Tibetan involvement and participation in the development of Tibet. China's development

policies have consistently failed to pay attention to rural areas, where the majority of Tibetans live. While the specific needs of Tibetan people may vary from region to region, all Tibetan communities are now disadvantaged. This could be corrected by learning from the successes of other poor areas in the world, where skilful investment in rural regions has, in some cases, led to remarkable results. If China is to achieve its United Nations Millennium Development Goal, which it has promised to achieve in Tibet by 2015, it must learn to catch up with the inclusive, participatory models in use around the world.

Tibet is the principal source of the rivers that flow through Asia and is referred to by China as the "Number One Water Tower", but this water tower is now drying up: its ability to capture, hold and steadily release water for downstream users is diminishing. The snow peaks and their glaciers are all melting too fast. Tibet's rivers are threatened by China's plans for massive dams, hydropower and water diversion projects, which also jeopardise the lives of billions of downstream users. China's ambitious dam and hydropower building projects are often carried out without consulting neighbouring countries or assessing the downstream impacts, which may have devastating regional and international ramification.

This report offers a balance of alarm and hope; failures and new possibilities; unintended consequences and fresh opportunities; past damage and specific case studies of skilful new directions. The purpose is to look ahead to a future in which Tibetan voices are no longer ignored and excluded – not only for Tibet, but also for the sake of our planet, which needs the many environmental services that Tibet provides. Future provision of these precious services can only be guaranteed if development on the Tibetan Plateau is sustainable, and not exploitative. Due to its high and frigid climate, Tibet's environment, once destroyed, will be very difficult to regenerate.

While acknowledging some of the positive developments, this report draws attention to the need for China to reconsider its current development policies, if it wants to create a harmonious society. This is crucial, particularly when China itself is making an effort to embark on the path to a sustainable future. Finally, this report proposes some alternative approaches that are best suited to the unique Tibetan Plateau, with examples of some worldwide best practices that can lead to sustainability. We hope that this publication will provide our international readers with a vivid account of the environment and human development in Tibet today, and will help to save this unique and fragile land, which is of global importance as the planet's highest and largest plateau, and the "Roof of the World".

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Tibet: A Human Development and Environment Report

EXECUTIVE SUMMARY

This report reviews the past, not to attribute blame but to understand how the present situation came to be, and how best to act in the future. To focus on well-being we must focus on the present, and on remedies, rather than dwelling on the past or seeking to assign blame. This report aims to look ahead, in a positive way, to new policy directions, which can often be found by adopting global best practice. China's actions in Tibet lag well behind the modern, advanced standards of human development in many ways. The emphasis has been on imposing large-scale, hard infrastructure from above, neglecting the "soft infrastructure" of human education, training, participation and engagement, especially of the rural Tibetans who are native to the great grasslands that surround the privileged new immigrant cities of Tibet.

This report identifies and documents several of the dangers facing Tibet and the Tibetan people today, many of which have only emerged recently and have not been reported before. Over the past 50 years, many long-standing, worsening and chronic problems have been caused by the excessive emphasis on making the plateau produce more for human consumption than is sustainable. Today, Tibet and the Tibetan people face many serious challenges, which are described chapter-by-chapter in this report. A summary of the chapters is provided below:

NOMADS AND GRASSLANDS

Pastoral nomadism has historically been the primary and most suitable land use for the conditions on the Tibetan Plateau. This traditional, mobile, extensive approach is now being threatened in innumerable ways; the exclusion of nomads from areas designated for industrial extraction and processing; the policy of settling nomads and fencing their pastures; intensive irrigation that captures the best water supplies, which the nomads formerly relied on; shutting nomads out of designated conservation zones; and failing to invest in the re-sowing of native grasses in areas of degradation. Grassland policy went from one extreme of coercive collectivisation, which reduced all nomads to labourers, to the opposite extreme of reducing the unit of animal production to the level of individual households. Only in a few cases have Tibetans managed to retain their traditional community-based grassland organisations, which group many families together and mean that there is no need for expensive fencing. The degradation of grassland is a serious problem that threatens the productivity of livestock. The causes of grassland degradation may be disputed, but the evidence of degradation is undeniable. The nomads themselves are sometimes blamed for the degradation, and accused of being ignorant of their own pastures. These occurrences of grassland degradation, erosion, rigid land lease allocation, exclusion of nomads, inadequate education, and concentration of services in urban areas all conspire to undermine the pastoral nomadic way of life.

EDUCATION

Education plays a fundamental role in the economic well-being of society, and forms the basis of all genuine development. Before the Chinese invasion in 1950, monasteries were the major learning centres in Tibet, and fulfilled Tibet's unique educational needs. Secular education in government-funded and private schools also gained some ground in the first half of the 20th century. It is true that the Tibetans were developing a secular education system before the Chinese invasion. However, China's invasion put a sudden stop to all indigenous development of an education system in Tibet. Today, illiteracy levels in Tibet are as high as the poorest countries found at the bottom of the UN Development Programme's (UNDP) Human Development Index rankings. The average adult Tibetan has only had three years of primary schooling and almost half of all Tibetans are illiterate. Official Chinese data from the 2000 census showed that the overall illiteracy rate among Tibetans aged 15 years and over was 48 per cent, or 60 per cent for women. According to the UNDP, education provision in the "Tibet Autonomous Region" ("TAR") is the worst of all 31 Chinese provinces. It estimates that 55 per cent of the Tibetan population of the "TAR" is illiterate, while the other 30 provinces all have illiteracy rates below 20 per cent. A similar survey conducted by National Research Center for Science and Technology for Development and Fafo Institute of Applied International Studies revealed that 59 per cent of the Tibetans who live in regions outside

of the "TAR" cannot read or write in any language, and that 40 per cent do not have easy access to a primary school.

UNEMPLOYMENT AND SOCIAL EXCLUSION

Low levels of literacy lead to low levels of employment, and there are very few opportunities for the Tibetan people to enter modern economic sectors. This is especially true of the booming urban areas, since the Chinese immigrants, even those from poor provinces, are invariably better educated. The result is chronic unemployment and underemployment for the Tibetans. Tibetans who live in the cities are largely restricted to unskilled construction labour, and those who are allowed to stay on their rural land have little opportunity to earn local, off-farm income. Employment is one of the primary determinants of the economic development and well-being of Tibetans. The absence of employment and income-earning potential – particularly in rural areas – is acute. In China, despite the economic boom, there has been a sharp rise in unemployment. The official urban unemployment rate in China has been set as low as 4.2 per cent. But independent researchers assert that, in any given year, the actual Chinese unemployment rate is likely to be at least double the official figure. The Chinese State Council's own Development Research Centre has warned that urban unemployment stands at 10 per cent and could soon rise to 15 per cent, which strongly contradicts the current official figure of 4.5 per cent. According to the 2006 International Labour Organisation (ILO) report, China's economy grew by a stunning 50 per cent between 2000 and 2004, yet there was only a five per cent rise in the number of jobs available. Compared to its rate of GDP growth, the number of jobs being created in China has slowed down tremendously. In Tibet also there has been dramatic economic growth without the corresponding creation of new jobs. This lack of employment opportunities is pushing the Tibetan people further into the margins of economic activity.

URBANISATION AND INEQUALITY

Throughout its provinces, China sees urbanisation as a self-evident good, the epitome of productivist progress, and even a law of history. Even though rapid urbanisation swallows China's precious arable land, intensifies energy use and increases all forms of pollution, China presents this accelerated urbanisation as proof of progress and an improvement in local living standards. Urbanisation is China's master strategy for modernising Tibet. It underlies the desire to transfer large immigrant populations into Tibet and implement innumerable policies; to exploit Tibet's minerals and energy resources; to integrate Tibet's roads, railways and rivers into China's transport and electricity grids; to secure China's borders; to suppress Tibetan aspirations for freedom; and to introduce mass tourism for the employment of immigrant labour. Urbanisation is the key to China's entire spectrum of development in Tibet. Prior to the Chinese invasion, the central town of Lhasa covered an area of only three square kilometres and had no more than 30,000 permanent residents. Today, Lhasa covers 53 sq km, and there are plans to expand this urban area to 272 sq km by 2015. The new cities in Tibet are unsustainable islands of privilege and extreme inequality, surrounded by the rural poor. Massive external funding continues to subsidise this urban lifestyle, and salaries can even exceed those of Beijing in an attempt to entice a favoured, largely immigrant elite. Investment, infrastructure, services and comforts are all concentrated in these small, privileged, heavily subsidised enclaves, and in the transport corridors that connect them to inland China; meanwhile, the countryside is in a state of neglect. The Tibetan Plateau is suited to extensive, not intensive, land use. The culture of Tibet, based on household economies, is accustomed to wealth redistribution, not constant accumulation. The new extremes of wealth and poverty, of urban luxury and rural deprivation, are both alarming and worsening.

DAMMING TIBETAN WATERS

China is building an extraordinary number of hydropower dams on the Tibetan rivers that feed almost all of Asia, and is therefore depriving downstream users of a regular flow. The purpose is not to provide electricity to rural Tibet, but to supply the smelters, heavy industries and distant cities of the plains below. China may soon commit to damming all of Tibet's major rivers in a single water capture scheme, on a scale that would dwarf the Three Gorges project, in an audacious attempt to divert water to the North China Plain via the Machu (Yellow River). This would seriously decrease the water supplies of India, Bangladesh, Vietnam, Cambodia, Thailand, Laos and Burma, as well as the Yangtze river basin as far as Shanghai, especially in drought years. Meanwhile, rural Tibetans continue to suffer high rates of hepatitis, water-borne infections and back pain because they are forced to fetch water from far down the valley due to inadequate village water supplies, even though fulfilling this requirement would cost only a tiny fraction of the amount spent on these massive dams.

NATURAL RESOURCE EXTRACTION

The industrialisation of Tibet, based on a productivist agenda that has persisted for over 50 years, has largely failed. Decades of destructive logging of Tibetan forests is coming to an end only because the resources have been exhausted. Reforestation efforts have been mostly limited to ineffective aerial seed drops. China's expectations that Tibet can be remotely managed, and made to increase production, have not yet been met. They have been hampered by the obstacles of remoteness, lack of transport infrastructure, and China's insistence that Tibet face east, rather than south – its historic economic linkage with India. For 50 years, China has sought a "pillar industry" that would generate wealth creation and an economic take-off. To date, this ambition has not yet been realised. Although the extraction of natural resources, especially timber and minerals, has been widespread and environmentally destructive, the mining industry has so far been smale-scale. However, this is all about to change now that Tibet is connected to China's railway network, which will enable large scale extraction to accelerate and lead to detrimental impacts on the Tibetan Plateau that will have a global reach.

TOURISM AND TIBETAN CULTURE

The number of Chinese tourists in central Tibet, labelled by China as the "Tibet Autonomous Region" ("TAR"), and to other areas of Tibet, continues to rise rapidly. With a booming tourism industry and rapid infrastructure development, the "roof of the world" is fast becoming a must-visit destination for people from all over the world. Tourism may quickly become the "pillar industry" that China has long sought, and generate economic growth capable of employing large numbers of non-Tibetan immigrants. Mass package tourism, as practiced by millions of visitors to Tibet, is no doubt taking a severe toll on the plateau. The pollution and "environmental externalities" caused by the current tourism industry have actually reduced the natural beauty of the areas that are intrinsic to the industry itself. In 2006, some 2.45 million tourists visited Tibet, which was a 36.1 per cent increase on the previous year. Revenue from tourism was approximately 2.7 billion yuan (US $338 mn), an increase of 39.5 per cent on the previous year, and accounted for 9.3 per cent of the total GDP of the "TAR". To accommodate this explosive growth, the authorities have decided to expand the local tourism industry even further and are anticipating 4 million tourist visits in 2007, aided by cheap rail and air fares. Lhasa currently has 300,000 residents, of whom at most 100,000 are Tibetans, and such a drastic increase in tourism will surely overwhelm this destination, which is considered to be a place of spiritual power, mental purification and transformation to the Tibetans.

SUSTAINABLE DEVELOPMENT AND THE POPULATION FOOTPRINT

Unskilful interventions by the developmentalist, productivist central authorities have amounted to a great deal of unsustainable development in Tibet. All of the chapters of this report highlight one common theme: the exclusion of Tibetans from any effective role in deciding their own future. The Tibetan people have been unable to participate meaningfully in any of the decision-making that has shaped their land and livelihoods. The school curriculum has no connection with the realities of their daily life. This stands in stark contrast to the rural development practices of other poor countries around the world. China, so advanced in so many fields, has fallen far behind in its methods of participatory development practice. Many past mistakes can avoid being repeated if the Tibetans are treated as equal partners, their knowledge heard and their basic human needs respected in all future development plans. What has been missing all along from China's actions in Tibet is the inclusion of ordinary Tibetans, the acknowledgement of their accumulated knowledge of the land and its limits, and their skill in caring for the wildlife and conservation of this vast plateau the size of Western Europe. A series of brief case studies of sustainable development in practice, both in Tibet and in countries facing similar problems, are also discussed. These case studies show that, in contrast to the ineffective, statist, top-down approaches of the past, much can be achieved through careful planning and an attitude of inclusiveness. Throughout this report, we discover evidence of the heavy human footprint of the current population in Tibet. The human population of the plateau, according to China's official census figures, is at least 10 million people (excluding huge population of Chinese military), which is 70 per cent above what the area has sustained historically. That dramatic increase is maintained by massive subsidies and external inputs that are unsustainable in the long term. Large-scale projects are imposed from above with no engagement of ordinary Tibetans in their design or implementation. Tibetan knowledge of the land and sustainable modes of production are systematically swept aside. Beijing has insisted on making the land yield more, disrespecting the natural constraints that are unique to this high, cold and

largely dry plateau. For over 50 years, China's interventions in Tibet, despite many changes, have consistently been centred on productivism from the perspective of a developmentalist state. In other cold and dry areas of the world, productivism has reached its limits and is now beginning to withdraw. How long will it be before this happens to Tibet?

Finally, this report concludes with the *Guidelines for International Development Projects and Sustainable Development in Tibet**, which are addressed to all parties who wish to undertake projects in Tibet – China's central leaders, international advisers, development agencies and investors – in order to provide clear principles and practices for human development that are best suited to Tibet and its people.

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* *Guidelines for International Development Projects and Sustainable Development in Tibet* is available online at www.tibet.net/en/diir/enviro/guide/

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INTRODUCTION

Tibet: A Human Development and Environment Report is a comprehensive synthesis of contemporary Tibet, documenting 50 years of energetic attempts by China to industrialise, modernise, urbanise and develop the entire Tibetan Plateau. The report covers many aspects of modernity and development, environment, livelihoods and human well-being.

WHY THIS REPORT?

Both a Human Development Report (HDR) and Environment Report (ER), this publication attempts a thorough accounting of the record of 50 years of vigorous statist interventions by the Peoples Republic of China (PRC), and provides a benchmark for future assessments. Each chapter documents the gap between China's productivist policies – based on the belief that human happiness is to be obtained from ever greater levels of material productivity, in all places and at all times – and their disappointing, at times disastrous, results for Tibet.

The introduction that follows sets forth the wider historical context and social forces shaping the well-being of Tibet today and into the future. It paints a broad picture, attempting to document everything. The chapters that follow the introduction provide details that support the extensive framework described here.

In order to understand the present we must analyse the past. Thus, this report looks back to certain key periods in Tibetan and Chinese recent history; to massive external investments in Tibet resulting in an urban construction boom, railways and mass tourism; to the early years of Beijing's bold experiment in reshaping land and people; and to the era of destruction and collectivisation. We also provide the reader, in each chapter, with a glimpse of pre-communist Tibet, specifically the ways production and human services were organised by respecting the limits of the land.

Importantly, it is the Tibetan land itself on which our account is based, a vast territory that is uniquely high, cold and largely dry. It is a combination found nowhere else presently inhabited by human beings on earth. We assess the serious ecological impacts, on the vast grasslands of Tibet, of the attempt to greatly increase herd size and animal production in the belief that traditional Tibetan modes of production were insufficiently productive. Our report is grounded in the land and the ways Tibetan culture, including religion, adapted to the realities of a land suited to a mobile and extensive way of life, ranging over wide areas with companionable yaks, sheep and goats. Throughout this report, our goal is to let readers see Tibet through Tibetan eyes.

Inevitably, this document is, to a great extent, a record of failure; of inappropriate, unskilled and simplistic schemes that looked good on paper, but which failed to appreciate basic ground truths of Tibet. For example, China's failure to include ordinary Tibetans in the planning and implementation of development resulted in many mistakes with serious consequences for Tibet. To be clear, the purpose of this book is not at all to place blame, and certainly is not intended to turn Tibetans into victims. Rather, the chapters that follow are a documented record of China's actions in Tibet and their impacts on both land and people. We also attempt to understand the intentions behind those actions, especially at the present day, since China is changing at such a rapid pace.

This report is, to a great extent, a record of failure; of inappropriate, unskilled, simplistic schemes that looked good on paper, but which failed to appreciate basic ground truths of Tibet.

The following chapters document, in detail, how China's massive investment in Tibet has produced a lopsided economy: Wealth is concentrated in towns and cities largely populated by non-Tibetan immigrants while vast areas of countryside have been stripped of forest and their pastures degraded, leaving rural people impoverished and marginalised. This is not sustainable. A new approach is needed so that the United Nations' Millennium Development Goals (MDGs) can be achieved in Tibet and Tibet's environment largely restored.

These goals are the world community's agreed upon, attainable goals for alleviating the poverty of the poorest people around the world, between 2000 and 2015. This report presents evidence that China is far behind in fulfilling its MDG pledges on the Tibetan Plateau.

"More, faster, better, cheaper. Construction of Socialism!"

We prepared this report with a clear goal in mind; to learn lessons from the past, look towards the future, and highlight policies that are beneficial both to the Tibetan people and their land. This document synthesises the enormous accumulation of data on Tibet, a genuine fruit of Chinese and international scientific studies in recent years.

This may be Tibet's first Human Development Report and it is a product of entirely Tibetan research. With the assistance of the United Nations Development Programme, many countries now publish a Human Development Report, providing an overview of all aspects of human welfare in their respective countries. As refugees, we cannot expect UN support to produce such a report so we have prepared it ourselves.

What exactly is "human development"? The United Nations Development Programme defines it as far more than income or family expenditure, though these monetary measures do indicate deep poverty in rural Tibet, where most Tibetans live. We believe human development involves the well-being of the individual and society, measurable in the commendable Bhutanese concept of "gross national happiness".

On the basis of income alone and by taking entire provinces as the unit, Tibet, or at least the half of the Tibetan people and plateau included in the "Tibet Autonomous Region" ("TAR"), appear to have above average incomes. Consequently, some economists conclude that the Tibetan population is doing well. Our analysis, however, does not stop at these provincial borders. We look more deeply, using disaggregated figures wherever possible, to differentiate between booming cities and neglected countryside, as well as enclaves of privilege and vast degraded grasslands that were pushed too hard to produce more than is sustainable. Always, we come back to the land and the ways Tibetans learned, over many centuries, to tread lightly, to remain mobile and to base an entire civilisation on mobility.

With such a broad scope covering grasslands, urbanisation, poverty, employment, education and other topics, this report raises a basic question – is there a unifying thread? Running throughout this report, through both the HDR and ER chapters, is the impact of two similar global ideologies; productivism and developmentalism. Productivism – the belief that human happiness is to be obtained from ever-greater levels of material productivity, in all places and at all times – is a worldwide ideology, but in some parts of the world productivism is in retreat. Developmentalism is the ideology of developmentalist states. In this ideology, government takes the lead in orchestrating development, with strong state intervention in the lives of both individuals and corporate boardrooms. The government masterminds a strategy, intended to maximise growth, in order to attain the highest material standard of living as quickly as possible. This hunger for increased production is also shown by many Chinese graphics from the 1950s and 1960s.

These terms – productivism and developmentalism – express beliefs that have become so natural and inevitable to some minds that there is no common word to explain their ideological aspect. These two closely related concepts also help clarify China's policies towards Tibet. Clearly, China's policies over the years have shifted from communist to capitalist; yet they have remained consistently developmentalist in that they are directed by central authorities. Those statist interventions have also consistently remained productivist, both during China's revolutionary period and into the present. Throughout,

China's plan has been to industrialise Tibet by increasing production and commercialisation, and intensifying the scale of output. It is seeking to do so by conquering nature and making the land and people yield more, in order to feed a population which has swollen to more than ten million – far more than have ever lived in Tibet before – which, according to their official statistics, even excludes the floating population of military and migrants with household registration in their respective homeland.

This report also demonstrates, in some detail, that what has worked in China has not worked in Tibet. The Tibetan Plateau has more in common with other areas of the planet where productivism is now in retreat, including Siberia, the Scottish Highlands, the Arctic north of Canada and Norway (see chapter eight - Sustainable Development and the Population Footprint).

Our conclusion is that the productivist ideology of the developmentalist state is simply not suitable for Tibet. For the sake of sustainability, Tibet should revert to its traditional extensive land use, where the population is spread over the entire plateau and land use is dispersed, mobile, flexible and respectful of natural limits. Intensive land use – the modern productivist practice of concentrating investment, resources and people in small areas to maximise production – has simply not worked.

We are not alone in concluding that the future of Tibet belongs to post-productivist approaches, such as conservation, protection and pilgrimage. China may yet discover that in Tibet there are limits to growth, the land cannot be pushed too hard, industrialisation does not work and a conventional "economic take-off" based on manufacturing will not happen. We do observe some hopeful signs of convergence between Tibetan and Chinese understandings of the land's tolerance. But before we can reach this hopeful – to some readers perhaps improbable conclusion – we must carefully understand China's full speed productivist programme.

RIGHTS OR NEEDS?

Certain violations of human rights in Tibet, especially religious freedoms, are often in the spotlight. But the issues detailed in this report seldom attract such attention. For example, land degradation in almost all areas of the Tibetan Plateau is now so serious that it undermines livelihoods, the well-being of human lives and biodiversity. Almost nothing has been done to reverse this.

The issues reported here can be characterized as human rights: Such rights are involved when Tibetans are denied a meaningful education and become illiterate at an alarming rate. It is a question of human rights when the plateau is flooded with non-Tibetan immigrants while Tibetans remain poor, chronically underemployed or unemployed, and excluded from effective participation in a booming modern urban economy.

Nonetheless, the language of this report is not the language of human rights. The framework here is establishing basic needs and well-being. These are universal human concerns shared by everyone, in China and the entire world.

WHAT DOES CHINA NOT UNDERSTAND ABOUT TIBETAN LIVELIHOODS?

Based on China's policies in Tibet for over half a century, it is clear that the PRC does not understand how Tibetan economic life functions. Economics is not a universal law of nature that transcends culture. Rather, it is very much shaped by culture. As described in detail in the chapters that follow, the economies of China and Tibet differ in basic ways. Due to Tibetan cultural values, economics in Tibet means the creation and regular redistribution of wealth. In contrast, in China today, economics is the creation, accumulation and concentration of wealth. This conflict of aspirations causes serious misunderstandings.

Entirely absent from China's official discourse of development is any recognition of Tibetan attitudes, practices and priorities, as expressed in Tibetan daily life in villages and on the grasslands. Perhaps the entire modern world, not only China, has little clear idea of the dynamics of economic life in Tibet; an economy which is not only a historic practice but persists today. It is the sole basis, even now, of any efforts to raise living standards or promote sustainable livelihoods in Tibet.

For the sake of sustainability, Tibet should revert to its traditional land use, where the population is spread over the entire plateau and land use is dispersed, mobile and respectful of natural limits.

Glimpses of Tibetan economic life are exposed by China's official statistics. For example, Chinese statisticians assign a monetised value to Tibetan rural production, both the grains grown by the farmers and the animal production of the nomads, even though no money changes hands. In fact, in Chinese statistics today, more than a third of actual spending by rural Tibetans is still non-monetised (CSB 2006: TSY, table 8-17). This spending is produced and consumed within the family. The household is the basic economic unit – not the economic individual as in modern

Over 80 per cent of Tibetans live in rural areas with negligible subsidy from the government.

economics. Household production is also bartered, without exchange of money, in a long-established interdependence shared by the upland *drogpa* (nomads) and the *shingpa* (farmers) down in the valleys. The swapping of grains for animal products is intrinsic not only to the economy but to the entire social structure. It is unclear whether China's economists even recognise what these statistics plainly demonstrate about the Tibetan economy and way of life.

Due to Tibetan cultural values, economics in Tibet means the creation and regular redistribution of wealth. In China today, economics is the creation, accumulation and concentration of wealth.

The purpose of these economic activities, as they are now called, was not accumulation based on exchange value as in contemporary market economies. Rather, the purpose of the productive economic activity of nomads and farmers was towards the satisfaction of needs, defined qualitatively rather than quantitatively (Taussig 1980). Tibetan proverbs and popular sayings encourage generosity, which is always defined as giving without counting the cost or expecting anything in return. Tibetan villagers do not calculate work contributions based on a custom of reciprocity, as if they generate credit to be repaid when extra help is needed. Nor does the householder, whose wall is collectively and enjoyably built, consider himself a debtor who must repay an accumulated obligation. Tibet's "gift economy" is not based on a calculus of obligation and strict reciprocity.

Tibetans do not conceptualise the economy as a distinct sphere of human activity. In Tibet, what modernity defines as productive activity, privileging it above all other activity, is not in any way separate from social life, cultural maintenance, reproduction of meaning or leisure. In the modern world, these are categorised as separate classes of activity. These activities are conducted in separate spaces and at particular times, with some done privately and others publicly.

Living well, meaningfully and wholesomely is valued in Tibetan culture far more than material accumulation. This is not simply religious theory; it is everyday practice. Tibetans routinely consider their future lives, not just the immediate satisfaction of wants and desires in the short term. The insistent message that Tibetans receive from their spiritual masters is that a concern only for the comforts of this life is foolish, selfish and useless at the time of death or in lives to come.

China is not alone in failing to notice this embedding of economic activity in all aspects of daily life. Global modernity has lost sight of such possibilities, or romanticises them as relics of some irretrievable mythical golden age when life was simpler. Karl Marx called it "primitive communism". This Shangrila romanticism depicts Tibetans as non-materialistic and completely uninterested in creating wealth. This is not historically the case. What is distinctive about Tibetan household economies is the very purpose of wealth creation, not an aversion to all wealth (Mills: forthcoming).

The high proportion of the male population working in monasteries in Tibet demonstrates how spiritual labour often serves social ends. Mills, an anthropologist of the relations between monasteries and their lay supporters, explains that in a society that values and works for wealth creation – but does not separate wealth creation into a separate privileged realm – the monks and nuns are also seen as productive if they are diligent in their creation of spiritual wealth. Accumulation of wealth in the Tibetan sense is not the personal quest of an individual spiritual seeker, but is a collective practice done for the welfare of all mind-possessing living beings. The creation of spiritual wealth requires hard work, as does its distribution to all sentient beings without exception (Mills: forthcoming).

Monks and nuns are not viewed as unproductive individuals pursuing purely personal ends at the expense of productive members of society. They are considered active contributors to community well-being, mental health, stability and dispute resolution. The end products of monastic production are enlightened teachers. Their

wisdom, clarity of mind and practical guidance as community leaders are deeply appreciated by Tibetans.

Anthropologists report that when contemporary Tibetans make money, their profits are largely recycled within their community, as donations to the reconstruction of the local monastery, or as direct support for the construction of community facilities, such as schools and clinics (Costello 2002). Throughout Tibet in recent years, lamas have used their charisma to raise money to build schools, health clinics and other services important for human well-being. This is of course essential because China provides minimal social services.

Modern Lhasa today illustrates the Chinese development policies for Tibet.
Photo by Rainer Haessner

This type of supportive economy has strong historic roots. The practice of generosity, or *manggye* (meaning 'to divide among many') is documented in the record-keeping and biographies of important Tibetans going back 12 centuries. The scale of such gift-giving was often substantial, sometimes amounting to giving away an entire fortune on the death of a rich man. Over the centuries, this ritual grew in scale and scope, extending beyond Tibet's borders to the eliciting of gifts from emperors and patrons, and the sending of gifts to distant monasteries and kingdoms on the peripheries of Tibet.

By the 18th century, "the upper level aristocracy sustained the tradition of wealth distribution as part of the religious calendar of their own private chapels, in addition to sponsoring both local and national public distributions" (Ardussi 2001). In her ethnography of the trans-Himalayan caravan traders, Janet Rizvi describes a monk-trader who accumulated enormous wealth by Tibetan standards, which he eventually donated entirely to the monasteries of Lhasa and their monks (Rizvi 1999: 156-8). These examples are unusual only in their scale.

For Tibetans, generosity, in the form of offering wealth to religious practitioners to sustain their work, is the first step in purifying the mind, letting go of narrow fixations and habits, opening the mind to existential truths and a profound letting go of all worldly worries, anxieties, greed and possessiveness. This type of giving creates a more spacious and inclusive attitude to suffuse all daily experience. The practice of generosity is not only a moral duty; it is understood as a major step on the path to liberation. The person is transformed into a capable, fluid, spontaneous, decisive and inclusive leader. Tibetans almost universally understand this, not as a remote theory but as the living example of their parents or relations to be seen in the daily activity of people around them.

These attitudes are found repeatedly in popular Tibetan stories, proverbs and histories, as models for how to live well through generosity, or self-destructively through selfishness. This generosity – so embedded in Tibetan history, daily life, religious practice and even its performance arts – is invisible to Beijing's economists with their productivist focus.

Monks and nuns are not viewed as unproductive individuals pursuing purely personal ends at the expense of productive members of society, but as active contributors to community well being, mental health, stability and dispute resolution.

China assumes all economic activity is undertaken by the selfish, accumulating modern individual. China assumes the given availability of free air, water and natural resources as mere inputs to production and accumulation. The late Tibetan sociology professor Dawa Norbu critiques China's preference for what he calls "Stalinist industrial gigantism" in Tibet. He calls for an alternative approach: "Tradition and culture, if judiciously used, could and can be the maidservant of an industrial revolution and lubricator of development, as modern Asian history indicates. This means we must consider not only state intervention in the economy, but also social sources of productivity that owe their origins to a great living

tradition, namely Buddho-Confucian culture" (Dawa Norbu 2006: 161).

China now sees the common assets – such as a forest, mineral deposit, grassland or a natural and much-treasured hot spring, cared for over the centuries by nuns - as ripe for exclusive commercialisation. The famous story involving the commercial exploitation of a hot spring, told by Tibetan public intellectual Woeser, is retold in chapter seven, Tourism and Tibetan Culture. The exploitation of a community resource, cherished by all for its curative powers and its role in maintaining social connections, is an example of Tibetan cadres having learned selfish Chinese ways, appropriating the hot spring as an opportunity to grow rich at the expense of others.

Throughout China, once the revolutionary controls on private accumulation were lifted in 1978, people seized the opportunity to become rich, as if this was the obvious and natural thing to do. Only in Tibet was there a reluctance to jump into the sea of commerce. China is unable to recognise Tibetan civilisation as a coherent, sustainable worldview different from China's materialist worldview. Tibet has been somewhat indifferent or uninterested in material production and consumption as the source of human well-being, viewing them as beyond the necessities of life.

To China's eye, Tibetans are mere slaves to a mighty, untamed nature, at its whim, and forced, like their animals, to wander the grasslands in search of feed for their herds.

Since Tibetans, even today, are not all that interested in commercialising their rural production by slaughtering a much higher percentage of their animals, Chinese economists routinely refer to Tibetans as "backward". It is a great puzzle to economists that anyone might fail to maximise production since production leads to income, income leads to consumption, consumption to increased comfort and satisfaction.

For all Tibetans, the focus of policies for sustainable development, and especially for sustainable livelihoods, must be the existing household economy, embedded in values of generosity and wealth redistribution as much as in wealth creation. This is still the reality of life for most Tibetans. The stubborn reluctance of Tibetans to slaughter more animals, documented in this report, is an example.

Suitable policies for sustainable livelihoods should be based on the Tibetan reality, as well as on the principles made clear in the Tibetan Government-in-Exile's "Guidelines for International Development Projects and Sustainable Development in Tibet" which conclude this report. Wealth creation is necessary on the Tibetan Plateau since basic human needs are unmet, and few of the UN Millennium Development Goals for poverty alleviation seem likely to be achieved by the target date. Yet projects and plans for income generation and wealth creation must take into account the widespread Tibetan preference for preparing for the next life as well as this one, which means practicing wealth redistribution regularly during this lifetime.

WHAT DOES CHINA NOT UNDERSTAND ABOUT THE LAND OF TIBET?

As with Tibetan livelihoods, China has not understood the nature of the land in Tibetan life. For Tibetans, the land is inextricably linked with fulfilment of sustainable livelihoods. However, China has long portrayed the Tibetan land and climate as dangerous to human life, extremely risky and hazardous, with its thin air challenging every breath to be the last.

Chinese descriptions of Tibet use words such as harsh, forbidding, inhospitable, barren, wasteland, no-man's land, wild, primitive and primordial. Tibet is represented as a land of earthquakes, blizzards, hailstorms and other extremes, all threatening to human life. To China's eye, Tibetans are mere slaves to a mighty, untamed nature, at its whim, and forced, like their animals, to wander the grasslands in search of feed for their herds. Such phrasing is found repeatedly in Chinese descriptions of Tibet, including many official documents – even White Papers of the recent Beijing government. European travellers to Tibet in the 19th and 20th centuries often reacted similarly.

Inherent in this dualistic attitude is a sharp split between humanity and nature. One or the other is in charge. If man does not conquer nature, he is enslaved by it. This is far from the traditional Chinese attitude since Chinese poets over the centuries celebrated the harmony of man and nature. But it is plainly the current attitude in China, as Judith Shapiro describes in detail in *Mao's War on Nature* (Shapiro 2001).

The splitting of people and nature into separate categories is alien to the Tibetan outlook. Tibetans feel at home in Tibet, even in what scientists call the alpine desert of the Jhangthang, where extreme aridity and extreme cold co-exist. Nomads feel they only have to gather what nature bountifully provides. Nomads told anthropologist Melvyn Goldstein that theirs is an easy lifestyle, with much leisure, since grass grows by itself, animals reproduce by

themselves, giving milk and meat without nomads doing anything (Goldstein and Beall 1990). His Holiness the XIV[th] Dalai Lama has made similar statements.

The nomad speaks as a steward, a guardian and a curator of landscapes through careful grazing pressure and a gatherer of what nature bountifully provides of its own accord, not as an individual owner of assets to be maximised for their transformation into meat, money and consumption. The steward or guardian has a duty to look after the herd, protect it from wolves and winter gales, lead animals to pasture and share in the bounty of their fertility. Tibetans understand that the human role is not mastery over nature. Nor does it require establishing what Karl Marx called an exchange value economy in which production is monetised and commodified, and the raising of animals is only a means to the end of meat production. The pastoral nomadic household does not aim to intensify production or slaughter more animals than is necessary to stay alive, pay taxes or earn a modest income. To nomads, the only reason to increase herd size is as insurance against blizzards and other hazards of nomadic life. The word used by nomads – as they look with respect at their grazing herd – is *nor*, which literally means wealth. In a broad sense this includes insurance, capital, wedding payment, collateral, credit worthiness and much more.

Wealth-on-the-hoof is an end in itself, as anthropologist Angela Manderscheid concludes on the basis of her fieldwork in Kham Dzamthang, Sichuan province: "This flexible form of production provides suitable land-use for marginal regions which can rarely be used in other ways. Nomadism, and the value accorded wealth-on-the-hoof, however, stands in contradiction to the market-oriented economy in China, and a subsistence-based economy stands in contradiction to a society in which cash is needed to pay for basic needs like grain and hospital bills, and to pay taxes" (Manderscheid 2002).

In Tibet, both in the past and today, wherever state controls have been reduced, Tibetans achieve their livelihood without separating production from other activities and without dividing humanity and nature.

THE GILDED AGE OF THE WORLD FACTORY

China is the world's factory. China can produce almost anything that can be manufactured; anything that requires human effort. It does so more cheaply and successfully than any other nation. Chinese social scientists have used the term "primitive accumulation" to describe the current ideology governing China's economy. To these scientists, that term describes how an ongoing dictatorship of the party-state is necessary in order to hold wages down, quell the masses and maintain, for as long as possible, China's competitive advantage over all others.

"Within 10 years we will surpass Britain's industrial production!"

Another broader and more inclusive term mentioned earlier in this introduction is "productivism". This term is used in this report as a way of summing up China's approach to Tibet. Productivism is the ideology of economic growth, which involves ever-rising consumption of the resources of the land, waters and skies of the planet for human use. This consumption usually occurs in cities.

Communism, socialism and capitalism disagree about how to maximise production but they all agree that productivism is the purpose of life. As a result, in over 50 years of occupation by the PRC, there has been constant pressure on the Tibetan land and people to intensify production. China considers this to be the only key to a prosperous future for Tibet, whose fate has been determined by this all-pervasive ideology.

The ideology of productivism is so widespread, so essential to modernity, that it is seldom identified, precisely because it is so universal, naturalised, taken for granted and assumed to be essential. The Well-Being in

Developing Countries Research Group of Britain's Economic and Social Research Council defines it as the "productivist philosophy of perpetual striving and demonstrative acquisition", a definition that includes conspicuous consumption to display accumulated wealth (Gasper 2004: 12). Productivism makes a fetish of productivity which means that other societies, who do not place productivity over all else, are condemned as unproductive, primitive and uncivilised.

Productivism hails the superiority of production and consumption of material goods, as well as the new "soft" products such as financial services, retail, tourism, intellectual property, real estate speculation and computer software (Escobar 1995). It claims to be sophisticated and the ultimate level of civilisation.

China's embrace of productivism has paid handsome short-term dividends. The country is experiencing its "golden age". This phrase, borrowed from late 19th century America, is commonly used in China. Like the US in the late 19th and early 20th centuries, fortunes are easily made in the China of today. There are few barriers to massive accumulation of wealth if you are smart, determined, well-connected and have access to capital.

Productivism is the ideology of economic growth, which involves ever rising consumption of the resources of the earth, waters and skies of the planet for human use.

Indeed, this is China's historic moment. It is China's greatest opportunity for wealth creation in centuries. But the opportunities are for the few and seldom for the many (Liu Xin 2006; Li Qiang 2005). The rapidly rising rich are a new class that has appeared in all communist countries, replacing the old ruling class (Djilas 1957; Whyte 2004; Anita Chan 2005, 2006; Solinger 2004). Historically, this new class has gradually become a class of bureaucratic entrepreneurs positioned to maximise their own gains (Nolan 2001; Wank 2001; Riskin 2001). China's utopian vision of revolutionary equality has been replaced by a single word, *xiaokang*, repeated endlessly in official discourse. Official ideology defines the goal of productivism as *xiaokang*, a well-off society, measured purely by material comfort. *Xiaokang* is now heralded as the great ideological goal which will enable China to attain comprehensive national power over space and nature, allowing it to equal the greatest powers on earth.

China's productivist ideology impacts on Tibet in several ways. In order to achieve *xiaokang* productivism, everything must remain stable so productivism can continue without interruption. Stability means compulsory harmony as defined by the party-state. As such, Tibetans are under enormous pressure to remain publicly silent, appearing to be acquiescent, without any of the channels available in a democratic society for voicing objections or legitimate concerns.

To China, Tibet is backward, unproductive, unscientific and even uncivilised in the narrow modern definition of civilisation (Ch: *wenming*) as commercial production and consumption, industrial discipline, urbanisation, hygiene, and comfort (Jacka 2005; Rogaski, Anagnost 1997). Tibet represents the past that China is determined to escape.

TIBET TODAY: A TREASURE FOR CHINA?

Chairman Mao envisioned that Tibet would be a treasure house that would enrich China. But this vision has been difficult to implement and China, in many instances, has turned its attention from Tibet's resources in favour of other, cheaper alternatives. By importing raw materials from overseas – such as iron ore, coal, copper, chromite, oil, gas, wheat, wool and many other commodities – China earned significantly more from its exports of manufactured goods than it had to pay for raw materials.

For many years it seemed China no longer needed raw materials from Tibet and could avoid the expense and long waiting time that would be involved if materials were to be sourced from the Tibetan Plateau. Chinese demand caused a dramatic global rise in metal and energy prices in 2005 and 2006, which has made Tibet much more attractive to Chinese mining companies. Now, as chapter six (Natural Resource Extraction) shows, there are 38 major Tibetan mineral deposits that are being exploited, or their exploitation is being vigorously prepared for.

China's leaders remain locked in a productivist view of Tibet as a provider of raw materials for the urban hubs of China. Chapter four (Urbanisation and Inequality) explores this further. The coastal cities of China are the most globalised, attract the most foreign investment and their fast-accumulating wealth continues to leave inland China further behind. The industries of the coastal provinces are hungry for raw materials. Usually, it is more convenient for them to meet short-term demand by importing raw materials. But Chinese leaders know very well that often the same raw materials – for example wool, dairy products, copper and chromite – are also found in Tibet, but extracting them would require massive long-

term investment in all aspects of infrastructure. Chapter eight (Sustainable Development and the Population Footprint) explores the failure of Tibet's comparative advantage in animal products to create markets in China.

Tibet still lacks the roads, railways, electricity, towns and educated workforce necessary to make it profitable for China to exploit the treasures of Tibet. Nonetheless, many Tibetan resources are already exploited, notably the salts, oil and gas of the Tsaidam Basin in arid areas of Amdo. Perhaps China will soon send copper and hydro-electricity from Tibet to its distant big cities and factories. But, to date, the scale of exploitation has been limited in comparison to the Chinese dream of using Tibet to make a fortune. However, China strongly believes Tibet will somehow make China's fortune; if not in timber then in minerals, if not in minerals then in water supply. See chapter five (Damming the Waters) for more on China's productivist plans for harnessing not one but all of the major Tibetan rivers.

CHINA'S RECORD OF FAILURE

Given China's singular focus, it will probably be a long time before the PRC questions the viability of productivist ideology or gives much attention to long-term needs in Tibet, such as the environment and leaving something for generations to come. But, as this report documents, there is increasing evidence on the ground in Tibet that productivism simply is not working and China will be forced to take notice.

It is clear to us, and to countless other sources, that China's efforts over the past 50 years to industrialise Tibet have largely failed. China attempted many different industries, invested countless sums and built scores of factories with little to show for it. Wool processing plants lie idle and abandoned (Zhou Li 1995; Zhang Cungen 1990a & 1990b; Shi Zhaolin 1990; Zhang Xiaohe et al. 1996; Watson & Findlay 1989). China attempted to intensify Tibetan industries such as wool, meat, leather, dairy, forestry, mining, woollen mills, carpet factories, boot factories, fruit drying and nut harvesting. But, as with the timber industry, they failed, quickly or slowly, either because the resource was destroyed or there was simply no profitable market for the small quantities produced so far from the big Chinese markets. Some industries like carpet making did at last became profitable, but only after many initial failures and subsidies.

A major reason for these failures in production, processing and manufacture has been China's failure to invest in Tibetan education. Instead, China has relied on immigrant labour, a top-down approach that failed to use local knowledge, encourage local participation or train Tibetans in basic modern skills. Chapter two (Education) shows in detail that Tibetans have paid a high price in illiteracy and social exclusion. Even today, Tibetans have on average only a few years of primary schooling. China's investment in capital construction and physical infrastructure has not been matched by investment in "human capital formation"; put directly, the education of Tibetans has been neglected.

Even the mining industry in Tibet has so far been a disappointment to China, despite the frequent announcements about Tibet's fabulous riches awaiting exploitation. Except for the Tsaidam Basin there has not yet been significant mining in Tibet. This may be about to change dramatically, with several large-scale mines soon to begin extraction (see chapter six, Natural Resource Extraction). In both mining and manufacturing, China has largely failed to match what it accomplished in the 20th century in Inner Mongolia and Xinjiang; the assimilation of remote areas through profitable industrialisation and close settlement by Chinese immigrants in huge numbers.

On the Tibetan grasslands and in the farming valleys, there are areas where China has successfully intensified production, particularly of vegetable crops and certain grains. However, as chapter one (Nomads and Grasslands) and chapter eight (Sustainable Development and the Population Footprint) demonstrate, there has been limited increase in commercial production beyond what is required for subsistence. This is largely because the rangelands have been degrading ever since the 1960s, when China's productivist revolutionary enthusiasm compelled Tibetans to increase herds far beyond the carrying capacity of the grazing lands. China has fallen far behind the advanced practices of other rangeland countries and needs to catch up (National Research Council 1992; Niamir-Fuller 1999; Scoones 1995; Lane 1998; Pratt et al. 1997; Prior 1994).

China has relied on immigrant labour, a top-down approach that failed to use local knowledge, encourage local participation, or train Tibetans in basic modern skills.

New forms of productivism privilege China's water supply over all other land uses and have had disastrous results for Tibetans. In some areas, Beijing's policies have resulted in Tibetan nomads being removed from their

Many Tibetans nowadays have to make a living from low skilled labour.
Photo by Koren Shai

traditional rangelands in the name of "environmental protection". The most extreme example is in the Tibetan headwaters of China's two great rivers, the Machu (Yellow River) and Drichu (Yangtze River), which begin in Amdo (Ch: Qinghai). Only a generation ago, China had such little presence in Tibet that the source of these rivers was unknown, with most Tibetans preferring the attractive vagueness of a semi-mythical origin in the poetically-named Tian Shan and Kun Lun, the mountains of heaven.

Chinese scientists have now traced the many glacial melt water streams that feed into these upper watersheds and the official sources are now mapped and named. Memorial markers and statues have been erected, and the entire area has entered China's nationalist discourse as "China's number one water tower". The mapping of these lands into China's national consciousness culminated in a large area being declared a protected space, so as to conserve the purity of China's downstream water supply. This story is told more fully in chapter five (Damming the Waters) and chapter one (Nomads and Grasslands).

MONEY FOR ADMINISTRATIVE SUPERVISION, NOT FOR THE GRASS ROOTS

China frequently, and with pride, announces how much money it spends on Tibet. Yet Tibetans remain poor and human development – usually measured by such yardsticks as maternal mortality, literacy and access to useful new capabilities – is far behind anywhere in China as the chapters of this report show in detail.

How is it possible to spend so much with so little return? Answers to this question come from the careful investigations held by sociologists sent from Beijing into remote townships of Gansu, Sichuan and other eastern Tibetan areas. In poor townships across Tibet, the government does very little for the people, despite being the level of government with the most responsibility for delivering human services. Revenues from various townships vary in size and source but there is great similarity in how they are spent.

According to Chinese sociologist Zhao Shukai, township revenues are routinely allocated to three expenditure categories, which, translated directly from Chinese are "head-count expenses, money for meals and money for operations". The first two categories swallow most of the money simply to employ and feed the administrative elite of local leaders, with little remaining for anything of practical use to the people.

"Money for meals" includes the expense of entertaining officials from higher levels, an expense that is particularly important in the poorest Tibetan townships most dependent on subsidies from higher levels of government. Some township party secretaries have said: "If you are so poor you cannot even entertain visitors, even fewer people will come, and you will have even fewer opportunities" (Zhao Shukai 2007: 50).

All of these expenses come first, leaving as little as seven per cent of the total budget for public affairs expenses that include, but are not limited to, building roads, establishing schools, social welfare, family-planning subsidies, education and health. This expenditure is very small (Zhao Shukai 2007: 51).

China's reforms have failed to slim overstaffed township governments. China's rhetoric of reform has failed to affect bloated and self-serving township governments. "Viewed from outside, the institutions themselves have failed to downsize; from inside, no improvement is visible in their functions, administration is chaotic, and problems abound. The anticipated objectives of the reform have not been attained" (Zhao Shukai 2007: 55). This is a fundamental reason why human development indicators in Tibet remain so dismally low, despite Beijing's frequent announcements of how generously it subsidises Tibet, especially the "Tibet Autonomous Region" ("TAR").

A major reason for chronic overstaffing is that at all levels, right down to the township, there are two overlapping bureaucracies: One of officials of the state and the other of Party officials. All must be paid their head-count expenses and money for meals. Additionally, because authority is so vertical and hierarchical, each ministry, department and bureau that operates at a national level has its own staff – even at the lowest level – and so many of these departments stick rigidly to their narrow area with little interest in co-operation (Zhao Shukai 2007: 56-59).

Those employed at the local bureaucracy have no interest in serving the people. Zhao Shukai describes in detail how some townships have up to one hundred personnel, most of whom cannot be found but are in the staffing system, have posts, and get salaries; how much of the time and energy was spent on interpersonal battles for power, and how the ties of blood, friendship, or money are very effective for getting any government jobs (Zhao Shukai 2007: 60-61).

Even when the population of a township is overwhelmingly Tibetan, the township administrative compound often employs mostly non-Tibetans, who use their positions to favour others of their own ethnicity. Since this elite is the most local face of central power, they go to great lengths to protect their own interests and avoid anything that might disturb the central doctrine of a "harmonious society". While the township governments hold banquets, swell their ranks with non-Tibetan employees who don't show up to work and engage in power struggles, the Tibetan people suffer and the government fails to meet the basic needs of its citizens.

CHINA'S RENEWED INVESTMENT IN TIBET

China is behind in responding to the global spatial contraction of productivism, which now enables large areas to be used for more human purposes, such as conservation, and the revival of local crafts and household economies. Not only is China yet to follow the global trend, it can be argued that Beijing's agenda is to accelerate productivism in Tibet by pouring in extraordinary amounts of construction capital to engineer a vast infrastructure of modernity, particularly the creation of a mass-tourism-based economy.

In 2007, China announced its spending plans for the "TAR" up to 2010, the end of the 11th Five-Year Plan period. Total spending will be 100 billion yuan (approximately US $16 billion), an extraordinary amount by any standards. China says this sum will be spent on 180 projects, but only a few have been named. Of those named, none would require anything close to 100 billion yuan.

Not surprisingly, the named projects will appeal to the Chinese metals manufacturing corporations, which now wield great power in China and around the world. To date, they have not profited from Tibet because basic infrastructure is lacking, such as railways to bring tourists in and minerals out, airports, highways, hydropower stations and urban facilities.

These types of infrastructure are exactly what China announced it would build. The list includes an airport in Ngari to complement the railway to Lhasa, extension of the rail line to Shigatse, which follows the recent opening of an airport in Kongpo in Nyingtri county, and many hydro-power plants. None of these projects amount to anything close to 100 billion, even if construction proceeds as quickly as China intends by its promise of a "leap-over", extremely fast development.

In 2007, China announced its 100 billion yuan plans for the "Tibet Autonomous Region", an extraordinary amount by any standards.

China's package also includes 10 billion yuan for extending the urban construction boom into the Tibetan countryside, providing farmers and nomads with electricity, phone coverage and education. In doing so, it appears that China is not restricting the benefits of development to the urban centres and their largely immigrant populations. But to access such services, nomads will have to cease their mobile way of life.

This still leaves much of the 100 billion yuan unaccounted for. How will China allocate the money? Will the 100 billion be used to set up major mines and processing plants? This seems quite likely. There has already been aditional mining in Tibet. It has often been highly destructive, although usually on a small scale by world standards, semi-legal and the production not recorded in official statistics. Future mines will operate on a world scale, since the Chinese metals industries now operate that way. China imports vast quantities of minerals, including minerals that could have been found in Tibet, because importing was cheaper and easier until the 2005 and 2006 global mineral price rises.

Building a world scale, capital-intensive mine involves large investments in a specific location. China will decide whether to have a mine and perhaps a smelter at a location in Tibet by comparing costs of extraction from Tibet with the costs of a similar plant in Brazil, Canada, Australia or

India. Until recently, such overseas sources have been cheaper, faster and easier than investing in Tibet. Now, for the first time, China's own state-owned mining giants – making windfall profits from booming prices – have the capital to exploit Tibet in ways never seen before (see chapter six Natural Resource Extraction).

Because of China's endless demand, the prices of nearly all metals, coal and oil have risen dramatically, doubling and even trebling worldwide. Expert commodity price forecasters, employed by major exporting countries, predict that present high prices will slowly decline, but not to the levels of 2003 or 2004. For this reason, Tibetan mineral deposits that had seemed too distant, expensive and complicated to attract investment by China's largely coastal metal manufacturers, may now prove to be profitable.

Another major extraction project that is already well advanced in planning, and would cost many billions to implement, is the capture of the Tibetan headwaters of the Drichu (Yangtze River), to be channelled by tunnelling into Tibetan mountain ranges all the way to the Machu (Yellow River). This is officially known as the Great Western Route of the south-to-north water diversion, and planning has been underway since at least 1990. Other south-to-north water diversions, downstream in China, are well underway. The Yarlung Tsangpo (Brahmaputra) and the many rivers of Kham that feed into the Drichu (Yangtze: Ch: Chang Jiang) are next in line but they are controversial in China, not because it is Tibetan water, but because there are many doubts about the great environmental consequences and effectiveness of the idea. This is documented in chapter five (Damming Tibetan Waters).

The human population of the Tibetan Plateau is now over ten million, 70 per cent more than the six million that was sustainable over many centuries. The Tibetan Plateau simply cannot bear the footprint of ten million immigrants and native Tibetans.

The infrastructure to accelerate tourism is another clear focus for China. What is already taking shape in Tibet, from a packaged mass-tourism industry viewpoint, is the infrastructure essential for transforming Tibet into an integrated suite of destinations. Tours to Tibet will be ideally suited to the new middle class of China who are taught by the authorities to save less and spend more, consume more and take more holidays, in fascinating but safe domestic destinations inside the Chinese-speaking, familiar and affordable world. Tibet exactly fits this model. The railway to Lhasa brings millions of strangers to the holy places, with four million visitors expected in 2007 alone.

But Lhasa may not hold the interest of casual Chinese package tour visitors for more than a few days. From an industry perspective, the United Nations World Tourism Organisation master plans (1990, 2004) for Tibetan tourism development have said that Tibet needs to develop tour circuits. These involve round trip itineraries that quickly transport visitors to the must-see highlights, without too many time-consuming bus rides. Air travel will accomplish this goal.

The announced tourist projects include an airport in Ngari, in far arid western Tibet, where the main attraction is the holiest of all Tibetan pilgrimage places – the mountain known to the world as Kailash and to Tibetans as Gang Rinpoche. Devout pilgrims make the long and arduous journey from the populous districts of Tibet to purify their minds by walking or prostrating round the holy mountain and its neighbouring lake, Mapham Tso or Manasarovar. If Mount Kailash becomes a major tourist destination – easily accessible by air from Lhasa or even by direct flight from Beijing – Tibetan pilgrims will find it hard to maintain the clarity of mind essential to achieving the purpose of pilgrimage, the transformation of mind.

In short, tourism offers China a new form of productivism. Tibet may not yet yield vast mineral treasures for generating wealth in China but it may soon be ready for a tourism boom that generates economic growth and an economy that employs great numbers of non-Tibetan immigrants who could find employment and money from the tourism industry. Chinese and European demographers project that the Tibetan Plateau population – already four or five million more than its sustainable limit - will grow in the next 20 years by a further 20 to 30 per cent (Liu, Li & Zhang 2003). This number may be realised sooner if the tourism boom attracts a new wave of non-Tibetan immigrants.

There is evidence to suggest that tourism could be designed skilfully to be pro-poor and to distribute wealth to remote rural areas, where non-farming income opportunities are few. To date, however, Tibetans and their culture have simply been a commodity for consumption. The rise of tourism, with Tibetan culture and landscapes promoted for Chinese consumption, is described in chapter seven (Tourism and Tibetan Culture).

The track of the new railway from Gormo to Lhasa, partly elevated, cuts through the grasslands of the Tibetan plateau.
Photo by Ran & Limi

A HEAVY HUMAN FOOTPRINT

After meeting with Mao, as early as 1952, the monk in charge of the Tibetan Foreign Affairs department, Lungshar Thupten Tharpa, explained the Chinese leader's plans for population growth in Tibet (later named as the "Tibet Autonomous Region") in a radio broadcast:

> Chairman Mao received us in audience and had a very close talk with the Tibetan delegates. He gave us detailed but clear instructions: Tibet covers a large area but is thinly populated. Its population should be increased from the present two or three million to five or six million, and then to over ten million (Union Research Institute 1968).

Chairman Mao's vision has been realised. According to the statistics of China's 2000 Census, the population of the entire Tibetan Plateau was 10 million in 2000 – of whom 5.5 million were Tibetans – excluding the floating populations.

A basic message of this report is that, by official Chinese figures, the human population of the Tibetan Plateau is now over 10 million, which is 70 per cent more than the six million that was sustainable over many centuries. The Tibetan Plateau simply cannot bear the footprint of 10 million immigrants and native Tibetans. Until Chinese population transfer into Tibet began in the 1950s, Tibet's six million people were spread widely across the plateau. The steady degradation of the vast pasturelands of Tibet over recent decades is a sure sign that Tibet has been forced to yield more than it can sustainably manage.

If China withdrew its external subsidies which prop up the regional economies in Tibet, a substantial part of the population – especially in the cities – would starve. The population increase in Tibet has not followed the standard Chinese frontier practice, perfected over many centuries of establishing self-reliant colonies of immigrant Chinese intensive farmers. That was not possible in Tibet. With a few exceptions, the climate is entirely unsuited to intensive agriculture in irrigated enclaves beyond the long-established Tibetan valley farms. The extra millions of people in Tibet are largely in the towns and cities, yet there are few productive industries in the cities other than real estate and construction, which are financed by external subsidies.

Like others throughout the world, Tibet is a country which is naturally suited to extensive land use, requiring a small human population scattered widely over the whole area, treading lightly and making minimal impact, because the land cannot sustain intensive exploitation. Intensive, urban-based land use that neglects, impoverishes or degrades the countryside, its fragile soils and vegetation, is simply unsustainable.

LOOKING AHEAD TO SUSTAINABLE ALTERNATIVES FOR TIBET

China's current economy is booming and its emphasis is plainly on the short-term. Since its grain-for-green programme in the 1990s, China has replaced marginal, unproductive and eroding ploughed land on hill slopes all over China with tree plantations. Despite the PRC's shortage of arable land, a great deal of territory has been retired from production in order to grow species that have ecological value in rehabilitating degraded soils. These

are modest beginnings, but the 11th Five-Year Plan for 2006–2010 speaks as much of sustainability and quality of growth as it does of productivism and quantity of growth. Beijing's rhetoric is beginning to shift in a promising direction.

When productivism is to fade away as the dominant ideology, what should replace it? What is a viable alternative model? We can see clear alternative land uses including conservation, protection, ecological restoration, recreation, eco-tourism, pilgrimage and other post-industrial uses of space. Chapter eight (Sustainable Development and the Population Footprint) details how this transition has been successfully implemented in certain parts of the world – such as the Scottish Highlands, the arctic north of Norway, Canada and Russia, the growing protected areas in Europe and the tropical savannas and deserts of Australia – where large investments in productivism ran their course. This report invites China to take a fresh approach to the Tibetan Plateau, which has much in common with the above regions.

High-level Chinese economic experts, such as Prof. Hu Angang, an expert adviser to China's premiers, have already proposed this transition. In 2001, Hu proposed that far greater emphasis be given to the traditional Tibetan economy, rather than pouring investment funds into showcase, urban construction projects. Writing in the journal *China Tibetology*, Hu argued that a mode of nomadic mobile production is better suited to the realities of Tibet. Decades of attempts at industrialising Tibet have failed, he wrote, and further investments to increase production are a waste of money. Tibet's local government and several scholars in recent times have proposed that Tibet should adopt the route of industrialisation towards economic development; but Hu argued that such a strategy of sacrificing agriculture to support industrial development as a means to regional economic development is, in reality, the re-appearance of the "squeeze agriculture for industry" tactic which has already been historically proven, in the experience of developing countries and China, as a difficult tactic with which to promote a sustainable regional economy.

The existence of Hu Angang's position is promising. He recognizes, as is clear to us, that when the transition away from productivism happens in Tibet, the long-distance will be replaced by the local connection, and local integrated economies, as well as eco-systems, will be restored. Local subsistence economies will become viable again and the range of economic alternatives will widen.

Tibetan alternatives that favour long-term sustainability have deep roots in the tradition of "sealing the hills and sealing the valleys", or *rigya lungya domba*. This is a practice of protecting landscapes set aside for conservation purposes that does not necessitate the removal of people, only that they respect wildlife and their habitats. The history of sealing the hills and valleys from exploitation shows that the invocation of the power of a king to secure an area with his seal originated in Tibetan conflict resolution (Huber 2003). Later, the concept of sealing landscapes was extended to decreeing conservation zones. The royal exercise of political power became a sacralisation of landscape for wildlife.

The Tibetan tradition of "sealing the hills and sealing the valleys" is a practice of protecting landscapes set aside for conservation purposes that does not necessitate the removal of people, only that they respect wildlife and their habitats.

Rigya lungya domba is a popular saying, a forceful reminder that it is our duty to protect the earth, waters and skies as a solemn vow. Tibetans take this vow seriously and it governs their entire way of life. It is a vow that, to date, China – as demonstrated by its policies in Tibet – has clearly failed to understand.

These laws against hunting were given a wider meaning by proclaiming that the disciplined choice of refraining from hunting is an act of generosity, given the specific name of "the gift of giving fearlessness". The right of wild animals, even those that threaten human economic production, to live out their lives, without fear of being killed by people, became an explicit part of the practices undertaken by any sincere Buddhist practitioner seeking to purify the mind of selfishness and possessiveness by learning to actively let go of self-centredness.

The gift of fearlessness was valued even more than the generous redistribution of wealth described earlier. To share space with wild animals was something everyone could do, in recognition that certain species are rare and in need of protection (Huber 2003). This shows how Tibetans could not only take into consideration the rights of other species, and long-term sustainability, but also conserve species and habitats without going to the extreme of excluding all human use of the sealed hills and valleys. These are lessons of great relevance to China's new policies of excluding nomads to ensure grassland regrowth.

Productivism has been problematic in Tibet only because it has been used as a pervasive ideology, one that

no longer serves but commands, that condemns other modes as backward and that focuses on the short-term rather than the long-term. But productivism can only co-exist with the traditional Tibetan household economy if Tibetans are involved in the process and are permitted to contribute their accumulated knowledge of the land and its limits. In the future, in a landmass as large as Tibet, it may be possible for a form of productivism to operate alongside smaller-scale local economies, sustainable livelihoods, biodiversity conservation, and human well-being based on modest, mobile utilisation of local resources. If Tibetan voices are heard, skilful choices will be made in future.

Tibetan tradition demands to protect the landscapes of the plateau.

A NOTE ON SOURCES, STATISTICS AND STYLE

This report is based on a wide range of sources, including official Chinese statistics. We also make use of refugee testimonies, and we hope the reader will understand that in many cases it is not possible to identify the individuals too closely, since they fear for the safety of their families in Tibet, where collective punishment of entire families is common.

However, most of the sources in this report are publications of independent researchers who increasingly have access to Tibet. Our intention is to provide documentation wherever possible, since our subject, the well-being of Tibetans and Tibet, can be confusing to readers who have been faced in the past with claim and counter-claim. Our hope is that we can find a middle way between extremes, highlighting the increasing convergence between accounts that had previously seemed antagonistic or mutually exclusive.

Our decision to use Chinese sources will also be controversial to some readers. They will point out that China's official statistics are well known to be unreliable and subject to political manipulation, both from below, as local results are reported up the chain, and from above, to fulfill predetermined objectives. Their doubts will only be reinforced by the scepticism publicly expressed by China's official media and senior leaders.

Many observers would add that endemic distortions of data and the reporting upward of glowing progress, whether factual or not, actually begins at the top with demands – either implicit or explicit – that the career prospects of lower level cadres depend on submitting what the top leaders want to read or hear. This is commonly said in China, and also by international economists who have similarly expressed doubts about the veracity of official reporting of data. Readers are referred to the erudite debates in the *China Economic Review* and other academic journals in recent years. This view was pungently put by a Tibetan cadre quoted in *The Economist* in early 2007:

> 'The officials tell us what incomes Beijing wants us to report and then we just have to report those numbers, even though there are farmers earning far less,' he said (*Economist* 2007).

Despite these problems, China's official statistics are the best data available and are the basis of China's planning system. They are also the basis for investments by international development banks. In addition, China has a long tradition of gathering statistics: In many ways, censuses, county gazetteers and local tax data collection are Chinese inventions. The State Statistical Bureau has, in recent years, worked hard to collect many new categories of data that reflect the shift from a socialist command economy to a capitalist economy. The amount of data available is enormous and is supplemented by international researchers, who often gain access to remote areas to assess for themselves how central policies are actually implemented locally.

In this report, monetary amounts are given in *yuan* (also called *renminbi*) and in US dollars, unless otherwise stated. Until July 2005, the official exchange rate was 8.28 yuan per US $; the average rate since then has been approximately 8 yuan per US $. However, in actual purchasing power, the yuan has long been worth more. Large amounts are in billions (sometimes shortened to bn) and millions (mn), rather than the Chinese custom of counting in units of 10,000 or the Indian practice of using the unit of 100,000 as a base. Kilometres is sometimes abbreviated as kms, and sq kms for areas measured in square kilometres.

Wherever possible, place names are given in Tibetan and Chinese (and in English, where English speakers have a different name) to avoid confusion. "Tibet Autonomous Region" appears in inverted commas because it is neither the whole of Tibet, nor is it in reality genuinely autonomous. In fact, "TAR", to use the usual abbreviation, is only half the area of the Tibetan Plateau, has under half the Tibetan population and only half the counties that China officially designates as districts of Tibetan "autonomous" governance.

Readers seeking a coherent picture of contemporary Tibet, and the well-being of the Tibetan people, may feel no need to delve into the question of sources. The report is not cluttered with endless footnotes, and can be read as a narrative that, we hope, sheds light on human lives pursued in difficult circumstances.

Readers who do want to check sources will find an initial reference embedded in the text, which is fully listed in the bibliography. Some may be surprised at the wealth of available sources, which is itself a sign of increasing openness and convergence. However, some sources cannot be identified, not only those refugees who are fearful for their families, but also the many international aid agencies whose NGO work in Tibet is always precarious and often viewed with suspicion by local cadres. They too have requested anonymity, but have contributed greatly to our understanding of ground truths in Tibet today.

CHAPTER ONE

NOMADS AND GRASSLANDS

At first glance, all is well on the high plateau of Tibet – to its pastoral nomads. So abundant is the summer pasture, dotted with the black, woven nomad yak hair tents, that China called this landscape "primordial" in an official *White paper on ecological improvement and environmental protection in Tibet*, released in March 2003. The idyllic alpine meadows of Tibet in summer bring joy to the hearts of not only the nomads, at home anywhere on the vast expanse of green, but also to visitors enchanted by the abundance of wild flowers, bees, contented herds of yaks, sheep and goats, and the fleeting glimpse of swift antelopes.

Tibet's rangeland, from the Northern Plateau of upper Tibet (Tib: Jhangthang) to the extreme eastern edge of the plateau, with an average altitude of 4000 to 5000 meters, covers approximately 70 per cent of the total area of Tibet's plateau. The types of rangeland vary from alpine meadows and mountain scrub to mountain sparse wood and mountain desert, which helps sustain domestic herds and nurture a wide variety of wildlife species.

THE PRIMORDIAL REALITY

First glances are deceptive. To the trained eye, signs of crisis are everywhere. Nomad livelihoods are threatened by decades of widespread rangeland degradation, as alien invasive species, toxic to livestock, take over dwindling, eroding and collapsing grassland. The water table is dropping, as water is no longer held frozen in the soil during winter. The hardy sedges and grasses, able to withstand intensive grazing, blizzards and gales, are dying off for lack of water. As the living turf dies and turns black, the subsoil is exposed, not only to biting winds and sudden hailstorms, but also to burrowing mammals whose populations are exploding to plague proportions.

Appearances are misleading. Grassland is a landscape, wonderful and life-giving, yet as fragile as the tropical rainforests. The world has come to understand the threats to the rainforests, but degraded grassland is less easy to recognise with an untrained eye. The nomads of Tibet, caring for a national herd of 10 million yaks and 30 million sheep and goats, look over the grassland with expert eyes. Today's nomads have inherant knowledge of how to make the entire plateau habitable. Over many centuries, they developed a mobile way of life, enabling sustainable use of the entire plateau, an area roughly the size of Western Europe. They also developed many risk management strategies in a climate prone to unpredictable extremes that can wipe out a carefully nurtured herd in a flash.

Now the nomads face new risks, not from the sky or earth, but from bureaucratic managerial restrictions that – in the name of scientific productivity, and more recently in the name of scientific conservation – constrict their nomadic flexibility and mobility. Nomads are under intense pressure to settle, fence the land allocated to them by state authorities, commercialise production and become more "civilised" in a standardised, modern way. All aspects of nomadic life are now regulated by non-Tibetan officials in distant cities: herd size, stocking rates, numbers of children permitted, land allocation, market access, availability of schooling, access to credit, fencing expenditure, pest control, multiple taxes and compulsory work on state projects. The customary flexibility, mobility and traditional tent-circle decision-making has been replaced by the rigid, remote bureaucratic regulation of rangelands by cadres of a nationality with little or no experience or understanding of the dynamics of the high plateau, and little inclination to respect, listen to or learn from the nomads.

This chapter documents an ecological crisis, which now becomes a crisis of Tibetan livelihoods, as the state increasingly blames the nomads for rangeland degradation and coerces them to vacate their land altogether.

NOMADIC PASTORALISM IN THE TRADITIONAL ERA

An examination of traditional nomadic livelihood on the rangeland provides a necessary framework for understanding the policies that have governed the grasslands for over 50 years.

Livestock production and rangeland management

Livestock and the rangelands were traditionally a constant yet precarious source of livelihood for the nomads. The animal that makes Tibet habitable is the yak. Yaks provide food, shelter, clothing and other amenities to help nomads thrive in the most inhospitable areas of the Tibetan

Plateau. Sheep and goats also provide them with an additional supply of food and wealth.

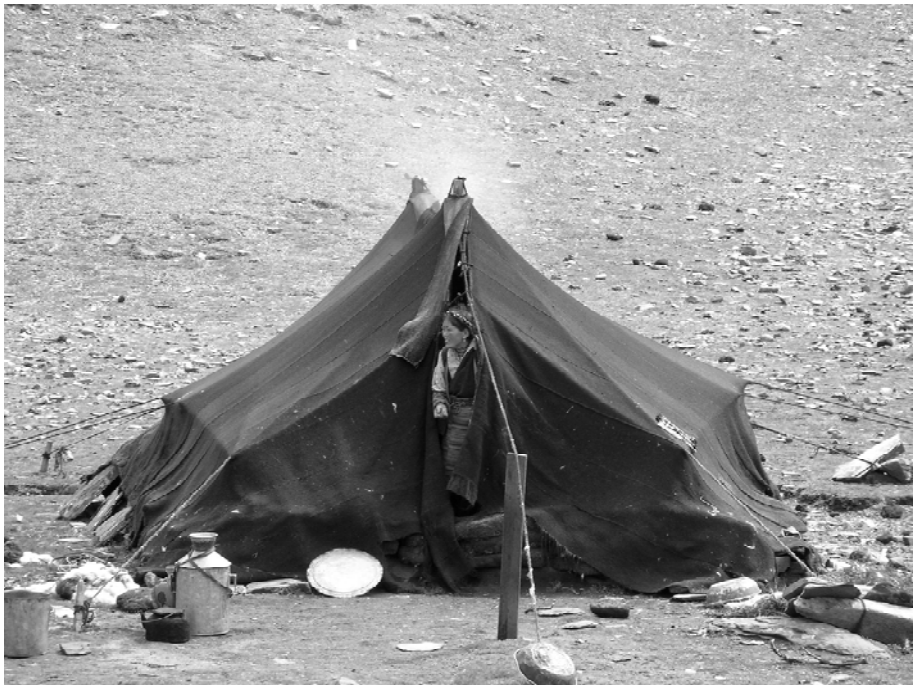
A generic term used by the nomads for a herd is *nor*, which usually is literally translated as "wealth", but this wealth has a value of its own, not just because it can be converted into cash. *Nor* means not only wealth but also well-being, insurance, capital for launching enterprises, credit worthiness and status. Wealth-on-the-hoof is an end in itself, not a means to an end or a stage in meat manufacture. Traditionally, the wealth of the rangelands was its abundance of butter and wool. These nomad products were not regarded as a fungible cash commodity or as wealth to be accumulated as an end in itself.

Livestock products are the basis of subsistence, providing meat, wool, manure, fuel, labour, leather and live animals for trade.

Livestock products are the basis of subsistence, providing a range including meat, wool, manure, fuel, labour, leather and live animals for trade. Dried yak dung is not only the cooking fuel for nomad tents on a treeless plain; it is now a source of cash income from sales to nearby towns. Tents, clothes, blankets, ropes, boots, boats and saddles are among the many artefacts made from animals; when an animal dies, nothing is wasted, everything has a use. Tibetan nomads have long been good traders and modern opportunities have only helped them to expand their network and enterprises.

The Tibetan nomads have, over time, developed the ability to live with the whims of nature (Apte and Edwards 1998: 31). In these highland pastoral regions, winter is long, with temperatures often dropping to below minus 30 degrees Celsius, and the growing period is very short. Snowstorms are common, even in summer, and the winter blizzards can wipe out their animals, forcing them into poverty.

Nomads of Tibet, spending their entire lives on the rangeland, have gathered an integrated knowledge of pasture management which they passed on through generations over the centuries. Nomadic pastoralism is an acculturation by humankind to rangeland, where extensive livestock production is more supportive of human life than cultivated agriculture and has been characterised as one of the grand progressions in the evolution of human civilisation (Miller 1998: 24–29). Nomads have been herding livestock on the grazing lands of the Tibetan Plateau for nearly 4000 years, but pastoral production strategies and practices vary widely across the rangelands, depending on altitude, environmental conditions and rangeland types.



Nomads in the "Tibet Autonomous Region"
Photo by Phillip Roelli

Traditionally Tibet's grasslands were unfenced, allowing a natural form of flexible transhumance. Mobility is the key to enabling human life and the flourishing of a sophisticated civilisation on the coldest inhabited region on earth. Nomads practice seasonal migration, which allows sufficient time for the replenishment of the pastures. The migratory sequence they follow ensures that the best forage is available to their livestock and ideally enables livestock to lay down the necessary fat stores to help them survive the long and bitter winter and spring (Goldstein et al. 1990). Chinese scientists sometimes report the usefulness of nomadic mobility as if it were a new discovery (An Yufeng et al. 2002: 66–71).

Nomadic pastoralists raise mixed herds of different animals. They also

split their herds, to take advantage of the different capacities and accommodate the different needs of their livestock, thereby making optimum use of the hardy and nutritious rangeland vegetation. Economic anthropologist Melvyn Goldstein says that, in semi-arid upper Tibet, nomads move sections of their herds to different pastures. For example, in Phala nomadic area – close to the alpine desert of upper Tibet in Jhangthang – satellite camps are established in summer for the male and non-lactating sheep and goats. They also establish a separate satellite camp during the spring birthing seasons for the pregnant females, so long as the households have appropriate pastureland and adequate labour. This system works well with sheep and goats (Goldstein et al. 1990).

For the herding of yak, quite a different sequence is followed. Goldstein explains that while the male yaks are left unsupervised in the mountains until they are needed for transportation, female yaks (Tib: *dri*) are herded daily and moved to the autumn pasture along with the sheep and goats. When the sheep and goats return to the home base in December, the female yaks are moved to other ungrazed winter pasture areas where they forage primarily on mountain slopes. Pastoralists often move several times with their herds, within the winter pasture area close to their home base, so that contact is easy. This is a skilful strategy in the coldest and highest part of Tibet, where the grasses are nearly dead most of the year. In this way, all the pastoralists of the western Northern Plateau are adapting to an environment where their livestock must forage for eight to nine months on near-dead vegetation (Goldstein et al. 1990).

Climatic conditions of the high plateau rangeland are so extreme and so prone to periodic disaster that sustained growth of livestock over the entire area is not possible. Sometimes nomads face difficulty when nature generates extreme weather conditions leading to great destruction. A sudden unseasonal blizzard can block a mountain pass and leave the animals trapped. However, rangeland specialist Goldstein believes the traditional systems of the nomads allowed them to subsist on the Jhangthang (Northern Plateau) for centuries without destroying their resource base precisely because it fostered a balance between their highly adapted herds and their challenging environment. This demonstrates the rationality of the nomads' individual herd-management strategy.

Nomads prefer to maintain a herd size as large as the land can sustain during good years. This provides safety against the inevitable bad years when heavy snow or drought decimates their herds, both directly and indirectly, through lack of forage, the winter cold and by making them more susceptible to disease. During the winter of 1997–1998, over three million head of livestock perished due to heavy snowfalls in the "Tibet Autonomous Region" alone. Parts of Amdo's (Ch: Qinghai) southwest regions were also hit hard (Miller 1998). Big herds can survive a major proportional reduction, with enough additional pasture. Pastures were taken from those whose herd size had decreased. This was done to skilfully maintain a fixed number of animals in each particular pasture.

Although the modern scientific, numerical concept of carrying capacity was not known at that time, the result was the same; a steady, even grazing pressure that balanced the maximum forage consumption by stock with the survival of plants. In this way, changing human needs, productivity, sustainability and biodiversity were held in balance. Despite the nomads' striving to maximise their own herd size, the traditional system of pasture allocation and reallocation was critical in accomplishing the balance between livestock numbers and carrying capacity. There was no "contradiction between grass and animals", as China alleges today.

Although the modern scientific, numerical concept of carrying capacity was not known at that time, the result was the same; a steady, even grazing pressure that balanced the maximum forage consumption by stock with the survival of plants.

Pasture allocation and reallocation was one of the unique features of the traditional (pre-1959) pastoral system. Nomad households could use only their assigned pastures and households normally received multiple pastures (Goldstein et al. 1990). Nomadic households owned their livestock and they were independent of each other in terms of control over their livestock and the pastures allocated. Households could choose to co-operate, and usually did, as a way of reducing the labour needed to shift and supervise the segregated sections of the herds. The pastures allocated were not fenced, but boundaries were enforced by the landowner.

Rangelands of the Tibetan Plateau are more than just a resource to sustain livestock. This region is an ecological and cultural landscape that fosters a rich diversity of human interactions within a complex socio-political and biophysical environment (Richard 2000). Richard states that diversity and mobility characterise the pastoral production systems. Her conclusion, as a rangeland

specialist, is that pastoral production systems are diverse in order to minimise risk in unpredictable conditions and the pastoralists engage in multi-resource economies that maintain large, diverse herds. Pastoralism is a subsistence strategy and the pastoralism of Tibet is different from the commercial ranching in developed countries, in which grain harvests are fed to livestock.

An intuitive respect for the land

Tibetans have a long tradition of conserving the grassland. The huge landmass of Tibet has many ecological niches that possess great diversity, making it a last sanctuary for some of the world's rare plant and animal species. This is primarily due to Tibet's long isolation and centuries-old tradition of living in harmony with nature. The testimony of European travellers to Tibet in the 19th and 20th centuries, up until China took control, is ample evidence of both the abundance of wildlife and that the wild herds mingled with the domestic herds of the nomads, freely and without fear, in an unfenced expanse. (Rawling 1905).

Tibetans traditionally have an intuitive respect for the natural limits of what the land can sustain. They generally value the "precious earth" as the basis of all life and the direct source of food, shelter and livelihood. Rather than trying to conquer nature, Tibetans have adapted their lifestyles to natural conditions. They are not driven by greed or a constant urge for increased yield, but by the needs of this generation and coming generations to survive – which means, in modern language, sustainability.

Rather than trying to conquer nature, Tibetans have adapted their lifestyles to natural conditions. They are not driven by greed but by the need of this generation and coming generations to survive, which means, in modern language, sustainability.

For nomads, home is wherever they find good pasture. His Holiness the XIV Dalai Lama says the life of a nomad is lonely, but very peaceful (HH the Dalai Lama and Rowell 1990: 39) and can be called a model of harmony with the environment. This Tibetan way of life, which emphasises peaceful co-existence with nature, is partly due to the far-reaching influence of Buddhist philosophy. Buddhism forbids the harming of any living creatures, directly or indirectly. However, nomads did sometimes hunt for supplementary subsistence, especially in arid, marginal areas such as the Jhangthang. Jhangthang is one of the poorest regions in Tibet (L. Fox et al. 2004: 17–19). Therefore, hunting in this region only occurred for survival on the harsh, cold land with scant vegetation, where subsistence is difficult. Sometimes nomads would say that their way of life was less destructive than that of the farmers who kill sentient beings each time they plough.

The edicts of the lamas forbidding the killing of wild animals sometimes made an exception for rats and wolves, the two species most destructive to the livelihoods of farmers and nomads. Yet even in this regard, the traditional knowledge of the nomads often kept them from killing.

An old Tibetan nomadic proverb reminds nomads not to attack the lair of a female wolf rearing her young, even if the nest is near their tent and overnight sheep enclosure. If a mother wolf or her cubs are attacked, she becomes ferocious and will slaughter many sheep. But she also has the habit of deliberately not attacking sheep near her lair, so as to not draw attention to the location of the lair. Because nomads know the mind of the wolf mother, they remind each other through proverbs to live-and-let-live. Wolves and humans have been circling each other for many centuries; both are intelligent and know the ways of the other. This is ancient indigenous wisdom, entirely unknown to the Chinese scientists who recommend extermination of wolves wherever and whenever they occur.

The innate wisdom of mixed herding

On most pastures, nomads raise a mix of animal species. Each species has its own specific characteristics and shows its own adaptability to the environment. Yaks can paw through heavy snow, giving access to grazing for sheep. The raising of yaks, sheep, goats and horses together maximises the use of rangeland vegetation. Nomads know which soil, slopes, streams and grasses will support an appropriate mix of animals. Different species graze on different plants and, when herded together on the same range, they use rangeland vegetation more efficiently than a single species would. This kind of herding system is not irrational, but demonstrates sophisticated adaptive responses by nomads to the complex environment in which they live and the resources available to them (Miller 1998).

To the untrained eye, Tsonyi and Lhari, both in the same prefecture, look alike. But the climate in Tsonyi is drier and the dominant alpine steppe vegetation is better suited to sheep and goats. In Lhari, there is more rain, and the vegetation is dominated by alpine meadow, which is better suited to raising yaks (Miller 1999: 16–19). This kind of herding requires complex management strategies,

since each animal species has specific nutrition requirements and production characteristics.

Different animals also have varied uses and provide diversified products for home consumption or sale. Jennifer S. Cesca has reported that, in Tibet, the mixed herds of yaks, goats and sheep are tended throughout the season based on their specific reproductive cycles and grazing preferences. This allows nomads to survive through the harsh winter (Cesca 1998). Maintaining diverse herd composition minimises the risk of total livestock loss from disease or harsh winters. Infectious diseases, including dangerous parasitic infections that can be transmitted to humans, such as echinococcosis, are a major concern in a land where standard veterinary treatments are difficult to obtain, even today.

Desertification of rangeland near Samye monastery.
Photo by Nathan Freitas

THE DEVASTATING EFFECTS OF DEGRADATION AND DESERTIFICATION

The causes of degradation are much disputed, but no one doubts the extent of degradation, and even desertification – the final stage of degradation – across Tibet today.

The pressure is on Tibet's rangeland, the highest plateau in the world, which dominates the climate of most South Asian countries. Chinese scientists have carefully measured the extent of the degradation. In Amdo (Ch: Qinghai) province, areas undergoing desertification increase in size by 67,000 hectares/ha annually (Ning Datong 1997). On the upper Yellow River, in Amdo, near a major hydropower dam constructed by Chinese engineers, scientists relying on satellite photos reported the following:

> Landsat data recorded on 15 August 1987 and 17 July 2000, and field data from 1981 and 1996 in the Longyangxia Reservoir (Tib: Lungyang Gag) Region in Qinghai, were used to analyse the area, distribution, development and evolution of grasslands during 1987–2000. The area covered by grasslands decreased significantly by 6984 ha with an annual rate of decrease of 0.14%. Grass coverage and grass height decreased by 5–10% and 3–28 cm, respectively. Grass yield showed a decreasing trend and varied with grassland type (Li Feng Xia et al. 2003: 13–17).

Measurement of grassland degradation, based on remote sensing, was carried out by scientists from the Chinese Academy of Agricultural Science in Beijing, the Nagchu Agriculture and the Animal Husbandry Bureau in the "TAR", particularly in Northern Tibet:

> The result indicated that grassland degradation in Northern Tibet is very serious, and the mean value of Grassland Degradation Index (GDI) in recent 20 years is 2.54 which belongs to the serious degradation grade. From 1981 to 2004, the GDI fluctuated distinctly with great inter-annual variations in the proportion of degradation degree and GDI but the general tendency turned to severe-grade during this period with the grassland degradation grade changed from light degraded to serious degraded in Northern Tibet. The extremely serious degraded and serious degraded grassland occupied 1.7% and 8.0% of the study area, the moderate and light degraded grassland accounted for 13.2% and 27.9% respectively, and undegraded grassland occupied 49.2% of the total grassland area in 2004.

In Amdo (Ch: Qinghai) province, areas undergoing desertification increase in size by 67,000 hectares annually.

> The grassland degradation was serious, especially in the conjunctive area of Naqu (Tib: Nagchu), Biru (Tib: Driru) and Jiali (Tib: Lhari) counties, the headstream of the Yangtze River lying in the Galadandong (Tib: Goelhadhardong) snow mountain and glaciers, the area along the highway and railway between Qinghai (Tib: Amdo) and Central Tibet (Tib: U-Tsang), and areas around the Tanggula (Tib: Thangla) and Nianqingtanggula (Tib: Nyenchenthangla) snow mountains and glaciers.
>
> So the Snow Mountains and glaciers as well as their adjacent areas in Northern Tibet were sensitive to climate change and the areas along the vital communication line with frequent human activities experienced relatively

Table 1.1 Degradation of the Tibetan rangelands

Tibetan province	Grassland area (in sq kms)	Degraded rangeland		Rangeland degraded to black soil	
		1980s	1990s	1980s	1990s
TAR	664,000	18 %	30 %	15 %	16 %
Qinghai	316,000	28 %	32 %	13 %	21 %
Ngaba/Karze	142,000	27 %	33 %	9 %	13 %
Kanlho	161,000	44 %	49 %	8 %	12 %
Total (in sq kms)	1,282,000	321,000	425,000	169,628	215,240

Source: Long Ruijun and Ma Yushou, Qinghai's yak production systems, Conservation and Management of Yak Genetic Diversity: Proceedings of a Workshop, edited by Miller, Daniel J. et al., ICIMOD, Kathmandu, 1997, table 5, pp105-114.

serious grassland degradation (Gao Qingzhu et al. 2006: 165–173).

A 1996 study, carried out by Zou Xueyong of Beijing Normal University, showed that desertified area in Tibet totalled 20.47 million hectares and the area vulnerable to desertification amounted to a further 1.36 million hectares (Zou Xueyong et al. 2002: 183–198). Similarly, reports by (Zhong Decai 2003: 317–329) and the reports by (Wang Xunming et al. 2004: 405–611) from the Chinese Academy of Sciences' The Cold and Arid Regions Environmental and Engineering Research Institute document the challenges China faces because of desertification. According to Wang and his colleagues, deserts themselves only slightly contribute to dust storms directly; dust is most likely coming from deteriorated grasslands. For decades, Chinese scientists have been measuring degradation, which continues to worsen.

Table 1.1 depicts two stages of steadily worsening degradation. The first stage, classified as "degraded rangeland", can still maintain herds, but at reduced levels as grasses die in patches, invasive species take over, infestations of burrowing animals explode and productivity is reduced. At this stage, the degradation is reversible if there is investment of capital (for buying grass seed, ploughing etc.) and much local labour contribution. The second stage is irreversible. When degraded grassland becomes "black soil", to use a Chinese term, it means the soil is completely exposed to the forces of gales, blizzards, rain, hail and snow, and soon stripped altogether down to bare rock – never to regenerate. Chinese scientists call this black soil or black beach, but internationally this is understood as desertification. The World Bank study on Tibet reported:

> The total area of degraded grassland increased by about 95 per cent between 1989 and 1998, with a notable acceleration in the middle to late 1990s. It is hard to avoid the conclusion that the most fundamental underlying cause has been poor government development policies (World Bank 2001: 22–26).

The State Environment Protection Agency of China in 2001 also reported that the PRC has 40 per cent of its entire territory classified as natural grassland, but 90 per cent of this grassland has been degraded to varying degrees (UNDP 2002: 17).

Rangeland degradation today has become a serious threat to the survival of both livestock and the nomads, who became accustomed to living in the rangeland for centuries, even where the temperature in winter drops to below minus 30 degrees.

HOW DID THE PRESENT CRISIS ARISE?

A review of Chinese policy over the decades enables us to discern China's shifts in policy for the grasslands, visible in the fieldwork reports of those who have investigated the varied ways that Beijing's policies have worked out in practice.

The PRC's policies towards nomads and their grasslands have changed dramatically over the past five decades, though its intention has always been to boost production; China's statisticians label this the "come-out rate" of livestock sold by nomads to market for slaughter.

China's governance of a land that it was not at all familiar with – the great grassland of Tibet – is worth tracking closely. Consistent throughout Beijing's policies over the past 50 years is that China has not learned to listen to nomads, or to recognise or understand their intimate working knowledge of animals and pastures, or to heed their concerns.

As we will discuss more fully below, in the 1960s and 1970s this meant confining the herders into communes where they had no voice. In the 1980s and 1990s, it meant leaving the nomads largely to themselves, ignoring all calls for help and investment in reversing the

degradation, and erosion, triggered by the failed productivist intensification of the 1960s and 1970s. Now, in a new century, the state policies – having still failed to hear the voices of the nomads – are imposing new restrictions, expulsions and exclusions based on satellite data and narrow scientific experiments, all done without consultation with the nomads themselves.

The rangeland on Tibet's plateau is heterogeneous in nature, with water availability unevenly distributed. Chinese policies disrupt the Tibetan nomad's way of living in many ways. Unwittingly, this has pushed the nomads on to marginal land.

Great Leap Forward and Collectivisation

The arrival of the People's Liberation Army (PLA) in Tibet in 1949 was traumatic in several ways. From the outset, the army of occupation was instructed to feed itself, living off the land by establishing farms close to their urban garrisons in Tibetan towns. This often meant appropriating the best land and best-watered pastures to feed all the extra mouths suddenly taking up long-term residence in Tibet. Mao's 1958 Great Leap Forward, the disastrous campaign that he imposed in his attempt to make all of China a land of abundance and achieve overnight prosperity, and the policies that followed it resulted in the wholesale destruction of forest and grasslands, and a famine that spread throughout China.

The need to feed a starving and continuously increasing population made policies to boost agricultural production a centerpiece of the Chinese development strategy from the early 1950s. By single-minded promotion of crops, almost 20 million hectares of China's grassland – or five per cent of the present grassland – were converted to croplands (UNDP 2002: 18). This policy has continued. In fact, a survey by the Ministry of Agriculture of 34 counties in east Inner Mongolia indicates that, between 1986 and 1996, a total of almost one million hectares of grasslands were converted into irrigated crop production. Reportedly, nationwide conversions have resulted in desertification of a staggering estimate of eight million hectares of grassland (UNDP 2002: 18).

In Amdo (Ch: Qinghai), 670 square kilometres of grassland were converted to cropland and nomadic herders were forced to assume an agricultural lifestyle which was unfamiliar to them and unsuited to local conditions. Grasslands were often classified as "waste" or lands that were under-utilised. Consequently, the term China used for conversion of pasture to farmland was "reclamation". In Amdo, this took desertification to a point beyond control (US Embassy 1996; Shapiro 2001:113). In his study of the Great Leap Forward, Jasper Becker describes how nomads were forced to do unfamiliar work:

> For the first time, nomads also had to learn how to till the region's stony soil. All over Amdo, efforts to plough the thin soil of the plateau failed, leaving a legacy of long-term environmental degradation. Overgrazing and deep ploughing destroyed the thin layer of topsoil and exposed the barren black rock beneath. The ground was often so hard that the Tibetans had to use picks to break up the soil. Even so, they had to 'deep plough' to a depth of three feet and to 'close plant'. The harvest of the autumn of 1959 failed, even in the arable regions where wheat and other crops unsuited to the short growing season were sown (Becker 1997: 172).

The first state farms in Tibet, founded by the PLA in 1952 to the west of urban Lhasa and just east of the borders of Toelung Dechen county, had historically been land used primarily for grazing sheep owned by the Tibetan Government. This land appropriation by soldiers soon went beyond Lhasa to Shigatse, Chamdo, Tingkye, Kongpo and Ngari (Yeh 2003).

Collectivisation

From the 1950s until 1980, the nomads of Tibet experienced the extremes of communism. The 'Democratic Reform' of the 1950s introduced land reform in which the previous feudalistic land ownership was abolished and replaced by redistribution of livestock, bans on bartering, taxation and class struggles. These conditions led to the emergence of foodgrain shortages for the first time in Tibet's history. Driven by the socialist ideology that peasants should not develop into a new class of wealthy farmers with privately-owned property, cooperatives were introduced that soon evolved into a systematic collectivisation. The Cultural Revolution of 1966–1976 further intensified this commune system to the extent that private ownership of land and animals ceased altogether.

Consistent throughout Beijing's policies over the past 50 years is that China has not learned to listen to nomads, or to recognise or understand their intimate working knowledge of animals and pastures, or to heed their concerns.

Under the communes of the 1960s and 1970s, nomads were powerless, forbidden to own anything, including

pots and pans, and everyone had to eat in a communal canteen. As Goldstein reports, the nomads felt like they had become slaves and were at the mercy of Party cadres. Tibet was entirely controlled by China and the traditional nomadic pastoralism was drastically changed. Due to crippling taxation, production quotas, export of meat and grain to China, and shifting agricultural policies that ignored social and geographic reality, Tibet experienced outright famine and widespread death (Becker 1997: 166–182). Policy during this period sought to maintain pastoral production but destroyed the social and cultural fabric of the nomads' traditional way of life (Goldstein and Beall 1990).

During the commune era, the traditional community-based organisation of nomadic herding was dismantled. Both rangelands and livestock became the property of the collectives and the net income was distributed according to the labour contributed by an individual, in the form of work points. The establishment of communes was accompanied by large-scale efforts at crop diversification. The heavy promotion of cultivating winter wheat and the emphasis on raising pigs was a particular irritant, since Tibetans are not used to eating wheat and pork. Tibetan farmers were forced to cultivate wheat where previously only high altitude barley grew. Tibetans grow barley on low-lying valleys and, when roasted and ground, it becomes *tsampa*, a staple of the Tibetan diet. Becker writes:

> Tibetan peasant farmers, who knew only to eat barley, which they roast over a fire and grind into a paste called *tsampa*, were now forced to grow unfamiliar and unsuitable grains. Much like the peasants in Ireland, who could not make bread from the wheat imported after the potato crop failed, the Tibetans, especially the nomads, had no idea how to eat wheat or maize (Becker 1997: 168).

Under the communes of the 1960s and 1970s, nomads were powerless, forbidden to own anything, including pots and pans, and everyone had to eat in a communal canteen.

But Tibet is too cold for wheat to thrive. After a reported bumper harvest in the initial years there was ecological disaster in the end. The grassland on the higher altitudes is often unfavourable for growing any types of crops. The crops the Chinese government demanded could not be harvested and much of the areas were left deserted. Intensive cultivation techniques and inappropriate choice of crops exhausted the soil, resulting in ecological tragedy and famine (Becker 1997: 177).

During the decade of the Cultural Revolution, all traditional grazing structures were dismantled and the entire pastoral nomadism of Tibet was forcefully collectivised, which brought irreparable damage to Tibet and its grassland ecosystem. Throughout the collective period, farmers had no incentives to develop their own initiatives and production remained low.

Overall policy during the period of collectivisation was to maximize grassland production, but the result was degradation. Unsustainable conversion of grassland into farmland during the Great Leap Forward and the Cultural Revolution seriously damaged the grassland in many areas, similar to Kazakhstan in the 1950s (Brown 2004). Only the valleys cutting into Tibet's high rangeland areas are suitable for growing crops. Once destroyed, natural grasses are difficult to replenish, due to the frigid climate. This turned many previous grassland regions into desert. The degradation of land is even greater where the grassland meets with croplands.

However, the areas of grassland lost due to failed experiments in crop production are much less extensive in Tibet than in Inner Mongolia or Xinjiang. The 670 square kilometers lost in Amdo should be seen in the context of Amdo's total grassland area of 316,000 sq kms, or the Tibetan Plateau total of 1.28 million sq kms (see table 1.1).

Miller, a rangeland expert, asserts that Tibetan pastoralism flourishes to this day because there has been little encroachment into the nomadic areas by farmers who try to plough up the grass and plant crops (Miller 2004). But now other key colonist policies have exposed the grasslands to a wide range of other uses that result in degradation, including irrigation, farming, mineral extraction, conservation, watershed protection and urbanisation.

The expanding desert has greatly affected grain production. According to Brown, China is the first major food producer to face reduced harvests, partly because of expanding deserts and aquifer depletion. Some 24,000 Chinese villages have either been abandoned or have had their farm economies seriously impaired by invading deserts. In the arid northern half of the country, where most of the wheat is grown, tens of thousands of wells run dry each year. These environmental trends – combined with weak grain prices that lower planting incentives –shrank the harvest from its peak of 123 million tonnes in 1997 to 86 million tonnes in 2003, a drop of 30 per cent (Brown 2004).

From communism to capitalism

Following more than two decades of poor performance, the Chinese government, under Premier Deng Xiaoping, found communes to be untenable and gradually moved back to the household system. The introduction of this liberal policy, called the "Household Responsibility System", disbanded communes and prompted redistribution of the livestock, which had belonged to the communes, to individual nomad households, with exemption from state taxation and responsibilities. It also allowed farmers to retain any surplus after quotas were met. Although the land still technically belonged to the collective, user rights were 'contracted out' to individual households.

While this change gave nomads some respite, the reversal also ushered in a new policy of settling nomads. This policy required them to exchange their tents for housing on land leased to them by the authorities and to fence their land and sow grasses – often forcing them into debt. A case study conducted by Chinese scientists for the China Council for International Cooperation on Environment and Development (CCICED) showed that nomads were ordered to take bank loans in order to pay a profit-making Chinese business, who had no experience in grassland management, to plough their degraded grasslands and sow seeds (CCICED 2001). If provided with seeds, the nomads of Darlag in Amdo Golog would gladly have sown it themselves.

Instead of alleviating poverty inflicted by rangeland degradation, this new project only deepened the nomads' poverty. The implementation of settlement and land distribution policies of the 1980s received fresh impetus under Beijing's campaign to develop its Western regions, including Tibet. Changes in the lifestyle of the nomads due to these policies have done very little to reduce rural poverty and have certainly led to degradation of the rangeland. As with China's agricultural policy, the policy for the grasslands in Tibet was focused on maximising production, with far less concern for the sustainability of the production system.

This grassland policy, based on capitalist individualism, has been in place since the 1980s and stands at the opposite extreme from the earlier commune system. Neither approach is suitable for the circumstances of the plateau or for skilfully managing the many risks and opportunities inherent to nomadic life. Neither extreme

Box 1.1 Case study of grassland restoration in Dari (Tib: Darlag) county in Amdo (now incorporated into Qinghai)

Ms. Shen Yuying of the Gansu Grassland Ecological Research Institute presented the results of this case study on grassland restoration in Dari ("Darlag" in Tibetan) county of Qinghai (Tib: Amdo) Province. Animal husbandry is the predominant occupation of Darlag's inhabitants, 96% of whom are Tibetan. The majority of the grasslands in the county are considered degraded. Of the total investment of 3.99 million RMB for implementation of grassland restoration in the county, 2.5 million RMB is from the central government. The year 2000 targets for the county's program, to be implemented in a single township, were the establishment of 50,000 mu of rodent control area; the establishment of 30,000 mu of artificial grassland; and the sowing of 20,000 mu of semi-artificial (rehabilitated) grassland. The task of establishing 30,000 mu of artificial grassland was contracted to a company from outside the county.

Ms. Shen reviewed several effects of the implementation. First, the number of grazing animals has been reduced. As a result, the animal taxes collected have been reduced, which affects township government finance. Because of the direct links between domesticated animals and the heavy workload of women on the Tibetan Plateau, it is expected that the reduction in animals will reduce the workload of women in the implementation area.

Through household surveys, the research team gathered information on the reaction of local people to the policy. The team found that the vast majority of households would prefer not to reduce the amount of livestock for the sake of the environment. Many claimed that the amount of livestock previous to implementation was just enough to ensure their livelihoods. The team also found that, given the seriousness of grassland degradation, the local Tibetans are now willing to kill rodents, which is considered wrong in Tibetan Buddhism. Finally, most of the local pastoralists that were interviewed have the impression that the program is a poverty reduction initiative, rather than a program focused on ecological improvement.

Ms. Shen closed her presentation with recommendations made by the case study team. First, she noted that although the compensation allowed for grassland seeding is 50 RMB per mu (with no grain or other cash subsidy as in agricultural areas), artificial grassland establishment may have a total cost of 172 RMB per mu. Thus, it is suggested that compensation to the local people be increased. Another problem that was discovered is lack of grassland science professionals in Darlag. The team suggests increased investment in grassland research and extension. Finally, the team also suggests amendment of grassland law and some form of eco-compensation system, whereby those in the middle and lower reaches of the Yangtze and Yellow Rivers pay partially for ecological environmental management in the upper reaches of these rivers.

Source: China Council for International Cooperation on Environment and Development, http://www.harbour.sfu.ca/dlam/WorkingGroups/Forestry/newsletter2.html

respects the nomads' preference for small-scale, *rukor* tent-circle governance, with decisions made by the most experienced nomads, within the 10 to 50 families, that pool their wisdom and reach a consensus.

A CLOSER LOOK: CHINA'S GRASSLAND GOVERNANCE SINCE THE 1980s

China's policies for the grasslands have been wide in scope and had dramatic consequences for the nomads and the Tibetan Plateau. In 1985, the Chinese government passed the far-reaching Grassland Law. Under this law, the Chinese government implemented the "Household Responsibility System", which involved the return of herds to households and of granting leasehold certificates to nomads, in order to provide long-term land tenure and encourage nomads to invest in sustainability. This system conflicts with the traditional group or cooperative management system and has not been instituted on the ground as widely as had China intended.

Following the household responsibility system, a policy of sedentarising and fencing of nomads has been implemented, whereby the nomads are resettled and confined to particular areas of the plateau. As a result, the nomads' traditional mobile way of life was compromised. The Grassland law has negatively effected the nomad population in numerous other ways.

Allocation of relatively small areas of semi-arid grassland to families has greatly reduced herd mobility. This may have contributed to the serious deterioration of the country's grazing lands.

Most recently, China has instituted a policy of "conservation" of watersheds and other areas, from which nomads are coercively excluded, as well as herd size regulations which affect livestock productivity. The following section provides a detailed examination of Chinese governance of the grasslands since the 1980s.

Household Responsibility System – "privatisation" of grasslands

Degradation of the Tibetan Plateau's grassland led to a number of policy initiatives affecting land management, livestock management and marketing. Beginning in the early 1980s, livestock were allocated to individual households, but the rangelands were still used communally. Production swung from the extreme of collectivisation to the opposite extreme of placing all responsibility on individual pastoralist households. This redistribution of herds to families was followed, many years later, by the granting of certificates for long-term leasehold rights to land, allocated by the authorities. The return of animals, and later of land, to households is known in China both as the "Household Responsibility System" and as "privatisation of grasslands", although private ownership of rural land is not in fact allowed at all.

To offer a regulatory framework, the Chinese government formulated the Grassland Law in 1985, which attempts to allocate grasslands based on the "Individual Household Responsibility System," a model that had worked in the agricultural areas of China. According to Ken Bauer, the first "TAR" Grassland Law was passed in 1994 (Ken Bauer 2005: 53–81). This law sought to provide the Chinese government with greater administrative control, this time emphasising a market-oriented livestock production system. Under the law, land contracts are granted to individual households on a long-term lease (30–50 years), while the ownership of the land remains with the State.

Allocation of relatively small areas of semi-arid grassland to families has greatly reduced herd mobility. This may have contributed to the serious deterioration of the country's grazing lands. As noted above, 90 per cent of grassland currently shows signs of deterioration. The Chinese government is now taking strong measures to address grassland degradation through its Planning Programme of National Ecological Environment Construction and Outline of the 11th Five-Year Plan.

The Grassland Law was intended to give pastoral nomads the confidence that land allocated to them was theirs for the long-term, and to encourage them to use it sustainably for their own good. Unfortunately, this intention has been undermined by the cancellation of grazing land lease certificates in areas that have since been designated for watershed protection.

Sedenterisation and fencing

The Individual Household Responsibilities model in Tibet allowed nomads to revive some features of their traditional practice of animal husbandry. But these changes also resulted in a policy of settling nomads, requiring them to exchange their tents for concrete housing on the land leased to them by the authorities. China's policy measures were thereafter increasingly focusing on "modernisation" and uplifting the "low human quality" of the nomads. This "civilising mission" assumes that nomadic pastoralism is fundamentally backward because it relies on nature, which is in contrast to the modern productivist attitude of master over nature. This is the deep-seated assumption

of Central Government leaders, who live in cities far from the grasslands. "Low human quality" is a phrase commonly used by the leaders to refer to Tibetan nomads as well as China's own peasants.

Due to a general lack of understanding of the grassland ecosystem, China's grassland policies often conflict with the goal of maintaining the grassland ecosystem. Despite the negative impact, the government continues to implement their policy of settling the nomads. In 1998, Beijing's vice minister of agriculture said that 67 per cent of Amdo's (Ch: Qinghai) herdsmen were settled and housed, and an end to nomadic life was imminent. China's White Paper of March 2003 also announced specific strategies for settling the nomads:

> To enhance grassland amelioration in the pastoral areas, change the nomadic way of production, speed up development in pastoral areas and improve herdsmen's living standards, projects to construct grassland in the pastoral areas, build permanent settlements for roving herdsmen have been launched since 2001 (State Council of the PRC 2003).

The settlement policy restricts the flexibility and mobility of the nomads, which leads to concentrated herds in limited areas of pasture that quickly becomes overgrazed. Until recently, vegetation in Tibet was in a pristine state. Desertification could only be observed locally, near camping grounds and settlements (Holzner and Kriechbaum 1998: 91). Now, however, constant grazing and severe trampling of the pastureland by livestock, as a result of their confinement, makes regrowth of vegetation impossible and leads to degradation.

The United Nations' China Human Development Report refers to the ineffectiveness of this policy, stating that mobile herding, though appearing harsh on herders' lives, can provide the grassland time to rejuvenate. The damage done to the grasslands from settled herding is evident in Inner Mongolia and other Central Asia regions (UNDP 2002: 18).

Settlement policies in Tibet are not appropriate. An official Xinhua report of 22 September, 2002 unusually admitted the lack of success of the settlement policy in the Ngari prefecture in the "TAR". Xinhua stated that within the prefecture there was only an average of 0.2 people per square kilometre, and as a result nomad settlements were scattered and communication was difficult. Consequently, many nomads had not yet settled and this had created barriers between the cadres and the masses (Saunders 2003).

Chinese officials have always claimed that Tibetan herders' practices are unsophisticated and backward, and allege that this is the main reason for the rangeland degradation. There is a common assumption among Chinese officials that access to a common resource leads to over-exploitation because the livestock owner will view the grazing resource as a free commodity, thereby maximizing herd size at the expense of other herders.

This view has been refuted extensively in the academic literature because it fails to recognize the common property arrangements generally made among herders which actually reflects a situation of open, unregulated access (Wu Ning: 2003). The government justifies its policy of sedenterisation by arguing that otherwise it is difficult to provide nomads with social services like education and healthcare (Wu and Richard: 1999: 14–21). The stated aims of the policy on settling herders throughout China are to improve the economic viability of animal husbandry (Saunders 2003). But so far, these policies have proved unsuccessful.

The settlement policy restricts the flexibility and mobility of the nomads, which leads to concentrated herds in limited areas of pasture that quickly becomes overgrazed.

There is widespread concern over the policy of fencing and permanent settlement. The first fencing in the "TAR" was done during the 1960s in Damshung Valley, north of Lhasa, which was used as a "model" demonstration area. In the mid-1980s, fencing of winter and lambing pastures spread quickly. Increasingly, summer grazing lands are also being fenced. Fences seem to be a favoured mode of pastoral development. Ken Bauer deliberately used the word "mode" because he believes that fences are not just strung of wire and rows of iron posts. Like other expert arguments, he asserts that technology is not neutral and must be seen as intertwined with projects of surveillance, control and power. They are not merely attempts to provide technical solutions for production constraints, but are also a political activity that expresses the nature of governance and dominant values in the culture.

These enclosure policies are designed to exert political control over nomads and to assimilate them (Ken Bauer 2005: 53–81). Fencing makes nomads, their family size and herd numbers more visible to the scrutiny of the state and that scrutiny increasingly results in a new "green governmentality" that excludes nomads from their land.

Responsibility for implementing the fencing policy lies with local governments, whose implementation methods

Degradation of grassland in the Ngari region.

vary greatly. Fences most often enclose private plots in the areas that are most available to official scrutiny, along roads and near administrative centres. More remote areas remain under communal control and are therefore fenced in larger spatial units. In the "TAR", fencing is less common than in Amdo (Ch: Qinghai) and is largely used to enclose communal plots with the cost fully subsidised by the government. In areas outside the "TAR", subsidies have been far lower. But fencing in the "TAR" is no longer free (Ken Bauer 2005: 53–81), which reflects the new emphasis on user-pays marketisation.

Despite the natural expansion of families that forces them into extreme poverty, China's official policy was that allocations of land would remain unchanged for decades.

Despite the natural expansion of families that forces them into extreme poverty, China's official policy was that allocations of land would remain unchanged for decades. Development economist Andrew Fisher reports that Tibetan nomads are some of the poorest people in China today and that reducing poverty in the Tibetan pastoral areas is a daunting challenge.

In the context of the Chinese agricultural sector, animal husbandry ranks a poor second in importance to grain production. Furthermore, within the animal husbandry sub-sector, pastoral livestock have not received as much emphasis as pigs, poultry and dairy cattle. Consequently, at the national level and even in most pastoral provinces, relatively little research or administrative resources have been devoted to pastoral livestock problems.

Agriculture, particularly in the "TAR", is one of the slowest growing sectors. Any modest growth it does experience is due to the peri-urban development of greenhouse agriculture and intensive pig farming around Lhasa and other major cities and towns of the "TAR". These enterprises are completely dominated by non-Tibetan immigrants. For this reason, rapid growth in these areas actually slows down the growth of Tibetan traditional activities (Fisher 2005: 36).

Settlement of nomads is at the centre of China's every programme. For example, China's Xinhua news bulletin of 7 April, 2003 announced the launch of the "TAR's" largest agricultural and animal husbandry programme to date, with a budget of 329 million yuan (US $41 mn), to be completed by the end of 2005. The programme involved the improvement of natural grasslands, the establishment of breeding centres and the settlement of nomads in 19 counties (Saunders 2003).

As China moves towards a market economy, Tibet's traditional livestock production and grazing management strategies have been increasingly marketised. The World Bank reports that, in recent decades, the government's goal for livestock production in the majority of pastoral areas has been to increase livestock off-take for slaughter. This policy has been promoted through the privatisation of herds and grazing land, sedentarisation, intensive grazing management strategies, and rain-fed farming techniques for growing forage and fodder (World Bank 2001: 23).

This sedenterisation policy had unintended consequences because the pasture allocation process is often unfair. Some nomads received pastures with access to water and some did not. Fencing of pastures also lays a heavy burden on households financially, often requiring

Table 1.2 Potential tenure and management arrangements for rangeland landscapes on the Tibetan Plateau

	Household	Household group	Village collective
Household	Grassland contract with individual household Management by individual household Each household derives benefits from their own land *Example: Kakhog (Ch:Hongyuan) in Sichuan*	Grassland contract with individual household Management by household group Resource shared communally based on household and livestock population *Example: Machu in Gansu*	Grassland contract with individual household Cooperative of individual contract holders for pastures or landscape management Each household derives benefits from their own land *Example: Gyalthang in Yunnan*
Household group		Grassland contract with household group Management by group Resource shared communally based on household and livestock population	Grassland contract with household group Pasture or landscape management by cooperative of household groups Resources shared communally based on household and livestock population
Collective (village level or larger)			Grassland contract with village (no internal land division) Management by village or collective of villages Resources shared communally based on household and livestock population *Example: Nagchu County, "TAR"*

Source: Richard, Camille et al. 2006, The paradox of the Individual Household Responsibility system in the grasslands of the Tibetan Plateau, China, USDA Forest Service Proceedings RMRS-P-39; Bank, Tony et al. 2003, Community-based grassland management in Western China, Mountain Research and Development, Volume 23 (2), p 132-140.

bank loans to be repaid with interest. Most disturbingly, the division of grasslands, subsequent rentals and the visual fixing-in-place effect of barbed wire fences have exacerbated and increased violent conflicts over pasture. One such example is a dispute between herders of the Machu (Ch: Maqu) County, in Gansu Province, and herders of Yulgan/Sogpo Mongolian Autonomous County (Ch: Henan county), in Amdo (Ch: Qinghai) province, which resulted in the deaths of at least 29 Tibetans between 1997 and 1999 (Yeh 2003: 499–523).

The Beijing government has ignored its moral responsibility to settle the disputes and this reluctance has escalated conflicts. Traditionally, land disputes are rare and the head of the group usually settles them. If he cannot do so, a lama intervenes to settle the dispute. But today, there are reports of herders complaining that government is doing nothing to settle disputes and that if a senior monk in the village voluntarily tries to intervene, as is his moral responsibility, he is reprimanded for overtaking the political authority. However, in areas where township and county leaders are mostly Tibetan, the government authorities seem to be aware that feuds among nomads cannot be resolved by criminal punishment, and now ask senior Buddhist lamas and the nomads' own mediators to intervene (Pirie 2005: 83–102).

Grassland tenure and management today

The intention of the "Individual Household Responsibility System" was to increase herders' responsibility for sustainable use of the rangeland. Despite the land contracts being granted to the individuals, rangeland tenure and management arrangements on the Tibetan Plateau vary across the region. A household may hold individual plots of land and choose to share labour

to plant and plough, but nevertheless harvest their own hay crop (known as individual tenure-collective management). Such arrangements can be found in Gyalthang (Ch: Zhongdian), in Yunnan province (Richard 2006). Table 1.2 shows the potential tenure and management arrangements on the Tibetan Plateau.

In many parts of China's Western region, as well as Tibet, individual household tenure remains the exception rather than the rule, and collective and group tenure arrangements continue to persist (Bank et al. 2003: 132–140). Tibetans have quietly resisted the fragmentation of responsibility down to the smallest possible unit: the individual household. Wherever possible, Tibetan nomads have unobtrusively returned to group tenure, in which several families form a tent-circle or *rukor*. This customary community-based structure is not recognised by China's laws and regulations, but is effective in spreading risk and reducing labour requirements by sharing the decision-making and daily management of segments of the pooled herd (Richard et al. 2006: 84).

In Kakhog (Ch: Hongyuan) county, Sichuan province, the law has been followed more strictly. There, contracts are allocated to individual households, as well as management responsibility. Rangeland management by individual households requires a large investment in fencing, well-digging if surface water is not available, harvesting hay for winter and access to other social services (Yan 2005: 31–50).

Many pastoral communities throughout the Tibetan Plateau currently manage pastures in one of the following ways; communally, with legal rights given to "administrative villages"; using government units comprised of smaller "natural villages"; or with herding groups that are not officially contracted under current law. These herding groups have retained autonomy and set their own rules for pasture access and management, using collective herding and border patrols to enforce boundaries (Richard et al. 2006: 83–90). Three categories can be found in this arrangement: a) kinship groups; b) groups legally sharing the same summer pasture; and c) arrangements whereby several households, each allocated rangeland in adjacent areas, organise themselves to manage their livestock and rangeland together. In the latter case, conflicts can easily arise due to a lack of formal agreement over regulations within the groups. Many such groups in Kakhog and Dzoge counties dissolved as a result. Nonetheless, people do still see the need to manage the rangeland together (Yan 2005: 31–50).

Table 1.3 A comparison of policy implementation models for resources tenure-management arrangements and their relative strengths and weaknesses

Government driven	Customary practice	Co-management
■ Easier to provide services such as credit and veterinary care ■ Tenure more secure under situations of conflict and instability ■ Ignores community strengths ■ Creates higher costs/risks ■ Creates unintended conflicts due to poor allocation process ■ Does not protect large landscape amenities ■ Reduces flexibility during dry years	■ Lack financial resources and technical inputs ■ Individual households lack equitable rights ■ High (but shared) labour to protect traditional pastures ■ Increasing external encroachment ■ Greater mobility for grazing	■ Lower risks/costs per household ■ Legal rights ensured per household ■ Subsidies and technical inputs provided ■ Decisions regarding management made by community ■ Communities' skills are strengthened (social capital) ■ More facilitation required, especially with larger population ■ Greater mobility for grazing

Source: Richard, Camille 2006, The paradox of the Individual Household Responsibility system in the grasslands of the Tibetan Plateau, China, USDA Forest Service Proceedings RMRS-P-39.

These different arrangements for grassland management are based on economic, social and ecological realities of pastoralism. Rangelands are, by nature, extensive areas of low productivity, given the unit area that is spatially and temporally available (Bank et al. 2003: 132–140). Different models for resource management arrangements can be seen in Tibet. The three simplified models, and their relative strength and weaknesses, are presented in table 1.3.

Community-based rangeland management seems to be the best method of managing resources, and achieving sustainable and equitable

use. This model can be found in Machu county, part of Amdo region in China's Gansu province. Although many families have been allocated land and legally manage it at an individual level, this county has adopted an approach that allows groups to pool their pasture for use as a collective (see table 1.2). But usufruct rights are legally still held at an individual level (Richard et al. 2006: 83–90).

According to Yan Zhaoli and his colleagues, there are three major types of this particular arrangement; a) collective management of rangeland because it is difficult to equitably allocate rangeland to individual households; b) management of rangeland with outside support to create detailed regulation on how to adjust equitable sharing of resources (as in Machu county); and c) management of rangeland whereby local people pool their resources and share stock by calculating their respective area of rangeland, number of livestock and other means of production – all pastoral production activities are arranged collectively and equitably as in Nyima county in Nagchu prefecture (Yan et al. 2005: 31–50).

These examples show that, if given a chance, Tibetan *drogpas* (nomads) can make good use of their deep knowledge of pastures and animals to pool resources, herds and decision making in a risky environment. But this is only possible when the state respects a community-based organisation. The highly interventionist State of the 1960s and 1970s withdrew considerably from the grasslands over the proceeding twenty years, especially in areas where sedentarisation, fencing and family birth control policies were not implemented vigorously. Now it seems the State is back, with intensifying scrutiny, and nomads are being displaced by new policies that again exclude them from their land.

Constraints of Grassland Law

The strict implementation of the Grassland Law that favours true "Individual Household Responsibility" is simply not appropriate to Tibetan tradition and the unique characteristics of Tibet's rangeland, although it has resulted in some positive outcomes, such as certainty of tenure that encourages nomads to feel confident that their land will not be expropriated. The Grassland Law has, at times, also helped to improve the chances of livestock survival. However, there are enormous negative consequences of the law, such as the huge fencing costs (usually unaffordable for nomads without government subsidies), fewer responsibilities for men and more for women, and reduced opportunities for children to attend school. There are also increasing conflicts due to poor allocation of land. Both the positive and negative impacts of the individual tenure and management model can be seen in table 1.4.

Additionally, there is great discrepancy in the process of pasture allocation. Before allocation, rangelands were classified by officials through a grading system and their standards were different. Now, the official stocking rates, and the area of rangeland allocated, varies from region to region and even between different villages (Yan et al. 2005: 31–51). Given the heterogeneous nature of the grassland, the distribution of pasture is often unequal.

In eastern Tibetan Plateau areas, such as Kakhog (Ch: Hongyuan) county, there was a shortage of winter feed, soon after the allocation of rangelands, that led to the decision to enlarge the winter and spring pastures. An experimental rangeland allocation of enlarging winter and spring pasture in Amo (Ch: Amu) and Lungzi (Ch: Longri) townships proved successful, but, when this policy was extended to the entire county, some townships were allocated rangeland composed of marshes that are unsuitable for winter pasture. Many tracts of land in traditional high summer and autumn pastures that were allocated as winter and spring or year-round pastures were unsuitable for winter grazing due to severe cold and heavy snowfall. Townships had to rent low-lying pastures every year. Poor families who were allotted these unviable winter pastures have inevitably become poorer. This inequitable allocation of rangeland is acknowledged by the officials of the Animal Husbandry Bureau, but they have yet to do anything to address the problem (Yan et al. 2005: 31–51). Rangeland privatisation has made the economic situation of the nomads worse than before.

There is now a growing awareness among policy makers that the rangeland areas require different strategies because of the complexity of the rangeland. Critically, the revised Grassland Law of 2002 guarantees distribution of grassland not just at the household level, but also at the natural village and administrative village levels (Ken Bauer 2005: 53–81). Under this revised Grassland Law, pastures may be contracted to individual households or groups of households that act as a collective entity (Richard 2006: 83–90).

De-stocking and mountain closure: China's "conservation" efforts and their effects

In recent years, China has announced policies on ecological construction – under the guise of conservation – which in reality exclude nomads from their grazing land.

The first and older policy, afforestation, began in 1998 in the wake of the devastating Yangtze River floods. The

Table 1.4 The impacts of the individual tenure, individual management model

	Positive	Negative
Allocation process	On paper the allocation is perceived to be fair and equitable	In reality, poor allocation of pastures in many areas: some receive good quality lands and others poor land
Size of pastures	Has required herders to fix number of livestock	Individual pastures often too small; herders liquidate herds/rent pasture from those with excess land. Flexibility reduced during drought
Water availability	None documented	Lack of water on individual pastures and lack of access to neighbor's water source; high cost of water development
Risk management	Livestock mortality reduced through use of reserve pastures	Costs per household high for improvements-require significant subsidies by the government
Social services	Better access to veterinary care and government services where holding pens constructed	Greater isolation of individual households in remote areas
Household labor distribution	Reduced labor for overall household	Gaps between men's and women's labor increased as men spend less time herding; increased labor for children reducing opportunities for schooling
Social conflicts	If boundaries clearly demarcated - reduced conflicts	Increased conflicts over water and pasture resources
Market access	Increased access to markets with use of holding pens, feedlots, settlement	None documented
Eco-system protection	Improved productivity within the fence due to protection during growing season	Degradation of surrounding "commons"; no responsibility for landscape amenities, such as riparian areas which are heavily grazed "outside the fence"

Source: Richard, Camille 2006, The paradox of the Individual Household Responsibility system in the grasslands of the Tibetan Plateau, China, USDA Forest Service.

Chinese government announced a logging ban and embarked on a plan to plant additional trees. Deforestation results in increased sediment loads in rivers and a loss of the water-retaining capacity of watersheds. The logging ban was therefore an opportunity for the remaining forests of Tibet to mature, and even for skilful reforestation. China today continues to invest in afforestation to tackle flooding.

Afforestation is the official policy. But under this programme, farmers and nomads are forced to plant shrubs and other species that grow quickly, regardless of the long-term impacts on the livelihood of farmers or nomads. This falls under another aspect of the afforestation policy called "grain for green", which encourages conversion of cropland to grassland and forestland, especially on slopes. This is only marginally productive as there is no opportunity for irrigation. Even in cases where forests are to be seeded and cultivated, the method China commonly used – called *aerial sowing* – which involves dropping the seeds from aircraft, excludes Tibetan communities from any benefit, participation, compensation or employment opportunities.

The second policy, *tuimu huancao,* which literally means "retiring pasture to restore grassland", is China's newest large-scale ecological construction project. According to Emily Yeh, *tuimu huancao* began in 2003. But it invests little in directly re-sowing native grasses, instead relying on the removal of livestock and even the complete removal of nomads so that the grasses regrow naturally. This *tuimu huancao* destocking policy calls for three new zones on the existing pastures; zones in which grazing is to be permanently banned; zones in which grazing is to cease for a period of several years; and zones in which pasture is to be seasonally closed (Yeh 2005: 9–30).

By introducing new and more extensive classification of the grasslands into zones where grazing is banned, the policy of *tuimu huancao* exacerbates the process of transforming the nomads' way of life, already affected by collectivisation, privatisation and fencing. The ban on grazing in "retiring pastures to restore grasslands" seeks to remove herders' labour from nature entirely by offering monetary compensation to entice herders to settle away from the range (Yeh 2005: 9–30). The state promises grain and subsidies for a few years, by which time farmers and nomads are expected to find new sources of livelihood. But there are reports indicating that these farmers and

nomads did not receive grain after the initial years – some never received any grain at all.

In the absence of nomadic stewardship of the grassland, this policy may be contributing to pasture recovery and the environment, but it requires the government to continue to provide grain to the households until alternative sources of livelihood are found. Locals have expressed their concerns, and hope that the government extends this benefit (of grain) while they strive to find another source of income.

According to the China-Tibet Information Center, in the "TAR", Tibetans in Gonjo county were resettled in another Tibetan area, in Nyingtri prefecture, as a part of this programme. The first small-scale pilot projects for *tuimu huancao* were carried out in the Amdo (Ch: Qinghai) province in 2000. A number of larger-scale provincial programmes began in 2003. In July 2002, at a total cost of US $239 million and with a target of restoring 100 million mu (seven million hectares) of grassland in Inner Mongolia's Xilin Gol, 8,000 families were to be removed, 10,000 local families prohibited from grazing, 19,000 families to cease grazing (presumably for a period of several years) and 5,000 families for whom seasonal rotational grazing was implemented. Bans on zones of large area grazing were also established in Sichuan and Amdo (Ch: Qinghai) provinces. These bans expressly linked *tuimu huancao* with a policy called "ecological emigration", and stressed the offering of economic incentives for herders to leave the grasslands (Yeh 2005: 9–30).

Coercive "ecological emigration" is now on such a scale, especially in Amdo (Ch: Qinghai) and Sichuan provinces, that nomadic livelihoods are impacted everywhere that the new policies are enforced. In Amdo (Ch: Qinghai), the most Tibetan and pastoral prefectures are Golog and Yushu. In these two regions, Tibetan nomads are now altogether excluded from 40 per cent of the grassland (Yeh 2005). They have been forced to shift to remote new towns, completely losing their stock, livelihoods and the land that had been leased to them. At the 2006 *International Conference on Poverty Reduction and the Important Role for International Cooperation* in Sichuan, international development agencies reported that nomads have been coercively removed, excluded from their rangelands and made to settle in rows of houses in rigid lines far from the watershed, with no livelihoods, little compensation and nothing to do but watch television.

China's Administrative decree has even created two classes of nomads with differing eligibilities for State help. The group that receives the most help from the State is of pastoral nomads, who were allocated long-term leases to their grazing land in the 1980s and who were given an official certificate demonstrating their leasehold rights – commonly called "land privatisation" in China.

The second group, that receives less compensation and no retraining, are the next generation, who became adults, married and began families in the 1990s, setting up their own herds separately from their leaseholder parents. They have very few rights because they have no leasehold certificate. They are now left in limbo because China's current policies have not opened up new opportunities for them. In contrast, European farmers are encouraged to reduce crop or animal production. They are paid well to do so and return their farms to wildlife habitat, whilst remaining on their land and caring for it in new ways. In Tibet, however, as a result of coercive "ecological emigration", many households lost the land which had sustained them throughout the years.

By introducing new and more extensive classification of the grasslands into zones where grazing is banned, the policy of *tuimu huancao* exacerbates the process of transforming the nomads' way of life, already affected by collectivisation, privatisation and fencing.

Notably, various government initiatives – policies under the Grassland Law and the latest policies involving "ecological emigration" – actually stand in conflict with one another. Privatisation and fencing of pastures are meant to stimulate both the entrepreneurial and environmental stewardship spirit of individual households. However, a permanent ban on grazing does exactly the opposite, forcing herders to leave their land, rather than to take better care of it.

While houses were built near the winter pastures under the policy of sedentarisation, *tuimu huancao* sees herders housed in newly-built towns, far from the rangelands. The latter government arrangements will have far more impact on transforming the lives of the nomads (Yeh 2005: 9–30). In order to facilitate these reforestation and grassland conservation programmes, restrictions were imposed on Tibetans and their livestock by sealing off mountainous areas (mountain closure), reducing the already marginal grazing land area and worsening the shortage of forage available to the livestock.

In Golog and Yushu prefectures, 40 per cent of the grassland has been entirely closed to nomadic pastoral use. This is just the beginning. On a further 38 per cent of the grassland, the total size of nomads' herds has now been compulsorily reduced by 50 per cent (Yeh 2005: 22). On the remaining 22 per cent, there are now mandatory seasonal closures of pasture and rotational grazing enforced by the State. These plans are accomplished by expensive fencing of pastures, usually at the nomads' expense (Yeh 2005: 22).

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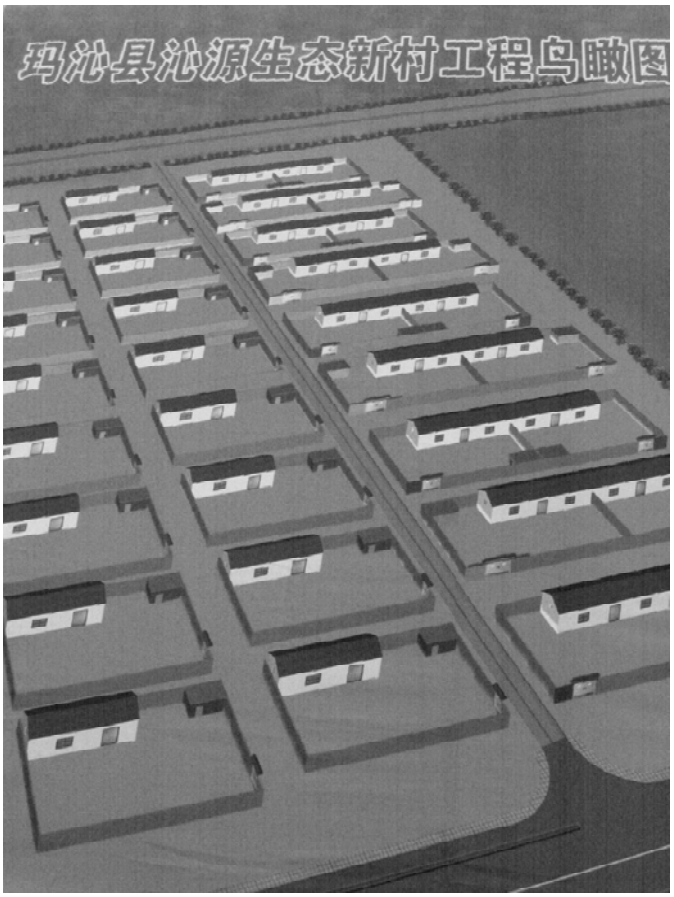

The billboard for new nomad housing reads: "Bird's-eye view of Machen county New Ecological Residential Quarter".

Tibetan nomads have been coercively removed from their traditional rangelands in the name of environmental protection. The most extreme example is in the Tibetan headwaters of China's two great rivers, the Yellow (Tib: Machu) and Yangtze (Tib: Drichu), which originate in Amdo.

Only a generation ago, China had such little presence in Tibet that the source of these rivers was unknown, most people preferring the attractive vagueness of a semi-mythical origin in the poetically-named Tian Shan and Kun Lun (Tib: Khunu) - the mountains of heaven.

Chinese scientists have now traced the many glacial melt water streams that feed into these upper watersheds, the longest of which have been declared to be the official source. Memorial markers and statues have been erected, and the whole area has entered China's nationalist discourse as "China's number one water tower". The entry of these lands into China's national consciousness culminated in a large area being declared a protected space, so as to conserve the purity of China's downstream water supply. This story is told more fully in chapter five (Damming Tibetan Waters).

The river source protection area had been one of the most remote frontiers for China, populated by frenzied immigrant gold rushes that scar the landscape, and by highway construction, endless reconstruction and frontier garrisons occupying the best land in order to feed their troops. Recently, national planning has declared the whole area a precious spring. However, this inscription of national imaginary did not give the nomads – displaced by the gold rushes and highway camps – a new role as the rightful guardians and stewards of this large area. This is in contrast to what is currently happening in other protected watersheds around the world.

As China's central authorities began to realise that this remote arid area of Golog (Ch: Guoluo) and Ngaba (Ch: Aba), in Amdo province, had national significance, they could have started a programme to rehabilitate the degrading rangeland by providing assistance to the nomads to re-sow grasses native to these districts. This post-productivist strategy is routine elsewhere in the world, but no such assistance was attempted here. In fact, the nomads were blamed for the decades of state failure, and were viewed as irrational and quite ignorant of the consequences of their grazing.

Thus, in 2005 the decision was taken to remove them. Now they live unproductive, idle lives in neat rows of houses, excluded from their rangelands in the name of environmental protection (Perrement 1 May 2006).

The exclusion of pastoral nomads from the lands they have used sustainably for centuries is not a skilful policy. The rationale for what is officially called "ecological emigration" is that the rangelands are degrading, so the pressing need for watershed protection requires the removal of nomads.

If all of these policies are implemented as they are presented in official documents, vast areas of Tibet will be depopulated, except for small towns of Chinese immigrants and displaced former nomads. Under this situation, nomads will lead a fugitive existence, hiding from officials who may seldom leave their offices to conduct occasional inspections. This reduces what was once seen as the ideal life of freedom, the epitome of the Tibetan way of life, to a criminal existence where nomads are in constant fear of being caught. This fugitive life is not even an option for those who have been removed altogether. A case study that follows this chapter presents the traditional life of nomads who live in complete freedom.

Despite this inevitable result for the nomads, Chinese and international scientists – concerned solely with habitat protection, rather than integrated, community-based management of biodiversity and domestic herds – often propose conservation measures that harm nomadic livelihoods.

In addition to programmes involving the upper reaches of the Yangtze and Yellow Rivers, there are also plans to establish many reserves. In 1993, the "Tibet Autonomous Region" ("TAR") established the 300,000 square kilometre Jhangthang Nature Reserve, an action triggered by the rapidly-diminishing population of *chiru* (Tibetan antelope) and wild yak. This northwestern area of the "TAR" is one of the least productive and poorest parts of the region. Some 30,000 nomadic pastoralists use areas within the reserve for livestock grazing. Most of the remote Nyima county (Yan Zhaoli et al. 2005: 31–51) and Aru basin are within this protected area. In reserves like this, where wildlife conservation is a major goal, pastoral development programmes to increase the livestock productivity are perhaps not compatible (Fox et al. 2004: 17–27). However, the nomads have shown that they care deeply for the over-hunted *chiru* antelopes, forming their own patrols to enforce China's anti-poaching laws, even at the cost of their own lives. The way in which Tibetan nomads have died on patrol, shot by non-Tibetan hunters who flout China's ineffective laws, is depicted powerfully in the award-winning documentary *kekexili: Mountain Patrol.*

The arid Dingri county, of southern Tibet, covering 13,968 square kilometres, falls within the Jomolangma Nature Reserve and lies in the rain shadow of Mount Everest, the greatest mountain in the world. Since the reserve was established, local pastoralists of this already marginal region have been further marginalised on geographical, economical and social levels. They are also facing acute conflicts between their livelihood and wildlife conservation (Yan Zhaoli et al. 2005: 31–51), especially those still living in the protected area. This conflict between wildlife conservation and livestock development creates uncertainties over the future sustenance of the nomads.

China is implementing these programmes without studying the true condition of the landscape and without taking into consideration the nature of the whole system. As a result, a great deal of money spent by the Chinese government goes to waste. The World Bank corroborates this point. Its 2001 report on Chinese air, land and water issues asserts that China's ecological construction programme focuses almost exclusively on investment, with far less attention being paid to the underlying social and administrative issues, which are often at the heart of natural resource management problems (World Bank 2001: 25).

The very survival of Tibetan nomadism is now uncertain because their grasslands are degrading and dwindling through overstocking, conversion of pasture to grassland, fencing and appropriation of land to facilitate the settlement of Chinese migrants.

All of these punitive policies drive the nomads into destitution and alienation. The very survival of Tibetan nomadism is now uncertain because their grasslands are degrading and dwindling through overstocking, conversion of pasture to grassland, fencing and appropriation of land for infrastructure development to facilitate the settlement of Chinese migrants.

IMPACTS OF GRASSLAND DEGRADATION ON LIVESTOCK PRODUCTION

All the indications show that rangeland degradation is beginning to seriously impact livestock production. Tibetan herders acknowledge that they experience the wrath of nature, beyond their control, when a severe

snowstorm wipes out their livestock as well as the forage. But their dwindling grassland resources are mainly caused by inappropriate government policy and initiatives to commoditise the livestock products.

Herders silently watch themselves fall victim to China's policies as the government pushes to increase productivity, as part of its integration into the global market.

As already outlined, desertification is an epidemic in the whole of China's vast rangeland regions. According to the estimates of the Ministry of Science and Technology task force, as reported by the UN's China Human Development Report, desertification costs China between US $2 and 3 billion annually. An estimated 110 million people suffer first hand from the effects of desertification, and according to official reports, another 2,500 square kilometres turn to desert each year, which ultimately puts people's livelihood in the pastoral region at stake (UNDP 2002: 38). Restoration of degraded grassland has become an important goal in the development of China's production system. China's plan for improving the quality and productivity of pastoral land focuses on developing irrigated and artificial pastures, increasing fencing and establishing grassland reserves, but these are only short term remedies that hinder a long-term sustainable pastoral development strategy (World Bank 2001: 25; UNDP 2002: 38).

Due to the deterioration of the grassland, livestock no longer receive sufficient forage on which to feed. As a result, animal sizes are reportedly decreasing. In the 1960s, the average weight of a yak and a Tibetan sheep was 250 and 30 kilograms respectively, compared to average weights of 125 and 20 kg in the 1970s (ICIMOD 2001: 6). There are reports that many herders attribute the increased livestock mortality to the lack of sufficient nourishment.

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The immediate consequences for nomads are that, as toxic weeds invade the grasslands, grasses die and turn the soil black, the nutrition available to yaks, sheep and goats diminishes, and the animals cannot grow to full size. The average carcass weight of adult yaks in Amdo (Ch: Qinghai) in 1965 was 112 kgs; by 1981 it had already fallen to 40 kgs (ICIMOD 1997: 105–114).

Many nomads, unable to subsist, leave their pastoral livelihood and migrate to cities where they often end up begging on the street or, when available, find some arduous and low-paid job. This is because they have no modern technical skills and no formal education, which makes it almost impossible for them to compete with highly-skilled, non-Tibetan immigrants. This is discussed further in chapter three (Unemployment and Social Exclusion).

CONTRADICTION BETWEEN GRASS AND ANIMALS

Chinese policy to date has been based on the perception that there is a "contradiction between animals and grass", a phrase used repeatedly, which means that pasture and grazing lands obey a logic of win or loss. Where one dominates, the other loses out. If animals eat as much grass as they are allowed, the result inevitably is the death of the grass. This ignorant assumption made by outsiders has been at the heart of Chinese policy over the years, despite all the evidence that Tibet's pastoral nomads know very well how much grazing pressure the hardy grasses and sedges can withstand and when to remove a herd so that the grasses can recover.

In the 1980s, China tried to manage this "contradiction" by searching for a scientific formula that would calculate an objective stocking rate based on the carrying capacity of the grasslands. This somewhat outdated approach to rangeland management required the gathering of large amounts of data from a vast plateau which China was, and still is, unfamiliar with. Experimental research stations were set up by officials of the Animal Husbandry Bureaus to measure, in fenced plots, how quickly the grasses grow when grazing ceases.

One such station is the Haibei (Tib: Tsojang) Research Station, north of Serkhog (Ch: Datong) Autonomous County in Amdo (Ch: Qinghai) province, where trial plots monitor various combinations of soil, grass species and grazing pressure, even varying the sunlight and ultraviolet radiation in order to test future climate change impacts. Essentially, everything is tested and measured except for the knowledge of the nomads, who are merely employed to bring their animals on or off the areas under scientific scrutiny.

At first, this approach seemed harmless, as Chinese scientists filled their professional journals with mathematical formulas that had no bearing on daily life. On the grasslands, nomads got on with their lives.

However, since the 1990s, these simplistic calculations of stocking rates – intended to resolve the contradiction between grass and animals – have graduated from the laboratory and become official policy. Now nomadic livelihoods are at stake, as increasing numbers of nomads are made to quit the lands that had been promised to them, only a decade before, as their leasehold for at least 30 to 50 years.

Now there are proliferating policies governing nomad livelihoods and fresh contradictions. First, some policies persist in promoting intensification of livestock production, improved breeds, a higher "come out rate" of animals for commercial use, and higher meat production and processing. Other, newer policies push in the opposite direction, requiring nomads to cease grazing for long periods or even to cease animal production altogether. These contradictions highlight the divide between the power of the State and the sustainable livelihoods of the nomads. Anthropologists who listen to the nomads' story point out that Tibetan nomads have strong traditions of autonomy. The nomads resent what they see as the authorities' interference with their autonomy, particularly the policies of restricting family size and, above all, of fencing pastureland (Pirie 2005: 88). But nomads are powerless to resist if they are altogether removed and forced to completely end mobile animal production.

While there are some indications that in certain instances productivism is retreating in Tibet, in many ways it remains the same policy as it was two decades ago. Du Runsheng, director of the Rural Development Research Centre under the State Council, said:

> There should be comprehensive development in the livestock areas themselves. They should engage not only in the livestock industry, but also in industries such as processing livestock products, commerce, construction, transportation, mining, gathering, tourism, services, forestry and horticulture [...] The livestock areas should also establish their own integrated systems of production, supply, marketing industry and commerce (Du Runsheng 1995).

The two entrenched policy settings – the older of which encourages, among other things, a higher "come out rate" of animals for commercial use, while the more recent policy requires nomads to cease grazing for long periods or even altogether – have collectively had unfortunate consequences for the nomadic way of life. The routine downshifting onto the lowest levels of provision of services means that the financing of investments to repair degradation of the rangelands falls on those least able to afford it: The township and village officials, and on the nomads themselves.

Township government is expected to implement central policies. They already have enormous responsibilities for providing health, education and a wide range of human services, even in the poorest areas where, in reality, the local government has no effective means of raising enough revenue to provide these services. The repair of grasslands in pastoral areas, which cover a huge region of China's western half, has now been added to the burden of townships.

In 2003, the official newspaper of Ngaba (Ch: Aba) prefecture, part of Amdo in the Chinese Sichuan province, announced the rules for *tuimu huancao* pasture closure and de-stocking. Essential investment for repairing the degradation damage from decades of state failure was limited to a maximum of 300 yuan per hectare, with 70 per cent coming from central authorities and 30 per cent to be raised by local government. However, the crucial investments in restoring long-term sustainability are the re-sowing of suitable species of grasses, cultivation of fodder crops to enhance winter herd survival, introduction of improved breeds and the building of better winter shelters for the intense cold. All of these expenses primarily come from local governments and individual contributions (*Aba Daily* June 2003, translated in Yeh 2005:19). Given that the Chinese have long viewed the nomads as ignorant, selfish and destructive of their own resource base, it seemed natural to policy makers that the nomads should either bear the cost of fixing their environment or abandon it.

Desertification costs China between US $2 and 3 billion annually. An estimated 110 million people suffer first hand from the effects of desertification, and according to official reports, another 2,500 square kilometres turn to desert each year, which ultimately puts people's livelihood in the pastoral region at stake.

The combination of the two fixed policy stances is disastrous not only for the nomads but for the whole nationality. Over many centuries, Tibetans based their civilisation on the principle of pastoral nomadism, which permeates Tibetan proverbs and provides metaphors even at the highest level of philosophical reasoning. In any country with a tradition of pastoral nomadism and a rangeland degradation problem, the first thing to be done

is to replant the degraded areas. Not only does this halt degradation, but it is also an opportunity to engage the local pastoralists as partners with the state, and begin joint efforts to pool their accumulated knowledge and care for the renewed pastures together.

Around the world, this is standard practice and sometimes called the New Rangeland Management approach. This co-operative approach distinguishes it from the statist, top-down approaches of the governments of many countries in the 1960s and 1970s, which completely failed on all counts.

Elsewhere, including on the rangelands of Africa, the lesson was learned – through failure – that when only the state intervenes on the rangelands, it is likely to make problems worse by applying simplistic and standardised solutions to vast areas which actually vary greatly. States may have the capacity to draw up plans, in distant air-conditioned city offices, that look logical on paper and are based on data collected by satellites that are hundreds of kilometres up in the sky. But only the nomads themselves know the land intimately, with its strengths and limits. Only they know how to work skilfully with herds and grasses, soil and rain, and wind and sun to achieve a result, in certain seasons and places, that sustains both the grassland and human livelihoods. The new approach, adopted worldwide, is the result of a partnership between state land management agencies and nomadic communities. They work together to achieve three key results; long-term protection of grasslands, habitats and watersheds; long-term sustainable livelihoods; and short-term productivity.

The solution to the problem of degradation is to focus on sustainable nomadic livelihoods, and produce an integrated package of projects that restore sustainability. This is now happening in rangelands worldwide except in China, where the nomads continue to be excluded from decision-making.

In any country where degradation is a problem, governments have eventually learned that it is often their encroachments that have pushed the nomads onto more marginal land, where grazing is riskier both to the livelihood of the herders and the capacity of the grasslands. Their encroachments have taken many forms. In Tibet, a large area of grassland, centred on the petrochemical industrial city of Gormo (Ch: Golmud), was denuded by Chinese settlers migrating en masse in the 1970s and 1980s and turned into an arid area of minerals, oil and gas (see chapter six, Natural Resource Extraction). Other grasslands and places where water is available for the livestock were confiscated for farming and irrigation settlements, such as Panchen Shingde (Ch: Xiangride), in the Tulan (Ch: Haixi) county of Amdo (Ch: Qinghai).

The solution to the degradation problem is to focus on sustainable nomadic livelihoods and produce an integrated package of projects that restore sustainability. This is now happening in rangelands worldwide except in China, where nomads continue to be excluded from decision-making. Sustainable livelihoods mean mobility, since the seasonal migration of herds and herders is the foundation of sustainable, flexible land use and a basic strategy for ensuring that grazing lands are not over-used and degraded. Mobility spreads the footprint of human use extensively over the whole rangeland, thereby reducing any negative impacts and maintaining sustainability.

The first things that need to be done are the restoration of mobility, regaining of access to stock migration routes and water, and the re-sowing of grasses. Only if all else fails should it be necessary to curtail nomadic livelihoods. Only as a last resort should nomads be instructed to de-stock their pastures and refrain from putting their animals on the land for many years, in the hope that the degraded grassland will regenerate by itself if left long enough.

An even more extreme measure is to close the grasslands permanently in order to promote their recovery. This option should only be chosen in the most desperate situations because it requires the nomads not only to remove their stock, but also to remove themselves, permanently, and never return to pastoral nomadism.

Yet in China today, these last resort options have become default practice. The exclusion of nomads has become increasingly common in very large areas designated for watershed protection or reforestation. The areas of total exclusion, and of compulsory de-stocking for several years at a time, have become the primary rangeland management tool of the state. Meanwhile, what should come first – the co-operative repair of degraded grasslands – comes last.

Degraded grassland cannot be regenerated without investment. When degradation has persisted for decades and was triggered by State failure to heed the natural limits of the grassland, both of which are the case in Tibet, it makes sense that only the State has the capacity and the responsibility to finance widespread regeneration. However, in the PRC this responsibility has been shifted

down to those least able to pay: The township governments and the nomads themselves.

The reach of the State exceeds its understanding. Although the State does not understand the dynamics of the grasslands, having never listened to the nomads, it nonetheless legislates and regulates the land more and more intrusively through policies of increasing complexity and impact. Intrusive government policies on land and resource management have largely failed in many places across the world (Borrini-Feyerabend and Buchan 1997).

A 1992 publication by the National Research Council, entitled *Grasslands and Grassland Sciences in Northern China*, reported findings of a Chinese and American team who investigated all aspects of Chinese grassland knowledge. They reported that there was a complete disconnect between nomad knowledge and the knowledge of scientists. Every branch of modern study was actively investigating the grasslands, they reported, except for sociology, anthropology and economics. These areas of study, which gather information on how inhabitants of the grasslands live, are absent today. The delegation reported that:

> In China, as elsewhere, the integration of social and natural scientific research has been impeded by both organizational divisions between academic disciplines and the intellectual assumption that views human beings as separate from their natural environment. The result has been for scholars to neglect such issues as the effects of pastoral systems on grassland ecology, the dynamics of herd growth and risk taking in pastoral economies, and the impact of mass migration of Han settlers into grassland areas previously dominated by indigenous minority groups. Despite widespread awareness of and acute concern for the human impact on grasslands, research in China on grassland ecosystems has made little use of economics and none whatever of political science, sociology, anthropology, demography, history, or other disciplines that might help explain the relationship between man and nature (National Research Council 1992: 186, 195).

The nomads are not allowed to contribute on subjects that concern the land they know so well. They are merely objects of regulation by the state, of little intrinsic interest, from whom nothing is to be learned because, according to China, they behave irrationally and destructively.

A major consequence is that new policies, which are supposedly intended to regenerate the grasslands, fail to invest significantly in the obvious solutions of re-sowing native grasses in areas that have become degraded and of actively employing the nomads to do the sowing and caring for the revegetated pastures.

The state is unwilling to invest the necessary capital in environmental repair and instead downshifts responsibility for such simple and direct methods to the lowest level. Chinese rural sociologist Zhao Shukai points out that all over China "this level of government has very few power resources available to it. In addition, the township governments bear very heavy responsibilities, and there is a complete lack of balance between their powers and their mission" (Zhao Shukai 2007: 8–16).

SELFISH NOMADS?

At the centre of the debate over the nomads and their grasslands is this concept of the selfish, ignorant and backward nomad. The nomads of Tibet have had almost no opportunity to speak up or participate in the environmental debate, in which they are routinely blamed for spoiling the basis of their own livelihoods. The State directs nomads to produce more, or conserve more, but without treating them as partners. The "low human quality" of pastoral nomads in official eyes means they are to be "improved" by instruction from above:

Although the State does not understand the dynamics of the grasslands, having never listened to the nomads, it nonetheless legislates and regulates the grasslands more and more intrusively through policies of increasing complexity and impact.

> The modernisation of human quality is presented mainly in the form of a theory of national development. It is bursting with technocratic optimism about the possibilities for transforming society and people, improving their social and moral quality. The policy of improving 'human quality' represents the 'dream' of control in all its utopian fervour. Such human 'improvement' is not an end in itself, but is geared towards the very aim of Chinese reform: 'making the country rich and strong.' The road to national prosperity is thus the modernisation of spiritual human qualities. Only the creation of the modern person can promote modernisation (Bakken 2000: 57–65).

Chinese grassland policy, ever since the dismantling of the centralised herding communes from 1980, has been based on certain assumptions about human nature. The fundamental assumption, which is seldom stated

Protrayed as ignorant and backward, nomads are surrendering their flocks and freedom
Photo by Ran & Lini

explicitly, is that nomads will care for the grasslands only if they individually have something akin to ownership rights over a specific area. This assumes that when pasture is owned by everyone, no one feels responsible and everyone will carelessly exploit it for narrow-minded, selfish reasons. The long- term result will be overgrazing, excessive pressure on the grasses, degradation and even desertification. This basic assumption is known in English as the "tragedy of the commons" idea, first expressed by the ecologist Garret Hardin. What follows from this assumption – that all people always behave selfishly – is that the only way of maintaining a healthy pasture is through the capitalist approach of individual ownership, thereby giving the owner a personal incentive to maintain his land productively.

This assumption is fundamentally wrong from a Tibetan viewpoint. From the outset, China's capitalist policy assumes that Tibetan pastoralists are selfish, competitive, ignorant and unconcerned for the long-term, seeking only exclusive advantage over others. This is evidently not the case. But since China has chosen for decades to operate under this assumption, it has completely misunderstood the reasons for degradation and other problems. For instance, when it became obvious that the grassland quality was degrading across Tibet, Chinese scientists, operating under the wrong assumption that Tibetan pastoralists were seeking only exclusive advantage of others, easily concluded that the resulting degradation proved that Tibetan herders were stupid and selfish, overgrazing with no regard for the consequences. In the minds of Chinese policy-makers, who are unfamiliar with the dynamics of grasslands, this created a certainty that Tibetans do not know what is best for the land, and that decision-making must therefore be done from above.

The official rationale underlying Chinese grassland policy is that, through the assignment of grassland use rights to the individual household level, pastoralists will be given the incentive to stock their grasslands within biophysical limits and invest in grassland improvements. Although post-1978 rural reforms have had a positive impact on pastoral incomes, it is widely perceived by Chinese policy-makers and researchers that the sustainability of these gains is threatened by accelerating grassland degradation. They have estimated that some 90 per cent of China's grasslands, which account for 40 per cent of its total territory, are now degraded to some degree, including 42 per cent that are degraded moderately to seriously (SDPC 1996: 82–94; SEPA 1998). Furthermore, policy-makers and researchers believe that overstocking is the principal proximate cause of grassland degradation and, therefore, is related to the classic "tragedy of the commons" (Longworth & Williamson 1993; NRC 1992). This fuels their conclusion that "individual household tenure needs to be established" (Banks et al. 2002).

A SEARCH FOR NEW MODELS

China's solution is the *tuimu huancao,* "retiring pasture to restore grassland", policy. This policy, with its compulsory de-stocking, grazing bans and total exclusion of nomads from grasslands, is such a major reversal of previous policy that its significance needs analysis. Retiring pasture from production for three or five years, or even altogether, breaks the promise made by the State in the 1980s and 1990s of uninterrupted nomad leasehold for at least 30–50 years. In addition, it ends the promise to China's urban consumers of greater meat consumption and of the prospect of Tibet making use of its comparative advantage in animal production in the context of China's national economy.

Tuimu huancao is actually a major new direction, the beginning of the end of productivism and the dream of

intensified commercial meat production from the Tibetan rangelands. Throughout this report, productivism is observed shifting shape. Initially, China's productivist expectations focused on Tibetan forests, which were systematically stripped over three decades. The productivist expectation of accessing Tibet's mineral wealth has only recently become feasible, now that basic transport infrastructure for bulk commodities is in place. However, Tibet's comparative advantages in animal products have never been realised and the Tibetan pastoral economy has never been integrated.

Some Chinese scientific effort has gone into proposing remedies for the degradation, but little has been done in practice, despite China's overall policy of reforestation and re-vegetation of river catchments (Zhao Cai xia and Zheng Da wei 2004: 9–14; Zhou Guo ying et al. 2004: 26–31; Li Jin hua et al. 2003: 30–35). Here is an example of recent Chinese research:

> A two-year field experiment was conducted to investigate the restoration of degraded typical alpine meadow on the Qinghai-Tibetan Plateau. Results showed that fertiliser application could restore production of grassland regardless of the presence and absence of cutting. The grassland productivity and index of grassland quality increased with fertiliser application. Fertiliser application reduced community structure complexity. The insignificant effect of cutting indicates that restoration may be independent of grazing at every fertiliser application rate. It is suggested that in the short term, fertiliser application can restore the productivity of a degraded grassland (Ren Qingji et al. 2004: 43–49)

Researchers have concluded that there are few technical reasons why degraded grassland cannot be restored. Even in arid, marginal grasslands that were abandoned because of rising salinity, the remedy is straightforward as long as there is investment in remediation.

What is missing is not knowledge, but funding to rectify past mistakes and State failures. For example, Chinese grassland scientist Peng Hongchun and his colleagues report on the effectiveness of sown pasture, which in China is called artificial pasture, in the Tsaidam Basin (Ch: Chaidamu) – an area much damaged by oil and gas extraction, heavy industrialisation and the stripping of vegetation for urban use:

> The establishment of artificial pasture on arable abandoned land due to secondary salinisation in the Chaidamu (Tib: Tsaidam) Basin, China, resulted in a stable and highly productive pasture. The soil salt content and evaporation from soil surface was reduced; the microclimate was improved; and the upward movement of salt was inhibited (Pen Hongchun et al. 2003: 26–30).

However, sown pasture may not be such a simple remedy. Rather than relying on only one method, a more integrated approach that utilises the expert knowledge of nomadic communities may be needed, as Zhang Yaosheng and his colleagues discovered:

> Based on many years of research, it is suggested that grassland degradation 3–5 years after sowing is due to invasion from weed forbs, and decreased nutrient supply in the soil. It is suggested that integrated management can prevent degradation and allow sown grasslands to be used for many years (Zhang Yaosheng et al. 2003: 22–27).

Remedies are debatable, as are the causes of this degradation. Chinese scientists dare not speak of State failure, even if it began in a revolutionary era that has long been discredited and abandoned. The causes blamed by Chinese scientists come down to only two factors: global climate change and the selfish ignorance of the nomads who overgraze their pastures.

At times Chinese scientists demonstrate an understanding of the grasslands from the viewpoint of the nomads, but they continue to believe that the nomads are making the wrong decisions. In 2003, Chinese scientist Yang Rurong concluded:

> The grassland livestock industry is the leading industry of the Tibetan agricultural economy, and the function it performs cannot be substituted by other activities. From the Tibetans' point of view, the grassland is not only the material base for subsistence and development but is also important for their cultural and spiritual world. Grasslands provide various livestock products for the Tibetans, including green, unpolluted dairy and meat foodstuffs, and at the same time, take on the important task of protecting the Qinghai-Tibetan Plateau's ecological environment safety. However, due to the peculiar environment of the region, and the unilateral pursuit of livestock quantity, overgrazing and other problems have already led to grassland degradation, productivity drop, and ecological imbalance. Different places have already seriously influenced the sustainable development of livestock industry production and the society's economy. People must think of danger in times of safety and cut off problems in their infancy. With the grassland degradation problem, consideration cannot be put off until an irremediable situation exists (Yang Rurong 2003: 24–29).

There are reasons why the Tibetan national herd never fell to the level of the 1950s, even though sheep numbers were reduced by close to three million – over 20 per cent – in the "TAR" once Tibetans regained some control over their herds in the early 1980s. Once the disastrous communes were disbanded, Tibetans did reduce the sheep herd substantially, but in recent years, as demand for intensification of production increased, the yak herd has increased. Table 1.5 shows how meat production was gradually intensified. It is far too simplistic to claim that this shows nomads to be ignorant or careless of the consequences of their decisions.

Only in Tibet was access to land delayed. Even other nomadic areas, such as Inner Mongolia, redistributed not only animals but also land in the early 1980's, both quickly and equitably.

A major reason that herd numbers remain high is that pastoral nomadism is naturally risky and there is no State scheme, as in Mongolia, to spread the risks of blizzards and extreme weather. Chapter eight (Sustainable Development and the Population Footprint) shows how Mongolia's nomads enjoy the security of knowing that when natural disaster strikes they have sufficient livestock insurance to quickly re-stock their pastures. Such skilful methods, which give nomads confidence that they can recover from disaster and therefore reduce normal herd size, are not attempted in China, even though the World Bank experience in Mongolia shows that such a scheme need not be expensive.

Another major factor that promoted unsustainable grassland use, and thus degradation, was the delay in giving nomads some secure guarantee against another round of confiscation of their land. Although herds were returned to family ownership in the early 1980s, it took many more years, even until 1993, before nomads were given long-term (30 to 50 years) leases over land. Under these circumstances and with the total confiscation of land and animals – a fresh and bitter experience – it is understandable that some nomads maximised their herd size for security, even if it did nothing to reduce grazing intensity.

In Tibet, the delay in guaranteeing rights to land is exceptional. Elsewhere in China, the legacies of the calamitous Cultural Revolution were rectified quickly and the rural "Household Responsibility System" quickly restored private property and free access to markets. In fact, the early 1980s was a time of greatest poverty alleviation in China's history, simply because farmers were allowed to sell their produce on the open market.

Only in Tibet was access to land delayed. Even other nomadic areas, such as Inner Mongolia, redistributed not only animals but also land in the early 1980s, both quickly and equitably. But in Tibet, the three years of famine were followed by more than 10 years of revolutionary upheaval, which were then followed by a further decade in which nomads owned animals but had no incentive to regard any land as their own.

Many grassland scientists, especially those from minority ethnicities, suggest that there is much to learn from the nomads. Khasbagan, a Mongolian scientist, reported in 2000 that:

> Traditional and local knowledge about the use of forage plants by indigenous people, based on a field survey carried out in the Arhorchin Banner area of Nei Menggu, China, (Inner Mongolia) was investigated. Ethnobotany was an effective method for discovering, conserving and applying the traditional knowledge and experience of indigenous people in the pastoral areas of China (Khasbagan and Pei Shengji 2000: 74–81).

Table 1.5 Number of livestock and number of slaughtered animals (1,000 heads)

Year	Total no. of yaks	No. of yaks slaughtered	Total no. of sheep and goats	No. of sheep and goats slaughtered	Total no. of hogs	No. of hogs slaughtered
1978	4,740	229	18,150	2,137	250	50
1985	4,990	343	16,270	2,833	130	57
1990	5,060	437	16,810	3,175	160	71
1995	5,390	682	17,670	3,887	220	95
2000	5,260	801	16,640	4,375	230	136
2005	6,320	1,061	16,980	4,831	300	188

Source: CSB: TSY 2006: table 9-24, 9-25.

Another standard policy prescription of Chinese scientists, economists and policy-makers is that nomads should emigrate from the areas badly affected by grassland degradation and join the tens of millions of Chinese peasants that are leaving land in order to seek factory work in the big, distant cities of China.

In an article on an investigation in Dritoe county, (Ch: Zhiduo) upstream of Golog – an area rapidly desertifying and a worry for China as it is the source area of both of China's main rivers – Wang Shiping suggests this solution to the increasing poverty of Tibetan nomads:

> The Zhiduo [Tib: Dritoe] county is so-called the 'first county' of the 'Three rivers fountainhead' area in Qinghai [Tib: Amdo] province, China. Looking at 32 years of climate data, investigation found trends of annual mean temperature increase and rainfall decrease since 1990. During this time, due to increase in population and numbers of livestock, utilizable grassland per sheep decreased from 2.3 hm2/sheep in 1953 to 1.1 hm2/sheep in 1994. Due to grazing pressure doubling, the average above ground biomass was only 50% compared to 1953. About 33% of the total rangeland area is now degraded to varying degrees, and about 10,000 sq kms of natural grassland has already become desertified or sandified, particularly along rivers, water sources, and villages. With examination of the places and occurrence times of vegetation degradation, the main reason seems to be overgrazing, although there may be interaction between overgrazing and climate change. The trend of increasing aridity could result in decrease of alpine meadow area and increased alpine and desert rangeland areas, which would result in grazing capacity decline. Therefore, the suggestion of immigration should be considered by local government with the construction of a national nature reserve in the region. However, the construction and management of this reserve should be open before the local people, and they should be encouraged to take part in the related activities. The conservation area should become multifunctional in combining conservation, development, research and education including training, so that both ecological and economic benefits are obtained (Wang Shiping 2003: 1–9).

Wang Shiping's policy advice is that those who choose not to migrate from their ancestral lands should not be excluded from the official protected area that is established to conserve the catchments of China's great rivers. This is a welcome proposal that would allow local communities an ongoing role in conservation, rather than excluding them by literally fencing them out, as is common, official Chinese *tuimu huancao* practice now.

CONCLUSION

China's policies towards pastoral nomadism are contradictory. Nothing is done to restore degraded grasslands, since the State takes no responsibility for its past failure, even though for decades it pushed the land too hard to produce more than was sustainable. Present policies may promote production but still exclude nomads from pastures in the name of watershed conservation. China has the world's greatest number of sheep, but their wool is hardly used at all by the fine woollen mills in the big cities. Nomads were once given long-term land leases, but those leases are now being revoked in the expanding protected areas, which undermines any confidence the nomads once had in the State keeping its word.

China's official purpose of rangeland "privatisation" is to maintain rangeland health and promote livestock production through assigning long-term rangeland use rights to individual households. Guaranteed land use rights had some positive effects in raising nomads' protective responsibility for the rangelands. But there are many disadvantages for Tibetan nomads that increasingly marginalises them as a community. This needs to be taken into consideration when planning sustainable use of the rangeland.

Today there is expert consensus that the grassland of Tibet is degrading, mainly due to the failure of institutional arrangements. The answer is not to exclude the Tibetan nomads altogether, which continues to happen, but instead to include them in policymaking.

Due to the inherently diverse characteristics of the rangeland on the Tibetan Plateau, rangelands were traditionally managed not by individual households but by community-based *rukor* or *repkor* tent-circles.

China's implementation of the Grassland Law is based on that law's successful implementation for China's cropland, but the law completely failed in Tibet. Policies that worked elsewhere in China do not work in Tibet. Therefore, despite the creation of the Individual Household Responsibility system, collective rangeland management still persists in Tibet.

In order to achieve sustainable rangeland management, we must examine the rangeland itself and the traditional ways in which the local people use it.

Today there is expert consensus that the grassland of Tibet is degrading and that it is mainly due to the failure of the institutional arrangements. The answer is not to exclude the Tibetan nomads altogether, which continues to happen, but instead to include them in policy making.

Of course, knowledge about local ecological, social and economic conditions should be imparted to the community, but most importantly there should be an appropriate rangeland management policy that provides the nomads with sufficient social security and livestock insurance.

All the policies on Tibet's grassland are determined far away at distant capital cities by authorities who do not understand the dynamics of the plateau's rangeland. Local indigenous knowledge should be considered when framing the policy. Nomads should be given equal opportunity to take part in management decision-making on any future development of Tibet's grassland, rather than having arbitrary decisions taken by authorities who consider the local people to be backward. Nomadic people have successfully inhabited and adapted to the challenging environment of the Tibetan Plateau for thousands of years.

Current revision of the land-related law offers an opportunity to afford de facto institutional arrangements greater formal legitimacy. Today there is need for national rangeland regulations that are adaptable to local situations and that provide more space to the locals for institutional innovations, such as the *rukor* tent-circle. Creating locally adaptable rangeland management regulations requires a good understanding of the heterogeneous nature of the rangeland as well as respect for its nomadic people.

If adopted, these understandings will eventually lead to institutional change in a direction that preserves the benefits and addresses the problems of existing arrangements.

A new model of inclusiveness is needed. Worldwide, states have learned from past failures of rangeland policy that mobile pastoralism is both productive and sustainable, and should be encouraged, not constricted. It is time for the People's Republic of China to follow this trend.

CASE STUDY ONE

THE LIFE OF NOMADS IN GOLOG

In the year 1900, a loyal subject of the Tsar, Captain P. K. Kozloff, led an expedition across the deserts of northern Tibet and into the lush pastures of Golog (Ch: Guoluo), a Tibetan prefecture with an area of 78,444 square kilometres. A *Gologpa* (person of Golog) said to him:

> You cannot compare us Golog with other people. You obey the laws of strangers, the laws of the Dalai Lama, of China, and of any of your petty chiefs. You are afraid of everyone; to escape punishment you obey everyone. And the result is that you are afraid of everything. And not only you, your fathers and grandfathers were the same. We Golog, on the other hand, have from time immemorial obeyed none but our own laws, none but our own convictions. A Golog is born with the knowledge of his freedom, and with his mother's milk imbibes some acquaintance with his laws. This is why we have ever been free as now, and are the slaves of none – neither the [Mongolian ruler] Bogdokhan nor of the Dalai Lama (Kozloff 1908: 526).

These mobile bands of pastoralists, free to roam through an unfenced land, were loyal only to their clan leaders and to the lamas of the nearest major monastery, who supplied these proud people with mediators to resolve disputes. A recent anthropologist of Golog, Fernanda Pirie, explains:

> [...] the monastery sent monks to be their *gowa* for periods of three years. The main tasks of these officials were to approve the headmen of the smaller groups, the *repkor*, and to arrange for monks to carry out religious rituals in the area, but principally to 'sort out the problems' among the nomads, by which they meant resolving cases of theft, fighting and killing. It does not appear that any substantial taxes were levied, although the nomads offered substantial tributes of butter, wool and meat to the monasteries (Pirie 2005: 84).

The *gowa's* (headman) ability to resolve conflicts was not because they were monastic, although the nomads of Golog, despite their quarrelsomeness, were known as devout Buddhists. A *gowa* headman, respected by the nomads, did not win their support by authority because these people had little respect for any authority outside of the clan. Instead, the skilful *gowa* was respected for his clear-headed equanimity, persuasive rhetoric and use of logic, reason, fairness and compassion in winning over stubborn and hot-headed antagonists. These are the skills of *rigne*, part of the classic Buddhist education in ways of leading others towards a more spacious and accommodating outlook on the path to awakening. Pirie observed in his fieldwork that the power exercised by these mediators is primarily persuasive. The *gowa* also faces precariousness and difficulty in the processes of mediation (Pirie 2005).

Robert Ekvall, an anthropologist in the 1920s and 1930s who was born in Tibet to a Christian missionary family and lived there for decades, reported on the spirit of independence of the "people of the black tents", as the Golog call themselves:

> The village organization is generally an informal one. Among the farmers there is a tendency to have a properly chosen headman; but among the nomads, although there is usually one person in the encampment who is known as the headman by right of his influence, it is seldom that he has been chosen formally. Some of the tribes – notably some of the smaller ones – have no chief; all matters of policy are decided by a council of elders somewhat analogous to the encampment council. The members of this tribal council have no special title but are also known simply as the *rgan-po* (the aged ones) nor is participation determined by any formal election; by common consent the leading men of each encampment attend. There are also tribes who have no chiefs but are ruled by the lamaseries to which they belong. In such a case, the lamasery, through its leaders, acts as ruler for certain tribes (Ekvall 1939).

Ekvall's description, from over seven decades ago, of highly autonomous self-governing clans remains largely true even today, with two significant and costly exceptions. First, the monasteries of Golog are now rigidly excluded from playing a constructive role in conflict resolution and they are not permitted to infringe on the prerogative of the State to administer justice. Second, the central authorities have broken their promise of long-term land lease allocations to the Golog nomads.

Many of the Golog leases have been revoked or restricted by new regulations that ban grazing for several consecutive years, which deeply undermines nomadic livelihoods.

Although not too far from lowland China, Golog has until now been a world far away from thick, smoggy, lowland air and booming cities. Golog is a large prefecture in Amdo (Ch: Qinghai) province, ruled from the distant city of Siling (Ch: Xining), far to the north. To Tibetans, these high pastures are among the best countryside areas for nomads. It is a naturally fertile, rolling green landscape that receives sufficient monsoon rain to feed turbulent mountain rivers, as well as maintain lush pasture. Like all Tibetan grasslands, winters are intensely cold, and agriculture is only possible in a few valleys.

Golog prefecture is one of the most authentically Tibetan areas of the Tibetan Plateau, in the sense that the population of non-Tibetan immigrants is small. China's most recent census, in 2000, shows the Tibetan population of Golog as 126,000, with only 9,000 Han Chinese and 3000 of various other ethnicities (China population census 2000: 637, 687). This means that local leaders are usually Tibetan, and they try to balance their official task of transmitting and implementing central directives with respecting the knowledge and way of life of the nomads.

To Tibetans, the high pastures of Golog are among the best countryside for nomads - naturally fertile, rolling green landscape that receives sufficient monsoon rain to feed turbulent mountain rivers as well as maintain lush pasture.

Like many other pastoral societies, the socio-political structure of Golog is made up of *rukor*, or encampments, a pooling of 35 families – sometimes less, sometimes more – to jointly manage herds, risks, decisions, labour and production, based on accumulated knowledge of local conditions. The term *rukor* refers to the people who live alongside one another and herd their animals on collectively held tracts of grassland (Levine 1998) and usually consists of close relatives. *Rukor* are mutual aid associations, ensuring that every household member receives all possible help from others in times of adversity. There is also a unique way of compensating for the weaknesses of specific families: A household rich in livestock but poor in workforce cooperates with one that has surplus workers but inadequate herds. In these ways, the ties of kinship and neighbourhood reinforce each other.

For example, in Washu Serthar in the Karze Tibetan Autonomous Prefecture, adjacent to Golog, the Tibetan anthropologist Losang Gelek reports that the people herd livestock together in a unit of five or so tents and households (Gelek 1998). This *rukor* varies greatly in size depending upon the local environmental, demographic, political and social circumstances. Social insecurity, as in many societies, encourages people to form a larger *rukor*.

Both the strength and weakness of Golog – and other small, flexible, mobile, stateless societies – is their intense loyalty to others within the clan, and disdain for outsiders. Amazingly, the social organisation of the nomad clans and tribes has survived the bloody conquest by the People's Liberation Army, collectivisation, destruction and the imposition of centralised authority based in remote lowland cities. The highly democratic *rukor* tent-circle internal governance of these nomads has, quite remarkably, survived into the 21st century, and has been noted in many anthropological fieldwork studies.

Like the *rukor*, the larger group called *tshowa* was widely found among ethnic Tibetan pastoralists. The *tshowa* is a unit of socio-political structure that has maintained its' importance through to the present day. *Tshowa* traditionally included several hundred households and controlled large tracts of land, which were independently utilised by constituent encampments (Levine 1998). A *tshowa* can have between 10 and 30 *rukor* or encampments (Gelek 1998). The members of the *rukor* work together on various herding tasks that provide risk insurance, either by sharing or rotation.

The Golog people were traditionally known for being fiercely independent, submitting neither to Lhasa nor Beijing until overwhelmed by the full force of modern warfare in the 1950s. Chapter one (Nomads and Grasslands) describes the many laws and regulations now governing nomadic life, including the policies of fencing and sedentarisation. These policies attempt to curtail nomadic mobility, limit family and herd size, and turn nomads into poor ranchers that are restricted to fixed allocations of fenced land.

Chapter one also details the history of statist interventions which, in the 1960s and 1970s, went to the extreme of total collectivisation of nomads, their herds, land and private property. This was followed in the 1980s by the opposite extreme, where each household was separately responsible for their own animals and a fixed, unalterable allocation of land was leased from the State. The nomads' traditional *rukor* (or *repkor)* tent-circle stands somewhere in between these two extremes. *Rukor* have made a comeback wherever township and county leaders in Golog have been willing to accept the system. After all the years of failed Chinese policies, it has become clear that the *rukor* is the most suitable community-based organisation to bring about sustainability.

For now, however, the *Gologpa* must obey the new laws of China's "green governance", a set of regulations imposed from above that have already, as chapter one reports, divided the whole of Golog into three zones: Areas where the number of animals must be reduced by 50 per cent; areas where grazing is banned altogether for three to five years, leaving nomads without herds or livelihood; and areas where both herds and nomads are removed altogether. No part of Golog is exempt, even though the prefectures of Golog and neighbouring Yushul (also subject to the same bans and exclusions) are the biggest producers of yak meat in the Amdo province (CSB Qinghai Statistical Yearbook 2006: table 11-21, 240). China's new laws have been devastating for Golog.

These current regulations exacerbate the extensive degradation in Golog, already the result of decades of Chinese policy which drove the grasslands too hard, built up herd numbers by collectivising production, took decisions out of the hands of experienced nomads and reduced the availability of meat to nomads in order to quickly increase the national herd size.

A report by the scientist Dillard Gates, who assessed the Golog grasslands in 1996 for the European Union, is alarming:

> In extensive areas the ecological collapse of the soil/vegetation complex is imminent or has already happened. This ecological degradation is the result of decades of extensive plant utilization, by too many animals over too long of a period of time. The present rangeland degradation problems were brought about by disruption of the traditional nomadic herding system and central government programs intended to increase livestock numbers and production of livestock products.

The excessive stocking rates were simply manifestations of the pressure from central government to increase production of livestock goods. The disruption to the traditional nomadic system of grazing, and the establishment of permanent villages and townships, has contributed to the rangeland degradation problem (Gates 1996: 1).

China's latest "green governance" policies also declare that pastoral nomadism and watershed conservation are incompatible. Although Golog produced 21,500 tonnes of yak meat in 2005, China is willing to sacrifice much of this production, most of it consumed locally, to the national goal of conserving China's main river sources by excluding nomads from their pastures. Golog is not well connected to the main urban markets of Amdo (Ch: Qinghai) province, and since 1997 Amdo has produced more pork than beef (CSB Qinghai Statistical Yearbook 2006: table 11-21, 240).

Although the economy of Golog is almost entirely pastoral, intensive pig farming close to Amdo's urban centres have made the grasslands largely irrelevant. Golog today accounts for less than 12 per cent of Amdo's total meat production.

Managing the yak herd of Golog, a task that involves 1.2 million animals, is the sole occupation of a population in a prefecture with more land than Belgium and Switzerland combined, and suited to no other livelihood. Yet this herd is converted into only a small amount of meat annually because China has now decided the whole of Golog must serve Beijing in quite a different way – as part of the Three Riverheads Programme, protecting the sources of the Machu (Yellow River), Drichu (Yangtze River) and Zachu (Mekong River).

China's new laws have been devastating for Golog - their policies have hardened grasslands, built up herd numbers by collectivising production, took decisions out of the hands of experienced nomads and reduced the availability of meat to them.

This is a sign of what is to come all over Tibet. China's new "green governmentality" decisively puts watershed protection first, and nomadic livelihoods second. This assumes that a choice must be made between the two. Participatory co-management, for both conservation and sustainable livelihoods, has been ruled out completely by the Chinese, although it is a more skilful alternative.

Two Chinese professors of the Tibet Academy of Agricultural Science in Lhasa stated:

> Ecological effects and benefits are to receive top priority while the livelihoods of farmers and herdsmen and local economic development shall be equally considered. Such measures as providing food, cash, and pasture seed subsidies are to be taken to solve the problems brought about by the project to farmers and herdsmen. Herdsmen will be encouraged to cull and sell livestock to increase the off-take from pastures. Farmers and herdsmen will also be persuaded to raise less or no livestock that require long periods of grazing (Zhao and Chen 2004: 87).

The overall effect of these policies on the nomads in Golog and adjacent areas is troubling, as fieldwork reports reveal. In 2005, Michelle Nori reported the following from Yushul, which is adjacent to Golog:

> The overall picture is of an increasing amount of herding households subsisting in critical conditions. Decreased pastoral productivity increases households' need for income and pushes for seeking alternative livelihood sources out of the pastoral system. Poor households are forced to get closer to towns to seek for income-generation opportunities, to allocate their labour force out of their livestock production, to shift their seasonal movements according to labour and market opportunities. These factors insert them into a vicious circle, which is likely to expel them from pastoralism to other kinds of livelihoods. The current situation on the ground is therefore of a huge number of herding families with limited livestock resources, low livestock productivity, high levels of indebtedness and limited options to tackle any of these problems. All this leads to increasing levels of vulnerability and poverty. The new Government of China 3RHP [Three Riverheads Programme] is likely to provide another brick to this wall, by further inducing herding households to out-migrate pastoralism towards urban-based livelihoods. It is already clear that in some areas pastoralists are selling out parts of their herds fearing the 3RHP with its destocking principles (Nori 2004: 50).

The nomads of Golog and Yushul were the first to experience these statist intrusions that curtail or completely halt their livelihoods, reducing them to marginal poverty. The rest of Tibet must follow, according to professors Zhao and Chen of the Tibet Academy of Agricultural Sciences. Meat production in the future will no longer make extensive use of large areas of Tibet, but will be "scientifically" concentrated in small areas close to cities. Professors Zhao and Chen declare:

> Transform grassland agriculture. Pen-feeding or semi-pen-feeding with concentrated feed as supplementary feeding, wherever possible, is to be encouraged. The animal husbandry sector will be reformed and optimised. The goal is to form a pattern of breeding on pasturelands and fattening in farming and semi-farming areas. In order to protect pastures, the amount of livestock on hand will be scientifically regulated. In recent years, in order to improve the productivity and living conditions of farmers and herdsmen, the government has supported projects of ecological migration, herdsmen's settlement, and drinking water supplies. To be out of the plight of poverty and be affluent is the dream of human beings (Zhao and Chen 2005: 87–89).

As is already happening to the once-free nomads of Golog, the formerly autonomous nomads of the whole of Tibet are to be fenced, regulated and compulsorily emigrated to distant new towns, in the name of grassland restoration and watershed protection. The nomadic way of life is being stopped so that grass re-grows. The more skilful alternative would be to invest in grassland repair, with nomads and officials working together to achieve the Beijing leadership's goal of "The Harmonious Development of Man and Nature".

■

CHAPTER TWO

EDUCATION

Education plays a fundamental role in the economic well-being of society, forming the basis of all genuine development. The importance of education was highlighted recently by Kofi Annan, 7th Secretary General of the United Nations:

> Literacy is a bridge from misery to hope. It is a tool for daily life in modern society. It is a bulwark against poverty, and a building block of development, an essential complement to investments in roads, dams, clinics and factories. Literacy is a platform for democratization, and a vehicle for the promotion of cultural and national identity. Especially for girls and women, it is an agent of family health and nutrition. For everyone, everywhere, literacy is, along with education in general, a basic human right.... Literacy is, finally, the road to human progress and the means through which every man, woman and child can realize his or her full potential. (Kofi Annan).

Unfortunately, Tibetans on the plateau lag far behind in scholastic opportunities. Therefore, special attention must be paid to education in Tibet.

As the employment chapter describes, Tibetans miss out on many employment opportunities because of a lack of skills and literacy, especially when compared to the swelling population of Chinese immigrants. In a society evolving towards modernity, raising the educational level of native Tibetans is crucial.

China has made significant advances in economic development. However, not all regions have seen this benefit. There are substantial disparities between the western and eastern regions of China, for both income and education.

The Chinese government views its western region, including Tibet, as economically backward. Furthermore, the majority of Tibetans live in rural areas, where modernisation policies have not yet been implemented. Generally, the level of education continues to be low among Tibetans, partly because the plateau's more remote areas lack schools and partly because parents cannot even afford to send their children to school. Without adequate education, the majority of Tibetans are excluded from the benefits of modernisation and economic development.

The picture that emerges in Tibetan areas is one of contradiction. On the one hand, China depicts Tibetans as uncivilized, backward and of low human quality. On the other hand, China fails to invest in the human indigenous capital, thereby excluding them from modern opportunities. Instead, it invests massively in roads, railways and cities – forms of physical capital formation.

SCHOOLING IN TIBET BEFORE THE CHINESE TAKEOVER

Before the Chinese invasion in 1950, and His Holiness the Dalai Lama's flight in 1959, monasteries were the major learning centres in Tibet. The top three were Lhasa's monastic universities of Sera, Ganden and Drepung. In addition, over 6,000 monasteries and nunneries served as schools and universities, fulfilling Tibet's unique educational needs. The purpose of this traditional monastic educational system was to keep up a high moral and intellectual standard through scriptural learning (H.H. Dalai Lama 1962).

Secular education in government and private schools slowly gained ground in the first half of the 20th century. His Holiness the XIII Dalai Lama attempted to modernise the educational system in Tibet in the early 1900s. He sent Tibetan students to be educated at Rugby School in England, and in 1923 the British educationalist Frank Ludlow was invited by the Tibetan government to establish schools in Gyantse and Shigatse that were modelled on the English public school system. In 1944, a similar school was founded in Lhasa, and thereafter the number of government schools increased rapidly. In the U-Tsang region of central Tibet, there were about 70 schools run by the government by 1959 (Naga Sangay Tendar 2002). Therefore, it is true to say that Tibetans were developing a secular education system before the Chinese invasion.

However, the hierarchy at Lhasa's major three monasteries argued that an English-nature education would endanger Tibet's religion and culture. The traditional notion that human capital formation is a direct result of moral formation was still very strong. Some of the new secular schools were closed down. Such fears are common in times of reform and modernisation, and can usually be overcome gradually. However, China's invasion

put a sudden stop to all indigenous development of an education system for Tibet.

DAMAGING POLICY ISSUES

In order to understand how the present conditions of schooling in Tibet came to be, it is necessary to assess the Chinese education policies practiced there. For the last five decades, the questions of "minority nationality" education and the role of the Tibetan language have been the most important educational issues in the "Tibet Autonomous Region" ("TAR"). Endless policy changes have severely damaged the education system.

Due to power struggles at the centre of Beijing, overall education strategies have changed several times. The direction was determined by whether the "quantity" or "quality" approach prevailed at the time, characterised respectively by an emphasis on basic and ideological mass education, or hierarchical and academic education . The quantity approach emphasised the rote learning of slogans that epitomised the Party line, whereas the quality approach sought to create elite cohorts (among minority ethnicities as well as Han Chinese) trained to understand, transmit and implement Party directives.

The education of Tibetans, as the Chinese government understands it, is not about the promotion or preservation of Tibetan language and culture. Instead, it is a tool for creating loyal Chinese compatriots.

During the 1950s, when His Holiness the Dalai Lama's government still retained some powers, Chinese education policies aimed to strengthen the loyalty of the Tibetan cadres to the Chinese government and its socialist reforms. The curriculum emphasised communist concepts such as class divisions and anti-imperialism. The Chinese promised that Tibetan language and culture would be promoted, and monasteries could keep the privilege of being the key educational institutions (Bass 1998:28–29). The *Seventeen-Point Agreement for the Peaceful Liberation of Tibet* that was forced upon the Tibetan government in 1951 envisaged a gradual progression in basic education. It stated:

> The spoken and written language and school education of the Tibetan nationality shall be developed step by step in accordance with the actual conditions in Tibet (International Commission of Jurists 1997: 357).

In September 1951, the *First National Conference on Minority Nationality Education* took place in Beijing. Education Minister Ma Xulun emphasized education priorities, such as the need for political education, preserving minority cultures, enhancing patriotism and supporting self-government for the "ethnic minorities" in China. He stressed the need for indigenous languages to be used in primary and secondary schools, of curriculum modification to meet local needs, and training of minority teachers. Following this policy, which was based on the quality perspective, a small number of newly-established state schools started to teach increasing numbers of young Tibetans, many of them children of the former Tibetan elite. Among other subjects, the curriculum included Party policy and history, as well as Tibetan literature and even, for a period, religious education. The lessons were taught in the Tibetan medium, predominantly by Tibetan teachers. In addition, hundreds of students were sent to Beijing and other parts of China for political training (Bass 1998:28–30).

After the Tibetan Uprising and the flight of the Dalai Lama in 1959, the policy changed in accordance with Mao's development plan known as the Great Leap Forward. Tibetan culture was now considered a threat. Additionally, a sudden change toward the quantity approach led to the rapid establishment of more than one thousand commune schools all over Tibet by 1961. The focus became to broadly educate the children of peasants and nomads, with an emphasis on the Chinese language. However, between 1962 and 1966, the proponents of the quality and gradualist approach gained power again in Beijing, and many of the new schools were closed down. Priorities temporarily shifted toward secondary and higher education (Bass 1998: 31–33).

The Cultural Revolution (1966–1976) had catastrophic effects on the education system all over China and Tibet. In 1966, all schools were closed, and students were made to join the Red Guard Brigades and follow Mao's command to attack the "Four Olds" (old thoughts, old customs, old habits and old culture). The authorities destroyed most of the centuries-old Tibetan learning centres on the grounds that Tibetan culture was elitist and therefore had to be abolished. In the name of the class struggle, all aspects of Tibetan language, culture, learning, heritage and accumulated wisdom were condemned as reactionary, "green-brained" and loathsome remnants of feudal slavery. Higher education, as well as any form of minority education, was abandoned, as it was seen as contrary to the prevailing quantity or egalitarian strategy. After 1970, the education system recovered from this total breakdown with increasing numbers of students being enrolled in primary and junior secondary schools. Due to the lack of teachers, however,

the quality of education at that time was highly questionable (Bass 1998: 36–40).

Since the Cultural Revolution, although education in the "TAR" has been a concern of the Chinese authorities, it is clear that political considerations have been at the forefront. The education of Tibetans, as the Chinese government understands it, is not about the promotion or preservation of Tibetan language and culture, or helping Tibetans to gain an equal footing in a changing society. Instead, it is a tool for creating loyal Chinese compatriots.

After Mao's death in 1976, Deng Xiaoping rose to leadership and promoted the "quality" approach once again, vehemently rejecting the reforms of Mao's final era. China urgently needed educated people to rebuild the destruction of the "ten lost years". In Tibet, however, there were very few Tibetan cadres with sufficient education to contribute to policy-making or governance.

In April 1980, the First Tibet Work Forum was held in Beijing to plan the structure of economic and educational development in the "TAR". This high-level conference, which brought together all of the ministries involved in the administration of the "TAR", took the bold step of restoring a central role to the Tibetan language. The Chinese government decided to replace the Han Chinese cadres in the "TAR" with Tibetans, and to train the remaining Chinese cadres in the Tibetan language (Bass 1998: 47, 52). The use of Tibetan was supported not just to preserve Tibetan culture, but also for economic development and the dissemination of government policies amongst Tibetans. It was important for the Chinese that the Tibetan rural population understand and participate in these government policies.

In 1984, the Second Tibet Work Forum discussed the problem of the Tibetan language not being used enough. Many also argued that the school curriculum did not conform with the reality of Tibet. The new policy was formulated to send Tibetan primary students to inland secondary schools in China, with the co-operation of inland provinces. This policy is known as *neidi xizang ban,* the "Inland Secondary School Project" (Postiglione et al. 2004). Rather than investing in secondary schools inside Tibet, these new schools, in provinces distant from Tibet, took the children of Tibetan cadres as full-time boarders and placed them in a totally Chinese atmosphere in order to mould them as future cadres.

The "TAR" Party Secretary at that time, Wu Jinghua, carried out the relatively liberal policies initiated by Party General Secretary Hu Yaobang, such as reducing the number of Chinese cadres in Tibet and promoting Tibetan leadership under the slogan of "putting more Tibetans in the saddle". However, Wu was dismissed by the Party later on, criticized for being too tolerant of religion and blamed for creating the atmosphere that led to the pro-independence demonstrations in late 1987 and early 1988.

In 1987, the Second Conference on Aiding Tibetan Education decided that the situation in Tibet was unsatisfactory and that education in the "TAR" had developed more slowly than in China's inland areas. A follow-up conference later that year came up with some new principles for restructuring and reforming Tibet's educational system. These included "laying stress on primary education, giving priority to the training of teachers, consolidating and enhancing college and university education, and actively developing vocational and adult education". It called for a new emphasis on science and technology, learning from the experience of other nationalities in China, and for the rapid development of an advanced system of education with distinctive Tibetan characteristics (Ram 2000). Similar rhetoric has characterised official policy statements ever since.

The Third Tibet Work Forum, held in 1994, identified education as a "strategic" issue in Tibet and laid down guidelines for educational reform and development. The "TAR" government formulated an ambitious educational development programme for the period of 1996 to 2000. Major targets included enrolling 100,000 students in primary and middle schools, establishing 100 key primary and middle schools, introducing important subjects in colleges and universities, making 100,000 adults literate, building 10 vocational schools and selecting 100 model teachers.

Tibetan primary school students kneel on the bare floor of a classroom.

However, there were strong political interests behind these impressive targets. The focus was now on "patriotic education", a concept formulated during the Third Tibet Work Forum. It was asserted that this would ameliorate Tibet's instability and generate loyalty to the Motherland. Chen Kuiyuan, a hard-line Party Secretary in Tibet, said during the Fifth Tibetan Conference on Education in 1994:

> The success of our education does not lie in the number of diplomas issued. It lies, in the final analysis, in whether our graduating students are opposed to or turn their hearts to the Dalai clique and in whether they are loyal to or do not care about our great motherland and the great socialist cause. This is the most salient and most important criterion for assessing right and wrong and the contribution and mistakes of our educational work in Tibet. To successfully solve the problem, we must improve political and ideological work at schools and have political and ideological work run through all the teaching, study and work at schools (Chen Kuiyuan 1994).

The United Nations' 2005 National Human Development Report places education in the "TAR" as the worst among all 31 Chinese provinces. It estimates that 55 per cent of the Tibetan population are illiterate, while the rest of China has illiteracy rates below 20 per cent.

Patriotic education was imposed extensively throughout the 1990s, with major campaigns in 1990, 1994, 1997 and 2000. Although the campaigns were aimed at all age groups, the programmes often took place at schools and monasteries to target the younger generation in particular. These policies are still in practice, and a new campaign commenced in 2005. Political education, whose main message is that loyalty to the Party and the country is paramount, is part of the compulsory core curriculum. It has recently been renamed "moral education".

During the National People's Congress (NPC) March 2005 annual session, it was announced that China would strive to improve education in poor rural areas by drafting laws and installing a party policy on education. Hou Zixin, NPC deputy and president of Nankai University, emphasized the importance of equality in education: "Millions of new illiterates will appear in a dozen years if the existing inequality in education is not addressed" (China's Human Rights 2 March 2005).

ARE TIBETANS BEING WELL-EDUCATED?

China claims to have made extraordinary achievements in Tibetan education. According to the Tibet Statistical Yearbook, in 2005 the "TAR" had 886 primary schools with 326,952 students enrolled, 110 regular secondary schools with 135,888 students, 10 specialised secondary schools with 8,549 students, and four Institutes of Higher Education with 14,731 students.

In spite of this, official Chinese data in the 2000 census showed that illiteracy among all Tibetans (including the "TAR" and other Tibetan areas) aged 15 years and above was 48 per cent overall, and 60 per cent for women. According to the United Nations Development Program's National Human Development Report 2005 (HDR), education in the "TAR" is the worst among all of the 31 Chinese provinces. It estimates that 55 per cent of the Tibetan population are illiterate, while the other 30 provinces have illiteracy rates below 20 per cent (UNDP 2005). This rate is even higher than in the 2000 census. To put this in a broader context, UNESCO maintains a database of literacy statistics, with data on 115 countries. If the more optimistic 48 per cent figure is taken, the illiteracy rate in Tibet is slightly better than in Benin, Pakistan, Sierra Leone, worse than in Burundi, Congo, and Egypt, and far worse than in Cambodia, Cameroon, Burma, Rwanda, South Africa, Tanzania, and Zambia (UNESCO 2005).

Data from a recent survey conducted by research centres in China and Norway is also informative on this subject. According to this survey, 59 per cent of Tibetans in the entire Tibetan region outside the "TAR" cannot read or write in any language. Only 13 per cent of Tibetans have more than a primary school (sixth grade) education. 27 per cent of Tibetans between the ages of 15 and 25 did not even complete fifth grade. 35 per cent of all Tibetan children between seven and 14 are not in school, and 37 per cent of Tibetan girls are not in school. 40 per cent of Tibetans do not have easy access to a primary school (FAFO 2006).

The Tibetan areas – the "TAR", Amdo (Ch: Qinghai, Gansu), and Kham (Ch: Sichuan, Yunnan) – together with Ningxia, Xinjiang and Shanxi are home to half of the illiterates in China, although their whole population is only 15 per cent of the national total (Bangsbo 2002).

On average, Tibetans complete only 2.2 years of schooling (Wang Shaoguang and Hu Angang 1999). By comparison, according to the 2000 census, rural Chinese average 7.3 years of schooling and urban Chinese average 10.2 years (UNDP 2005: 47). As chapter three (Unemployment and Social Exclusion) describes, the result of this gap is that Tibetans have trouble competing in the

modern job market against the better-educated Chinese immigrants.

Andrew Fischer, a development economist, has laid out the situation well:

> Education and skill levels become the critical factor in determining inclusion or exclusion. The educational divide rather than the spatial divide is much more relevant in determining exclusionary outcomes. Rural migrants from Sichuan are, on an average, half as illiterate as the TAR city residents, at rates of 18 per cent versus 36 per cent illiteracy. Thus even an average rural Sichuan migrant in Lhasa would have a considerable skills advantage over the average city resident, an anomaly that is simply not observed elsewhere in China. A woman in rural Sichuan is less likely to be illiterate than a Tibetan man permanently residing in Lhasa, despite the fact that she is more than twice as likely to be illiterate than her male counterpart in Sichuan. Conversely, a Tibetan woman migrating from the rural areas in the TAR is more than 19 times more likely to be illiterate than a male city resident migrating from Sichuan. Not only is the TAR highly illiterate, but skilled labour is also in extremely short supply, with only 15 per cent of the TAR population having some form of secondary education or higher, versus 40 per cent in Qinghai, 48 per cent in Sichuan and 55 per cent nationally (Fischer 2004: 136–140).

The 2000 Chinese census tracks literacy by age group, so we can see the outcomes of the shifting education policy (see figure 2.1). There were 239,099 Tibetans born between 1956 and 1960 (age 40 to 44 in the year 2000), during the early years of the Chinese occupation. Of these, 48 per cent never went to school and are illiterate. Ten per cent received a minimal education and achieved minimal literacy, 28 per cent completed primary school (during the Cultural Revolution when all that was taught were Maoist slogans), and six per cent went on to junior middle school.

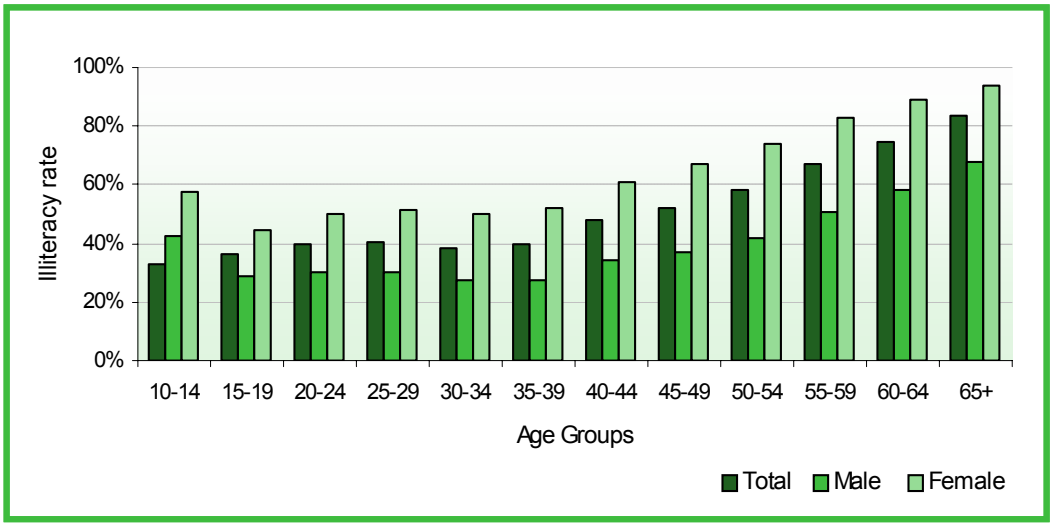
There were 461,324 Tibetans born ten years later (age 30 to 34 in the year 2000) that were technically able to attend school in Hu Yaobang's liberal, post-revolutionary reform era. However, 39 per cent never did so and remain illiterate. A further 10 per cent achieved minimal literacy, 34 per cent attended primary school, and nine per cent went on to junior secondary school.

In the youngest age group of 15 to 19-year-olds, 37 per cent have had no schooling at all and are illiterate. Thus, from 1956 to 2000 the proportion of illiterate Tibetans with absolutely no schooling fell from 47 per cent to 37 per cent. That is a very limited achievement, considering it has occurred over a period of more than four decades

Of course, the principle tragedy is that the illiteracy rate among all age groups remains high. Among the youngest, aged 15 to 39, the proportion who are illiterate ranges between 36 and 41 per cent. For Tibetans in their forties, the illiteracy rate was 49 per cent, and for those in their fifties, 63 per cent. Out of a total adult (age 15+) Tibetan population of 3.7 million in 2000, 48 per cent had no schooling at all. Eight per cent received a minimal education and achieved minimal literacy, 29 per cent completed primary schooling, and nine per cent completed junior secondary schooling.

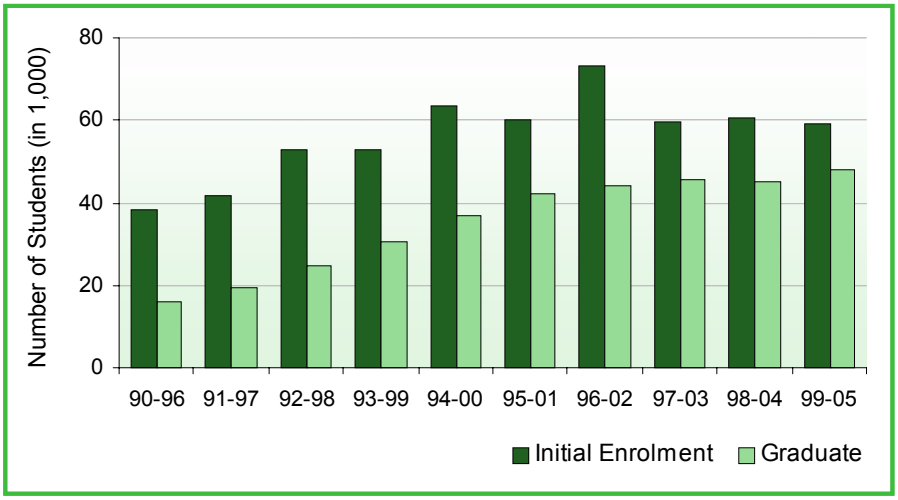
There is significant inequity between men and women (see figure 2.1). In nearly all age groups, female illiteracy is 20 to 30 per cent higher than among their male counterparts. The lowest rate among all age groups of females were those aged 15-19 years old, with an illiteracy rate of 44 per cent. While it is common in a traditional society to have gender inequalities, bridging this gap should be a high priority for the modern society that China claims to be. The benefits of female education are well documented. If China genuinely wants to develop and

Figure 2.1 Illiteracy among the Tibetan population (total, male and female)



Data Source: CSB 2000: Tabulation on nationalities of 2000 Population Census, Table 2.2 p 128.

Figure 2.2 Gap between initial enrolment and graduation from primary school in the "TAR" (1990-2005)



Data source: TSB 2006: TSY, Table 16-6 and 16-7.
Note: Enrolment numbers for a particular year are placed next to the numbers of Tibetan children that completed primary school six years later.

improve Tibet, then it must improve the field of education, especially for women.

The impressive official primary school enrolment rate of more than 95.9 per cent (cited in The Swedish-Tibetan Society for School and Culture 2006) is meant to show China's compliance with the obligations of the UN's Millennium Development Goals. But enrolment is only one indicator of education; actual classroom attendance is also, if not more so, important.

On average, Tibetans complete only 2.2 years of schooling. By comparison, according to the 2000 census, rural Chinese average 7.3 years of schooling and urban Chinese average 10.2 years.

A study by a Hong Kong-based education researcher revealed that in two counties of the "TAR", Panam and Lhundrup, "the official enrolment rate was 90.2 per cent, though fieldworkers viewed this figure as inflated" (Postiglione et al. 2005). The UNDP's Human Development Report has also covered the school attendance rate of different provinces. All of China's provinces have primary school attendance rates higher than 95 per cent, except for the "TAR" – whose rate is 70 per cent. The UNDP's figure is probably closest to the truth.

One should also consider the graduation rate. The "TAR" yearbook cannot look impressive, judging from figure 2.2. Many students do not complete primary education (the first six years of compulsory education, according to the universal Nine-Year Compulsory Education policy). A major reason that many Tibetans are unable to complete their schooling is that the curriculum does not relate to their daily life. In order to promote a sense of national unity, a standardised curriculum is taught which undermines the culture and identity of ethnic minorities. There are no references to their culture or history in school materials.

In a 2006 radio interview, Tibetan education expert Dr. Nawang Phuntsog, Associate Professor of Education at California State University, said:

> The medium of instruction in Tibetan schools in Tibet is Chinese, rather than Tibetan which should be the case. In fact Tibetan is not used at all after standard three. Worse, school curriculum in Tibet is set in such a way that it is not related to the Tibetan culture and identity. As a result, Tibetan students lose interest in learning the standardised subjects, and many drop out of school from an early age. The only alternative for them is to join monastic institutions, which provide learning in Tibetan tradition and culture. In fact many children prefer enrolling in monastic education. However, enrolment in these monastic institutions is not covered in [China's] statistical yearbook. And this explains why Tibet's overall literacy rate is recorded very low in it (*Voice of America* 2006).

Beijing government policy forbids admission to a monastery and nunnery until a child reaches the age of 18. China claims that this policy is for child protection. However, this prohibition in effect means that the state alone can claim the minds of the young; the State has exclusive access to children and teenagers up to the age of 18. The implication is that a Tibetan's desire to study his own language and culture is dangerous, and the State must intervene to protect them from themselves.

Historically, nearly all of Tibet's leaders, in all fields (including the arts, medicine, literature and governance), have been products of a monastic education. The Tibetan tradition trains the mind to recognise its own nature, producing leaders who are remarkably capable and able to guide others skilfully, resolve community disputes, and contribute greatly

to human welfare. Tibetan traditional education trains the mind to transcend the ingrained selfish habits of preferring the self over others. To produce leaders (and ordinary people) with such outstanding abilities requires an intensive education starting early in life, with arduous effort under close supervision. The Chinese prohibition of monks and nuns under the age of 18 is therefore very costly to society.

Two additional reasons for the high dropout rate are that the tuition costs and miscellaneous expenses in Tibetan schools are high, and that some children are needed to help with farming and livestock tasks at home. China's dropout rate in rural junior middle schools ranges from 20 to 50 per cent – indicating that the education of rural children is being severely curtailed (Feng 2005).

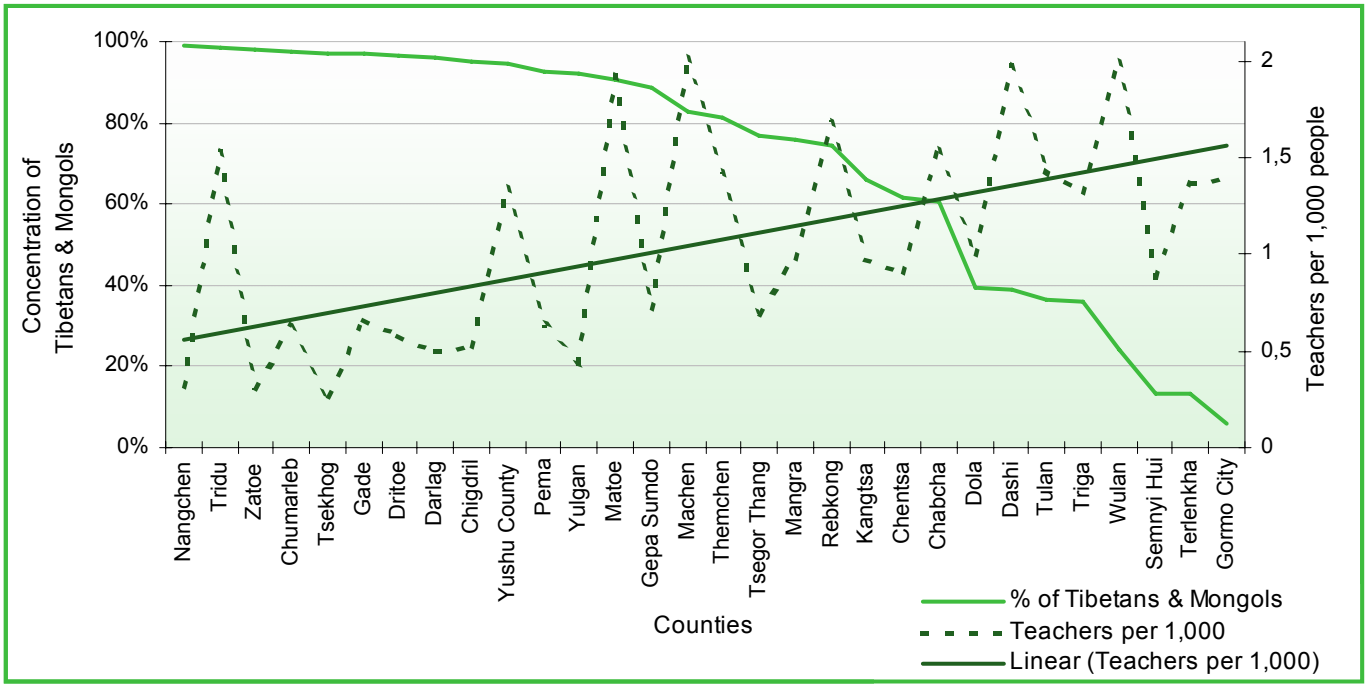
Many nomad (*drogpa)* parents complain that, even after many years of schooling, the children have learned nothing useful for *drogpa* life, but instead have picked up bad habits and attitudes. The worst attitude is disdain for the *drogpa* way of life. After going to school, many children say they find *drogpa* life backward, and refuse to go back to it. Yet, they cannot go forward either. They have neither the grades nor the fees to be able to attend middle school, nor are they yet equipped to compete in modern society.

Amdo province (Ch: Qinghai) consists of 98 per cent land that was traditionally Tibetan. The Tibetan population now constitutes only 22 per cent of Amdo. Still, according to the 2000 census, 45 per cent of Amdo's illiterate population is Tibetan. If we compare the counties in Amdo that are most and least Tibetan, and also measure the number of teachers per thousand residents, a remarkable pattern emerges. Using China's official 2000 census data, the more Tibetan a county is, the fewer teachers there are (see figure 2.3).

THE HURDLES TO HIGHER EDUCATION

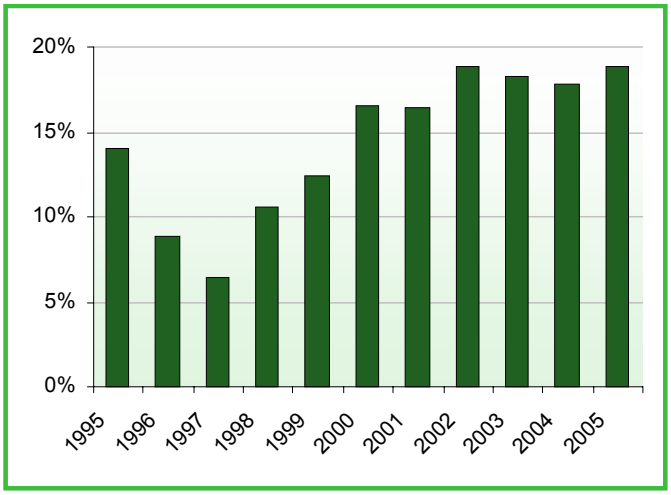
After completing elementary school, students must pass examinations on the Chinese language, because all post-primary education is taught in Mandarin. This presents a barrier that prevents many minority students from advancing to higher learning. There is a also an examination to be taken after junior high school in order to advance to high school, which is even more competitive than that of the primary level. Finally, the National Examination is also required for admission to university (Johnson and Chhetri 30 April 2000). A tiny number of highly motivated Tibetan students succeed in conquering all of these obstacles and qualify for junior high school /

Figure 2.3 Lack of teachers in Tibetan areas in Amdo (Ch: Qinghai)



Data Source: CSB 2000: Tabulation on nationalities of 2000 Population Census, Table 10-1, p 636, 637 and QSB 2000: Tabulation on the 2000 Population Census of Qinghai, Table 4-1,p 1170-1172.
Note: Counties of Qinghai are ranked by concentration of Tibetans and Mongols in total population of the county.

Figure 2.4 Percentage of "TAR" students who complete secondary school and enter higher education, 1995–2005



Data Source: TSB 2006: TSY, table 16-6 and 16-7.

middle school or post-secondary education, usually in a teacher training college (often called a Normal University). They rarely enter a full university or any of the institutions intended for China's 110 million minorities. According to the official statistics of "TAR", from 1995 to 2005 the number of graduates who entered higher education never exceeded 20 per cent (see figure 2.4).

In all higher education establishments, the environment is wholly Chinese, even in the minority nationality colleges. Even in the "TAR", almost 50 per cent of the students in higher education are ethnic Chinese (Bass 1998: 207).

The net result of China's education policies is that during five decades of rule over Tibet, China has produced only a handful of skilled Tibetans: this is in large part a strategic decision.

Initially, the Inland Secondary School system that was set up to educate young Tibetans used the Tibetan language. However, Mandarin has now become the main teaching medium in all Inland Tibet Secondary Schools. Since their establishment in 1985, these inland schools have admitted more than 23,560 primary school graduates (Postiglione et al. 2004). Many parents fear that the schools are strongly assimilating young Tibetans into Chinese culture.

Woeser, Tibet's first modern public intellectual, has correctly identified Tibet's education predicament. Parents who send their children to Chinese inland schools not only make great financial sacrifices in the hope that their offspring will be able to compete with one billion Chinese, but they must also prepare to sacrifice the family bond. Many children, when they return, no longer respect Tibetan traditions, and even worse they don't respect their parents. Instead, they show disdain for Tibetans (Wang Lixiong and Woeser 2005: 51–66).

On the other hand, some of the students at these schools get enough of the glamour of modern China, and when they return, they appreciate Tibetan culture all the more. They can then be very useful, since they know both cultures and are able to act wisely and effectively. Such people will be deeply appreciated all over Tibet.

However, once a Tibetan succeeds in finishing his or her education, new pressures come into play. The higher status a Tibetan has, the more visible he or she becomes, the more loyalty to China is questioned, and the more his or her behaviour is inspected for signs of Tibetan nationalist sympathies. The pressure grows even more when Tibetans become lecturers in teachers' colleges. Because they are so few, they stand out, and they receive intense scrutiny.

The original reason for sending Tibetans to inland schools was that Tibet had low quality schools, and inadequate staff and teachers. Today, China proudly claims that it has helped Tibet by educating large numbers of pupils. A senior Chinese official said,

> In the past 20 years, 28 schools in 20 provinces and municipalities opened classes for Tibetans, more than 90 higher education institutions and 53 key high schools received short-term Tibetan students, educating and training a total of 14,000 people (Jia Qinglin 26 January 2006).

However, China has been unable to make good teachers stay in rural Tibet. The experience of international NGOs is that good teachers can be attracted to rural areas, and retained, if they are paid a little above average and their efforts are appreciated. The net result of China's education policies is that during its five decades of rule over Tibet, China has produced only a handful of skilled Tibetans. Of course, this was in large part a strategic decision. The Chinese government has deliberately handicapped Tibetans in the process of economic development, giving preferential opportunities to Han Chinese and using the lower educational accomplishments of Tibetans to justify the increased Chinese migration "to help develop Tibet".

THE NEED FOR BILINGUAL EDUCATION

China is a multi-lingual and multi-national state of 1.3 billion people and 56 officially recognised nationalities.

The Han are by far the largest nationality, making up 92 per cent of the total population. The 55 ethnic minorities combined account for only eight per cent, or 110 million people. The Han population's dominance constantly threatens the survival of the minority languages. Language policy poses a significant challenge to the Chinese government, and is of course an issue of cultural survival for the ethnic minorities.

It is reasonable to ask whether Tibetan or Chinese ought to be the primary language of education in Tibet. There are two schools of thought amongst Tibetan intellectuals on this question. One school claims that Tibetan is essential for the maintenance and growth of Tibetan culture. It argues that the current Chinese education system is contributing to the assimilation of Tibetans into the Chinese mainstream, and gradually wiping out Tibetan culture. The other school of thought claims that Mandarin is more appropriate for education, as it gives people the ability to participate in economic and political development. Those taught in Chinese will be able to pass the national exams and go to institutes of higher education. As a result, they will also have access to salaried jobs in the government.

It seems clear that both schools of thought have valid points. Therefore, if China wants Tibetans to be productive and contribute to its greatness, it will have to adopt and implement education strategies that promote education first in Tibetan and then in Chinese. Full bilingual literacy must be the goal. Only a bilingual strategy that prioritises Tibetan as a core part of the cultural heritage of the Tibetan people, yet also teaches Chinese so that Tibetans can operate effectively in economic and public life, can succeed in the long run. However, a lack of funding, qualified bilingual teachers and teaching materials, as well as changing and conflicting policies, have for years presented major obstacles in the development of bilingual schooling in Tibet. Let us briefly consider this history, and where bilingual education stands today.

Soon after Communist China was created in 1949, a number of public schools were set up in Tibetan areas, as well as other places inhabited by "nationalities of the minority". Education was an important tool for the new regime in order to consolidate control of the border zones. In the mid-1950s, the newly-established education departments in Tibetan areas published the first guidelines for bilingual education. Considering that few people understood Chinese, the use of Tibetan as the primary language in schools was the only feasible strategy at that time.

In 1958, the process of developing bilingual education programmes was interrupted by democratic reform campaigns, which were then followed by a series of radical campaigns, including the devastating Cultural Revolution (1966–1976).

By 1980, as described in the history section above, officials of the local government education departments started to discuss how best to develop an education system that satisfied the "special characteristics of the nationalities". The role of the local language was at the heart of those discussions. Officials eventually decided to educate children in their native language. The Tibetan educators of the provinces and regions that cover the Tibetan-speaking areas – Amdo (Ch: Qinghai, Gansu), Kham (Ch: Sichuan, Yunnan) and the "TAR" – began to work on a series of bilingual textbooks for Tibetan schools (Kolas 2003).

In 1987, the People's Congress of the "TAR" passed the "Preliminary Regulations on the Study, Use and Development of the Tibetan Language". It was formally enacted as law on 22 May, 2002 (Zhou Maocao 2004: 222). The law stipulated that by 1993, all junior middle schools were to teach in Tibetan, and by 1997, most subjects in senior middle schools were also to be taught in Tibetan (Bass 1998). However, in the 1990s, during a tightening of restrictions after the Tibetan 1987- 1989 uprising, bilingual education began to suffer a backlash. The policies from 1987 became dated, and this law was not upheld. In 1997, a deputy secretary of the "TAR" Communist Party formally annulled the law.

Tibetan language education was weakened further under the economic reforms of the 1990s. In 1995, local governments became responsible for funding their own primary and secondary education. The poorer counties, many of them located in minority areas, were unable to

An urban elite secondary school building in Lhasa.

provide adequate funds. Although there is a nationwide policy of nine years of compulsory education, in some Tibetan areas local education authorities struggle to offer even a basic three-year education. Under these conditions, the provision of bilingual education inevitably becomes a second priority.

There have been other initiatives and policies to promote the Tibetan language that have been introduced by Tibetan education officials. From a 2004 report:

> From the late 1980s to the late 1990s, the Tibet University had trained over 1400 middle school Tibetan teachers, compiled 19 Tibetan language textbooks, edited and translated 181 textbooks on 16 subjects from primary school to high school, 122 reference books and 16 kinds of syllabi. It has also compiled Chinese-Tibetan dictionaries on the terminology of eight subjects including physics, biology and mathematics, each with over 120,000 entries. The University has translated 55 educational books on patriotism for primary school students and produced a lot of teaching software, pictures and materials for Tibetan language training (Zhou Maocao 2004: 226).

Zhou Yong-kang, Communist Party Secretary for Sichuan, complained at a session of the National People's Congress in March 2000 that teaching Tibetan was "a drain on government resources".

However, there is a large gap between appearances and reality. Tibetan is clearly not adequately promoted as an important and useful language. There are many Han teachers in secondary schools and universities, and Tibetans who have been taught in inland secondary schools are more fluent in Chinese than Tibetan, which makes it difficult for them to go on to teach Tibetan courses. And although the teaching of Tibetan has been allowed in some village schools up to grade three, classes beyond grade three are all taught in Mandarin (except for those teaching Tibetan-specific subjects).

Sadly, the Tibetan language is now utterly irrelevant in Tibetan public life. This was noted in 1996 by the famous Tibetan educationalist Khenpo Jigme Phuntsok Rinpoche, who was known for creating a successful Buddhist university in a remote area of Serthar, in Karze prefecture, Kham (Ch: Sichuan Ganzi Sertal):

> The Tibetan language has no value in present-day Tibet. For instance, if a letter is mailed with an address written in Tibetan, it wouldn't reach its destination even within Tibet, let alone outside. While travelling, no matter how literate a person is in Tibetan, he would not be able to know the bus timing or read the seat number on his ticket. Even if one has to look for a hospital or a shop in the county headquarters or a city, the knowledge of Tibetan is useless. A person who knows only Tibetan will find it difficult even to buy daily necessities. If our language is useless in our own country, where else will it have any use? If the situation remains like this for long, the Tibetan language will become extinct one day (Khenpo Jigme Phuntsok Rinpoche 1996).

A senior teacher at Shigatse School has also raised a red flag about the redundancy of Tibetan in everyday life. On 29 August 2006, on the Xiztang Lhasa channel's "Domney" TV show, he said that the Tibetan language is used only for exams, as a criterion to get through school. After the exams, it is not used again. He feels that as a result, the quality of the Tibetan language is declining.

Chinese and international scholars of language have clearly identified an unresolved tension at the heart of China's language policy. This tension goes back to the early days of the Chinese Communist Party, long before it took power, when it needed to cultivate all the allies it could in order to form a broad united front. From the earliest days of the People's Republic of China, policies concerning minorities and their languages have faced conflicting goals:

> China has been struggling since 1949 to make and practice a minority language policy that is supposed to serve its ideological goals, safeguard its territorial integrity and national unity, and accommodate the minority communities' linguistic and cultural diversities (Zhou Minglang 2004: 71–95).

National unity, stability and security all require assimilation and monolingualism in a unitary state that is ruled from Beijing. However, the accommodation of diversity requires formal recognition of non-Chinese cultures and their right to develop and practice their culture. This contradiction has never been resolved.

Scholars who have tracked the history of the Party's policies towards minority peoples over the past 80 years have demonstrated that there has been a steady slide away from respecting minority rights and toward dominance by the Han majority and its standardised language, *putonghua* (Mandarin Chinese). This dominance was fully and finally established in 2001 when *putonghua* was directed to be taught even in the earliest primary school years, formalised in an amendment to the Regional National Autonomy Law (Beijing Law Press 2001) - prior to 2001, it was taught in the later primary school years. The assimilation of the 110 million members of ethnic

Box 2.1 A young Tibetan takes refuge in India to study and preserve the Tibetan language and culture

"More than 80 per cent of school age children in Chamdo area are not attending school. Many of them are working in their homes instead of studying. The standard of the school and the education provided in it are very poor. Moreover, school fees are exorbitant. Tibetan students have to pay an annual amount of around 4000 Chinese yuan [US $500].

The Tibetan language has become useless in Tibet. When the late Panchen Lama was alive, the medium of instruction in schools was Tibetan. But now it is Chinese, which makes it very difficult for Tibetan children to understand their subjects. Tibetan has also lost its relevance in the offices in Tibet. All the office work is carried out in Chinese. Tibetan language and culture is increasingly losing ground in Tibet. Learning and preserving Tibetan culture has therefore become all the more important. Unfortunately, we do not have a school where we can hope to learn about Tibetan culture. The school environment in Tibet is more Chinese-friendly. We have no freedom at all.

These circumstances compelled me to come to India, where I can have a better education and learn Tibetan culture, which I could not do back home. As soon as I complete my studies in India I will return to Tibet, where I will teach Tibetan language and culture to my fellow Tibetans."

Translated from a Tibetan language radio interview with Tashi, a refugee from Chamdo, Voice of Tibet, 25 September 2006

minority groups is now so advanced that the guarantee of equality among languages is merely a token, a relic of a past era. The promotion of monolingual and monocultural China has been firmly established.

All regions of Tibet, not only the "TAR", suffer from Chinese efforts to undermine the Tibetan language and culture. Zhou Yong-kang, the Communist Party Secretary for the Sichuan province, complained at a session of the National People's Congress in March 2000 that teaching Tibetan was "a drain on government resources" (Tsering Shakya July 2000).

The Exile Experience

Experience from around the world has shown that bilingual literacy can be successfully taught if a clear strategy is followed. Teachers must teach in the mother tongue during the primary years, until literacy is well established. The second language is then introduced gradually in junior and senior middle schooling, without neglecting the mother tongue. International research, as well as studies in China, shows that this approach can achieve full literacy in both languages, and that the children become more intelligent and sensitive. To be bilingual is to be bicultural, seeing everything through two frames of reference, and thus to respect the basic truth that there is never just one viewpoint.

It is constructive to compare the education policies and outcomes in China with those of the Tibetan community in India. Education has been a high priority for Tibetans in exile. Every effort is being made to create productive citizens in the exile community. The Tibetan Children's Village (TCV) School is a successful, integrated educational community for Tibetan children born in exile, as well as for the hundreds of children still escaping from Tibet. The TCV practices "Tibetanisation", devising an appropriate curriculum on the basis of Tibetan cultural values and language.

The TCV's Education Development and Resource Centre produces books, teaching aids and other resource facilities in Tibetan, and also provides ongoing teacher training programmes. The TCV also established a Teacher Training Centre in 1995 in Dharamsala, Himachal Pradesh, with a two-year training course. More importantly, the Department of Education (DOE) of the Tibetan Government-in-Exile formulated a "Basic Education Policy for Tibetans in Exile", based on the needs of the exiled Tibetans (BEP 2004).

The assimilation of the 110 million members of ethnic minority groups is now so advanced that the guarantee of equality among languages is merely a token, a relic of a past era. The promotion of monolingual and monocultural China has been firmly established.

The Assembly of the Tibetan People's Deputies approved this policy in September 2004. A model school, Meyon Tsuglak Peton School, was constructed in Lower Dharamsala to fully implement the new policy. The school was inaugurated in 2005. Tibetan is used as the medium of instruction right from the beginning of schooling. Currently, the Tibetanisation programme is confined to primary schools. English or another second language is taught from class IV. This conforms to the policies of the host Indian government and UNESCO, which state that children should receive primary education in their mother tongue.

According to a DOE spokesperson's statement in August 2005, the new education policy will be implemented in 79 Tibetan pre-primary schools in India, Nepal and Bhutan within three years. By 2009, 70 per cent of the 1,650 teachers in Tibetan schools in exile will have received training on the Basic Education Policy.

Tibetan language is given primary importance in the Basic Education Policy (Section 8.4):

> It will be given priority that from pre-primary to Class III, besides Tibetan no other language is to be taught at this level, even terminology and songs in other languages. Second language is to be taught from Class IV and third language to begin at Class VI.

As to whether the Tibetans in exile have achieved a superior education system, the results speak for themselves. As far back as 1998, a Tibetan Demographic Survey found that 89 per cent of young Tibetans between the ages of 15 and 39 in India and Nepal were literate. The literacy rate of all Tibetans in exile stands at 70 per cent. Furthermore, the proportion of Tibetans obtaining a post-secondary education is far higher amongst those in exile than those in Tibet (TDS 1998: 106).

If China genuinely wants to improve Tibetan lives, it must adopt more skilful and suitable policies that use Tibetan literacy as a bridge to Chinese literacy. Both languages are necessary for Tibetans.

The Tibetan education expert Badeng Nima, in an article on "Problems Related to Bilingual Education in Tibet", has well articulated the need for bilingual education:

> The most important function of language is to bear the content of culture and transmit information. The educational function of language is to develop people's ability to function in society through the language. In a linguistic perspective, the choice of language of instruction should depend on the educational function. In Tibet, the language of instruction should be based on what is easiest for children to study, most convenient for children to use, and what is most useful for their lives. The language of instruction should also help students to master the greatest amount of knowledge in the shortest time. For this reason, I believe Tibetan must be the most suitable language for Tibetan children in schools; therefore, Tibetan should be the first language of instruction.
>
> Secondly, Tibetan children also need to study Chinese thoroughly. In China, there are 56 nationalities (*minzu*). Chinese are the majority. Chinese is the main language of the country, and the majority use Chinese to exchange information all over the country. Therefore, Tibetan children must study Chinese in order to understand the country and learn how to be a citizen and live in modern society (Badeng Nima 2001: 91).

To some, the dominance of the Chinese language and the eclipse of the Tibetan language seem natural, inevitable and unproblematic. But if China genuinely wants to improve Tibetan lives, it must adopt more skilful and suitable policies that use Tibetan literacy as a bridge to Chinese literacy. Both languages are necessary for Tibetans. The Tibetan language is essential for cultural transmission and inner contentment. Chinese is essential for accessing modern opportunities. The combination of both languages will enable Tibetans to meet the needs of the mind and body, as well as contribute to China's prosperity.

THE PROMISED NINE-YEAR EDUCATION?

The availability of nine years of basic schooling to all children is a universal promise of governments to their citizens. In adopting the UN's Millennium Development Goals, all governments, both rich and poor, pledged to achieve this goal.

China's nine-year compulsory education policy was a key point in the 1985 "Chinese Communist Party Decision on Education". One year later, the People's Congress passed the Law on Compulsory Education (LCE), which required a "nine-year basic education and that all the children at age of six should have the right for schooling regardless of gender, ethnicity and race. The law also requires that the state, the community, schools and families should guarantee the right of all children for schooling" (Shanghai Poverty Conference May 2004).

The nine years of schooling, divided into six years of primary education and three years of junior secondary education, meant that all children aged six to 15 should be in school. This policy had multiple objectives: To provide universal compulsory education throughout China, especially in rural areas; to eliminate illiteracy among young people and adults; and to upgrade the quality of life in rural areas, which in the long-term will help eliminate poverty and achieve sustainable social progress (Shanghai Poverty Conference 2004). Additionally, in 1995, China's government set a target of achieving 99 per cent enrolment rates at primary schools and 85 per cent at junior high schools by the year 2000.

However, the implementation of this policy in Tibet has fallen far short of its objectives. The nine-year compulsory programme was not introduced in the "TAR" until 1994. A directive issued by the "TAR" Education Commission in May 1993 indicated that the goals of compulsory education were four years in pastoral areas, six years in agricultural areas, and nine years in major cities and towns (Bass 1998: 67). According to China's 2000 census, 38 per cent of Tibetan children between the ages of six and 14 (i.e. the compulsory schooling age) were not attending school. The 2004 "TAR" yearbook shows that more than 30 per cent of primary school graduates are not even able to enrol in secondary school. As of 1998, less than 20 per cent of Tibetans had completed all nine years of schooling (China Development Brief 1999).

During a visit to Tibet in August 2004, Carol Bellamy, Executive Director of UNICEF, criticised the low levels of access to primary school education for Tibetan children. She stated that "only 31 per cent of the children in Tibet have access to the compulsory nine years of education". She expressed her concern that although the conditions in western China and in Tibet had dramatically improved in recent years, the growth was occurring at a significantly slower pace than in eastern China, creating fears of a widening poverty gap (International Campaign for Tibet 2 September, 2004).

China's latest target is to make nine years of basic education available to all children by 2008. As well as the lack of funding, the fact that the quality of teachers, medium of instruction, and centrally prepared curricula are notorious for ignoring local cultures, languages and realities will make it very difficult to achieve this goal by 2008. However, the UN's Millennium Development Goal of primary education for all by 2015 may be reachable, if serious and genuine effort is applied to education provision across the entire plateau.

LOCAL FUNDING OF EDUCATION: THE KEY ISSUE

The main obstacle to providing schooling is the devolution of funding responsibility to the lowest level of government. The LCE stipulates that school funding is the responsibility of the local authorities. As Article 12 of the law states, "The State Council and the Local People's Governments at various levels shall be responsible for raising funds for operating expenses and capital construction needed for the implementation of compulsory education and the funds must be fully guaranteed" (China Education and Research Network 2005). The UN Special Rapporteur for Education found that the lowest levels of government (county and township) shoulder 87 per cent of public expenditure for education in China (Tomasevsk 2003). Rich counties and townships have little difficulty in coming up with the required money, but the poor counties in Tibet find it very hard.

The law stipulates that the central government shall assist minority nationality areas to implement compulsory education, by providing them with teachers and funds. However, local governments must raise 150 per cent of the amount that the central government provides. If they fail to do so, the central government's funding is denied. Local governments are barely able to maintain their payments for cadres and operation fees of administrative organs, let alone come up with enough money for building and maintaining schools, and paying teachers. Case studies conducted by the World Bank show that some counties are so poor that they never receive any state assistance.

Even at the central level, government funding for education has been poor and failed to meet its own goals. "In 1993 the 'Program for China's Educational Reform and Development' issued by the Central Committee and the State Council directed that State funding of education should represent four per cent of GDP towards the end of century" (Bass 1998: 13). However, the Chinese government reported that the allocation for education was only 3.2 per cent of GDP in 2001. In 2003, funding for education grew slightly to 3.4 per cent of GDP (*People's Daily Online* 2004). However, this claim is not supported by the data published by the World Bank and UNESCO Institute for Statistics. Table 2.1 shows that compared to developed countries and even compared to most of its

An example of what a little foreign assistance can achieve in constructing solid,well-heated classrooms for Tibetan children.
Photo: Swedish-Tibetan Society for School and Culture

neighbours, China's expenditures on education have been very low.

At the local level, where most of the funding responsibility lies, governments often push the financial burden onto families. Professor Rong Wang of the Beijing University Graduate School of Education has noted that, in poor areas, families are often unable to raise the compulsory matching funds, and as a result the central funds go unused (Rong Wang 2002).

In urban areas, where incomes are higher and schools more accessible, many parents end up spending the majority of their income on school fees and expenses, especially on post-secondary education. In rural areas, many parents cannot bear these expenses. The fees and expenses are numerous; they include the cost of textbooks, tuition fees, miscellaneous fees (often the greatest costs) and boarding expenses.

Additionally, parents are often asked to donate labour and materials in order to construct the schools. In a major 1994 policy speech, "TAR" executive deputy secretary Gyaltsen Norbu stated:

> Wherever possible local governments should mobilise and organise peasants and herdsmen to reconstruct unsafe village schools, build new schools and improve teaching conditions by contributing their labour service or construction materials on a voluntary basis (Gyaltsen Norbu 30 October 1994).

The real results of this unrealistic policy are schools in ruins and children whose potential is never realised. Many researchers and expert observers have recognised the abysmal state of education in poor areas, particularly if rural, in China. For example, Zhang Yulin, a leading Chinese sociologist at Nanjing University, asserts that rural education is in "crisis". He identifies three major problems; students leaving school, delayed payment of teachers' salaries, and a severe lack of education funds (Feng 2005).

The Economics Teaching and Research Department of the CPC Party School issued a report on the "Predicament and Way Out for China's Nine-Year Compulsory Education in Rural Areas" in early 2005 (Feng 2005). The report notes that the biggest problem confronting rural education is the punitive education budget. In cities, the government shoulders all of the expenses for the nine years of compulsory education. In rural areas, however, the farmers must pay the bulk of the expenses. The limited government funds available are concentrated on schools in the county capital, at the township or village level, or at a "teaching point" out in the grasslands. All of these schools are all starved of funding and teachers. According to a report produced by Rong Wang, a professor at Beijing University's Graduate School of Education, the more remote the school, the less public spending per student, to as little as 2.65 yuan per student per year (US $0.33) (Rong Wang 2002).

Hou Zixin, a National People's Congress deputy and the president of Nankai University, also admitted that many rural people are unable to educate their children because they cannot afford the fees. "Many of the local governments at a county level in China, particularly those in poor areas, could not make ends meet for rural compulsory education. Lots of rural kids have been forced to drop out of school for failing to pay schooling expenses" (*Xinhua* 2 March 2005).

A senior Chinese official of the "TAR" Education Bureau told an American researcher that "in the future we can't support all the schools, so we will ask local people to set up senior high schools and we may ask parents to pay for textbooks". The same official also said that the authorities would make the same demand of parents for primary and middle schools if the law permitted it (Erickson 1997: 105).

This system of funding is aggravating the disparity between urban and rural, developed and under-developed regions that is a key theme of many chapters in this report. Grossly uneven economic development is creating grossly uneven educational development.

Since China began opening up in 1978, Tibet has been able to receive foreign aid for various programmes, especially education. A number of foreign aid projects were established in Tibet in the 1990s. However, foreign funding for education is a sensitive political issue in the

Table 2.1 Government education spending as a percentage of GDP in selected countries

Year	India	Nepal	Bhutan	Mongolia	China	Japan	Korea	U.K.	U.S.A
2000	4.1	3.0	5.2	6.7	2.1	3.6	3.4	4.6	5.7
2004	3.3	3.4	5.2	5.6	2.1	3.7	4.6	5.5	5.9

Source: World Bank's Summary on Education Profile and UNESCO Institute for Statistics (http://devdata.worldbank.org/edstats/cd1.asp).

"TAR". Because education is such an important strategic issue, the government is reluctant to allow foreigners to develop educational initiatives. Donors and organisations must overcome a range of hurdles to offer support on education projects. Geographical accessibility also poses difficulties in the remote, rural regions where education aid is most needed.

The UN itself has recognised the funding problem in China, and proposed that poor parents receive direct payments to support the schooling expenses:

> Funding for primary education in poor areas is a particular problem. Current policy requires that education be funded largely from local budgets, but in poor areas there is insufficient revenue. This situation harms the very counties most in need because parents lack the money to make the necessary donations. This is an urgent issue for government to address. The solution may be to provide subsidies to poor rural families, particularly if there is need to put children in boarding school (UN 2003: 14).

As the statistics cited earlier in this chapter demonstrate, girls face particular hardships in gaining an education. Wu Qidi, China's vice-minister of education, was quoted at the Chinese Women's Ninth National Congress in Beijing as confirming that many female children are deprived of education, especially in rural and poor areas. Education for female children, Wu said, was of extreme importance since, as mothers, they can affect multiple generations. Despite some improvements in their social status, women and children remain relatively weak groups socially (*Xinhua* 25 August 2003).

Girls face particular hardships in gaining an education. Wu Qidi, China's vice-minister of education, confirmed that many female children are deprived of education, especially in rural and poor areas.

The most poignant stories on education come from the Tibetans themselves. One detailed case study, quoted by Dr. Robert Barnett, describes the experience of Nyima Drolma, a young woman with no training who was sent to teach in a primary school in the southern Tibetan village of Lhoka. When she and another woman teacher arrived in 1995, they found that only four out of the 100 children in the village were willing to attend school:

> We were told that in the past there had been a teacher. But when we reached there, there was no teacher. The classroom was very dusty and it was falling into ruins. While I was there, for one and half years, no one came from the county education bureau. When we first reached the school we were told that some inspector was going to come. But no one came. Actually it doesn't at all look like a school, it is just some kind of dilapidated building, a building in ruins, and the village was on one side of the river and the school on the other side, so it was in a way very isolated. I heard that the school had been constructed in 1992. It was not very well built so sometimes when we had a little bit more rain the walls would collapse. We complained many times because most people cannot get there and are scared to stay there at night. But we two had to stay there; we had nowhere else to go. And there was no electricity. The education bureau said they were going to send a lantern, a kerosene lamp. But no kerosene lamp came and no inspectors came. If you walk to the county offices it takes about eight hours, and we walked once every month, because our salary was paid on a monthly basis. Sometimes they would ask us: 'Do you have any problems?' Now, we can't tell them our personal problems, because they can't help us. But we told them about one problem in the school, that is that the parents are not sending their children to the school. Then they would say 'okay we will come and ask the parents to send their children.' But of course nobody came (Barnett 2005: 320).

Barnett describes Nyima Drolma's disheartening experience as "an indication of systemic collapse in the educational system" (Barnett 2005: 321). Other voices of Tibetans on the ground confirm the bleak picture of rural education in Tibet:

> The students from the villages of Yomto, Khagsar, Yoesha, Shingti, and Lingsha had to attend my school for grades four to six, since their village schools stopped at grade three. To reach our school, many had to walk over the mountains for a day (TCHRD Annual Report 2005).

> Our school, being a boarding school, charges 365 yuan [US $46] per semester. Each student is required to bring in 200 *gyama* (100 kgs) of grain to school. Despite that the food in the school is very terrible. The rice porridge in the mornings is filled with rat excreta and the other meals in the day are no better (TCHRD June 2005).

> The school provides hostel facilities for those whose homes are far away, but the children have to pay 45 yuan each term. Moreover, the meals and edibles have to be brought from their own homes. In winter, the students have to supply firewood from their homes to feed the wood stoves that generate the only heat to keep the classroom temperature bearable (TCHRD Annual Report 2005).

Tibetan primary school children take a break in the sunshine to warm up after a morning spent in a cold classroom.

Dolma, a college graduate from a family of farmers, describes the difficulties she and her parents experienced:

> During my three years of college, my family had to pay more than 6,500 yuan [US $810] a year, in tuition, textbooks, boarding and other expenses. This was a big expense as my whole family only earns about 7,800 yuan [US $975] a year. After my first year of college the job assignment system was brought to an end. Now I'm unemployed. I don't have any relatives working for the government, so I don't know how I'll manage to find a job. It's very difficult these days (Kolas 2003).

Tibet has needlessly lost at least two generations to illiteracy. Fortunately, there are some signs of hope.

These eyewitness accounts depict the real situation in Tibetan schools. Due to these severe conditions, many students do not manage to complete their education, even if there are schools available.

SIGNS OF HOPE: THE FUTURE OF EDUCATION IN TIBET

Tibet has needlessly lost at least two generations to illiteracy. Fortunately, however, there is some cause for hope. Firstly, there is the situation in Mongolia – a country similar to Tibet in many ways – which has demonstrated that educating a dispersed, nomadic population is clearly possible. A World Bank study praises how well Mongolia has adapted modern education to the needs of its nomads:

> Mongolia was chosen because of its unique success in providing education to its largely nomadic population, moving from nearly zero to almost 100 per cent enrolment between 1950 and 1990. At the very root of Mongolia's success with education provision to nomads one finds a non-antagonistic culture towards nomadism, both at the national level and within the school system, with a deep respect for herders. Mongolians had to fight to maintain this attitude. Their Russian advisers clearly thought nomadism was backward and primitive and where state power was strong enough – as in the Soviet Union, especially Siberia and Kazakhstan – they ruthlessly eliminated it. Today, the impression received when talking to teachers and headmasters / headmistresses in rural areas is that nomadism is seen as a perfectly normal way of life. Just as one can be a teacher or a driver, one can be a herder, and consequently a nomad. Even more interesting is the continuum between nomadism and sedentary life, a continuum within which a nomad can choose to study and go to university just as a teacher can decide that for the time being it is more convenient to be a herder and become a nomad. Asked whether they had ever heard of children who, born and educated in town, decided to move to the countryside and become nomads, none of the interviewed teachers and parents showed surprise or amusement. On the contrary, they seemed to find the question perfectly legitimate and usually said that such cases were quite common. It is undeniable that virtually all nomads above the age of 25 in Mongolia today have had between 4 and 10 years of schooling (Saverio 2001).

Another cause for hope is that Tibetan teaching materials are now available. The liberal period of the 1980s, when official policy promoted the Tibetan language, resulted in the creation of a full set of textbooks in Tibetan. They cover a wide range of subjects, including biology, chemistry and physics, up to grade 12.

The third reason is that, as explained above, there is a proven strategy for effective bilingual education. Even some Chinese education experts acknowledge that educating first in the mother tongue, and subsequently in the national language, is effective. A 2005 UNESCO survey, "First Language First: Community-Based Literacy Programs for Minority Language Contexts in Asia", stated:

> A wealth of research on bilingual education has been conducted in China. These studies provide support and justification for the use of the mother tongue as the medium of instruction in order to achieve bilingualism in

a minority language and Mandarin. On the basis of their research, Chinese scholars suggest that a major reason for minority children's poor educational performance is that learners' mother tongues have not been used in schools (Kosonen 2005).

Fourth, there are signs that China is starting to pay more attention to rural education. In September 2003, the State Council held a "National Conference on Education in Rural Areas" – the first conference to focus on education in rural areas since the founding of the People's Republic of China in 1949. During the conference, rural education was identified as the "priority among priorities". Three grand objectives were announced: a "strategic breakthrough" in the West, further consolidation and improvement of basic education and rural education, and deeper comprehensive educational reforms in rural areas (Ministry of Education PRC 23 December 2004).

The 2003 "State Council Resolutions on Further Strengthening Rural Education" state:

> The governments of western provinces and autonomous areas have to formulate work plans, establish specific funding items, and conscientiously organise the implementation of one supervisory exercise per year to ensure that these goals [of realising universal compulsory education for nine years, and doing away with youth illiteracy] are achieved. In order to strengthen construction of school buildings and dormitories of primary and secondary schools and junior secondary schools, we must expand junior secondary school enrolments, raise the quality of teachers, promote modern distance education, and help students from families with economic difficulties. The central authorities will increase funds and support for poor areas so that they can develop education.
>
> We must comprehensively promote quality education that is closely linked with rural practice. We must vigorously improve the curriculum and pedagogical reform in rural primary and secondary schools. The content and compilation of textbooks and the educational activities in these schools must be closely linked to actual rural conditions, stressing characteristics of the countryside (Chinese Education and Society 2005: 46–60).

These resolutions can be seen as part of China's commitment to fulfilling its pledge to meet the UN's Millennium Development Goals. This is a pledge that China is proudly confident it can keep.

However, the government is still coming up short on funding. The extra funds required to make this new blueprint a reality were not made immediately available. The 11th Five-Year Plan (for 2006–2010) directs money toward rural education as a part of a broader strategy that seeks to prepare rural people across China to migrate to cities and do factory work. The central government has also decided to allocate a special fund of 10 million yuan (US $1.25 mn) each year to improve education for minorities, according to the Ministry of Finance. This special fund will be used to improve the conditions for primary and middle school students in minority areas (*Tibetan Review* March 2006: 7). These are good steps that may well be taken, but the number of people that need assistance is overwhelming. There are over 800 million rural Chinese whose education levels lag behind those of urban residents, and 110 million minorities whose situation is even worse. Tibetans are just a small part of an immense problem. The allocation of 10 million yuan to improve minority education will provide, on average, 0.09 yuan (US $0.01) per person. This is a derisable amount and central government must do better.

There are over 800 million rural Chinese whose education levels lag behind those of urban residents, and 110 million minorities whose situation is even worse. Tibetans are just a small part of an immense problem.

Finally, despite politically sensitive issues, Tibet has attracted the attention of many foreign aid offices and NGOs. These organisations are helping to improve the healthcare and education provisions in rural Tibet. The question remains, however, of how much freedom they have.

CONCLUSION

For every Tibetan who succeeds in a Chinese world, there are many more who drop out along the way, with little hope for the future. The failure to properly educate Tibetans perpetuates their poverty and deprivation, especially in rural communities. Poor education deprives Tibet of the "soft infrastructure" – human capital – of modernity, which it urgently needs if it is ever going to contribute to China's success. Despite recognising education as a long-term priority, China's achievements in Tibet over the last 50 years are still meagre. This is a systemic state failure that has resulted in a repetitive cycle of poverty, exclusion, lack of choice and often misery in rural Tibetan families.

Tibet's low educational levels are drastically below the national standard, as China has generally made considerable advances in the field of education. Currently, 48 to 59 per cent of Tibetans are illiterate, as compared to less than 20 per cent in the other 30 provinces of China. Female illiteracy is an even greater problem in Tibet. Every year, no more than 20 per cent of Tibetan students enter institutes of higher education. Tibet's remoteness, lack of qualified teachers and the irrelevance of the school curriculum to real life are all factors behind this dismal situation. Above all, laying the responsibility to fund schools at the local level is a debilitating handicap for education in rural areas, where over 80 per cent of Tibetans live.

China has controlled Tibet for over 50 years and, during that time, its changes in education policy have wreaked havoc. In the first decade, the Chinese authorities collaborated with the traditional Tibetan monastic education system. Then, for the ensuing 20 years, Buddhism and its schooling system were violently persecuted. After 1980, new policies encouraged the return of the Tibetan language to schools, and the employment of Tibetan cadres and officials. This era of reform and liberalisation, under Party Secretary Hu Yaobang, was a high point for Tibetan education. But Hu Yaobang's command was never fully implemented and, within a few years, Tibet faced repression once again.

In this cycle of extremes, the one constant since 1959 has been China's hostility toward the monastic education. China first began the systematic destruction of the monasteries and their education system in 1959; at present, under the hardline "TAR" Party Secretary Zhang Qingli, this hostility is still intense.

The education of ethnic minorities in China has always been a crucial and sensitive issue. The central government gives high priority to "patriotic education" in the curriculum, and uses education to serve its ideological goals of safeguarding territorial integrity and national unity. Therefore, China's main objective when educating Tibetan children is to create a loyalty to the motherland. In practice, the primary function of education has become the assimilation of Tibetans.

The 2001 law enshrining standard Chinese language as the medium for all schooling, even in the early primary years, effectively relegated Tibetan to a language used only in private, with no public role. It is becoming a relic of no practical use. The essential right of the Tibetan people to hold on to and pass on their cultural heritage, through use of their native tongue, is being abused. Without a proper bilingual education that allows Tibetans to become literate in their native language, and to subsequently learn Mandarin in order to participate in economic and public life, China is relegating Tibetans to second-class citizenship and condemning them to lives of poverty.

As a result of this inappropriate education policy, many Tibetan parents complain that schooling neither enables their children to progress nor return to rural life. They learn bad attitudes, remain illiterate in both Chinese and Tibetan languages, and are unable to gain entry to the limited number of far-away junior and senior middle schools. They are stuck, dissatisfied and unemployed. This is a waste of human potential. To Chinese eyes, this perpetuates the belief that Tibetans are innately backward.

The responsibility to pay for local schools has been downshifted to the local communities. Numerous studies have confirmed that this has resulted in huge inequalities and a virtual breakdown of the entire rural education system. Poor areas are unable to finance local schools, or come up with the matching funds necessary for central government assistance, and parents are certainly unable to foot the bill themselves. This perpetuates the cycle of poverty in rural areas. Urban-based educational resources are too far away for most rural communities to take advantage of, and the lack of job opportunities makes it hard for rural students to see any financial benefit in attending school anyway (Stan and Aimee 1997).

The NGOs who have built schools in Tibet enjoy many success stories that include motivating students to enjoy school, improving literacy and retention rates, and producing graduate students that are capable of contributing to modern society. These heartening outcomes clearly demonstrate that low literacy is not due to an innate inability of Tibetans to learn, or an incompatibility between modern education and traditional Tibetan livelihoods. Instead, it is simply a matter of developing and funding an educational system that serves the specific needs of Tibetans.

Fortunately, there are some signs of hope, and this chapter has shown a clear path for moving forward on educational priorities and methods. China is starting to pay more attention to the dismal state of rural education, although adequate resources are still lacking. China must prioritise the appropriate education of Tibetans, both rural and urban, if it hopes to succeed in its quest to improve the lives of Tibetans and to make them productive members of a modern society.

CHAPTER THREE

UNEMPLOYMENT AND SOCIAL EXCLUSION

This chapter presents the current employment situation in Tibet. It begins with a brief description of the labour market in traditional Tibet (including the Kham and Amdo regions that are now incorporated into the Qinghai, Gansu, Sichuan and Yunnan provinces of China). It shows how the Chinese government is promoting mass migration of Chinese entrepreneurs, cadres and labourers into Tibet. It analyses some of the impacts of Tibet's dramatic population increase – from no more than six million before 1959 to over 10 million today. It illustrates the government's preferential treatment of Chinese and discrimination against Tibetans, which has marginalised the predominantly rural Tibetan population and resulted in high levels of unemployment and underemployment among Tibetans. The chapter concludes with some recommendations about how a revised policy that provides more opportunities to the local people could help sustain the current rate of economic growth.

OVERVIEW

Employment is one of the primary factors that will determine the economic development and well-being of Tibetans. One of the overriding concerns of Tibetans in Tibet is the lack of employment opportunities. The absence of employment and income-earning potential – particularly in rural areas – is acute. The lack of jobs is pushing Tibetans to the margins of economic activity. The Tibetan people have suffered a lot in recent years because of the Chinese government's intensification of its population transfer policy – facilitating more and more Chinese to work and settle in Tibet. There is no sign of this policy being stopped, slowed or reversed. The rapid increase in the Chinese population in Tibet is exacerbating the already difficult employment situation for Tibetans.

Over 80 per cent of Tibetans live in rural areas. A recent Chinese White Paper claims that the Chinese government is taking effective measures to help the rural poor to shake off poverty, safeguard and develop farmers' material interests, and protect rural dwellers' rights and interests. However, the Tibetan people remain the poorest in the whole of China, despite 50 years of productivist development.

In 1981, People's Republic of China (PRC) acceded to the United Nations International Convention on the Elimination of All Forms of Racial Discrimination (CERD) that guarantees rights without racial discrimination. Also, according to the article 4 of the Constitution of the People's Republic of China, as well as its regional autonomy law, minority or ethnic autonomous regions have been created expressly to preserve minority culture and to benefit minorities. But development policies and strategies in the Tibetan regions continue to exclude the majority of the Tibetan population. The conditions for local people are further aggravated by their lack of skills and the government's preferential treatment of non-Tibetan migrants, who are generally more skilled. This discrimination has created an underclass; Tibetans are being marginalised in their own homeland.

TRADITIONAL RURAL LIVELIHOOD AND THE WORKFORCE

Agriculture and animal husbandry formed the backbone of Tibet's traditional economy. Croplands in Tibet cover less than two per cent of the total land area, but supply the grain requirements of the entire populace. The principal croplands are found along the broad valleys of many major rivers: in the Drichu (Yangtze), Zachu (Mekong) and Gyalmo Ngulchu (Salween) valleys of Kham, the Yarlung Tsangpo (Brahmaputra) valley in U-Tsang (Central Tibet) and the Machu (Yellow River) valley in Amdo (Ch: Qinghai). Kham now incorporated into the Chinese province of Sichuan and Yunnan is the most fertile region, with 85 per cent of the country's arable land.

The traditional agricultural system is based on organic farming. The principal crop is highland barley used for making *tsampa* (roasted barley flour), the staple Tibetan food. Other crops include rice, maize, mustard, millet, sorghum, buckwheat and rapeseed. The main vegetables are cabbage, lettuce, radish, turnip, peas, carrot, potato, spinach, kidney beans and tomatoes. These days, new vegetable crops requiring intensive care in greenhouses have also been introduced. Normally, the farmer (Tib: *shingpa*) and his family handle most of the work in the fields. During sowing and harvesting time, however, outsiders are hired and paid either with goods or exchange labour. The harvest surplus is traded with the nomads (Tib: *drogpa*) for animal products.

Tibet's pastoral nomadic lifestyle is one of the last examples of sustainable pastoralism, once common in many parts of the world. The nomads are scattered throughout the unfenced expanse of grasslands that covers 70 per cent of the total territory of Tibet. These grasslands are concentrated in the Jhangthang (Northern Plateau) region, regarded as one of the best grazing regions in Eurasia. The nomads migrate with their herds of yak, sheep and goats according to the seasons of the year. They produce wool, butter, cheese, yoghurt and meat, some of which are bartered with farmers for food grains. Until recently, Tibetan society was almost entirely self-sufficient in food grains. Both farmers and nomads stored their surplus food to use over a long period of time, a risk management practice guaranteeing the availability of food supplies in the event of a poor season or natural disaster. The cold and dry climate of Tibet is conducive to long-term food storage.

Tibet was materially underdeveloped until late in the 20th century. However, this never deterred any Tibetan from pursuing his or her own way of life. The unique social system in Tibet allowed people total freedom in choosing their way of life. As they were self-sufficient in food production, hunger and famine were never heard of in the whole history of independent Tibet. Dhondup Choedon, whose family belonged to the poorest social strata in Tibet, described her life before the Chinese occupation:

> I belong to what the Chinese now term as serfs of Tibet [...] There were six of us in the family [...] My home was a double-storey building in a walled compound. On the ground floor we used to keep our animals. We had four yaks, 27 sheep and goats, two donkeys and a land holding of four and a half *khel* (0.37 hectares) [...] We never had any difficulty earning our livelihood. There was not a single beggar in our area (Dhondup Choedon 1978: i–iii).

Yaks still provide the best method to plow the fields in Tibet.
Photo by Nathan Freitas

Independent Tibet was by no means perfect, but it was far more egalitarian than any other Asian countries of that period. China's official justification for its military invasion of Tibet is to have helped "liberate" Tibet from "feudal serfdom" and "slavery." China's propaganda paints a dark picture of traditional Tibetan society, but the Chinese allegation of a lack of human rights in traditional Tibet is based on distorted accounts. The "serfs" in Chinese terminology were Tibetan peasant farmers with legal identities, often with explicit documentation of their rights, as well as access to courts of law. The maltreatment and suppression of peasants by estate-holders was forbidden by law as well as by social convention throughout Tibetan history (DIIR 2001: 127–128).

Since Tibetans are largely rural, as mentioned above, most of the labour force is engaged in agriculture and animal husbandry. In traditional Tibet, Tibetans worked as either tenant farmers or hired agricultural labourers. Labourers received payment in kind, such as food and clothing, for their services. In principle, the land belonged to the estate holder, but once allotted to an agricultural labourer, land could not be taken back as long as the labourer paid for it with his services. It was further irrefutable if the labourer built his own house (Stein 1972: 128). There was a marked seasonal dynamic to employment – the short summers saw a chronic labour shortage as the traditional farming and pastoral economies were extremely busy, while there was much underemployment in the winter.

In a Tibetan peasant family, each day begins with making offerings to the gods and a prayer for the day to pass happily. In summer, the men's workday begins with a check to see if everything in the field, such as the banks and the irrigation canals, are in proper order. Both men and women share the fieldwork. Women carry baskets on their backs filled with dung, which was accumulated in the stalls during the winter, to spread as manure on the fields. They also carry out the weeding. Men and women work side by side to reap the harvest and stack the crops in the middle of the field. When the harvest is in, straw is put aside for feeding the animals in winter. Women also take part in winnowing (sorting the grain from the chaff), using a wicker basket in the presence of wind. The grain is spread out on the roof until dry, and then stored in sacks (Tucci 1973: 129–133).

In a nomad family, men take the herds of livestock high up on the mountains to graze. Women stay behind at the base camp, churning the milk to make butter and cheese – making the summer surplus more durable.

The off-farm work includes spinning and weaving wool. In rich families, such work is usually carried out by servants. In poor families, the women wash and comb the wool for the men to spin. Men might spin the wool when they take their livestock for grazing, while they are on the road in a caravan, or when they are at home in winter. The women then weave it on simple looms. To perform special tasks such as tailoring, specialists go from house to house delivering their services on request (Tucci 1973: 129–133).

The long winter, when nomads and farmers are not so busy, is a time for undertaking pilgrimages and long trading journeys. Generally, travelling is very much part of the Tibetan way of life. Be they craftsmen, businessmen, physicians, astrologers, or anything else, all Tibetans like to travel. Even the monks have always spent a major part of their life travelling in a quest for initiations and knowledge (Stein 1972: 122).

Trade was not the privilege of one class. As has often been observed, Tibetans are natural-born entrepreneurs. They have long traded with merchants of China, India, Nepal and Mongolia. The normal form of trade was through the barter system. The scale of trading was not large, but it was a critical component of the economy.

Tibetan traders travelled far and wide, transferring goods between Tibet and its neighbouring countries. Trades included varied imports and exports, not just agricultural and animal products (Tucci 1973: 123). Wool was exported to India or sometimes to New York via China (Rasmussen 1936: 60–68), rock salt to Nepal, and pharmaceutical products to China. Some countries even bought white yak tails to make Santa Claus beards. Tibet imported medicines and precious stones from India, silk and ponies from Mongolia, and tea from China. Broad-brimmed fedora hats were imported from faraway places like Japan and America.

Now, the traditional Tibetan economy and Tibetans' traditional livelihoods are in danger of complete extinction. The following sections of this chapter explain how and why this outcome is being deliberately pursued by the Chinese government.

EMPLOYMENT: THE LARGER CHINESE STRATEGY

The decades of neglect and poverty in rural Tibet, documented throughout this report, cannot be explained without an understanding of the broader historical context of China's assimilation strategy in its frontier zones. The assimilation of distant frontiers has a long history in China and a well-established logic. The strategy involves sending two groups of colonisers: military garrisons and poor farmers. The state finances the establishment of military outposts, whose demand for food guarantees a market for the poor settlers who follow. The settler-farmers plough and irrigate, establishing new villages on what usually had been open rangeland for grazing. The military can guarantee the security of the settlers, even if the original inhabitants resent or resist the intrusion. Gradually the new, irrigated farming villages become self-sustaining, employing more and more new arrivals in a labour-intensive agricultural economy that feeds itself and the military. Eventually the farms generate enough surplus to be traded back to China. In this way, employment is generated, settlers put down roots in new soil and territories become newly Chinese. Historians have given detailed descriptions of this strategy as it was developed over the centuries. In the 20th century, this was done in Inner Mongolia and then in Xinjiang.

Tibet's pastoral nomadic life is one of the last examples of sustainable pastoralism, once common in many parts of the world.

This strategy was not possible in Tibet, as farming is possible only in a few sheltered valleys that Tibetans were already intensively cultivating. Apart from the lower altitude "yellow earth" around Siling (Ch: Xining), there was no land suited to Chinese agriculture. Nonetheless, for political reasons, the central authorities set assimilating Tibet as a top priority, and proceeded with its standard strategy: sending settlers and stationing large numbers of troops in all significant Tibetan towns. The troops are still there today. These military outposts took the best land for pasturing their own animals, in an effort to be self-sufficient. They continue to this day to provide the troops with food.

Because of the marginal agricultural land available, the immigrant settlers still faced the challenge of finding employment. Finding employment has been the top priority of central authorities for many decades. A base of securely employed Chinese is needed to ensure the loyalty of a distant and restless border province. Since self-employment was not readily available, this meant

employment in the formal sector – on the payroll of the state, in state-owned enterprises and departments of the government. This was the only way forward until an alternative industry could be developed to generate an economic take-off. Over time, China also began pouring huge sums of capital into infrastructure development in Tibet, providing a ready supply of state-financed construction jobs.

In Tibet today, two different economies exist: one formal and highly visible, concentrated in the towns; and the other informal and invisible, located in the countryside. These economies existed side by side, with almost no linkages. This extraordinary situation has persisted for decades. In many ways, even today the formal sector remains largely urban and immigrant, while the informal sector remains almost entirely Tibetan and rural.

China's top priority is still to find an employment engine capable of drawing large numbers of immigrant Chinese to Tibet. This, of course, has focused on creating work in urban areas. This goes a long way toward explaining the systemic discrimination documented in this report.

The assimilation of distant frontiers has a long history in China and a well-established logic. The strategy involves sending two groups of colonisers: military garrisons and poor farmers.

Although China claims its policies will uplift Tibetans, there are very few reports and little data available on the employment situation of Tibetans in Tibet. This is remarkable when one considers that governments all over the world routinely report on employment, as it is a basic and easily-understandable measure of economic health. But the Chinese government's attitude toward Tibetan employment has been one of unconcern, at best. An incident from the mid 1980s typifies the government's behaviour. In this large scale, but otherwise unremarkable instance, 30,000 Tibetans employed in 16 labour units of the Lhasa municipality lost their jobs to Chinese workers. The Tibetans were told to go to the villages to look for work (van Walt van Praag 1986; TYC 1994: 32). Sending Tibetans back to their villages demonstrates an assumption that the village household economy can always absorb Tibetans. Leaders need not concern themselves with creating employment opportunities for Tibetans, because after all, Tibetans can always make a living on the land. In fact, the state does not consider rural Tibetans as employees at all. It doesn't categorise them, count them or seek to improve their job market skills. They are seldom included in official economic statistics. There was a brief period when the official policy was that Tibetans should be trained and encouraged to take more charge in the early 1980s. But that ended the when Chinese workers spontaneously started flooding in. Prior to the 1980s, the influx of Chinese in Tibet was directed by the state.

ECONOMIC AND SOCIAL REFORMS IN CHINA AND TIBET: A BRIEF HISTORY

Since the People's Republic of China was created, China and Tibet have gone through numerous periods of convulsive reform. The most infamous period was during Mao's "Great Leap Forward" that began in 1958. Between the 1950s and the early 1980s, both rangelands and livestock were collectivised into "production brigades" and "production teams". Production fell dramatically, resulting in nationwide famine. These decades were a period of great poverty, even mass starvation, yet no unemployment. Unemployment was officially inconceivable during this time, because everyone was required to work and was issued rations according to their contribution to the production quotas. Party cadres held the power of life and death over people through total control of rations.

During this revolutionary period, most of the produce was forcibly collected as taxes, such as patriotic grain tax, compulsory livestock sales tax, military tax and so on. The rest of the harvest was purchased at a nominal price by the government, although the government rarely actually paid up. Any surplus of these products was appropriated by the state, often for export to distant provinces. This period also brought about widespread destruction of Tibet's fragile grassland. This is explained in detail in chapter one (Nomads and Grasslands).

During the period of "Democratic Reform" in the late 1950s and early 1960s, high income traders were considered enemies, middle-class traders were deemed worthy of "co-operation" (although this was a severe euphemism, as the following example shows), and lower-class traders received full support. Similar policies were applied in other occupational divisions. Kunsang Paljor, an eyewitness to this period, writes:

> In 1961, a committee was formed to draw up regulations to control trading activities. Following this, the property of the big traders was confiscated [...] Later, some of them were forced to labour with the manorial lords; others were imprisoned or have simply disappeared [...] The middle traders who were thus far being actively wooed were now levied impossibly high taxes, which crippled them

> financially. They even had to sell their personal properties to meet the tax demands. Those who were unable to pay the taxes were either imprisoned or met with an unknown fate, or else were put under house arrest and subjected to class struggle sessions [Tib: *thamzing*]. So in 1963 the trading community was reduced to the low traders and even they were very few in number [...] Before 1959, the villages used to trade with each other, but this practice has been brought to an end with the introduction of trade controls. Even cow dung is not allowed to be marketed without permission (Kunsang Paljor 1977: 9–10).

The economic reform of 1978 saw the beginning of China's transformation from a centrally-planned socialist economy into a market-oriented economy. The transition brought about an inevitable restructuring of industry, which saw the guaranteed tenure employment system, known as the "iron rice bowl" (Ch: *tie fan wan*), slowly replaced by a contractual employment system. But of all the sectors that are being transformed in the Chinese economy, agriculture is changing the most. Its economic contribution is declining in relative terms, as is its role as a source of jobs. Farmers are increasingly being freed from state control and permitted to respond to consumer demand, which is changing the structure of agricultural output (World Bank 2001: 9).

The introduction of a productivist economy changed Tibet fundamentally, from facing south to facing east, from a use-value economy based on barter to an exchange-value economy based on monetised commodities. A self-sufficient, local economy supplemented by seasonal trade via caravan became a massive, collectivised meat manufacturing system intended to supply distant cities with rangeland products. This was imposed from above by a developmentalist state with a productivist agenda.

In the early 1980s, the introduction of the "household responsibility system" provided people with a small sense of ownership and the opportunity to revive some of their traditional herding and farming practices. Livestock was redistributed to households, prompting nomads to revive some features of their traditional practices. However, the planning and development of agriculture continued to remain centralised, and still required intense land use to produce grain surpluses for the benefit of the state. Government quotas were imposed to increase agricultural and animal production. Along with that, a new policy of permanent settlement and the fencing in of grazing areas was imposed upon Tibetan nomads, leading to a loss of mobility and more intensive use of limited grazing areas. Additionally, people had to pay for expensive fencing materials, and the defined boundaries created a new source of communal conflicts. The traditional Tibetan way of life, once in harmony with its surroundings, was being undermined.

Although the state-owned sector had been undergoing reform since 1978, it was only in 1993 that the Third Plenary Session of the Fourteenth Party Central Committee endorsed the creation of a modern enterprise system with diversification of ownership (TIN 1998: 95). This reform led to the gradual privatisation of state-owned enterprises, by selling off unprofitable or smaller firms while consolidating profitable and competitive ones. The intention was to cultivate a leaner set of state-owned enterprises that were capable of competing in a gradually liberalised, domestic economy and, eventually, in the international economy (Fischer 2004).

The introduction of a productivist economy changed Tibet fundamentally from a use-value economy based on barter to an exchange-value economy based on monetised commodities.

This restructuring of enterprises has led to large-scale displacement in the labour force throughout China. The former responsibility of public enterprises to provide lifetime tenure to their employees suddenly vanished. Even in Tibet, parents had encouraged children to become officials, secure in the "iron rice bowl". Since the widespread privatisation of most enterprises and the dismantling of the revolutionary welfare programme, even the state no longer accepts responsibility for finding new jobs for those who lose them. As more decision-making powers are being granted to enterprises, profit and productivity have become the priorities. The introduction of labour-saving technology has exacerbated the situation for workers. Industry is becoming progressively more capital-intensive and labour-extensive. This has been aided in part by foreign imports entering the machinery market (Solinger 2004). Since the early 1990s, job losses followed the closure of factories that failed for numerous reasons – a lack of state-of-the-art technology and equipment, poor management or embezzlement, hefty social welfare bills, or competition from more modern or less costly non-state plants both in China and abroad – have resulted in the impoverishment of approximately an eighth of the officially registered residents of many major cities (Solinger 2005).

In the rural areas, the reforms led to significant changes through the re-orientation of development policies and the relaxation of regulations that govern internal migration.

The most important changes that swept through rural China include the implementation of the "household responsibility system" and the drive for economic diversification, including the encouragement of rural enterprises (often called township and village enterprises, or TVEs).

The success of these rural enterprises in China stimulated significant shifts of labour from agricultural to non-agricultural occupations. In Tibet, the TVEs did little to create rural employment or stimulate use of rural products because access to markets was not available, and loan capital was restricted to enterprises set up by party leaders. There is also recognition that the capacity of these rural enterprises to provide employment is limited (Chung-Tong Wu & Xu Xueqiang 1990: 130-131). This greatly contributed to the surplus rural labour. The United Nations Development Programme estimates that there are more than 150 million surplus workers in China's rural areas (UNDP 2005). These surplus workers, as well as the large numbers of urban unemployed, have had a major impact on Tibet.

CURRENT CONDITIONS IN CHINA: HOW DO THEY IMPACT TIBET?

In China, despite the economic boom, there has been a sharp rise in unemployment. This exposes the paradox of modern China. According to an International Labour Organisation report, China's economy grew by a stunning 50 per cent between 2000 and 2004, yet there was only a five per cent rise in the number of jobs. Compared to its rate of GDP growth, the number of jobs being created in China has slowed down tremendously (ILO 2006). Evidence from around the world shows that a focus on employment helps economic growth and reduces poverty, whereas economic growth alone cannot be counted on to generate employment and help alleviate poverty. There can be dramatic economic growth without the creation of enough jobs, as is the case in Tibet today.

Among the unemployed, laid-off workers become a kind of privileged minority because their existence is at least recognised, and some effort is made to consider their plight.

China is in the midst of the most rapid urbanisation programme the world has ever known. A State Council survey estimates that 200 million rural labourers are on the move (*Xinhua* 2006). Central leaders acknowledge that it is extremely difficult to create sufficient jobs for the hundreds of millions now being forced from or pulled off the land. In 2007, central leaders also conceded that little is being done to make it possible for farmers and nomads to stay in rural areas. According to the Ministry of Finance:

> Funding needs to be further increased to address problems related to the national economy and the people's well-being. For example, the employment situation is still grave, the system of providing basic cost of living allowances for rural residents is still not fully operational, and in some areas it is still difficult and expensive for students to attend school, and residents still face the problem of inadequate and unaffordable medical services (Ministry of Finance 2007).

The 2005 official urban unemployment rate in China was as low as 4.2 per cent (*China Knowledge* 20 July 2005), but this figure is misleading due to serious omissions. It is widely recognised that Chinese statistics are often murky, incomplete, and unreliable (Solinger 2004; Lee & Warner 2004: 174-175). In the case of unemployment, according to the State Statistical Bureau, the term only refers to the urban registered unemployed who "(a) possess non-agricultural residence; (b) are within a certain age range (16 to 50 for males and 16 to 45 for females); (c) are able to and willing to work; and (d) have registered with the local labour bureau for employment" (Lee and Warner 2004: 176-177). Leading Chinese economist Hu Angang estimated China's actual unemployment in 1998 as 7.9 to 8.3 per cent (Asian Affairs 2000), while the official unemployment rate in that year was 3.1 per cent. Giles and his colleagues estimated the true unemployment rate in 2002 to be 14 per cent, by analysing data from an in-depth fieldwork survey conducted in five large Chinese cities and applying the international standard definition of unemployment (Giles et al. 2005). The official unemployment rate in that year was four per cent. In any given year, the actual Chinese unemployment rate is probably at least double the official figures (SEPI 14 Jan 2002), which can be seen from the Table below. The State Council's own Development Research Centre has warned of a rise in the urban unemployment rate to 15 per cent from the present 10 percent, contradicting the official figure of 4.5 per cent (Lee and Warner 2005: 102).

Solinger reports that the recent figures for laid-off and unemployed people in China are as high as 60 million, and that the migrant population – those who have left rural homes in search of work since the 1980s – is loosely estimated to be anywhere from 100 to 200 million (Solinger 2004). If only a small fraction of this huge "floating population" (as China calls it) heads to Tibet seeking work, Tibet will be overwhelmed. In

China, a city of one million people is regarded as minor, yet Lhasa in Tibet – currently more than ten times its pre-1950 size – still has only 300,000 people.

Within the unemployed community, the laid-off workers become a kind of privileged minority because their existence is at least recognised, and some effort is made to consider their plight. In May 1998, a national conference on the protection of laid-off state workers (Ch: *xiagang*) called on all the enterprises with laid-off workers to set up Re-employment Service Centres. The Central Committee of the CCP and the State Council in the following month jointly issued the "Circular on fully implementing the work of ensuring a minimum standard of living and re-employment of laid-off state workers" (Lee and Warner 2004: 181). This policy was meant to be transitional and the Chinese government hoped to end the *xiagang* problem by the end of 2003. The idea was to provide a caretaker role by issuing basic livelihood allowances, medical insurance and pensions for workers as they attempted to find new employment or preferential business terms to help them set up their own ventures. While the government has spent much money on this programme, it has had limited impact. "In fact, the central government allocated an impressive total of 78 billion yuan (US $9.6 bn) in 2004 for laid-off workers and the poor, while localities also increased their outlays. But the sad truth is that probably only about a quarter of those pushed out of their plants ever got any meaningful support" (*Asian Labour News* 12 Feb 2005).

On a provincial level, unemployment in Sichuan – especially the unaccounted rural unemployment and underemployment – is severe. This has a strong impact on Tibet. Sichuan, an inland province that borders the "Tibet Autonomous Region" ("TAR") has lagged behind other big provinces in terms of economic growth and remains well below average in per capita income. The Sichuan Basin is small and extremely overcrowded, unable to sustain its tens of millions of peasant farmers. Around 25 per cent of all Tibetans actually live in Sichuan's mountainous western half, in the prefectures of Amdo Ngaba (Ch: Aba) and Kham Karze (Ch: Ganzi). It is all too easy for Sichuan's unemployed to drift to Tibetan areas where, with more education and *guanxi* (connections), they displace Tibetans in the labour market.

CHINESE MIGRATION INTO TIBET

In China, as in most countries, when the rural people become more prosperous and self-confident, they begin migrating to urban areas in order to start private enterprises (Ch: *getihu*). Migration is prompted by other factors too, including the desire to seek new and better opportunities. In Tibet, however, migration has been mainly driven by government policy. Because it was seen as an underpopulated, underdeveloped region with a wealth of natural resources, and above all because the central government wanted to integrate Tibet into China, Chinese people have been encouraged to move to Tibet for decades. The current so-called "spontaneous" migration of Chinese entrepreneurs and workers is being driven, above all, by the vast capital investment pouring in from Beijing. Beijing's investment in capital projects in Tibet is ten times bigger than the revenues of the "TAR" government. (This will be described in the following section). It is this boom that lures immigrants.

Although Chinese people have been encouraged to move to Tibet since its invasion (as will be described below) until the beginning of the 1980s, China enforced strict controls on internal migration. Following the Communists' rise to power, urban areas were expected to develop heavy industry, while rural people were required to produce sufficient quantities of grain to feed the urban population. The system of household registration (Ch: *hukou*), introduced in the early 1960s, deprived rural migrants of basic urban benefits such as urban employment, housing, medical care, education, pension and welfare, and effectively made them remain in the regions of their birth (Solinger 2004).

However, as economic reforms were implemented, regulations on internal migration were selectively relaxed. Two related trends of migration are now strongly evident. First, as in most countries, there is a general move from rural to urban, both temporary and permanent. Second,

Table 3.1 Rate of actual unemployment in China from 1995-2003 (in per cent)

Year	Registered unemployment rate	Actual unemployment rate
1995	2.9	4.8
1996	3.0	5.8
1997	3.1	9.0
1998	3.3	9.0
1999	3.1	8.7
2000	3.1	8.3
2001	3.6	8.4
2002	4.0	8.4
2003	4.3	7.8

Adapted from: Hu Angang and Sheng Xin 2005: 58.

there is a move from poorer to richer provinces (UNDP 2002: 40). Most migration in China is from poor rural to richer urban areas. Between 1980 and 1998, the number of Chinese living in cities grew from 19 to 30 per cent – a net movement of over 100 million people. A UN team has forecasted that China's urbanisation will reach 45 per cent by 2010, meaning that 200 million people will relocate into the already overburdened urban areas (UNDP 2002: 40). This migration is being driven by economic opportunity, and also by environmental degradation, such as reduced access to good land and clean water. As the UNDP notes, environmental degradation itself leads to poverty and unemployment.

Under China's open-door policy in late 1970s, introduced by President Deng Xiaoping, Chinese people were encouraged to come to Tibet to lend their skills to its development. They were lured with offers of salary supplements and special allowances for working in remote areas. The introduction of Chinese workers was carried out in the name of economic development, although clearly the motive was also to build a population loyal to the central authorities. Economic development was adopted as an essential component of the solution to the Tibetan issue at the Second Work Forum in 1984, reversing the decision of the First Tibet Work Forum of 1980, which had planned to reduce the number of Chinese in Tibet (Smith 2003: 209). Increasing production levels has remained the consistent aim of policy throughout the past 50 years.

China's 2000 census lists the total population of the Tibetan Plateau as 10 million people. Before the 1959 invasion, Tibet's population was not more than six million.

By 1990, official statements referred explicitly to the increasing migration of Chinese people into Tibet for the ostensible purpose of infrastructure development. For instance, on 5 September 1992, Chen Lianchang, executive vice-minister of the Ministry of Personnel, stated:

> All provinces, municipalities and other autonomous regions must unconditionally guarantee the supply of party and government cadres as well as specialised technicians needed by Tibet for its economic construction [...] In addition, various methods must be adopted, such as drawing up preferential policies, to attract scientists, technicians and students from the hinterland to work in Tibet (ICJ 1997: 108).

In 1994, Chen Kuiyuan, then party secretary in Tibet, openly proclaimed the benefits of stimulating economic development by having Chinese migrants take jobs from Tibetans. He declared:

> All localities should have an open mind, and welcome the opening of various restaurants and stores by people from the hinterland [...] They should not be afraid that people from the hinterland are taking their money or jobs away. Tibetan people learn the skills to earn money when a man from the hinterland makes money in Tibet (Barnett 2003).

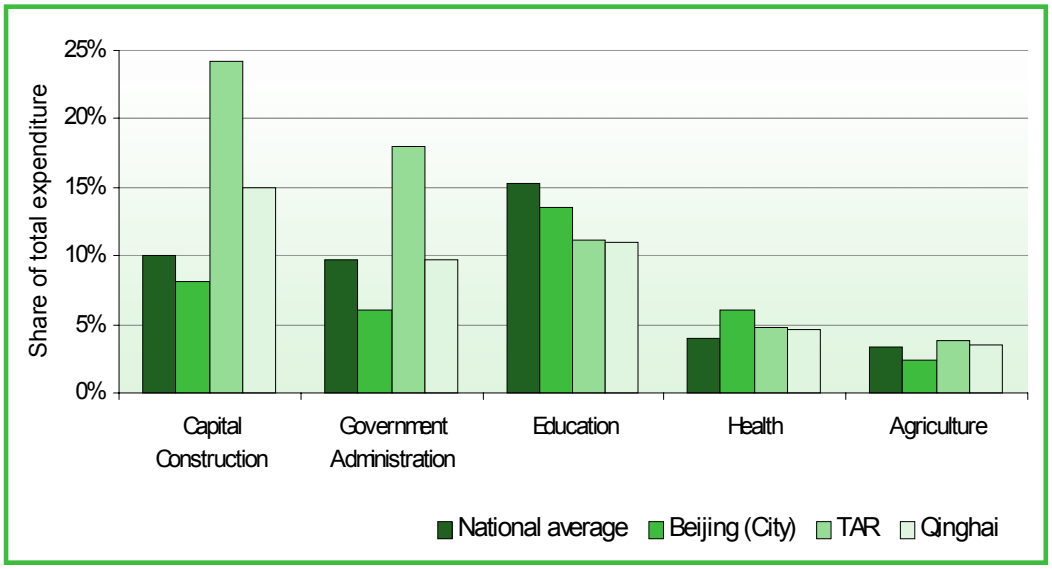
After 1990, infrastructure development became a major concern that led to even greater migration of Chinese people into Tibet, particularly since the announcement of the "Great Western Development" campaign. The favourable endowments of China's coastal provinces, and the challenging geographical conditions of China's Western Region, including Tibet, have impeded economic development for years, creating a wealth gap. This wealth gap between rich coastal provinces and the poor Western Region has caused concern among China's leadership: they fear social unrest that could lead to political instability. As a consequence, Chinese President Jiang Zemin announced a "Great Western Development" campaign (Ch: *xibu da kaifa)* in 1999 to speed up infrastructure development in the Western half of China.

All of China's policies have resulted in a rapid increase in the Chinese population in Tibet. China's 2000 census (which does not count floating population and the Chinese military) lists the total population of the Tibetan Plateau, including all areas officially designated as Tibetan Autonomous Counties, Prefectures, or Regions, as 10 million people. Before the 1959 invasion, Tibet's population was not more than six million. Not only is an extra four million human beings a huge burden to Tibet's fragile environment, but it almost certainly means there will not be enough jobs to go around. As the second half of this chapter describes, all available evidence suggests that it is the Tibetans who are missing out. They suffer from discrimination, a lack of training and education, and from the fact that most employment opportunities are now located in the cities.

In 1950, the entire urban population of Tibet, including Lhasa, Shigatse, Gyantse, Tsethang, Siling, and Chamdo, was probably no more than 100,000 altogether. This demonstrates Tibet's widely-dispersed agricultural society with extensive and mobile land use. Today, two of these cities, Lhasa and Siling (Ch: Xining), together have a population of well over one million, closer to 1.5 million

if military garrisons are included. This is an increase of perhaps fifteen fold, which is simply not sustainable. It is beyond the local carrying capacity. The rise in urban population has also led to the flourishing of cheap brothels and bars (Barnett 2003: 232). There is historical evidence in Inner Mongolia to remind us of how Chinese development policy can significantly affect the local population. Mongolians are today outnumbered in their own region by the Chinese population by more than four to one, according to the 2000 China Population Census.

Figure 3.1 Proportion of 2004 government expenditure in selected categories



Source: CSB 2005: CSY, table 8-15.

There is clearly a long-standing, strategic government policy to move Han Chinese into Tibet under the guise of providing talent to develop the region. However, economic and infrastructure development in Tibet – the ostensible reason for encouraging such massive migration – is geared towards promoting "pillar industries," especially tourism, rather than improving the lives of Tibetans. China's successive Five-Year Plans have allocated substantial capital for hard infrastructure, yet very little has been allocated to the "soft" infrastructure of education, vocational training, or expanding employment opportunities for Tibetans. This makes it clear that economic development in Tibet is driven mainly by the political objective of integrating Tibet into China and the economic objective of exploiting Tibet's rich natural resources, which the PRC claims are now state property.

China's successive Five-Year Plans have allocated substantial capital for hard infrastructure, yet very little has been allocated to the "soft" infrastructure of education, vocational training, or expanding employment opportunities for Tibetans.

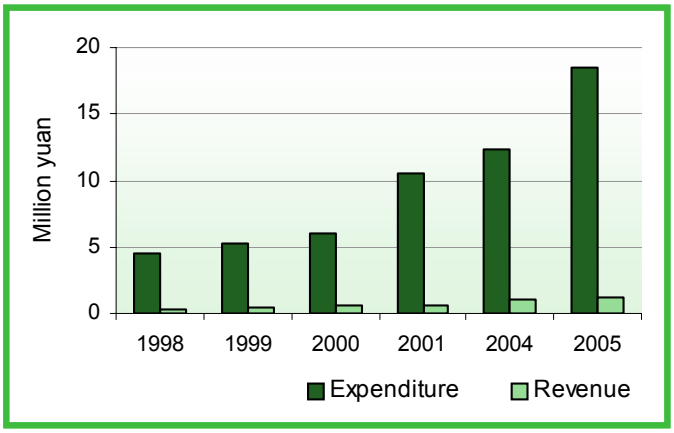
ECONOMIC GROWTH AND GOVERNMENT SUBSIDIES IN THE "TAR"

Economic growth in the "TAR," driven by central government subsidies, is luring Chinese migrants into Tibet. The "TAR" has enjoyed enormous economic growth during the past few decades. China's White Paper on Regional Ethnic Autonomy, released by the Information Office of the State Council of the PRC in May 2004, describes the progress in Tibet as growing by "leaps and bounds". The paper mentions that between 1965 and 2003, the Gross National Product (GNP) of Tibet increased from 327 million yuan (US $40 mn) to 18 billion yuan (US $2 bn), and that the per capita Gross Domestic Product (GDP) rose from 241 yuan (US $29.8) to 6,874 yuan (US $848.6).

Much of this rapid growth in the per capita GDP of the "TAR" began during the 9th Five-Year Plan (1996 – 2000). In 2000 and 2001, the total GDP growth rate in the "TAR" was apparently the highest of all the western provinces and among the highest in the country. The official Chinese government website reports 12 per cent GDP growth in the "TAR" for four consecutive years between 2001 and 2004. Amdo (Ch: Qinghai) also surpassed 10 per cent in both 2000 and 2001 (Fischer 2005:32).

Underpinning this rapid growth in the "TAR" is radical economic restructuring, stimulated by external interventions, such as central government subsidies and

Figure 3.2 Local government revenue vs. total expenditures of the "TAR" from 1998 to 2005.



Sources: Fischer 2005; CSB 2005: CSY, table 3-11, 8-14, 8-15; TSB 2006: TSY, table 6-1.

other direct investments (Fischer 2005). The growth has been concentrated in urban services, particularly administrative expansion and large-scale construction projects such as the just-completed US $4.2 billion Gormo-Lhasa railway. Figure 3.1 shows that government expenditure on construction and administration is much higher in the "TAR" than in Beijing or nationally. These expenditures are also relatively high in Amdo (Ch: Qinghai). Both administrative expansion and large-scale construction require skilled labour – where Tibetans often fail to compete because of poor education and training, as will be described in following sections.

The vast bulk of these expenditures have come from the central government. China's White Paper of May 2004 stated that, of the total governmental financial expenditure of around 88 billion yuan (US $10.8 bn) in the "TAR" over the past nearly four decades, 94.9 per cent came from central government subsidies. Figure 3.2 compares local government revenue against its total expenditures in the "TAR", and shows how the net government subsidy has grown dramatically in recent years. The degree of subsidisation and investment has increased most rapidly since 2000, when the Western Development Programme was launched. Because of China's vested interest in Tibet, the government will likely continue its policy of increasing subsidies, regardless of financial constraints.

The "TAR" has been the only province to enjoy a growing amount of central subsidy since 1988, when the central government policy of increasing subsidies to ethnic areas to 10 per cent annually was abolished (ShenKaiYun 2005). All Tibetan areas, whether in the provinces of Amdo (Ch: Qinghai), Gansu, Sichuan or Yunnan are chronically reliant on central subsidies, but none to the extent of the "TAR".

The government subsidies and investments have mainly targeted the tertiary sector, which could hardly be the Tibetans' priority. Over 80 per cent of the Tibetan population lives in rural areas that depend on primary and secondary industry. Official statistics of the "TAR" quoted the rural population as 80.2 per cent in 2005 and that 70 per cent of people in the "TAR" depend on primary and secondary industries. This, nevertheless, is still a large majority, but the fastest growing category is the tertiary sector (see table 3.2).

Table 3.3 shows how the GDP share of the three categories has changed since 1955. Rise in secondary sector GDP have been slow but tertiary sector GDP has rapidly increased from 46.2 per cent in 2000 to 55.6 per cent in 2005. However, there has been a sharp fall in primary sector GDP from 30.9 to 19.1 per cent during the same period. The government's lack of consideration for the primary and secondary sectors has led to high unemployment and poverty throughout Tibet. Development economist Andrew Fischer wrote about the employment being generated by the current growth pattern:

Growth in the urban sector has been fuelled by a preponderant

Table 3.2 Labour share by type of industry in the "Tibet Autonomous Region"

Year	Total employment	Primary industry	%	Secondary industry	%	Tertiary industry	%
1996	1,177,000	897,200	76.2	58,400	5.0	221,400	18.8
1998	1,202,200	892,700	74.3	68,700	5.7	240,800	20.0
2000	1,241,800	909,800	73.3	73,500	5.9	258,500	20.8
2002	1,302,000	896,300	68.8	81,100	6.2	324,600	25.0
2004	1,373,200	860,000	62.7	131,700	9.6	381,500	27.8
2005	1,436,000	863,900	60.1	136,000	9.5	436,100	30.4

Sources: TSB 2006: TSY, table 4-1; CSB 2002: CSY, 2002: table 5-3.

degree of externally subsidised spending and investment that is concentrated in administrative expansion or large-scale construction projects rather than productive activities. This tends to concentrate employment in high skill and high wage labour, thus biasing outside or educated urban labour over local rural labour. Within this labour market, the emerging "Tibetan middle class" is nested in an administrative niche, while management of the large economic projects tends to be dominated by skilled Han personnel, usually transferred to the region on a short-term basis. In the absence of any significant industry, migrant labourers compete over the residual opportunities in either construction or urban tertiary activities (Fischer 2003).

HIGH SALARIES AND WAGES: AN INCENTIVE FOR CHINESE MIGRANTS

The Chinese government has created a number of specific incentives to lure migrants into Tibet. One is the promise of generous wages. According to official government statistics, after several years of rapid wage increases, privileged staff and workers in the "Tibet Autonomous Region" ("TAR") are now among the highest paid in all of China. In 2002, average annual wages in the "TAR" were the highest in the PRC, even higher than those of Shanghai. In 2003, average annual wages in the "TAR" reportedly reached 26,931 yuan (US $3,325), very close to the average Shanghai wage of 27,304 yuan (US $3,371). In 2004, the total average wage of staff and workers in the "TAR" was once again the highest, at 30,873 yuan (US $3,811.5), surpassing even the Shanghai wage of 30,085 yuan (US $3,714) – although it was fourth highest in the specific category of state-owned units (*Asian Labour News* 2005; CSB 2005: CSY, table 5-21).

Table 3.3 Percentage share of GDP by economic sector in the "TAR"

Year	Primary	Secondary	Tertiary
1955	95.1	0.8	4.1
1965	70.9	6.8	22.3
1975	55.4	20.8	23.8
1985	49.9	17.4	32.7
1995	41.9	23.8	34.6
2000	30.9	23.0	46.2
2005	19.1	25.3	55.6

Sources: TSB 2006: TSY, table 2-7; CSB 2002: CSY, table 3-9.

The total average wages of some of the provinces and autonomous regions of China is shown in table 3.4. In the "TAR", the private companies (officially known as "units of other types of ownership") pay the highest salaries, averaging 61,138 yuan (US $7,548) in 2004. These companies employ only a negligible percentage of the total workforce (see table 3.5) and do not play much of a role in the economy of the "TAR". Still, the earnings of their employees are very high – higher than in Beijing. Serious fortunes are being created, mostly for urban construction managers and contractors. Lhasa is a frontier boom city, with spectacular profits for a privileged few.

Table 3.5 shows the total number and proportion of staff and workers in state-owned, collectively-owned and otherwise-owned units. In 2005, state-owned units in the "TAR" accounted for about 95 per cent of the total number of staff and workers in these three categories (TSB 2005: TSY, table 4-3). Such state dominance is unlike anywhere else in China, because in most places the command economy has long been dismantled. 92 per cent of the total wage bill in the "TAR" in 2004 (i.e. the total amount of funds disbursed as salaries or wages to staff or workers) was derived from state-owned units, versus less than 48 per cent in the rest of the PRC (CSB 2005: CSY, table 5–20). While the high percentage of staff and workers in state-owned units is higher than average, it also represents the fact that employment opportunities outside the state sector are extremely limited in the "TAR" (*Asian Labour News* 21 Feb 2005).

In urban areas, some Tibetans have experienced a rapidly rising standard of living. However, they represent only the minority.

The urban collective units represent a small proportion of total staff and worker employment. Though a sudden rise in the number of employees in state-owned units was seen in 2005, the general trend is that the number of employees in state-owned units declined between 2000 and 2004 according to official statistics, and the number of Tibetan employees in particular was reduced (*Asian Labour News* 21 Feb 2005).

Central leaders argue that high salaries and wages in the "TAR" are granted because of the hardship of working there. They compensate for the difficulties that Chinese people face while working in the thin air, high altitude and harsh climatic conditions of the "TAR." Chinese cadres and skilled workers consider a job placement in the "TAR" highly undesirable. It is widely claimed by many Chinese

veterans of service that a two or three-year work placement in the high and dry plateau can lead to long-term health consequences. Health workers in the "TAR" confirm that many Chinese seem to suffer from a form of chronic altitude sickness (*Asian Labour News* 21 Feb 2005). Medical journal research reports also suggest that as many as 10 per cent of Chinese immigrants suffer from chronic altitude sickness. However, many are not cadres but poor people, so they are more likely to stay. There is an obvious strategic reason for Beijing to award high salaries in the "TAR" – to attract more Chinese people to work and settle there. The Tibetans are mostly locked out, and the benefits of high wages are being disproportionately reaped by non-Tibetans.

According to the Tibet Information Network, the expansion in government administration and increased wages have contributed to an emerging "middle class" of Tibetans (TIN 20 Jan 2005). In urban areas, some Tibetans have experienced a rapidly rising standard of living. However, this is only a marginal percentage of the total Tibetan population. Most Tibetans live in rural areas and most urban Tibetans do not receive highly paid jobs. The high salaries are mostly paid to greater-skilled workers, managers and cadres. The Tibetans usually fail to get these jobs, except for a very few well-educated people or those with financial leverage. The Chinese enjoy better opportunities in the job market due to their advantageous technical skills, more competitive spirit, knowledge about business, knowledge of language, and connections to economic and political powers in the region.

Tibet's high GDP growth, therefore, is more derived from Beijing's subsidies and decision to pay high wages than from productivity or output factors. The high salaries of urban elites lift the "TAR" GDP, and make the per capita income of "TAR" residents appear, at first glance, to be well above the poorest provinces. But this illusion, of Tibet not being on the bottom, is generated by aggregating figures and masks a vastly uneven distribution of wealth. The urban remittance economy and the rural subsistence economy are mixed in the per capita statistics, even though the two economies are distinct and have few linkages. The urban construction boom attracts poor peasants, especially from the overpopulated Sichuan province, to try their luck in Tibet. Understanding the reality of the two economies requires disaggregating what was artificially aggregated. The final sections of this chapter explain this in more detail.

FAVOURING HAN CHINESE MIGRANTS THROUGH THE HUKOU SYSTEM

As described above, the majority of migrants to Tibet's urban regions are non-Tibetans from the poorer provinces of China, who are seeking new opportunities in Tibet's externally-financed development boom. Many rural Tibetans, whose farming or nomadic way of life no longer sustains them, also migrate to urban areas in the hope of finding work, but they are much less successful. They are often restricted by the *hukou* (household registration) system.

Table 3.4 Average annual wages of certain staff and workers 2004 (in yuan)

Region	Total	State-owned units	Urban collective-owned	Other types of ownership
National	16,024	16,729	9,814	16,259
Beijing	29,674	34,009	13,422	28,026
Shanghai	30,085	31,507	20,127	29,657
Zhejiang	23,506	33,426	18,013	16,867
Guangdong	22,116	25,979	11,937	20,267
Sichuan	14,063	15,818	9,758	11,362
Yunnan	14,581	15,320	9,519	13,307
TAR	30,873	30,165	9,600	61,138
Qinghai	17,229	18,686	10,302	11,291
Xinjiang	14,484	14,477	11,594	14,870

Source: CSB 2005: CSY, table 5-21; http://www.stats.gov.cn/tjsj/ndsj/2005/html/E0521ehtm

The *hukou* system is strongly discriminatory. Usually only those Tibetans who have at least a temporary urban *hukou* manage to get work in the formal state sector, but a temporary *hukou* is normally granted only if a person has already obtained a job in the area where they hope to move. By contrast, Chinese workers in Tibet are immediately given a temporary or permanent *hukou* that entitles them to all urban benefits, such as housing, jobs, and pensions (Trade and Industry Department 29 Sep 2001).

Table 3.5 Number and proportion of staff and workers in state-owned, collectively-owned, and other units in the "TAR"

Year	Total	Number of staff and workers			Proportion		
		State-owned units	Urban collectively-owned	Units of other type of ownership	State-owned units	Urban collectively-owned	Units of other type of ownership
1996	167,496	155,488	10,818	1,190	92.8 %	6.5 %	0.7 %
1998	163,342	149,057	11,752	2,533	91.3 %	7.2 %	1.5 %
2000	162,438	149,690	8,187	4,561	92.2 %	5.0 %	2.8 %
2002	148,025	137,940	5,580	4,505	93.2 %	3.8 %	3.0 %
2005	162.831	154,473	3,226	5,132	94.9 %	2.0 %	3.1 %

Source: TSB 2006: TSY, table 4-3.

Paragraph 58 of a State Council's circular on "*Suggestions on the Implementation of Policies and Measures Pertaining to the Development of the Western Region*" itemises China's policies on the free movement of Chinese workers (referred to as "talents"). This circular, submitted by the Western Region Development office of the State Council in September 2001, states:

> The policy of free movement of talents working in the Western Region should be implemented. The talents working in the Western Region can transfer their personal files to their new employers in the Western Region. College graduates going to work in the Western Region may transfer their *hukou* to the place of employment or domicile of origin. Talents who have come to invest and set up companies or devote themselves to the development of the Region can move their *hukou* to their previous place of registration if they return. Talents who have been assigned to work on major construction projects may retain their *hukou* at its original working place and keep their employment relationship with their original employer and enjoy the same treatment as their colleagues at their original working place in terms of promotion, appointment of professional and technical titles and salary increases. Personal problems, such as being separated from one's spouse due to job transfer, should be solved with priority, and if possible, the new employer in the Western Region should purchase accidental injury insurance for these talents (Trade and Industry Department 29 Sep 2001).

As the circular directs, Chinese settlers enjoy great flexibility in the *hukou* system. This use of *hukou* favours the Han migrants and restricts rural Tibetans from seeking work opportunities in urban areas. Strategic measures such as this are designed to attract "skilled" personnel.

This is in stark contrast to the heavy-handed government control that the Tibetans are subject to. The lack of an urban *hukou* makes rural Tibetans that live in cities vulnerable to harassment, and potentially expulsion, by government authorities.

Chinese authorities regularly conduct house searches in the Tibetan areas of Lhasa for "unauthorised" residents. Often the searches and expulsions are motivated by the desire to quash political dissent; frequently they end up in the arrest of Tibetans for possessing "splittist" items such as photos, videos or writings of the Dalai Lama.

Tibet's high GDP growth is more derived from Beijing's subsidies and decision to pay high wages than from productivity or output.

On 21 March 1989, during a period of martial law in Lhasa, an estimated 40,000 Tibetans without residence permits were forcibly removed and driven off to their native villages (TCHRD 2002: 28-29). The result is that today, Tibetans remain on the economic fringes, despite a tourism and urban construction boom.

After moving to the cities, Tibetans often live hidden from view in desperately poor slums. Their daily experience is not exactly the dream of economic development and prosperity that they have been promised. This is blatant discrimination and a breach of China's constitutional guarantee of racial equality.

URBAN UNEMPLOYMENT IN TIBET: CREATING AN UNDERCLASS OF TIBETANS

Out of all the impacts of the Chinese occupation of Tibet, China's population transfer programme poses the most serious threat to the survival of Tibet's culture and national identity. Tibetans are being reduced to an underemployed and impoverished minority in their own homeland.

Tibet is seeing rapid expansion of a class of Chinese immigrant traders, from street sellers to luxury shop owners. Tibetans not only have to face an alien market system, but the Chinese are eating into Tibetan livelihoods. Ever since the process of acquiring a business license was relaxed and simplified, the number of individual and private enterprises in the region has increased at a rapid pace. According to one estimate, in the area of small business ownership in Lhasa from 1991 to 1992 alone, less than 20 per cent of the total business establishments were owned by Tibetans. Tibet Support Group (TSG), UK in their report published in 1995 estimated 75% of shops in Lhasa owned by Chinese. Out of 1,458 salespersons in Lhasa's vegetable market, 1,357 were Chinese or Hui (TSG (UK) 1995: 110, 115; ICJ 1997: 117).

Finding work in a government or state-owned enterprise is almost impossible for most rural Tibetans because of illiteracy and a lack of necessary modern skills.

Unemployment, especially in urban regions, has had adverse impacts on economic and social development, and political stability. With the progress of the economic transition since the 1990s, China has been challenged with a "flood of unemployment" at a pace and scale unparalleled in its history (Hu Angang and Shen Xin 2005: 36). In Tibet, according to an official Chinese website:

> In 2004, the autonomous region had 1 million unemployed people, a figure which was 45,500 people more than December 2003. They included 316,700 in cities (an increase of 29,200). The unemployment rate was 4.3 per cent at the end of 2004 (China Tibet Information Center 2005).

If the statistics of one million unemployed is to be believed then about 37 per cent of "TAR's" total population of 2.7 million are unemployed. While this statistic may not be accurate, Fischer argues that given the modern skill deficit in the region, the job opportunities created by the economic boom tend to absorb the skilled non-Tibetan immigrants, who represent a much larger share of urban employment. Even where immigrants are temporary sojourners, a circular flow of arriving relatives assures their continual replacement (Fischer 2005: 132). Sociologists have termed this "chain migration" – passing on opportunities to the next in the kin network to arrive.

Tibet's booming tourism industry has also benefited the Chinese more than the Tibetans. More and more Chinese shopkeepers and stall holders are selling Tibetan artefacts, often pretending to be Tibetan. Most translators and guides in Tibet today are reported to be Chinese, edging out the Tibetans who had previously held the roles. Although many tourists would prefer to have Tibetan guides, most of them come on package tours organised by Chinese tour agencies that employ Chinese guides. This is documented in chapter seven (Tourism and Tibetan Culture).

Chinese sources sometimes suggest that if Chinese people prosper in Tibet and Tibetans do not, it is simply the natural laws of the market economy in operation. They claim that "what is natural cannot be stopped". The Chinese migrants who come to Tibet are better educated and have learned a commercial approach – an understanding of the economic enterprise as an entity in its own right, with a life of its own that transcends the family household base of traditional Tibetan enterprise. Tibetans do not value accumulation as an end in itself. For most Tibetans, wealth accumulates only in an annual cycle that culminates in its ritual dispersal, through donations to the full-time religious practitioners in the community, for the benefit of all. Everyday economic life is based on use-value, not exchange-value. Thus, Tibetan employment-generating enterprises often operate on a short term and shoestring basis, without seeking endless accumulation and retention of profits. Tibetans do not live to accumulate money and possessions, because they will inevitably be abandoned at the end of this short life. Their priority is to live responsibly and happily, and ensure good circumstances for their next life. These cultural choices are seen by most outsiders as backwards, and a failure to grasp the rudiments of materialism and development. This deep-seated, cross-cultural misunderstanding is seldom broken down.

It is obvious that a major barrier for Tibetans, especially rural Tibetans, is a lack of education. Finding work in a government or state-owned enterprise is almost impossible for most rural Tibetans because of illiteracy and a lack of modern skills. Chapter two (Education) presents evidence that the average adult Tibetan has had, at most, three

years of primary schooling, compared to an average of seven years for rural Sichuanese peasants.

There is a vague official acknowledgement of an unemployment problem in Tibet. The government has announced some efforts to increase jobs and a plan to introduce vocational training programmes for unskilled Tibetans. But it remains extremely challenging, given the increases in population and growing competition for jobs with skilled Chinese migrants.

In 2003, the "Tibet Autonomous Region" ("TAR") announced a small amount of funding made available to create jobs in Tibet. It said it had set aside 47 million yuan (US $5.8 mn) that year to help urban residents in Tibet – of all ethnicities – find jobs. The "TAR" government set a goal of creating 10,000 new jobs and limiting the urban unemployment rate to around 4.5 per cent that year (*China Daily* 29 September 2003).

Unfortunately, this programme was a case study in poorly-executed employment programmes. It included training courses for 4,193 laid-off workers, the majority of whom were former Chinese loggers in Tibet. Many loggers' jobs ended suddenly in 1998 after a disastrous flood which, as China realised at its own expense, was caused by the indiscriminate cutting of forests along the upper reaches of the Yangtze river. After this flood, the central government declared a ban on logging in the region. Though the loggers worked in Tibet, they were rarely Tibetans – they were overwhelmingly immigrants from various Chinese provinces, mainly Sichuan. Many of these loggers were re-employed as reforesters. China's methods of reforestation, however, are not among the world's best practices. Where trees are to be grown, the Chinese employ "aerial sowing" – throwing seeds from aeroplanes. This practice excludes Tibetans from the reforestation process.

While the "TAR" government concentrates on boosting service trade and labour-intensive enterprises, and encouraging the development of private economy in order to create more jobs, Tibetans are pushed out by having to compete with better skilled and better connected work gangs from distant provinces. Though Tibetans have long been traders, even street stalls are often monopolised by the immigrants. They sell Tibetan artefacts and even dress like Tibetans in order to make more sales. Other semi-skilled work, such as driving taxis, is predominantly done by immigrants. Even in institutions designated for Tibetans, a large number of posts are taken by non-Tibetans who bribe their way in and Tibetans left behind. This is obvious to Tibetans in their everyday encounters with staff in offices.

The Barkhor in Lhasa, a place for walking, prostration and shopping.
Photo by Nathan Freitas

THE CREATION OF NEW TOWNS AND CITIES

China's modernisation process includes the establishment of new towns, especially along the highways and railways. The creation of towns and cities does not greatly benefit Tibetans, who are neither accustomed nor generally attracted to an urban way of life. These new settlements will instead turn into hubs for immigrants. For instance, Gormo in the far east of Amdo (Ch: Qinghai), once a desert area inhabited by a few scattered nomads, has grown to a town of 200,000 – out of which less than two per cent are Tibetan.

Another example is the predominantly rural area of Nagchu. In 2002, Nagchu Communist Party Secretary Gonpo Tashi said his prefecture had a population of 370,000 people, of whom 330,000 were herders or farmers. Nagchu is officially reported to be 99 per cent Tibetan. But the urban population was expected to double to 80,000 as herders move to towns to find work on the railroad. Gonpo Tashi also said that the government had approved a plan to form 25 new townships, many of them along the railway line. Nagchu is already filled with Chinese restaurants, shops, karaoke bars and brothels (often disguised as hairdresser shops) to cater to the mostly Chinese drivers who ply the road to Lhasa. Officials also say it is home to a floating population of nearly 100,000 unregistered migrants, mostly Chinese (*Reuters News* 22 Aug 2002). Nagchu was designated as the logistic centre of the railway, which greatly increased the employment of people with skills in transport management operations. Now that the railway is running, Nagchu and other major Tibetan towns will be flooded with Chinese at an even greater rate than before, which will result in the creation

Table 3.6 Human development index and its components by province					
Province	**HDI**	**Life expectancy**	**Education index**	**Income index**	**Rank of HDI**
Shanghai	0.8528	0.8412	0.8837	0.8336	1
Beijing	0.8453	0.8568	0.9188	0.7602	2
Xinjiang	0.7068	0.7349	0.8124	0.5731	15
Inner Mongolia	0.6790	0.7248	0.7709	0.5414	22
Sichuan	0.6711	0.7316	0.7710	0.5107	25
Yunnan	0.6323	0.6753	0.7108	0.5107	27
Gansu	0.6322	0.7096	0.7088	0.4784	28
Qinghai	0.6249	0.6926	0.6637	0.5184	29
Guizhou	0.6020	0.6872	0.7062	0.4128	30
Tibet	0.5212	0.6421	0.4181	0.5034	31

Source: Adapted from UNDP, China Human Development Report 2000, Annexure-3.

of towns and cities of predominantly Chinese characteristics.

POVERTY

Over the past decade, rapid economic development contributing to per capita income growth has allowed China to make strides in alleviating poverty. However, China's poverty line of 680 yuan (US $84) per capita is far too low. It is just 20 per cent of the average annual per capita income of the rural population, and 23 per cent of the internationally accepted poverty standard of one US dollar per day. If the international standard is used, the number of poor in China would be 120-130 million (*People's Daily* 24 Aug 2006) and Tibet has the highest poverty rate in China.

Chinese documents also boast of increase in life expectancy in China including Tibet. Yet, according to the UNDP, average life expectancy for Tibetans is only 60 years, about 10 years lower than the national average. It is also no surprise that the "TAR" has the lowest Human Development Index (0.52) among all the provinces, autonomous regions and provincial-level cities (UNDP 2002: 38). Other Chinese provinces, such as Qinghai, Sichuan, Gansu and Yunnan (into which parts of traditional Tibet were incorporated) are also close to the bottom of the list of China's least prosperous provinces. Table 3.6 shows the various indicators of well-being for selected provinces in China.

China is also facing the problem of widening urban-rural income disparity despite its economic growth. Tibetan areas have among the highest urban-rural inequality in China, the highest poverty rates, and by far the worst education indicators (Fischer 2005: xv). In 2001, according to official statistics, the per capita income in rural areas of the "TAR" was 1,404 yuan (US $173) – the lowest of all provinces in China and just 17.8 per cent of the per capita urban income of 7,869 yuan (US $971) in the "TAR" (CSY 2002: table 10-15, 10-22). The Chairman of the "TAR", Jampa Phuntsok, in his 2005 speech in Nepal said that herdsmen and farmers' per capita net income had reached over 2,000 yuan (US $247) in 2005 (IFA 2005), but that was still far below the national average for farmers at 3,255 yuan (US $402) (Chinese Government Official's Web portal. 14 Dec 2006). The "TAR" continues to show the highest urban-rural income disparity in China. These statistics indicate that poverty and basic subsistence issues dominate life in rural Tibet. Even the government is aware that China's widening gap between the urban rich and the rural poor – worse in Tibet than in the rest of the country – might pose a threat to social stability. The following sections will explore the impacts on rural Tibet in more detail.

The disparity in urban income across provinces is smaller than for rural income. And unlike rural income, urban income in the "TAR" stands much closer to the national average. Official statistics show the 2001 per capita urban income in the "TAR" as 7,869 yuan (US $971), even higher than the national average of 6,860 yuan (US $847) (CSB 2002: CSY, table 10-22). This has not quite held steady; by 2004, per capita urban income of 9,106 yuan (US $1,124) in the "TAR" had fallen below the national average of 9,422 yuan (US $1,163) (CSB 2005: CSY, table 10-22). The reason for the relatively healthy average urban income in the "TAR" is the dominance of the state sector and the high salaries paid by the government, as described earlier.

While the average urban income appears to be among the highest in the country, urban unemployment and poverty are on the rise. In the late 1990s, urban poverty rates among permanent urban residents in the "TAR" were some of the highest in China, even as average urban incomes were among the highest as well (Fischer 2005: xvii, 132-133). Tibetan beggars on the streets of Lhasa as witnessed by a westerner who recently visited Tibet evidences this increasing poverty. Xu Jianchang of Tibet's Development and Reform Commission is quoted as saying that "the difference in income is there, but that's because Chinese and Tibetans are engaged in different industries". As Beck argues, with 70 per cent of Tibet's labour force working in agriculture, where wages are stagnant, that difference is only likely to grow (Beck 30 Aug 2005).

The high unemployment rate increases the widening income gaps, aggravating urban poverty. It is the main cause of social contradictions. The growing unemployment has an adverse impact on the minds of the people and it has become a destabilising factor both socially and politically (Hu Angang and Sheng Xin 2005: 40-43). More on poverty and income disparity is discussed in chapter four (Urbanisation and Inequality).

RURAL UNEMPLOYMENT AND UNDEREMPLOYMENT IN TIBET

More than 80 per cent of Tibetans live and work in rural areas, and most of their work is part of what was described above as an informal economy. These Tibetans, their work and their problems are usually neglected by the government because they are largely invisible to official scrutiny.

Those who work in village household economies, producing wool, meat and dairy products, are seldom included in official employment or output statistics, except as labourers, even though they are always taxed. Instead, such employment in household enterprise is increasingly restricted, as chapter one (Nomads and Grasslands) shows in some detail. Categorising nomadic pastoralists as labourers is quite misleading, as it suggests that they are a factor of production that is available to work anywhere, which is not true.

For example, the latest official statistics on employment in animal husbandry in Amdo (Ch: Qinghai) list less than 30,000 people as employed (QSB: Qinghai population census 2000). This is inconceivable in a province, now the size of France and Germany combined, where one million Tibetans live, 95 per cent of which (by area) are dedicated to livestock production and where pastoral nomadism is the standard way of life. Only a small minority of Tibetans in Amdo work on farms or in urban areas. The hundreds of thousands of Tibetan nomads that look after their yaks, sheep and goats full-time simply do not appear.

Tibetan areas have among the highest poverty and urban-rural inequality rates, and by far the worst education indicators in China.

Although increasing numbers of rural people have been transferring to off-farm jobs, there is still a considerable number of rural surplus labour with "hidden unemployment" – a term often used to describe the situation of surplus rural labour. This unemployment is hidden because rural people have access to land, meaning they have at least some way of obtaining a livelihood, no matter how meagre (Murphy and Tao 2005: 129).

Despite its absence from official statistics, unemployment is a major problem in rural Tibet. In most cases, the proceeds from farmers' and nomads' livelihoods are barely enough to sustain them. They have to look for other avenues of income, such as collecting *yartsa gumbu* (*Cordyceps sinensis,* a fungus used in Chinese medicine) or *droma* (small sweet tubers), or doing hard labour on construction sites. These supplementary sources of income have now become an essential source of income for many households. But these activities are also becoming more difficult. For example, the authorities now charge a hefty sum for collecting *yartsa gumbu*, and a growing number of Chinese are taking part. According to a man interviewed

A Tibetan man with his horsecart, standing in front of Tashilhunpo monastery, in Shigatse.
Photo by Luca Galuzzi

by the Tibetan Centre for Human Rights and Democracy (TCHRD), Chinese county authorities now charge 100 yuan (US $12) per person for plucking *yartsa gumbu.* Still, during the two months that it is collected (from April to June), it is the largest source of income in his area (TCHRD 2002: 45).

Another problem is that most of these supplemental jobs are done in the summer months, and therefore compete with farming and herding. Most of the basic productive tasks for nomads and farmers are already crammed into these few warm months. Autumn and winter used to be the time for leather tanning, meat freezing, grain storage, hay storage, feeding penned herds, gathering dung fuel, spinning, weaving, making carpets and tents, producing cheese and many other traditional productive efforts. At a subsistence level, this work is still done, but there is now little value in making these things for wider sale. As sources of cash income have become more necessary, so underemployment has worsened in the cold months to the extent that it is now a chronic problem.

Rural Tibet sorely needs basic enterprises that add value to rural commodities for the distant market. Remedying this deficiency will require training, the availability of credit, and simple technology that can generate income and employment for local communities.

Winter was once meant time for weaving yak hair into tents and ropes, for salt gathering expeditions, and for long distance trading caravans. All of these income sources have disappeared, to be replaced by plastics, cheap Chinese manufactures, and regulations forbidding nomadic salt collection. What once was a seasonal balance of work has fallen victim to a deep imbalance.

Off-farm local employment throughout China has generally been an important source of new employment, with migration and enterprises, both private and individual, playing a growing part in generating employment (World Bank 2001: xvi). Off-farm employment is local and does not deprive a farming or herding family of the fittest young adults, who might otherwise have to migrate if no local source of cash income is available.

One of the most fundamental changes that swept rural China after the economic reforms is the development of town and village enterprises (TVEs). Rural employment grew rapidly in the late 1980s and early 1990s in China, as TVEs took advantage of the cheap, rural labour. They evolved quickly to meet the rising demand for consumer goods. In China's pastoral regions, including the Tibetan areas, there was a brief boom in TVEs for wool treatment. However, by the mid 1990s, TVEs throughout rural China began to face financial problems brought on by poor management and growing competition from the private sector. Employment in these sectors began to decline (Brooks and Tao 2003). The wool boom ended in bankruptcy, not because there was anything wrong with the wool, but because the cadres and local leaders built the plants too big, in expectation of huge profits, and ran them badly. The big coastal woollen mills complained of the TVEs' bad practices, and turned instead to imported wool and synthetic substitutes. This was a major setback for adding value to and marketing Tibetan wool (Zhang Xiaohe et al. 1996: 120-143) that persists even now.

Because of the dispersed population, the prospects to develop TVEs in China's western region, and particularly in Tibet, are not as good as in central and eastern China, but there are still some opportunities. Fischer, a development economist, asserts that although there are limits to what can be accomplished (especially in rural areas), there are still many avenues to explore – particularly with trade and products that are demanded locally, in which Tibetans have a competitive advantage over Han migrants (Fischer 2005: 166). All over Tibet, niche products such as walnuts, pears, apples, medicinal ingredients and dairy products could be processed locally, which adds value, and made into saleable products for distant urban markets that are increasingly willing to pay premium prices for organic, uncontaminated foods.

There may also be potential to develop historic Tibetan crafts such as carpets, traditional medicine, metal work, and woodcarving. The evolution of many of these crafts, and others such as *thangka* painting, is closely linked to the development of Buddhism. These skills were mainly employed in the construction of temples and monasteries throughout the country. A lot of these arts and their artists were destroyed during the Cultural Revolution. In addition, the modern economy has undermined the value of many of the crafts and commodities that rural Tibetans previously used to market. Today, even the remotest markets are flooded with cheap plastic ropes, shoes, buckets, cloth and many products once made by the nomads during the long cold months when there was little work to be done with the animals. However, the knowledge required to produce these traditional arts and crafts has not been lost. It could be nurtured. There are niche market opportunities that ought to be explored.

Rural Tibet sorely needs basic enterprises that add value to rural commodities for the distant market. Remedying this deficiency will require training, the availability of credit, and simple technology that can generate income and employment for local communities.

China's neglect of rural Tibet is seeing rural Tibetan people migrate to towns and cities in search of jobs. According to a report by the Regional Development and Reform Commission in Lhasa, during the period of the 10th Five-Year Plan (2001–2005), 60,000 jobs were going to be needed in urban areas of the "TAR" just to employ the Tibetans moving from rural areas – not counting those needed for the large and growing number of Chinese migrant workers (Saunders 12 Dec 2003). The Chinese government's plan to reduce the number of farmers, as part of modernisation, has created a huge challenge that is not yet solved: how and where to absorb this labour.

> Because growth in the 'TAR' is largely based on administrative expansion, its ability to absorb labour is limited, depending on continuing if not increasing levels of subsidisation, which further exacerbates the economic dualism. Consequently, rural Tibetans in the 'TAR' face a large hurdle to access and participate in the growing modern economy, which is essentially urban. In other words, there is an undercurrent of exclusion within the growth itself [...] Within the Tibetan regions (outside 'TAR') of the provinces, it is likely that a similar experience of exclusionary growth mirrors the patterns observed in the 'TAR', albeit with less intensive subsidisation, and inversely, more space for local policy innovation (Fischer 2003).

For decades, China has been making a futile attempt to transform and modernise Tibet. The International Commission of Jurists (1997) contends that even if Tibet was lacking in secondary and tertiary industries prior to 1950, it is still chronically underdeveloped today. Their report confirmed that China has been unable to industrialise the processing of agricultural commodities from Tibet or provide industrial employment to rural Tibetans. Despite massive state investment in building infrastructure, there are very few viable enterprises that employ Tibetans. Chinese investment has concentrated on urban, state-owned enterprises, which are largely reserved for Chinese employees. Only 2.5 per cent of rural Tibetans in the "TAR" are employed outside the traditional Tibetan agricultural economy (ICJ 1997: 156-157).

THE EMPLOYMENT FATE OF TIBETAN WOMEN

Over the centuries, the lives and work environments of women have improved dramatically all over the world. For women in China, the story is mixed. Despite the increase in the percentage of women workers, discrimination against women continues to exist. Many women in state-owned enterprises were the first to lose their jobs during the economic reforms, on the grounds that they were not the principal wage-earners in the family (Goodman 2004: 20). Despite China's great economic advances since 1949, the majority of female workers are still seen as disposable or second-class employees. Often they are only able to work for a few years, and are usually weak candidates for workplace training or promotion. The employment situation of women is well described in the 2004 China Labour Bulletin:

> Since 1984, when the Regulations on Permanent Residence Registration were loosened, millions of Chinese rural residents have migrated to the urban areas in search of employment. The result has been an ever-growing population of migrant labourers without minimal benefits of residency including medical care, housing or education for their children. Most are unaware of their rights and unable or unwilling to exercise these rights against the powerful forces that control their access to employment. Migrant workers in general, and female migrants in particular, who work in low-paid, labour-intensive sectors, are frequently subjected to long overtime hours, poor or unsafe working conditions and the withholding of wages (*China Labour E-Bulletin* 7 Mar 2004).

The Tibetan women felt that they were discriminated against when compared not only to men but also to Chinese women. They are paid less for equal work, even less than Tibetan men receive.

While job discrimination against Tibetans is widespread in Tibet, studies have uncovered many Chinese employment practices that specifically disadvantage women. These include virginity testing, gender-specific hiring and recruiting practices, sexual harassment, lack of adequate maternity leave or accommodation for pregnant workers, and a total lack of childcare facilities. The employment-related fines and penalties are tied to family planning policies (TJC 1998).

Methods of family planning have proven to be forceful and coercive. Between four and 20 per cent of Tibetan

women inside Tibet are no longer able to reproduce, depending on the severity of the birth control policing in each county. Fines imposed for pregnancy can reach 10,000 yuan (US $1200), an amount twice as much as they earn annually (TWA 2000).

A study produced by the Tibet Justice Centre, based on interviews conducted with Tibetan women, reveals the extent of the discrimination and offensive treatment that Tibetan women face in Tibet. "According to one woman interviewed, 'all girls had to submit [to the examination]. A women put her hand inside us to check for virginity." This was done to ascertain the job applicant's 'fitness' for employment. Sexual harassment of Tibetan women at Chinese workplaces is quite common. Another woman who was interviewed reported that Chinese officials hold and touch them: "The Chinese officials are so used to it. My supervisor did it, so did all the others. They said if we slept with them we would get a better position. Many girls in the village did it for the money.' She felt that complaining would be useless and even worse, it would ruin her reputation. Furthermore, she knew of no complaints process" (TJC 1998).

In Tibet, there is no freedom of land use. Tibetan farmers and herders depend on the land leased to them by the state.

The Tibetan women felt that they were discriminated against when compared not only to men but also to Chinese women. They are paid less for equal work, even less than Tibetan men receive. They are at the very bottom of the scale.

POLICY CHANGES AFFECTING TIBETANS' TRADITIONAL LIVELIHOODS

As the preceding sections have demonstrated, rural Tibetans faced innumerable hardships in making a living and receive little help from the government. Taken together, the quota system, government cropping policy, huge tax burden, and intensive farming have long restricted the Tibetans' freedom and reduced their incentive to farm and herd animals.

There have been some proclamations that the burden of taxation for peasants has been lifted. Despite such claims, local cadres continue to impose extra-budgetary charges which do not appear in official budgets or statistics (Chun Guidi and Tao Chun 2004). Nomads have been forced to sell some animals to fulfil their meat quota. China's increasing focus on modernisation has brought about fencing of land and permanent settlement of nomads, disrupting the centuries-old practice of seasonal migration. Though fencing can sometimes help in restoring degraded pastureland, it leads to many other problems such as reduced total grazing area, restricted mobility, land disputes, and in some cases even violence. Restricting mobility also reduces employment opportunities.

Another problem is that the allocation of leasehold grazing land has remained static for decades. As young adults marry and families grow, there has been no new allocation of certificates of leasehold land (commonly but mistakenly called land privatisation in China) since the 1980s. Families who have expanded are stuck with their same limited area, leading to increased poverty, overgrazing and underemployment. In Chinese provinces, by contrast, the officials reallocate farmland every five years in accordance with changes in family size (Xin Liu 2000: 157-161). Chinese officials in charge of animal husbandry say that the solution is for excess labour to leave the grasslands and find employment in factories in distant cities, as many millions of Chinese farmers have done, but the Tibetans are very reluctant to leave their ancestral land.

In Tibet, there is no freedom of land use. Tibetan farmers and herders depend on the land leased to them by the state. To make matters worse, in March 2007, China's National People's Congress passed a law allowing private ownership of land classified as urban, which can include farms close to urban expansion. This decision may well enable the dispossession of rural Tibetan landholders on urban fringes (McGregor 2007). They may feel forced to sell out to Chinese entrepreneurs, who are offering what seem like large payments, but the land will be forever out of Tibetan hands.

Traditional Tibetan medicine has also been transformed as a result of Chinese policy. The International Commission of Jurists states that the private practice of Tibetan medicine was already largely eradicated in the 1960s, during the social and land reforms. Many local traditions of Tibetan medicine died out. But it has also experienced a revival and is now supported by the government (ICJ 1997: 226). Tibetan medicine has the potential in the long term to appeal to both national and international markets. There is hope that Tibetans could continue to nurse the skills and productive knowledge that almost vanished under that repressive period.

MARGINALISING TIBETANS: THE QUESTION OF RACISM

The government fiercely denies that racism is behind the increasing unemployment problem faced by Tibetans in Tibet. On the eve of the UN World Conference against Racism in 2001, China portrayed racism as a Western phenomenon that does not exist in China. Indeed, the Labour Law of the People's Republic of China (1994) states in Article 12 that "Labourers, regardless of their ethnic group, race, sex or religious belief shall not be discriminated against in employment" (NPC 2007). However, although this verbally stipulates racial and ethnic equality for all 56 peoples or nationalities in the PRC, the enforcement of these provisions remains extremely weak and politicised.

Earlier, in 1981, China accepted and ratified the United Nations International Convention on Elimination of All Forms of Racial Discrimination (CERD). Article 5 of the CERD states that:

> States Parties undertake to prohibit and to eliminate racial discrimination in all its forms and to guarantee the right of everyone, without distinction as to race, colour, or national or ethnic origin, to equality before the law, notably in the enjoyment of the following rights: [...]
>
> (e) Economic, social and cultural rights, in particular:
>
> (i) the rights to work, to free choice of employment, to just and favourable conditions of work, to protection against unemployment, to equal pay for equal work, to just and favourable remuneration (UNHCHR).

Despite this, China proceeds to recklessly violate these principles by employing measures that implicitly and explicitly favour Chinese settlers. Enforcement of the laws and regulations that prohibit acts of discrimination is lax and subject to an ever-changing political climate. Tibetans are faced with the choice of assimilating – giving up their identity, religion and culture – or facing perpetual discrimination.

Discrimination in Tibet is widespread. It starts with the education policy. Many Tibetans cannot get a job unless they can speak Chinese. Even to be a construction worker, one needs to know Chinese. Most Tibetans do not speak Chinese. As chapter two (Education) shows, the rate of illiteracy in Tibet is high because of the poor quality of schooling. Also, most Tibetan farmers and herders do not possess modern technical skills. These are the main factors that China uses to justify its discrimination against Tibetans in the job market. But these shortcomings could be remedied if there was equal access to education. The government also requires that employees be loyal to the views and interests of the PRC government. Requiring a specific political viewpoint is, of course, outright discrimination.

A number of studies have concluded that Tibetans suffer systemic discrimination in employment. This is demonstrated by the better treatment received by Chinese migrants seeking work in Tibet.

> As a rule, the Chinese government and the Communist Party employees in Tibet, who are ethnic Chinese, along with their families, are automatically guaranteed not only accommodation but also substantially higher wages than in China, extended vacation periods, tax deductions, low land-use fees and assured employment for family members. These benefits are not afforded to ordinary Tibetans (Leckie 1994: 139).

Educated Tibetans feel especially frustrated by the widespread corruption in allocating jobs. At times, Tibetans have even dared to protest against discrimination in employment.

The same report also compares a Tibetan and Chinese guide, providing another typical example of discrimination. Citing the source, it says:

> The Tibetan guide received no free housing, and a salary of 60 yuan (US $7) per month. The Chinese guide, however, not only received a salary nearly four times greater than that earned by his Tibetan counterpart, but was also provided with free accommodation, which included a room provided in a work unit compound, furnished with bed, cupboard, washbasin, thermos, quilt and pillow, as well as an attached toilet. A similar furnished room would cost between 120 to 140 yuan per month on the open market (Leckie 1994: 140).

A disproportionate number of public officers in Tibet are Chinese, which the government itself admits. In the private sector, Chinese people are also likely to make up a considerable proportion of company employees. In the private trading and natural resources Jinzhu Group in Tibet – a spin-off of the Government's export-import agency – only 60 per cent of its 400 employees in Tibet are Tibetan (TJC 1998).

Educated Tibetans feel especially frustrated by the widespread corruption in allocating jobs. At times, Tibetans have protested against this discrimination in employment. In July 2005, out of 100 available government positions, only 17 went to Tibetans, while

members of other ethnic minorities and Han Chinese took the rest – even though many of them had gained only a high school education. Some 70 Tibetans from Xunhua Salar (Tib: Yadzi) Autonomous County, including many college graduates, launched a protest outside the government offices in Siling (Ch: Xining) on July 11, accusing authorities of favouritism and discrimination. According to local sources, eight Tibetan youths were arrested and beaten (*RFA* 15 July 2005). Another non-violent protest erupted in Lhasa and lasted for several days, following the civil service exam conducted by the "TAR" government on 30 September 2006. In that case, Tibetans received only 2 out of 100 jobs, the rest going to Chinese – despite the Tibetans having been assured of getting jobs after successfully completing their education. Sources in Tibet said that the exams were conducted in Chinese with questions mostly about ancient history (*RFA* 8 Nov 2006).

Tibetans held the majority of government official posts until 2000, but after the launch of the Western Development Programme, there was a rapid reversal and a sharp decline in their numbers.

The International Campaign for Tibet reports that the Tibetan experience of racism is particularly painful because it exists in the context of colonialist repression, where the government seeks to suppress the distinct Tibetan cultural identity in its efforts to create 'Unified China' (ICT 2001).

TIBETAN CADRES IN GOVERNMENT POSITIONS

The government offices of the "TAR" employ a few Tibetan cadre officials in high positions of real authority. Even fewer Tibetan cadres are employed in areas designated for Tibetans outside the "TAR". The very limited decision-making power of Tibetan leaders is evident in the inability of even the "TAR" People's Congress (the legislature) to pass regulations limiting immigration – even though municipalities such as Shanghai and Beijing can impose many such restrictions. The majority of the cadres posts, especially the top positions in Tibet, are taken by the Han Chinese.

For China, grooming Tibetan cadres is considered one of the most important strategic tasks in Tibet. Soon after what China called the "liberation of Tibet", hundreds of Tibetan youths were sent to China to be educated. But China gradually grew to distrust well-educated Tibetan youths. Chinese officials learned that Tibetans develop pride in their skill and their identity, and become harder to manipulate. As a result, China started giving well-educated Tibetans very ordinary jobs. Many Tibetan youths received only a political education and are actively indoctrinated. Recent political education in Tibetan schools is discussed in chapter two (Education). Dhondup Choedon, in her 1978 book "Life in the Red Flag People's Commune", describes the position of the Tibetan cadres. She notes:

> The Chinese cadres in Tibet are well-educated, shrewd, able to command and are well paid whereas the Tibetan cadres are like scarecrows mounted on the fields to ward off and fool the world (Dhondup Choedon 1978: 57).

The PRC government argues that Tibetans make up the majority of state sector workers in Tibet, including the majority of government cadres. Statistics on the "TAR" in 2000 show that Tibetans comprised 71.3 per cent of the total staff and workers in state-owned units (TSB 2001: TSY, table 4-5). The *People's Daily* reported that Tibetan and other ethnic group officials accounted for 74.9 per cent of the "TAR" government's total officials (*People's Daily* 22 May 2001).

However, this has changed. Tibetans were a majority of the total government officials until 2000, but after the launch of the Western Development Programme, there was a rapid reversal and a sharp decline in the number of Tibetan workers. The total number of staff and workers in state-owned units is divided between permanent workers and workers employed on contracts. According to the Tibet Information Network, among permanent workers, the share of Tibetans fell sharply from 71 per cent in 2000 to 53 per cent in 2003. Much of this change, significantly, took place among the cadres. The share of Tibetan cadres fell from 72 per cent in 2000 to less than 50 per cent in 2003, while the total number of cadres (including non-Tibetan) increased by 26.9 per cent during the same period (TIN 20 Jan 2005). Furthermore, a closer analysis shows that Tibetans are concentrated among the lower ranks, while Han Chinese predominate at higher levels.

CADRE LOYALTY: EMPLOYMENT AS A POLITICAL TOOL

The employment of Tibetans in government positions is a highly selective process that strongly favours officials who are Communist Party members, or loyal to the policies of the Communist Party (Kunsang Paljor 1977). This description is still valid today. Political loyalty is the test for employability, not actual qualifications.

In 1998, the "TAR" launched a political campaign on "anti-separatism" to root out Tibetans, at all levels in the region, from cadres at the top of the political elite down to communities at the grassroots, who were suspected of insufficient loyalty to the Party (TIN 1998: 37). A number of changes took place within the political elite. Campaigns such as Ragdi's campaign to "purify the ranks of party members and cadres" were implemented to strengthen cadre loyalty. Cadres involved in activities that China conceived as harmful to Tibet's stability, or as violating the Constitution of the CPPCC, were expelled. At the grassroots level, China installed loyal cadres in key political positions in rural areas. In February 1999, another campaign was launched, aimed specifically at separatist tendencies connected with the "Dalai clique".

In 2000, restrictions were again imposed on Tibetan cadres. Cadres were threatened with losing their positions if their relatives who were monks and nuns did not withdraw from the religious institutions. The campaign also inspected the cadres' homes for pictures of Dalai Lama, or any other religious articles, and they were instructed to withdraw their children from Tibetan schools in India. Those who failed to comply had no further employment prospects. Later this policy was furhter strengthed. Independent observers have reported that "if cadres are found in possession of altars or pictures of the Dalai Lama they will be regarded as having voluntarily resigned from their work units" (TIN 1998: 44).

In every formal workplace, there is a Party cell that wields great power and commands the obeisance of professional managers. Party watchdogs, known as "liaison officers", scrutinise and authorise all decisions. By this practice, decision-making power is vested in the Chinese and not the Tibetan cadres.

People who are imprisoned for expressing their beliefs are also unable to find employment after their release, and the smear even extends to their families. For example, one woman whose uncle was considered a political prisoner lost her job at a hotel when Chinese nationals took it over from Tibetans. Another affluent Tibetan woman interviewed said she found a job after her mother paid a bribe of 10,000 yuan (US $1,200) to the Chinese officials in charge, but then she lost the same job when her mother was charged with being a "separatist" (TJC 1998). The Chinese practice of collective punishment – punishing a whole family for the deeds of one person – can mean an entire family loses its employment and livelihood, and may have to flee to exile in order to survive.

EDUCATION AND TRAINING: A NEED FOR HUMAN DEVELOPMENT

Two major reasons why rural Tibetans are unable to participate in the labour market are a lack of modern skills and poor access to education. Recently, there has been some official acknowledgement of the need for skill development programmes. As a part of the urbanisation policies during the 10th Five-Year Plan (2001–2005), new vocational training measures have been announced to combat the rising unemployment (Saunders 13 Dec 2003).

While the Chinese government is determined to keep news of disturbances out of the media, different news sources, some even in the Chinese media, are increasingly reporting rising social unrest.

During its five decades of rule in Tibet, China has produced only a handful of skilled Tibetans. In a recent interview, Xu Jianchang of Tibet's Development and Reform Commission admitted the true condition of education and training programmes in Tibet when he acknowledged that such programmes were in their infancy (Beck 30 Aug. 2005). For decades, the Chinese government has purposely under-educated Tibetans in order to handicap them in the economic development process, thus allowing them to justify transferring more Han Chinese so they can "help develop Tibet". Chairman of the "TAR", Gyaltsen Norbu, reportedly said at the sixth "TAR" People's Congress (in May 1995) that:

> While paying attention to training cadres of Tibetan and other minority nationalities, we should adopt practical measures to stabilise the existing contingent of cadres of Han nationality [...] get qualified personnel to Tibet through various channels and transfer a certain number of skilled workers here (ICJ 1997: 113).

On the one hand, though some efforts are being made to provide training and education to Tibetans, such programmes are often ineffective due to inadequate funding or inappropriateness of the training, either to the trainees or to the job market demand. China's spending on vocational training is minimal. At the same time, the government continues to create and fund efforts to move skilled Chinese workers and cadres into Tibet.

SOCIAL UNREST: VIOLATION OF WORKERS' RIGHTS

Social surveys in China show that unemployment issues rank with corruption, medical care, and unequal

Table 3.7 Public concern over social issues		
Social issue	**Concerned population**	**Rank**
Seeing doctors is difficult, expensive	58.0 %	1
Unemployment	33.5 %	2
Income inequality	32.1 %	3
Corruption	27.4 %	4
Insurance for old age	27.3 %	5
Educational expenses	19.0 %	6
High cost of housing	13.1 %	7
Social order	12.9 %	8
Social atmosphere	9.8 %	9
Environmental pollution	9.5 %	10
Urban-rural disparities	9.3 %	11
Unfair treatment of peasant workers in the city	6.9 %	12
Relations between the masses and cadres	6.3 %	13
Judicial bias	4.3 %	14
Unfair compensation for land acquisition/housing	3.7 %	15
Prostitution	3.0 %	16
Labour-management disputes	1.9 %	17
Others	1.1 %	–

Source: Peilin et al. 2006: 25.

distribution of wealth as one of the major concerns of ordinary people (see table 3.7).

There are clear indications that officials are uneasy with the potential threat that unemployment poses to social stability. China scholar Joseph Fewsmith notes the growing unrest over these issues:

> Social stability has been one of the hottest topics in China in recent years, influencing intellectual debates as concerns with 'social justice' have become ever more prominent, and stimulating new policy initiatives, such as the decision to end the agricultural tax. Nevertheless, income has become increasingly unequal and social order has deteriorated as 'mass incident' have increased. Between 1993 and 2003, the number of mass incidents increased from 10,000 to 60,000, and the number of participants from 700,000 to over 3 million. In 2004, the number rose to 74,000, and then to 87,000 in 2005 (Fewsmith 2007).

While the Chinese government is determined to keep news of disturbances out of the media – or at least downplay their size and disruptiveness – different news sources, some even in the Chinese media, are increasingly reporting the rising incidents of social unrest. The rise in public demonstrations is even admitted by China's Public Security Minister (Lum 8 May 2006). What is fuelling this unrest, amidst the economic growth and the emphasis on social stability?

Some of the sources for unrest are the issues discussed earlier in this chapter: unemployment, unpaid wages, the urban-rural divide, the appropriation of farmland for big construction projects and other problems related to economic development. Another reason is that the workers are becoming increasingly conscious of their rights, and more readily taking their grievances to court. Between 1995 and 2001, the number of labour disputes adjudicated by the courts rose from 28,000 to 101,000 (Solinger 2004).

In Tibet, workers face even more hardships than in the rest of China. For example, Tibetans rarely bring labour concerns to court, as attempts to participate in the public sphere are regarded as "splittist" and are quickly repressed. Another example is taken from a 1997 white paper on human rights, which admitted that while a minimum wage had been introduced in China, it was yet to be implemented in the "TAR" (State Council of the PRC 1997). Also, workers in Tibet are not allowed to form unions. And despite the central government's acknowledgement of the legitimacy of public grievances, the state reserves the authority to determine arbitrarily which protests are acceptable (Lum 8 May 2006); In Tibet such protests are almost never allowed.

There are additional serious violations of workers' rights in Tibet. There is evidence to suggest that compulsory

and unpaid labour in widely used in Tibet. Reform-through-labour is an entrenched concept of the Chinese legal system. According to Laogai Research Foundation, there are more than 1000 labour camps in China, where prisoners work more than 10 hours a day and sometimes overnight without any payment. Those failing to fulfill their tasks are beaten and tortured (Laogai Research Foundation 22 Aug 2006). There are many prisons and 13 known labour camps in the "TAR". Forced labour in prisons and re-education through labour camps in Tibet are also cited in the US State Department's March 2006 report on human rights (US State Department 8 Mar 2006).

Health and safety is another concern. While the government claims to attach great importance to labourers' rights, it has consistently failed to implement routine health and safety measures. One glaring example is that over 80 per cent of the coal mining deaths in the world occur in China. This statistic exposes serious enforcement problems, as well as corruption – officials often grant mining companies the permission to operate without fulfilling the required safety criteria. The occupational health and safety records of employers in Tibet are not publicly available, but it is safe to assume that they are no better, if not worse, than the rest of China.

There are ample cases of Tibetan farmlands that have been lost to government construction projects. The 1,142 kilometre Gormo-Lhasa railway, and new urban centres along the railway line, are prime examples. Even though there is rarely adequate compensation, the Tibetans have not been allowed to raise their voices.

Finally, there is a complete lack of social security in Tibet. Efforts to improve the social security system in China have been piecemeal and poorly implemented, partly due to tensions between the central and local governments. This means that employees end their work lives without an adequate pension. Until the 1990's, enterprises themselves did not accept responsibility for the welfare of their retired workers either.

Improving benefits for the unemployed and creating an adequate pension system would certainly improve social stability in Tibet. Of course, unequal wealth distribution, official corruption, a lack of democratic institutions and other realities in China will also continue to fuel popular protests as long as they are not addressed.

Tibetans performing menial jobs on a railway construction site.

IS THERE AN EFFECTIVE EMPLOYMENT POLICY FOR TIBET?

One assumption underlying the Chinese government's behaviour and policies is that Tibetans' traditional livelihoods are backward. China wants to promote urban industries. Chinese officials maintain that the development and modernisation of Tibet will bring more jobs and greater prosperity. However, the Tibetans are not willing to give up their traditional ways of life. They also fear that this modernisation will only bring more Chinese into their native land, further diluting Tibetan culture, identity and demography. In fact, modernisation will further threaten their traditional livelihoods, as newly-surplus rural labour moves into the towns.

The Chinese drive for modern economic development is completely at odds with Tibet's traditional economy. It is this clash which has led to such massive problems, especially in rural Tibet.

For example, while the railway to Lhasa was under construction, Nakchu Communist Party Secretary Gonpo Tashi stated:

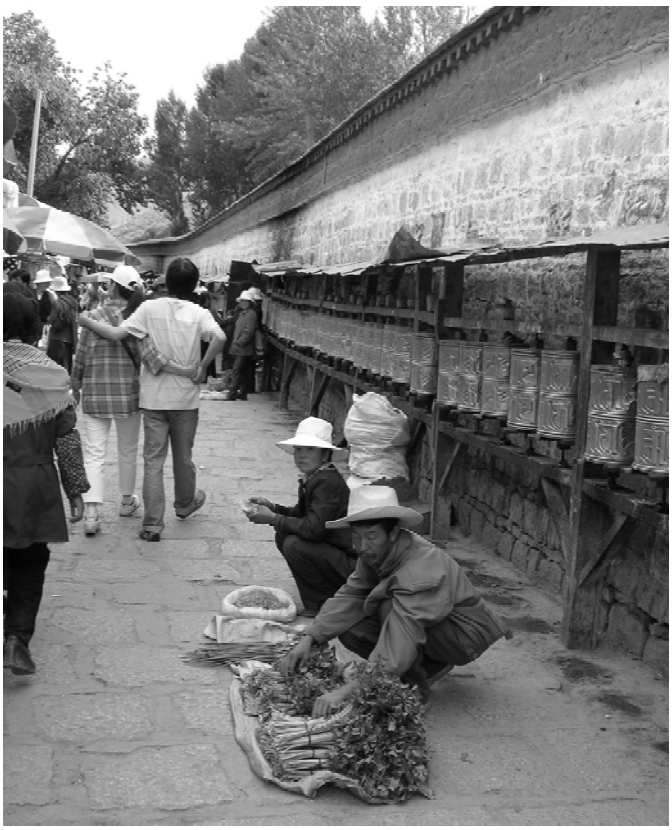
> We expect that during the construction of the railway, many herders will abandon the animal husbandry practised on the plateau for generations and enter new industries. More and more farmers or herdsmen will serve the railway industry in the form of labour, technical support, maintenance work or other kinds of service work (*Reuters News* 22 Aug 2002).

Such things are easily said, but there is no vocational training or access to credit that might enable "herders to

abandon animal husbandry". During the railway construction, there were not many Tibetans involved in even the low-paid, menial jobs. Rural Tibetan migrants into urban areas have very few contacts and little chance of employment. While rural reforms have made it possible for many to leave agriculture, the serious problem of surplus rural labour is largely the product of a long history of urban bias (Chung-Tong Wu and Xu Xueqiang.1990: 134).

Not only is there no employment plan for Tibet, but much economic life goes uncounted for and unacknowledged. Only commodities that enter the commercial money market exist in official statistics.

The Chinese drive for modern economic development is completely at odds with Tibet's traditional economy. It is this clash which has led to such massive problems, especially in rural Tibet. Traditionally, Tibet operated as a use-value economy – one in which economic activities were not considered different from the work of maintaining human relationships, making pilgrimages, or performing daily spiritual practices. Milking a cow, churning the milk into butter, and offering the butter to a monastery were all regarded by Tibetans as being useful and valuable activities. In such an economy, all socially useful activity is intrinsically worthwhile – rather than just being a means to an end, such as converting animals into meat, meat into money, and money into consumer goods. The latter type of economy is what Karl Marx called an exchange-value economy. In this system, making butter creates exchange value, therefore it is worthwhile; but offering the butter for the upkeep of monks is wasteful consumption.



Tibetans selling vegetables in Lhasa Bhakor street.

Today, everything has changed. The Communist Party completely eradicated Tibet's use-value economy and replaced it with an exchange-value economy. All activity that does not generate cash income now tends to be invisible and treated officially as if it did not exist. Chinese economists have often depicted Tibetans as wasteful, because of their failure to accumulate wealth.

The profound change from a use-value to exchange-value economy means that all Tibetans, even the remotest nomads and spiritual practitioners, now need cash income. The sparse economic activity in the winter months – when fields are fallow and herds are penned – was never experienced in traditional Tibet as a season of "underemployment", but now Tibetans need to spend the time making money to pay taxes and extra-budgetary charges imposed on them by county officials. Even the poorest Tibetans now also need cash to buy plastic buckets, factory-made shoes, nylon rope and other products that have replaced the traditional crafts. For these reasons, underemployment now exists where it had not before, and full employment is a necessity.

An appropriate employment policy for Tibetans would allow farmers and nomads to generate cash incomes in the off-season without the need to migrate to distant places, which makes it impossible to do the productive work of cropping and animal rearing in summer. Is there such a policy?

Unfortunately, China has never even attempted to craft a true Tibetan employment policy. There is no policy document, from any time during the past 50 years, that has sought to create employment opportunities in rural Tibet that would strengthen rather than undermine the existing economic production. Official plans give no recognition to the unique economic circumstances of Tibet. The latest Five-Year Plan (for 2006–2010) treats all of China uniformly, as if labour-intensive production methods are as appropriate in Tibet as in a rich coastal provinces.

Not only is there no employment plan for Tibet, but much of Tibetan economic life goes uncounted for and

unacknowledged. Only commodities that enter the commercial money market exist in official statistics. For example, the Tibet Statistical Yearbook makes no estimate of wool production in Tibet, even though wool is a major part of the traditional economy, and Tibetan wool was historically exported every year to the UK via Calcutta, and to the US via Tianjin (Rasmussen 1936: 60-68). Other products that only partly enter official channels, such as milk, hides and meat, are greatly underestimated.

In recognition of the potential of these products, successive Five-Year Plans have cited livestock production as a pillar industry to support economic growth throughout Tibet. However, these raw commodities fetch poor prices because they are sold at the farm gate without processing or upgrading in quality. There have been few attempts to improve them. For this reason, Tibetans remain poor.

Wool exemplifies the many opportunities that have been lost. China now pays the highest price in the world for fine imported fleeces in order to make the world's highest quality woollen cloth for men's suits. This wool, sold at premium prices, is a considerable achievement for the woollen mills. They have marched steadily up the value chain. However, the increase in quality and profitability of the woollen mills has been achieved entirely by importing foreign wool and utterly neglecting China's own wool-growers, including the Tibetans. Instead of helping Tibetans grow fine wool and prepare it for processing, Tibetan wool remains rough, fit only for coarse cloth (from the viewpoint of clothing manufacturers).

Not surprisingly, Tibet's wool output has steadily declined after peaking in the late 1970s. Official statistics show that the production of woollen goods in the "TAR" averaged 290,000 square metres a year from 1977–86, but by 2002 had slumped by 99 per cent to only 3,000 square metres. Woollen blanket production peaked in 1978 at 44,700 blankets, and declined steadily to only 159 blankets in 2004. Knitting wool production peaked in 1978 at 410 tonnes, then went into slow decline, bottoming out at only two tonnes in 2005 (TSB 2006: TSY, table 10-16). China never built large woollen mills in the "TAR" or Amdo, although it did so in nearby provinces like Gansu, Xinjiang and Inner Mongolia. These areas produced heavy woollen cloth for military uniforms, Mao jackets and blankets. Nearly all of these woollen mills have now gone out of business. Chinese wool, grown mostly in minority ethnic areas, remains of poor quality and unable to attract investment for improvements. As a result, the amount of fine wool produced in China is steadily dropping, since rich coastal woollen mills are willing to pay 30 per cent more for imported fine wool than for domestic (Longworth 2004).

The failure to produce high quality wool is certainly not because China is incapable of improving its domestic industries. Chinese agriculture has previously been extraordinarily successful in increasing both the quantity and quality of almost every agricultural commodity, including traditional crops such as rice and wheat, traditional livestock such as pigs, and new crops such as rubber and citrus fruit. China has established export markets for citrus, apples and garlic, with many further successes likely in the future.

Present Chinese development policy reduces Tibetans to an underclass in their own country by strategically excluding them from job opportunities, which results in widespread poverty.

A full employment policy would enable Tibetan wool growers to breed better sheep, separate fine wool from coarse at shearing time, clean and scour wool to remove grease and dirt, and thereby add value and increase their incomes. They could be fully employed and lift themselves out of poverty. However, China has failed to capitalise on this opportunity. There are no plans to add value to Tibetan wool production and certainly no efforts to ensure full employment for Tibetans.

CONCLUSIONS AND RECOMMENDATIONS

China has no employment policy for Tibet. There is no policy that recognises unemployment and underemployment as major issues for Tibetans throughout Tibet, or that seeks to effectively train Tibetans to become more employable in modern sectors.

Agriculture and animal husbandry have been the main source of Tibetan livelihoods for centuries. They get woefully little support from the government, and Tibetans are increasingly forced to abandon their traditional lifestyle and seek jobs in the cities. Traditional livelihoods, crafts and knowledge are in real danger of being wiped out.

Throughout the country, as well as in Tibet, China is experiencing rapid urbanisation, fuelled by the huge number of surplus labourers from rural areas. The rapid urbanisation in Tibet is occurring because of policies that promote urban development and because of massive construction projects, which are attracting a huge influx of non-Tibetan immigrants. These migrants receive

preferential treatment and are taking every possible job away from the Tibetans. The rapid urbanisation and the burgeoning Chinese population in the region very much threaten the survival of Tibetans. China's 11th Five-Year Plan, for 2006–2010, persists with China's productivist emphasis on urbanisation. The huge subsidies that China is pumping into Tibet, in order to expand administration and construct large-scale infrastructure, are still not enough to absorb all of the surplus rural labour pouring into the cities.

Development in Tibet is mainly driven by China's preoccupation with security, stability, border control and the imposition of a "harmonious society". It does not take into consideration the needs of the Tibetan people and Tibet's fragile ecology. Most developments, being urban-focused, do not benefit rural areas – where over 80 per cent of Tibetans live. China seems to be hoping for a trickle down of the wealth that is generated by the entrepreneurial migrants. But so far, this effect has not been felt. Tibetans are predominantly rural and except for a few who have had a chance to acquire an education, they lack the modern skills to compete with non-Tibetans in the workplace. Because of discriminatory education practices, migrants are usually better skilled, have the added advantage of knowing Chinese and possess *guanxi* connections. Some analysts say that this trend of economic development is contributing to the widening rich-poor gap that falls along ethnic lines, instead of allowing wealth to build harmony.

China must change its attitude toward Tibetans and give them the right to participate in the development process.

The development policy in Tibet that favours non-Tibetans has strategically prevented Tibetans from exercising their rights, which are officially provisioned under regional national autonomy. The Tibetan people were granted certain autonomous rights within the Chinese constitution. However, there is a huge gap between the rights given on paper and the rights exercised in practice. Tibetans have never been able to freely pursue their own economic, social and cultural development. On the contrary, current Chinese development policy reduces Tibetans to an underclass in their own country by strategically excluding them from job opportunities, which results in widespread poverty.

Tibet's poverty and rural income stagnation are rooted in the lack of good employment opportunities. Urban poverty is growing rapidly in major Tibetan towns due to the government appropriation of farmland for expanding urban areas, and due to social exclusion, particularly in the labour market. Expanding employment opportunities and improving education are the most effective ways to reduce poverty. Both formal and on-the-job training can only improve Tibetans' viability in the labour market.

If China wants to see real development in Tibet, it first of all needs to understand the traditional mode of production in Tibet, which has always been a use-value economy based on farming and nomadic pastoralism. Both of these specialities are highly seasonal, given the short growing season for crops and the grasses on which the livestock feed. This means that economic activity in the summer and autumn is intense, often with labour shortages during that time. But in winter, people are virtually jobless. Approaches must be developed which make use of this seasonal surplus labour. Creating a better seasonal balance for other income-generating work could be one effective measure. This approach is especially adapted to the special circumstances of Tibet, since it will enable Tibetan farmers and nomads to earn off-farm income while staying close enough to their land, so that they can fully participate in the production season during the warmer months.

Tibet's indigenous products such as Tibetan carpets, handicrafts and other traditional products have great potential for redressing current inequalities, as they are largely rural-based. To realise this potential, the traditional products need to be enhanced by supplying the Tibetans with modern skills for production and marketing (see the Guidelines for International Development and Sustainable Development in Tibet). There is a comparative advantage for Tibet to produce these products, which should be able to find a distant and highly profitable market. Rural production should move beyond raw materials and basic processing into control and ownership of higher stages of both processing and distribution. This type of local business should be supported through well-implemented policies, including training farmers and nomads in technologies compatible with their way of life, establishing and operating co-operatives, pooling micro-finance, and planning and operating enterprises.

It is widely recognised that China's employment attitude in Tibet is discriminatory. The Constitution of the People's Republic of China recognises the harmfulness of racial discrimination and forbids it, but China still has far to go in addressing the discrimination that is widespread in the minority regions, including Tibet. If China is to respect its own constitution, the government

should make specific recommendations on ways to combat this discrimination.

From the perspective of equity and human development, education is also critically important. Education increases people's capabilities and choices, and enhances the nation's human capital. As chapter two (Education) explains, the primary task in Tibetan education is to increase investment in the public fiscal system and basic education. Also, the government should meet modern conceptions of workers' rights, and approve a sound social security system, such as pensions and healthcare facilities.

For all of this to change, China must change its attitude towards Tibetans and give them the right to participate in the development process. In Tibet, decision-making on all development projects predominantly follows the priorities of the central government, which has strategically chosen to marginalise the Tibetan people. Despite its huge investments, Chinese development policy is a complete failure, as the policy relies on state-driven growth and hopes to raise incomes of the poor only as a side benefit. Rather than relying on this hope, new development projects should directly target the poorest sectors of society. The government should encourage the active participation of villagers, listen to their opinions, and delegate some decision-making powers to the villagers themselves on all development projects. This would not only save money and optimise the use of funds, but also provide incentives for decision-makers in the village to maintain proper project management and sustainability. Local needs should always be prioritised in sustainable development. The government's interventions should be based on a policy of guaranteed minimum income support, which should be limited to the destitute, who are at risk of chronic dependence. Unless an appropriate policy based on the comparative advantages of Tibet is devised, a looming social crisis caused by unemployment, massive inequality and the violation of workers' rights will remain a threat.

On this highland humans and nature coexist harmoniously,
The land where spiritual and human laws reign supreme,
In the land where celestial powers are revered,
Where animals are partners in life's struggle,
Where birds fly without fear, Where fish swim in freedom,
Where wildlife is protected,
Where men and women cherish inner peace and outer freedom.

Tibetan folk song
(Reprinted from DIIR, Tibet 2000)

CHAPTER FOUR

URBANISATION AND INEQUALITY

Urbanisation is China's master strategy for modernising Tibet. It underlies China's desire to transfer large immigrant populations into Tibet and implement innumerable policies; to exploit Tibet's minerals and energy resources; to integrate Tibet's roads, railways and rivers into China's transport and electricity grids; to secure China's borders; to suppress Tibetan aspirations for freedom; and to introduce mass tourism for the employment of immigrant labour. Urbanisation is the key to China's entire spectrum of development in Tibet.

> Guided by the overall plan for urban construction, we will make efforts to accelerate the development of medium-sized cities, vigorously develop small, county-level and border cities, and appropriately develop organic towns. We will establish an urban network with medium-sized cities as the core, small cities as the mainstay, and the organic towns as the basis and with the close cooperation and coordinated development of all of them. Efforts are to be made to speed up the building of small towns in rural areas […] Our region is sparsely populated, with people scattered in various areas. In view of these characteristics, urban construction is to be carried out first in prefectural cities and county seats (*Xizang Ribao* 1996).

China sees urbanisation, throughout its provinces, as a self-evident good, the epitome of productivist progress, and even a law of history. Even though rapid urbanisation swallows China's precious arable land, intensifies energy use and increases all forms of pollution, China presents this accelerated urbanisation as proof of progress and an improvement in living standards. According to the UN, by 2008 the global urban population will exceed the global rural population (UN ECOSOC 2007). China is contributing vigorously to this global urbanisation.

OVERVIEW: THE THEORY BEHIND THE URBANISATION OF TIBET

Urbanisation is a natural trend only when it is driven from below, in cases where poor people in the countryside find it too hard to sustain their lives on their ancestral land. This can be true in China where there is an extraordinarily large population and the agricultural returns to smallholder peasants are diminishing.

Yet there are many parts of the world that are not suited to urbanisation and are unlikely to benefit if urbanisation is imposed from above. It is a mistake to assume that what worked in China is necessarily suitable for Tibet. Unfortunately, China frequently makes this assumption. Successive Five-Year Plans have announced urbanisation targets not only for Tibet's major cities, but in each of its counties as well.

Urbanisation in Tibet has not been discussed at great length before, but the radical changes now being engineered by China – a productivist, developmentalist state – need to be thoroughly assessed. This chapter concentrates on urbanisation in the "Tibet Autonomous Region" ("TAR", corresponding only to central and western Tibet), because adequate data is available for this area. However, all of the Tibetan areas are included in China's urbanisation plans. Lhasa alone receives nearly three million tourists a year, more than ten times the resident population. The population itself has increased sevenfold in recent years, due to the massive influx of non-Tibetan immigrants. As the other chapters demonstrate, the intensive urbanisation of Tibet has done little to lift the average Tibetan income, provide services to the countryside where most Tibetans continue to live, or raise the education, skills or employability of Tibetans.

The picture that emerges is of urbanisation as the engine of inequality (Li Qiang 2005; Liu Xin 2006). This is potentially a counterintuitive outcome. Conventional economic wisdom is that urbanisation stimulates economic growth, and that economic growth benefits everyone. But in Tibet, the gap between the urban rich and rural poor is flagrant and only getting worse. Chinese immigrants send the wealth that is generated in the Tibetan cities back to their families in China's interior provinces. This money leaves Tibet without trickling down into the hands of urban Tibetans, let alone to Tibetans in rural areas.

China's statistics show that rural Tibetans spend only US $195 per person annually, while the average per capita annual spending of urban Tibetans is US $1084 (TSB 2006: TSY, tables 8-11 8-17), over five times as much. This is an extraordinary gulf that is widening every year.

The result of urbanisation has been social stratification. A new class of rich contractors, real estate speculators,

hotel builders and tour operators in urban enclaves such as Lhasa are now surrounded by a sea of poverty. The best schools and hospitals are located in the urban areas and their aim is to assure non-Tibetan immigrants that they can enjoy the same services as residents of Beijing or Shanghai. The rural facilities are decrepit, as chapter two (Education) accurately describes in the case of schools.

Most of Tibet's physical infrastructure, such as the monastic universities near Lhasa, was destroyed 40 years ago in revolutionary violence that was intended to impose compulsory equality. Now inequality is acute, with all privileges being bestowed on an immigrant elite. The Tibetan people suffered greatly in the supposed creation of equality, and are now largely excluded from holding any wealth.

Urbanisation is usually defined as a sharp increase in the proportion of a population living in urban places. The criteria for the definitions of urban or rural fall into five categories: demographic, economic, social, morphological and functional (Ramachandran 1989: 101). The most widely used criteria are demographic, which refer to the total population and population density. The economic criteria focus on the occupation (agriculture or the primary, secondary, and tertiary sectors) of the working population. Urbanisation brings about a decline in primary sector employment and a proportional increase in secondary and tertiary sector activities.

Prior to 1950, the Tibetan economy was part of the global economy. It was only under the People's Republic of China that Tibet's southern borders were closed to commerce.

By 2005, China's urban population, depending on how urbanisation is defined, ranged from 508 to 603 million people, according to a study by the International Institute for Applied Systems Analysis (IIASA) (Heilig 1999). The Chinese press stated that China was 43 per cent urbanised in 2005 (*People's Daily* 17 December 2005). The IIASA study estimates that by 2030, China's urban population will be between 828 million and 1016 million people. Of course, this raises serious questions about whether the planet can actually sustain such an enormous population producing urban levels of consumption and waste.

The urbanisation of Tibet cannot be understood in isolation. Tibetan urbanisation is an integral component of the urbanisation of China, which is undergoing the fastest, largest and most fundamental population restructuring the world has ever seen. China's central planners seek to integrate Tibet into the Chinese economy at a low point of entry – as a supplier of raw materials – and to smother it in Chinese knowledge and Chinese characteristics. The new cities in Tibet will be ordered to collect and aggregate Tibetan raw materials, and send them to bigger inland Chinese cities, where they will be processed. This is called the ladder-step model or the growth pole model. This model has been explained by a team of Chinese geographers in a significant book about the Great Western Development programme, initiated in 1999 (Gu et al. 2004).

According to this model, Tibet's remoteness condemns it to a low rung on the ladder of development. The metropolitan hubs that drive Tibetan urbanisation are not actually in Tibet at all, but in the two inland, urban belts of Chengdu-Chongqing in China's southwest, and Xi'an to Lanzhou in China's northwest (Gu et al. 2004). These two massive, sprawling, competing hubs are where the capital, knowledge and power will be concentrated. Tibet is to supply the resource-hungry industries around these hubs. This brings additional income to the Chinese metropolitan hubs, but not to Tibet itself.

The ladder-step model assumes that there is a natural law of progress and urbanisation, whereby remote areas begin at the bottom and slowly progress to becoming manufacturing centres. However, for years to come, Tibetan cities and transport corridors will provide only minimally processed commodities, such as minerals and energy. Since most profit comes not from unprocessed commodities, but from the value added by processing and manufacturing, any progression will be extremely slow with very limited short-term economic benefits for Tibet. Urban centres in Tibet will train people in the modern skills required for extraction, but this training will undoubtedly be offered to predominantly non-Tibetan immigrants.

These models make some very questionable, hidden assumptions that should be examined. One assumption, thought to be undeniable, is Tibet's remoteness from major markets. It is true that Tibet is distant from the major Chinese manufacturing centres, but it is not remote from India, a country that has historically had strong economic as well as cultural ties with Tibet. Trade caravans of Tibetans, Nepalis and other nationalities crossed the passes through the Himalayas for centuries. Prior to 1950, the Tibetan economy was part of the global economy, trading wool via Tianjin to the Americas, and via Kalimpong and Calcutta to the UK and Europe. These trade arrangements have been well documented (Rasmussen 1936; Shuttleworth 1923; Baker 1915; Black 1908; Hamilton 1910). It was only under the People's Republic of China that Tibet's southern borders were

closed to commerce. Tibet was then forced to look east, as a remote hinterland with its new capital now thousands of kilometres to the northeast.

A second questionable assumption is that development has to be a step-by-step climb up the ladder, with no shortcuts. According to this assumption, the order of the steps is fixed. As a result, Tibet finds itself on the lowest rung as a supplier of raw, unprocessed, bulk commodities. Only after the new urban infrastructure enables Tibet to gain a foothold on the ladder can it begin to climb towards industrialisation. Ultimately, in the distant future, Tibet should be able to develop post-industrial service sectors. However, if we look at the occupations of Tibetans outside of Tibet, in India and around the world, we can observe very different patterns of progress.

By studying the economic occupations of Tibetans in exile, it becomes clear that the prevailing models in Tibet are not for the benefit of Tibetans, but for supplying the demands of China's metropolitan hubs. Tibetans have shown themselves to be very successful at service industries, from selling sweaters to working as IT technicians. Tibetans are also in high demand around the world as teachers of mind training, a not-for-profit service role. One might suggest that Tibetans are also suited to the role of "service nomad", a term coined by Yuri Slezkine to explain the success of 19th century European Jews (Slezkine 2004). The transition from nomadic lama or nomadic herder on the grasslands, to nomadic global lama, trader, restaurateur, artist or personal care provider in modern metropolitan centres may not be so difficult.

A third questionable assumption is that the Tibetan Plateau has two distinct economies that must supply two separate hubs. China has artificially split Tibet's three provinces among the southwest and northwest regions of China, using geographic designations created by the central government. China's southwest includes the "TAR", Yunnan, Sichuan (including the Tibetan prefectures), Chongqing, Guizhou, and Guangxi all classed together in a huge region with Chengdu-Chongqing as the hub. China's northwest includes Xinjiang, Gansu (including the Tibetan prefectures) and Shaanxi, and occasionally Inner Mongolia is also classed in this region. China has separate plans for these two regions.

The result is that at both provincial and regional levels, Tibet is not treated as a single unit, but is presented as two artificial entities to the outside world. No longer do the three traditional and more natural internal divisions of the Tibetan Plateau – U-Tsang, Kham and Amdo – face and deal with each other. U-Tsang is now on the extreme periphery of China's southwest region, Kham is mostly within the southwest, and Amdo is mostly within the northwest. Tibet has been cleaved and turned inside out.

Rising concrete jungle - Lhasa as seen from the Potala Palace.
Photo by Rainer Haessner

The most debatable assumption made by the Chinese authorities is that economic development theories originating in Western countries, such as Marxism and neoliberal capitalism, are all applicable to China and Tibet. Western theories of economic development, often called *tidu lilun* in Chinese (Gu et al. 2004), typically rely on urban centres that are favourably endowed with production facilities and enjoy some competitive advantage. These urban areas process goods, add value, create wealth and grow demand, thereby supporting the whole of society. The growth-pole concept of Chinese geographers is similar, with the bulk of the growth inevitably concentrated at "poles" and then diffusing. A growth pole is also seen as a magnet for attracting investment and development. In China, the poles are said to be held up by "pillar industries" that will enable other economic developments to follow suit (Gu et al. 2004). As early as 1985, Chinese economists published articles justifying the concentration of wealth in urban areas and the urban fringe (Lin Lin 1985; Chen Jia Ze1987; Wang Zhi Yuan and Zeng Xin Qun 1988).

These growth models were actually American ideas from the 1950s (Hirschman 1958; Rostow 1963). They are idealised, and based on the assumption that both capital and labour are free to move wherever there is comparative advantage or other factors that provide profitable opportunities. However, in China, capital and labour have not always been free to move. Labour is restricted by the *hukou* (household registration) system. This is explained further in chapter three (Unemployment

and Social Exclusion). Investment capital, especially loan capital of major banks, has until very recently been allocated by state policy directives. Even the knowledge of good economic opportunities, assumed to be available to all, is primarily held by the dominant class in China's political system. Furthermore, this class holds the administrative power to grant permissions or impose hindrances on applicants.

A final reason why these models are unsuitable for Tibet is that they simply do not make sense in remote, agrarian areas. A top-down, urban-driven growth model cannot possibly work in Tibet, which is thousands of kilometres from any other major urban centre and has a population that is over 80 per cent rural. Urban and industrial growth in Tibet can only be achieved by massive, direct intervention by the state. The urban growth in Tibet, while very real, has nothing to do with organic or spontaneous growth and it is not economically sustainable.

From all the lists of nodes, axes of development, pillar industries and growth poles, nothing can be found that gives Tibetan cities a significant role in China's national development programme, except as suppliers of raw materials.

Despite these major flaws, the Chinese authorities and their academic advisors remain wedded to their ladder and growth-pole theories. The inevitable result of applying such dubious and ill-fitting theories is that Tibet will be assigned a lowly and unrewarding role for a long time to come. From all the lists of nodes, axes of development, pillar industries and growth poles, nothing can be found that gives Tibetan cities a significant role in China's national development programme, except as suppliers of raw materials. A team of geographers from the Chinese University of Hong Kong identified two primary growth axes within western China in 2004: one vertical (north-south) developmental axis, suitable for promoting urban agglomeration and urban clusters, and two horizontal (east-west) axes, none of which include the Tibetan Plateau. They also name seven existing urban clusters that have been designated to be built up as part of the *xibu da kaifa* (Great Western Development Programme), but again none of them are in Tibet (Gu et al. 2004).

The role of Tibetan towns and cities has barely changed from what it was to central planners in the Maoist revolutionary era. Mao referred many times to the abundance of minerals and the small population of Tibet and the far west. The policies introduced in the 1980s, especially the 7th Five-Year Plan (1986–1990) further solidified this role for Tibet in the rise of China (*Beijing Review* 1986). Let us now consider this recent history in more detail.

CHINA'S DEVELOPMENT POLICIES IN TIBET

It has been more than five decades since the People's Liberation Army entered Tibet. From the beginning, China claimed it had a superior capacity in terms of human quality, and that it had come to develop Tibet in the name of material growth and egalitarian communism. The one constant during the 55 years of China's control has been their emphasis on developing industrialised urban areas and increasing consumption.

Since 1980, the central government's main forums to discuss economic development in the "TAR" have been the four "National Work Forums on Tibet". These forums are held by Central Beijing Government and attended by China's most senior leaders.

The First National Work Forum on Tibet took place before Hu Yaobang, Secretary of the Chinese Communist Party, visited Tibet in 1980. Hu was so shocked by what he witnessed that he introduced six tasks, or preferential policies, for Tibet during a political speech given at a gathering of 5,000 cadres in Lhasa on 29 May, 1980. He said that although there had been some improvements, Tibetans still lived in relative poverty. In some areas, the living standards had even deteriorated. He stated that the living standards must be brought up to at least pre-1959 levels (Barnett & Akiner 1996). This remarkable statement demonstrated an official recognition that Tibetans' living standards had fallen during the 30 years of Chinese rule.

In 1984, Hu Yaobang convened the Second National Work Forum on Tibet. Besides partly opening up Tibet to the outside world, the new policies from that forum encouraged state-owned enterprises, individuals and China's richer provinces to invest in businesses on the Tibetan Plateau. In total, 43 projects to develop infrastructure for tourism, at a total cost of 480 million yuan (US $60 mn), were also approved, which resulted in a sharp increase in the Chinese population in the "TAR". In May 1984 alone, more than 60,000 Chinese peddlers and craftsmen, from over 20 Chinese provinces and cities, arrived to work on these 43 projects. Just one year earlier, 50,000 Chinese workers had already migrated to the plateau. In 1984, at least 10,000 Chinese people – mainly from neighbouring Sichuan and Gansu provinces – decided to settle in the few urban locations of the "TAR", while another 30,000 Chinese settlers arrived in 1985.

This rapid increase in Chinese migration, particularly of entrepreneurs and petty traders, led to inflation and a loss of employment and business opportunities for the Tibetan people (DIIR September 2001:11). None of the 43 projects were designed to have any positive impact on the lives of ordinary Tibetans, most of whom were (and still are) farmers and nomads. For example, some projects saw the construction of hotels in Tibet, whose main purpose was to consolidate the Chinese bureaucratic presence and only slightly improved the quality of life in urban areas, which are mostly comprised of migrant Chinese anyway. In any case, this liberal period lasted less than a decade. After the pro-independence demonstrations of 1987–89, Beijing reverted to ruling by control and repression.

Deng Xiaoping remarked that Tibet could no longer remain at the back of progress (Yeh 2003 Chapter 2). In July 1992, China introduced a series of new policies and regulations in Tibet. These were intended to deepen reforms, increase openness, and accelerate the development of tertiary industry, townships and town enterprises. Tibet's reputation of being at the back was rhetorically changed to being at the forefront. Tax rates in the Lhasa "Special Economic Zone" were reduced to 15 per cent, instead of the usual 33 per cent (*BBC* 2001). According to the Lhasa Bureau of Industry and Commerce, in June and July of 1992 alone, over 500 industrial and commercial entrepreneurs arrived, equal to almost 10 per cent of the city's total number of entrepreneurs. The towns of Shigatse and Tsethang also saw newly bustling commercial streets (*Renmin Ribao* 1994). However, the government's stimuli resulted in the establishment of only small enterprises, despite regular proclamations of great success. China's statistics on private sector employment show that, until recently, most enterprises in the "TAR" actually had very few employees. The government-incentivised population growth was unable to generate much industrial growth.

The Third National Work Forum on Tibet was held in Beijing in July 1994. Tibet was still way behind in basic infrastructure, a necessary condition to attract investors, so the Third Forum launched a set of 62 large-scale "Tibetan aid projects" in sectors including energy, transportation, post and telecommunications. Direct investment from the central government for these projects totalled 4.86 billion yuan (US $0.61 mn) (State Council of the PRC 2001). But the main end goal of these 62 projects was to make the living conditions of the government cadres and Chinese urban residents more comfortable. Of these projects, 17 were energy related, mostly hydropower. A few aimed to renovate existing power stations – all to supply power not to local Tibetan households near the power stations, but to the urban areas of Lhasa, Shigatse, Nyingtri, Chamdo and Nagchu. More than 30 per cent of the total investment went to financing these energy projects (DIIR 2001).

The Third Work Forum also launched a programme to send "aid-Tibet cadres" (*yuanzang ganbu*) from 15 counterpart provinces and municipalities to work in "TAR" government units for a period of three years. The first batch of *yuanzang ganbu* consisted of 621 officials, the second of 637, and the third of 685 (Yeh 2003: Chapter 2), which further de-Tibetanised the government units.

The Fourth National Work Forum on Tibet was held in June 2001. This forum went even further than the last one by raising the pay scales of government personnel to up to 2.5 times the national average (Yeh 2003: Chapter 2) and launching 117 infrastructure projects. The direct state investment for these projects totalled 31.2 billion yuan (US $3.7 bn) (DIIR September 2001).

The "TAR" government currently receives more than 90 per cent of its total income in the form of direct grants from Beijing – a degree of dependence unheard of elsewhere in China.

Another major initiative was the *Xibu da Kaifa,* also known as the "Great Western Development Programme" or "Go West", which was launched in 1999 for implementation during the 10th Five-Year Plan (2001–2005). A railway line from Gormo (Ch: Golmud), in Tibet's Amdo province (Ch: Qinghai), to Lhasa was the key project. This now-famous project cost US $4.2 billion to build, absorbing no less than 10 per cent of China's entire national capital construction budget for five successive years (Xinhua 18 March 2007). It became operational on 1 July 2006. Even China's president said that the project was uneconomical, with little prospect of turning a profit, and was implemented primarily for national and political reasons.

> Some People advised me not to go ahead with this project [Gormo-Lhasa Railway] because it is not commercially viable. I said this is a political decision (Jiang Zemin 2001).

Tibet's 10th Five-Year Plan for 2001–2005 proposed that a rapid increase in GDP should be the main goal of "leap-style development". The plan lists processing, mining and forestry as the mainstay industries for the exploitation of natural resources. This is the traditional strategy of industrialisation. However, the only four industries in the "TAR" that are thriving, according to

official statistics, are commercial brewing, quarrying and cement production, and maintenance of transport equipment for the long supply lines to interior China (see table 4.1). The collecting and processing of ingredients for traditional Tibetan and Chinese medicines, also listed as an important industry, is now orchestrated by major enterprises.

These four industries account for around 82 per cent of all industrial income in the "TAR". This is a slender base for growth, considering the "TAR" is bigger than France and Germany put together. These industries also offer a limited set of revenue sources for the "TAR" government, which collects little tax revenue other than corporate taxes. To finance Tibet's booming urbanisation, the "TAR" government currently receives more than 90 per cent of its total income in the form of direct grants from Beijing – a degree of dependence unheard of elsewhere in China. Other Tibetan provinces and prefectures also rely heavily on subsidies, since their industrial base is similarly weak.

China claims that the "TAR" has enjoyed extraordinary economic growth, averaging over 10 per cent during the last five years. In 2006, the official growth rate of the "TAR" was 13.2 per cent, higher than the Chinese national average. A Tibetan cadre interviewed by *The Economist* expressed great scepticism as to whether such figures are true and whether Tibetans are benefitting. "The officials tell us what incomes Beijing wants us to report and then we just have to report those numbers, even though there are farmers earning far less" (*Economist* 2007).

Whatever growth is actually happening, it is not organic economic growth caused by market forces, but by immense, centrally planned government subsidies. Such deep dependence on external inputs creates a highly artificial and unsustainable economy. The central government's special treatment of the "TAR" also creates envy among neighbouring provinces, and it remains to be seen whether there will be any real long-term benefits.

Furthermore, despite the massive financial inputs, poverty and deprivation are still prevalent among the majority of the Tibetan population. China's official statistics show that the annual expenditure of the 80 per cent of Tibetans that live in rural areas – in other words, what they each spend in a year on everything they need to live on – is US $195 per person. Of that figure, 67 per cent is cash expenditure, while the rest is a statistical value assigned to the farmer's own subsistence production and consumption (TSB 2006: TSY: table 8-17). The large and growing gap between haves and have-nots raises serious questions about the current application and effectiveness of central subsidies.

The main result of these subsidies, in human terms, is the massive influx of Chinese migrants to Tibet, as described in chapter three (Unemployment and Social Exclusion). A population of at least 10 million people now lives on the Tibetan Plateau, which is 70% more than the pre-1959 level. The demands on the ecosystem have more than doubled because the urban immigrants consume far more per person than the Tibetans did. This is far beyond what the ecosystem can support. Water, soil, grasslands and forest resources are being rapidly depleted as a result.

The population and wealth increase has been highly concentrated, both spatially and socially. The result is enormous inequality. Spatially, investment has been concentrated in specific areas that are suited to urban growth, mining, intensive farming or transport corridors, which exacerbate the local environmental conditions. In social terms, the investments primarily benefit the urban Chinese immigrants. The Chinese urban elites in Tibetan regions are paid some of the highest salaries in China. Most Tibetans remain poor and continue to subsist on their land as farmers and pastoral nomads. Except in unusual cases, 50 years of input from Beijing have failed to create new opportunities for rural Tibetans. The main products of Tibetan labour, such as wool, dairy products, leather, live animals, barley, and medicinal herbs and ingredients continue to be produced (often in great quantity) but receive consistently low prices.

Table 4.1 Sales revenue of all state-owned and non-state-owned industrial enterprises in the "TAR," 2005

Items	Revenue (million yuan)
Quarrying, cement, and construction materials	760
Medicinal and pharmaceutical products	380
Sale of hydropower and geothermal power to industries	472
Beverage production	210
Other	420
Total	**2,242**

Source: Tibet Statistics Bureau 2006: TSY, table 10-11.

There has been no significant investment in the increase of production or income, or even in halting the accelerating grassland degradation, which was triggered by past attempts at making the land produce more than was sustainable. Chapter one (Nomads and Grasslands) demonstrates that little has been done to rehabilitate these degraded rangelands.

The Great Western Development Programme is also directing development projects, and possibly some Foreign Direct Investment (FDI) and Chinese investment capital, into the urban hubs of China's western half. Most of this money goes to the booming areas of Chongqing, Xi'an, Lanzhou and Chengdu. When the campaign began, Chongqing and Sichuan already accounted for 33.6 per cent of the entire GDP of western China (Gu et al. 2004: 174). Since then, Chongqing, under the direct management of Beijing and with massive funding, has become the fastest growing city in China, and the theory is that it will enable growth throughout the impoverished west.

However, once again, the resulting boom has benefited only a favourably placed minority that enjoys a good location and connections. Only a few people have benefitted from the bulk of this new wealth. Inequality in China has grown ever since it scrapped central responsibility for healthcare and basic education in the 1980s. The government's promises of lifelong welfare, pensions and employment security for workers in state enterprises have not been fulfilled, as explained in chapter three (Unemployment and Social Exclusion).

China's central leaders have wisely recognised that the hundreds of millions of peasant farmers also need to benefit from China's growth, as do the 110 million members of minority nationalities. China's 11th Five-Year Plan (2006–2010) recognises that unsustainable, narrowly concentrated growth should be redirected into strategies that are more sustainable, equitable and socially responsible. Direct attention should be given – and is already being given – to those who have missed out on the decades of fast accumulation.

The emphasis on rural expenditure, as part of the goal to assist rural incomes, is a welcome change from the previous, lengthy focus on urban construction. Nonetheless, the biggest allocation of the expenditure that aims "to better the production and living conditions of local farmers and herdsmen" is going to infrastructure. This only alleviates poverty indirectly, unless the casual employment of rural Tibetans as unskilled road builders counts as entering the modern economy.

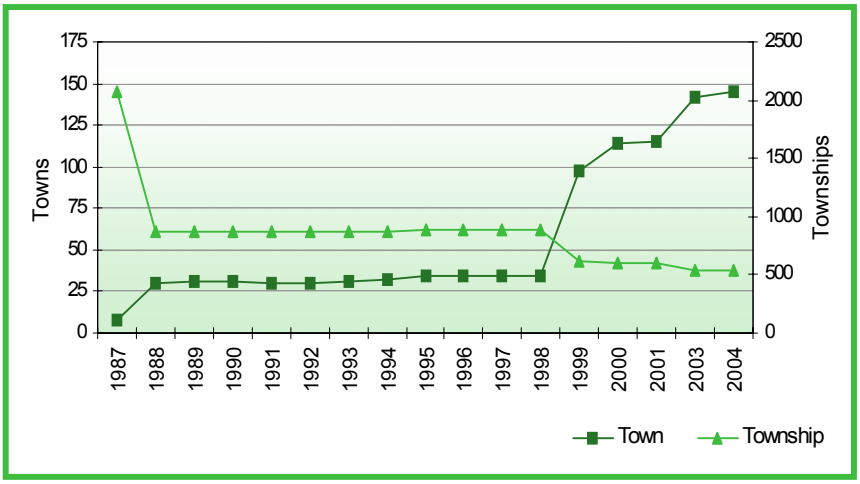
URBANISATION IN TIBET

Urbanisation refers to both an increase in population density and an increase in the total population size. Here, we also use the term to refer to urban occupations and services, as opposed to agricultural.

Tibetan settlements are comprised of villages, towns and cities. Before 1950, there was little focus on Tibetan urban areas, externally because of Tibet's geographical and political isolation and internally because Tibet actually had very few urban areas. The only major towns besides Lhasa were Shigatse, Gyantse and Chamdo. Even Lhasa seemed more like a town than a city to its few visitors. In Tibetan history, "urban" is better applied to the large monasteries such as Drepung, Sera, Gaden and Tashi Lhunpo. The boomtowns of today, such as Gormo and Siling (Ch: Xining), were little more than stopovers for long-distance trading caravans and their yaks and camels. Now, Siling has become an official city of one million people, 99 per cent of whom are non-Tibetan. Similarly, Gormo is more than 95 per cent non-Tibetan.

China has changed the boundaries and classifications of the Tibetan areas several times. In 1988, many rural townships officially became urban towns and the total number of towns increased from eight to 30. Other rural

Figure 4.1 Number of Towns and Townships in Tibet Autonomous Region (1987-2004)



Data Source: Emily Ting Yeh doctoral dissertation University of California, Berkeley and TSB 2005: TSY, table 2-1.

Table 4.2. Number of towns in various prefectures of the "TAR"		
Prefecture	**2001**	**2004**
Lhasa	9	9
Chamdo	24	28
Lhoka	24	24
Shigatse	27	27
Nagchu	2	25
Ngari	7	7
Nyingtri	19	20
Total	**112**	**140**

Sources: TSB 2001: TSY, table 1-1; TSB 2005: TSY, table 1-1.

townships were consolidated into larger rural townships, with the overall number declining from 2,069 to 865. Another round of agglomeration came in 1999, when the number of towns increased from 34 to 97 and the rural townships decreased from 880 to 623 (see Figure 4.1). Since 2000, the number of towns has increased every year and the number of rural townships has decreased. According to the 2005 Tibet Statistical Yearbook, the "TAR" contained 145 towns and 540 rural townships.

This policy of town creation and agglomeration, which is part of China's drive to urbanise rural areas, is an alien notion to Tibet. Historically, there was no major tendency to concentrate people in permanent settlements. A township is just an administrative unit imposed from above, based on the communes created all over China in the 1960s and 1970s.

The greatest increase in the number of towns has occurred in Nagchu prefecture, which had only two in 2001 but boasted 25 in 2004 (see table 4.2). This is due to the Gormo-Lhasa railway. Major sections of the tracks run through Nagchu, and settlements along them are rapidly taking shape. This is to be expected; all over the world, railway lines stimulate immigration, change land use, intensify production and create new economic niches, especially where the trains stop.

The jump in the "TAR" from 112 towns to 140, an increase of more than 20 per cent in only four years, indicates an acceleration of the urbanisation policy, which was made explicit in the 9th Five-Year Plan (1996 - 2000). Rapid urbanisation is also at the core of China's 11th Five-Year Plan (2006–2010) and spreads throughout China. The urban construction boom, especially in Lhasa, imposes the development model of the eastern seaboard on Tibet. There is a definite plan to reproduce China's eastern, urbanised landscape in Tibet (Yeh 2003). In fact, China now claims that Tibet is developing in a "leap-over" fashion, so fast that it is more like a coastal province than its neighbouring, deep hinterland provinces.

A similar, centrally-planned urbanisation process occurred in the 1970s and 1980s in Mongolia. As a result of the massive capital inputs from Moscow, Mongolia's largely nomadic population quickly became urbanised and concentrated in a few cities. When the Soviet bloc collapsed, life in the Mongolian capital, Ulan Bator, quickly became untenable. There was no fuel for milk and food trucks, no money to maintain power stations or to service farm machinery. Residents of Ulan Bator literally faced starvation. The only alternative was to move out of the city, back to the grazing lands of relatives, where survival was possible. The urban population dropped quickly and considerably. The exodus from the cities was halted only by the extreme weather that caused disastrous seasons in rural areas in the mid-1990s.

In the "TAR", there is only one prefecture level city (Lhasa), one county level city (Shigatse) and 140 towns. The scales of these towns are limited. Lhasa, the biggest city, occupies only 53 square kilometres. The second-biggest city, Shigatse, occupies only 9 square kilometres. Other small towns are no more than 1 square kilometre (Li Tao 2003).

In terms of population, the "TAR" reached 2.77 million in 2005. This does not include the military garrisons that are present in every Tibetan town. China has more than one way of defining the urban-rural split. According to certain official Chinese figures, 27 per cent of the "TAR" population was urban in 2005 (Xinhua 21 March 2006), while other official figures quoted 20 per cent (TSB 2006: TSY, table 2-4). However, some farmers are considered "urban" by Chinese statistics, even though most observers would consider them rural. A total of 84 per cent of the "TAR" population was agricultural in 2005 (TSB 2006: TSY, table 3-3).

Also according to official statistics, the rural population declined from 88.7 per cent in 1978 to 80 per cent in 2005. The urban population has grown from 11.3 to 20 per cent. The likely outcome of this trend is clearly visible from the Interim Report on Regional Population Projections for China, compiled by the International Institute for Applied Systems Analysis (IIASA 2003: 32), which projects that 32.4 per cent of the Tibetan Plateau population will be urban by 2010. If the statistics are correct, a rapid increase in urbanisation is currently

underway. Given Tibet's low level of urban industrialisation and rural industry (township and village enterprises), this degree of urbanisation is most unusual.

LHASA AS THE URBAN FUTURE OF TIBET

Lhasa, with its gleaming glass facades, monumental icons and broad boulevards, has been remodelled as extensively as Shanghai and Beijing – and at comparable expense. The holy city of pilgrimage for Tibetans and Mongolians is now a showcase of Chinese modernity. China's central leaders, proud of what has been accomplished, are keen to show it off to the world.

Lhasa is worth a closer look for its sheer exceptionality. Cost was not a consideration in its bulldozing and remaking. Not only does Lhasa boast sheet-glass shopping malls, hotels, broadcasting networks, transport hubs, universities, museums, entertainment centres, discos, Party cadre training schools, libraries, hospitals and security apparatus, it also retains a few islands of exotic attractions, most notably the Dalai Lamas' Potala Palace and the central cathedral known as the Jokhang.

Lhasa has become a form of theme park for domestic Chinese tourism. It is a government-building project that intends to display the inert jewels of Tibet set in a crown of modern Chinese institutions. Experiencing Lhasa as a domestic package tourist is akin to experiencing the ancient icons of the Tibetan Oriental traditions as interpreted by Chinese modernism. The Potala Palace and the new museum and national library are equally iconic and meaningful. In the Potala Palace, both international and domestic tourists are accompanied by Chinese professional guides who recite China's official version of Tibetan history and culture. This landmark and the ancient traditions it represents are also given a thoroughly modern interpretation in the government museum and library. At all times, the official voice of the state provides the only explanation, depicting Tibet's journey from darkness to light, from oriental despotism to holiday destination, from enslavement by nature to mastery of nature.

In an exclusive interview with the *Xinhua* newspaper in 2005, "TAR" Chairman Jampa Phuntsok (Ch: Qiangba Puncog) said that if the current situation in Tibet can be maintained, Tibet will have a strong chance of reaching its potential. He believes that Tibet's cultural and historical richness would be greatly attractive to travelers from around the world. According to Phuntsok, the central government has poured an average of more than 10 billion yuan (US $1.2 bn) annually into Tibet for big projects in recent years. Together with investment from other channels, including private sources, there is more than 16 billion yuan (US $1.93 bn) currently pouring into Tibet annually (Wei Wu 3 June 2005).

The new Gormo-Lhasa railway is providing an added stimulus to tourism in Tibet. The "TAR" received more than 2.25 million visitors in the first 10 months of 2006. This influx of tourists brought revenue of more than 2.4 billion yuan (US $300 mn), a year-on-year increase of 28.9 per cent (Satish Gupta 15 November 2006). Four million tourists are expected in 2007.

Lhasa has become China's Orient. By travelling on a special, pressurised train (marketed as an attraction in its own right), China's fast growing middle class can easily consume Tibet. Lhasa is now even being marketed as a great place to stage a wedding – a great backdrop for a conspicuous display of wealth, like a gold tooth, in a land where material success has become the meaning of life.

Lhasa is now being marketed as a great place to stage a wedding – a great backdrop for a conspicuous display of wealth, like a gold tooth, in a land where material success has become the meaning of life.

When the Potala Palace and the Jokhang were the living centres of Tibet and the heart of the sacred landscape, Lhasa occupied only three square kilometres. The civilisation was based on extensive, low-density land use and pastoral nomadism, with a sacred central town of no more than 30,000 permanent residents. By the year 2000, Lhasa occupied 53 square kilometres (Huihuang sishi nian 2000). Out of this area, however, the traditional quarter, where most Tibetans are located, continues to occupy only about three square kilometres. Official plans call for an expansion of the urban area to 272 sq km by 2015, with a short-term goal of 70 sq km by the end of the 10th Five-Year Plan (2001–2005). In 2005, according to official figures, Lhasa's city region had a population of 257,400 (Municipal Government in Lhasa 2005). The population is planned to grow to over 300,000. As usual, these numbers do not count the military presence, which is especially large in Lhasa. These plans makes it clear that China intends to continue increasing Lhasa's size and scale. The population increase, of course, will come about through Chinese migration from neighbouring counties and prefectures, particularly Sichuan

On the urban fringes of Lhasa, Tibetan leaseholders rent out land to immigrant vegetable growers. However, China's new urban property laws, passed by the National People's Congress in 2007, permit the outright purchase of land as cities expand into the countryside (*Financial*

Times; McGregor 2007). Smart immigrant businessmen will now be able to buy this land, which will be forever taken from Tibetan hands and incorporated into the Chinese-dominated city.

As Lhasa balloons and Tibetans become an increasingly smaller proportion of the urban population, there is a real danger that China will adopt the strategy already employed in Inner Mongolia. Under this strategy, large Chinese cities based on coal and steel production sprang up, which were then redesignated as "municipalities" for all nationalities, in place of the Mongol "counties" they had previously been. The Mongol population of these cities was so low that the cities actually lost the status of belonging to the ethnic group for whom the province had been named (Bulag 2003). Once this happened, there was no longer a need for policies to support the ethnic minority whose land had been taken. This could become the fate of Lhasa, once the Tibetans are reduced to a small enough minority.

China's massive investment in Lhasa's infrastructure, including cheap and comfortable rail access, has turned the city into a booming island of privilege in the midst of a hinterland of degrading pastures, villages and poverty.

China's massive investment in Lhasa's infrastructure, including cheap and comfortable rail access, has turned the city into a booming island of privilege in the midst of a hinterland of degrading pastures, villages and poverty. Lhasa's boom is not the result of natural economic forces, but of massive central government investment. Nowhere else in China is there such an artificially stimulated economic boom. This precarious situation has great potential for instability.

URBANISING RURAL TIBET

China's official policy towards rural life is known as the "Three Rurals": land, agriculture, and farmers. Pastoral nomads are implicitly included. Finding new or additional work is the principal method of increasing rural people's income. China routinely refers to the "export of labour" as a solution to rural poverty. The measures undertaken include "mobilising" labour by requiring villagers and nomads in remote areas to relocate closer to existing highways, so that they are more readily available to work on construction. The Tibetan preference for staying on their ancestral land is seen as "unscientific".

China consistently depicts the Tibetan people as backward, poor and peripheral, and the Tibetan Plateau as a vast and empty wasteland. For China, progress means urbanisation. Cities are the future, the countryside is the past. Cities, with their comforts, conveniences and services, define modernity and are the essence and engines of progress. Rural areas are there only to supply raw material in accordance with urban demands. With such an attitude, the prospects for improving life in the country are indeed slim, and the export of labour appears to be the only solution.

In Tibet, especially in areas where most of the land is used for extensively scattered and decentralised livestock production, there are no natural townships. There is no initial cluster to use as a basis for concentrating the population. Thus, the township designations in Tibet are as artificial as the communes were in their day. In reality, Tibet's current townships are just small administrative compounds of cadres and officials. Most of the population is still dispersed and nomadic. Even so, the walled, official compound is intended to be the nucleus of urbanisation.

According to the *People's Daily*, the "TAR" decided to speed up urbanisation in April 2000 by constructing 100 small cities and towns along the highways to Lhasa from Amdo, Kham and Nepal over five years. This was done to promote urbanisation and to boost the development of secondary and tertiary industries. The *People's Daily* stated that the small cities and towns would act as transport and trading centres for capital goods, farm and animal products, and means of livelihood. The population of these new towns was expected to increase from 440,000 to 780,000 in 2010 (*People's Daily* 2000).

The Beijing government put forward a revised scheme for urban expansion in 2003 (Zhang Tingting 2003). Under this scheme, towns were to belong to one of three administrative levels: satellite towns, central towns or ordinary towns. They were to be regarded as "groups" along highways, and would directly or indirectly connect with each other to form a pattern and become development zones for the urban hub.

120 new satellite towns have been built in the "TAR". Chamdo is a typical example of a new town. More than 500 million yuan (US $62.5 mn) has been spent on urban engineering projects. Buildings of different styles stand on streets festooned with dazzling lights, and asphalt highways have replaced the bumpy, earthen roads.

Settling The Nomads

Rural urbanisation requires the settlement of nomads. This policy is accelerating; nomads are increasingly excluded from their traditional grazing areas. This resolves what China perceives as "a contradiction between livestock and grass" in Marxist terms. In the name of maintaining grasslands, conserving watersheds and promoting reforestation, nomads are being increasingly excluded from vast areas of pastoral land and headwater areas, even though they have grazed these lands sustainably for centuries.

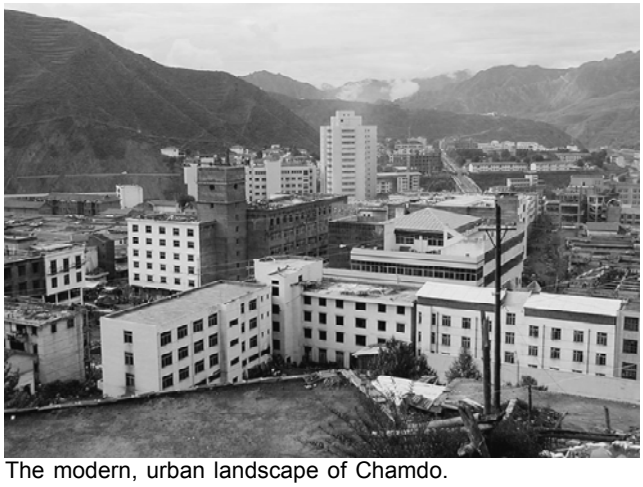
This policy of urbanising and settling Tibet's mobile pastoralists has been pursued for years. An official statement from 1994 stated:

> Qinghai has a total area of 720,000 sq kms and its pastoral area makes up 96 per cent of the land. Qinghai, inhabited by more than 500,000 Tibetan people, has now built fixed residential districts for its 270,000 herdsmen and a number of small commercial towns have taken shape in its pastoral areas. The Tibetan herdsmen in the province have for a long time been living a wandering life, choosing their residential place according to the water and forage grass resources there. In 1994 52,000 herdsman households out of the province's total of 91,000 were housed in fixed residential housing (WTN January 1994).

A substantial amount of permanent housing for former nomads has been built in Tibet's Amdo and Kham regions. In 2006, 18,559 people from the Kanlho (Ch: Gannan) "Tibetan Autonomous Prefecture" in Amdo were forcibly moved to permanent settlements (China Tibet Information Center 10 January 2007).

China's rhetoric of progress takes for granted that the urbanisation of nomads is beneficial. The process is meant to raise the nomads' "low human quality" (a common phrase among Chinese planners) and civilise them. China's overall level of civilisation will thus also be augmented.

However, there are convincing economic and ecological reasons why the Tibetan people never urbanised, except for a few small pilgrimage centres, market towns and administrative centres. Ecologically, the absence of towns meant that the grazing impact of herds was spread both spatially and temporally. This mitigated the inherent ecological risks of grazing in a cold, arid and unpredictable climate. Overgrazing and the degradation of pasture were minimised. Economically, the mobile way of life ensured the maximum sustainable production for each group of herders. They were willing to relocate to available pasture



The modern, urban landscape of Chamdo.

and markets according to the season, thus making low-impact but economically viable use of the entire plateau.

The sustainability, biodiversity conservation and productivity of the rangelands that was achieved by pastoral nomadism has never been evident, even today, to Chinese planners. The planners were often based in distant cities and their knowledge of the rangelands was purely from Chinese schooling and satellite data. The nomads were dismissed as backward and their existence was deemed to be "of low human quality". They were unable to produce sufficient meat to supply the Chinese urban centres. The 9th Five-Year Plan was announced in 1996, with a vigorous urbanisation initiative for the "TAR", as quoted earlier in this chapter.

Tibet is not undergoing a process of "natural" urbanisation, driven by the rural poor freely choosing to migrate to towns and cities in search of better income and work. Instead, this is top-down urbanisation, directed and financed by central authorities, which seeks only to attain policy objectives. Chinese geographers call it "state-sponsored urbanisation" (Jianfa Shen 2006: 497-516).

China's household registration system (*hukou*) divides the populace into those permitted to live in rural areas and those entitled to urban residency. Jianfa Shen, a geographer of the Chinese University of Hong Kong, points out that state-sponsored urbanisation has been made possible by permitting citizens with a rural *hukou* to live in towns and cities. This migration is a major factor behind the boom in the economy that started in the 1980s. Urban dwellers may have fewer guarantees and privileges since the reforms of the 1990s, but rural *hukou* holders have

New houses built in Chushul County, under the Lhasa Munipality in 2005.

even fewer. For example, they are often paid less and are unable to enrol their children in urban schools.

Despite the discrimination against rural *hukou* holders, a substantial proportion of urban dwellers in China are officially designated as rural. In the Sichuan province, adjacent to Tibet, the total urban population in 2000 was 22 million, eight million of whom had rural *hukou* (Jianfa Shen 2006: 510).

The result of these state-sponsored programmes is that the urban population of Tibet has grown enormously. Tibet's population is now more urbanised than most comparably poor provinces, due to the massive investment of government capital. Inequality between urban and rural areas has also increased substantially.

One of the most dramatic examples of state-imposed urbanisation is Bayi town in Nyintri County, southern Tibet. An American writer who visited in 2002 described this empty city:

> In thickly falling snow, a yellow taxi led our convoy down a wide boulevard – four lanes of clean-swept concrete divided by a neat median of newly planted pines. On either side, low, white-tiled shop fronts with green glass windows gave the whole street the feel of a lavatory. Beyond, new office buildings rose into the twilight, seven and eight stories, some all blue glass, faceted like gems, and others in mock pagoda style, half-built and caged by scaffolding. The city was empty. We turned onto another four-lane avenue, where we were the only cars. It was a city in waiting, planned and stocked and completed like a new exhibit at the zoo or a colony on Mars. We were told later that we were the first foreign group here in a year and a half (Heller 2004).

Bayi is now filled with immigrant workers and is a booming tourist town. In the near future, it will be a typical small Chinese city.

China's 11th Five Year Plan (2006–2010) includes a rural reconstruction campaign under the slogan of "Build new Socialist countryside". This campaign requires Tibetan villagers to rebuild their houses and often relocate to the roadside. Within two to three years, villagers must rebuild their houses in accordance with the strict specifications. Houses with red flags on the roof are a common sight among the new houses around the townships of Lhasa, Shigatse and Nyingtri prefectures. The campaign, known in Tibetan as "Namdrang Rangdrik" ("Do-It-Yourself Programme"), was launched in 2005.

China claims to be spending a lot of money on building accommodation for rural Tibetans as part of its poverty alleviation programme. Unfortunately, the reality is that these rural reconstruction projects are not benefiting the poor, and in many cases are significantly harming them. According to Human Rights Watch, there is less emphasis on poverty alleviation and more emphasis on urbanisation and the construction of modern-looking homes. Local officials have told the Tibetans that clean, modern houses are essential to make a good impression on tourists. However, these houses often lack electricity, water and a courtyard in which to raise animals. This can prevent the improvement of household income. "The Chinese government boasts about bringing economic development to Tibet, but its current policy is costing some Tibetans their homes and their livelihoods," explained Sophie Richardson, deputy Asia director of Human Rights Watch (Human Rights Watch 2006).

The cost of building these new houses is not cheap. A new house that meets the government's standards costs about US $5,000–6,000, for which the government lends about US $1,200. This is a huge personal expense for Tibetan rural families, whose average annual budget per person is about 1,562 yuan (US $195) for all living costs (TSB 2006: TSY, table 8-17). However, the families are not able to refuse participation; they must arrange the remaining funds by taking out bank loans, which plunge them into debt. According to evidence gathered by Human Rights Watch, the poorest households are not even eligible for loans, but the guidelines make no exceptions for this situation.

China's official media presents this housing programme as evidence of the government's sincere desire to ease poverty in rural Tibet. It portrays rural families as thankful for the programme, never having dreamt of being able to own such new houses. The media also creates the false impression that the government is paying for everything.

In reality, the government is exacerbating rural poverty by forcibly increasing the debt burden on families.

According to the "TAR" government, China moved 250,000 Tibetan farmers, herdsmen, and family members - totalling 47,000 households - into new houses in 2006. The government stated that the region invested about 2.5 billion yuan (US $320 mn) in housing projects in that year alone. It plans to improve the housing conditions for all rural Tibetans, who represent 80 per cent of the total Tibetan population, by 2010 (Development Gateway 2006). Additionally, it will invest 620 million yuan (US $77.5 mn) to move over 50,000 rural families into new houses in 2007, according to Yao Ruifeng, a senior official of the Tibet Housing Project Office. Another 141 million yuan (US $17.6 mn) will be used to complete the construction of rural facilities such as building electricity, water and transportation facilities (Development Gateway 2006).

China states that these initiatives will uplift the rural poor. In reality, these plans compel rural Tibetans to take out substantial loans and build new, government-mandated and specified houses. The campaigns are primarily designed to make Tibet appear modern and presentable to the rest of the world.

DEVELOPMENT OF TRANSPORT LINKS

There are numerous major projects designed to connect the new immigrant cities in Tibet with each other and with inland Chinese cities. This hard infrastructure of roads, highways, oil pipelines, optical fibre cables, satellite broadcast links and so on has received major investment.

As with urbanisation, this investment is highly concentrated. Major transport corridors are lavished with funds for hard infrastructure, while the surrounding countryside is neglected. Comparatively, the "soft infrastructure" of providing Tibetans with training in modern skills receives negligible attention.

Infrastructure development in Tibet is fully in keeping with China's developmentalist and productivist agenda. Ever since the People's Liberation Army marched into Tibet in 1949, the establishment of physical infrastructure has been a crucial task. Manual workers immediately began constructing roads and transport networks, connecting major Tibetan towns to central China, in order to centralise control over the region. These networks also facilitated the transportation of mineral and natural resources from Tibetan areas into central China. This occurred as early as the 1950s, when the Tibetan mineral of borax was exported to the Soviet Union for its nuclear programme. Transport workers still constitute a major proportion of the formally employed, urban workforce.

Airports

In order to firmly connect Tibet to China, the first airport was built in Tibet in 1956, the same year that the intensive highway construction began. About 10,000 PLA officers and soldiers, and 6,500 local people, worked at the Damshung construction site, north of Lhasa. The Tibetans performed the unskilled labour, with shovels and baskets of earth, under the command of Chinese officers. The Damshung airport, 4,200 metres above sea level, was completed in August 1956.

In November 1966, another airport was built in Gonggar, south of Lhasa. The runway was a full 3,600 metres long, since at high altitudes (the airport stands at 3,540 metres) planes must acquire more speed in order to take off. After a reconstruction and expansion effort, which was one of the Third Work Forum on Tibet's 62 infrastructure projects, Gonggar airport can now accommodate large aircrafts such as the Boeing 767 or the A340. The project was launched on August 25, 1995 with an investment of 6.7 million yuan (US $0.80 mn) and completed on November 25, 1996.

In September 1994, Pomda (Ch: Bangda) airport in Chamdo (Ch: Qamdo) was also built with an investment of 257 million yuan (US $32 mn). At 4,334 metres, it is the highest airport in the world (Namgyi and Ye Hu 2005).

A rural reconstruction campaign, under the slogan of "Build new Socialist countryside", requires Tibetan villagers to rebuild their houses in accordance with strict specifications.

The third civil airport, at Nyingtri, near the border with Myanmar and India, became operational on July 1, 2006. Construction started in October 2004 and cost more than 780 million yuan (US $97.5 mn). The airport is expected to have an annual flow of 120,000 passengers (China Tibet Information Center 2006).

China continues to develop airports in Tibet. The National Development and Reform Commission of China has approved the construction of a new civil airport at Dartsedo (Ch: Kangding), in the Karze (Ch: Ganze) Tibetan Autonomous Prefecture of the Sichuan province. The airport will be set up at Shitingtso, 40 kilometres from Dartsedo. At 4,200 metres, this will be the second-highest civilian airport in the world. The total cost is

estimated at 950 million yuan (US $119 mn) (*Tibetan Review* September 2006). The construction work began in 2006 and is expected to finish in 2008. The airport is designed to handle 330,000 passengers and 1,980 tonnes of cargo and mail annually (*Tibetan Review*: October 2006). In addition, the Ngari Weather Bureau, China Civil Aviation Bureau and the "TAR" government have finalised plans to build Gunsa airport, in the Ngari Prefecture of western Tibet. The construction work started in May 2006 and is expected to finish in 2007 (*Tibetan Review* December 2006).

The number of flights operating to and from Tibet is also increasing. According to Chinese news reports, by 2003, China Southwest Airlines had opened up 10 domestic air routes into Tibet, including Lhasa to Beijing, Chengdu, Shanghai, Guangzhou, Chongqing, Kunming, Xi'an and Siling, as well as one international route from Lhasa to Kathmandu (China Tibet Information Center 2006). In 2006, one million passengers passed through Gonggar airport, which constituted a 17 per cent increase on the previous year.

New airport at Nyingtri, near the borders of Myanmar and India, which has been operational since July 1, 2006.

Roads

Roads and land connectivity are crucial strategic issues for every nation. In the "TAR", official statistics indicate that at the end of 1998 there were 22,445 kilometres of roads, but none were expressways or first-class highways. Five national highways run through the "TAR", but only recently have they been sealed. They still swell in winter and slump in summer, creating potholes and cracks, because of the advance and retreat of the permafrost. Highway construction has always emphasised long-distance trunk routes that connect Tibetan to Chinese cities, rather than local feeder roads that give farmers access to markets. Since 1989, the state has invested 1.71 billion yuan (US $0.21 bn) in overhauling the highway that connects Lhasa with Siling (China Tibet Information Center 2006).

At the end of 2005, the total mileage of Tibetan roads reached 43,700 kilometres, of which over 3,000 kilometres were paved, and 25 out of 73 counties had asphalt roads. During the period of the 10th Five-Year Plan (2001–2005), 15.2 billion yuan (US $2 bn), almost all of it from Beijing, was invested in road construction in the "TAR". During the 11th Five Year Plan period (2006-2010), the "TAR" will invest 39.8 billion yuan (US $5 bn) in the maintenance and construction of 17,614 kilometres of roads. This project will focus on all of the highways from Amdo, Sichuan, Xinjiang and Yunnan (*Tibetan Review* February 2006). By 2010, the "TAR" is projected to have 50,000 kilometres of roads, which will make 80 per cent of the villages accessible.

Without the highways, it would have been impossible to transport the large equipment and parts necessary for the construction of the railway line. The highways in Tibet will, of course, also help with economic development. But at the same time it will help to drain Tibet's natural resources, and make it easier and more attractive for Chinese people to migrate to Tibet, and siphon government attention.

Railways

The first railway to connect the Tibetan Plateau with China was built during China's 2nd Five-Year Plan period (1958–1962). In May 1958, Beijing began construction of a railway line from Lanzhou to Siling, the capital of Amdo province. The line was completed in October 1959 and became operational in March 1961.

A railway line from Siling to the strategic town of Gormo also began in 1958 to coincide with the establishment of the Northwest Nuclear Weapon Research

and Design Academy at Xihai City, the capital of the Tsojang Tibetan Autonomous Prefecture.

The latest project, a railway line that links Gormo with Lhasa and completes the Beijing-Lhasa route, became operational on 1 July, 2006. It is the highest railroad in the world. From Gormo to Lhasa, the line stretches 1,142 kilometres, of which 960 kilometres are at an altitude of over 4,000 metres. The highest point stands at 5,072 metres. More than 550 kilometres of track are on permafrost, which may cause problems due to seasonal (and even daily) expansion and contraction. The line passes through the Kyegudo (Ch: Yushu) Tibetan Autonomous Prefecture, Nagchu Prefecture, and Damshung and Toelung Dechen in Lhasa District, before reaching Lhasa. The railway cost a total of US $4.2 billion to build.

Up to US $1.2 billion will be invested in more new railways in the Tibetan region over the next 10 years. China has already unveiled plans to extend the rail network to Shigatse, the second-largest city in the "TAR" in southern Tibet. There is a substantial gold and copper deposit being developed for mining at nearby Shetongmon, which is probably a factor in China's motivation. Press reports suggest there is also to be a railway line heading east from Lhasa along the Yarlung Tsangpo River (which becomes the Brahmaputra River on reaching India) to Nyingtri (Ch: Linzhi), and even a line to Dromo (Ch: Yadong), near the Tibetan border with India (Jigme Kazi 2006). Transport links to Dromo, in the Chumbi valley near Nathu-la, will open up access to Sikkim in northern India.

THE IMPACT OF CHINA'S DEVELOPMENT POLICIES

The Chinese government dictates all of the development policies for Tibet, assuming the role of a benevolent state. But it is clear that China's development policies have largely failed, and the present development strategy is still inconsistent with the needs of the Tibetan people. Contrary to China's professed goals, its present development policies will lead to an increase in income inequality and the marginalisation of Tibetans.

China's economic development policies have not benefited rural areas in Tibet or taken advantage of their natural assets. Writing in *China Tibetology* in 2001, the influential Chinese economist Hu Angang stated that industrialisation has traditionally been seen as the only way to promote a regional economy and relieve poverty. Hu goes on to critique this Stalinist development model. Problems with China's economic development originated in the early 1950s, when the strategy of giving precedence to heavy industry was adopted – a model of economic construction indiscriminately copied from the Soviet Union. The slogan "industry as the guiding factor, agriculture as the base" summed up China's economic development strategy for many years. The strategy was also known as "squeeze agriculture for industry", sacrificing agricultural development for the sake of state industrialisation. Hu goes on to point out that this exhausted policy of compulsory sacrifice is still being enforced in Tibet, even though it has already been attempted there for many years without success.

Gormo transformed – a city of immigrants.

Poverty Amidst Wealth

The result of this economic development policy is poverty amidst wealth. Tibetans, especially in rural areas, face exclusion and deprivation, while the urban elite enjoy high levels of consumption and privilege. Inequality is common throughout China today, but is most extreme in Tibet. The gap between the primarily Tibetan rural poor and the largely non-Tibetan urban rich is so great that Chinese officials are worried about the potential for social unrest.

Recent statistics on Tibet clearly indicate that Tibetans are impoverished. The benefits made available by massive state support and subsidies do not reach the majority of Tibetans, nor are they intended to. Based on the UNDP's China Human Development Reports in 1997, 1999, 2002 and 2005, the "TAR" remains at the bottom of the list on the Human Development Index, which is a composite of indicators for performance in health, education and income. The "TAR", where Tibetans officially comprise 96 per cent of the population, is grouped with the world's least developed countries. The World Bank also puts the "TAR" at a low ranking position in its 2003 "East Asia Integrates" development report (Krumm and Kharas 2003). Tibet's performance in the health and education sectors is so dismal that the "TAR" and Amdo (Ch: Qinghai) province are known as the least developed regions of China.

The other provinces that contain Tibetan "autonomous" counties and prefectures are also close to the bottom of any ranking of China's provinces. The Tibetan areas of Amdo, Gansu, Sichuan and Yunnan are all very poor and rely heavily on subsidies to sustain the immigrant urban elite. For example, two cities in Sichuan's "Tibetan Autonomous Prefectures", Ngaba and Karze (with respective populations of 851,000 and 916,000), are located in the best-watered and lowest altitude areas of Tibet. They have long been Tibetan population centres and major pastoral and farming areas. Now they are heavily dependent on Beijing subsidies to maintain their infrastructure. The authorities in Ngaba have spent 3.1 billion yuan (US $0.39 bn) on the area, 81.5 per cent of which came from central subsidies. Similarly, in Karze, the prefecture spent 3.4 billion yuan (US $0.42 bn) in 2005, but only 7.8 per cent of this amount was raised from within the prefecture (SSB 2006: SSY, tables 9-3, 9-4). In the "TAR", the local government raises 7.5 per cent of the total expenditure, with the rest coming from central subsidies (TSB 2006: TSY, table 6-3, 6-4).

Based on the UNDP's China Human Development Reports in 1997, 1999, 2002 and 2005, the "TAR" remains at the bottom of the list on the Human Development Index, which is a composite of indicators for performance in health, education and income.

Within the "TAR", spatial inequality is now widespread. The money pours almost entirely into towns and cities where the consumer lifestyle is extravagant, while the vast rural hinterland, almost entirely populated by Tibetans, remains poor and starved of investment. This is the paradox of poverty amidst wealth that exists in Tibet today.

Based on China's statistical yearbooks, it is evident that Tibet's economic growth and rise in income is largely an urban affair. Approximately 85 per cent of the Tibetan population resides in rural areas and engages in farming and herding. Tibet remains one of the most rural economies on earth. In the past, this ensured the sustainable and productive use of the entire plateau. Today, a careful study of rural incomes reveals little genuine growth. One major study reveals that:

> The actual purchasing power of rural incomes in Tibet did not change between 1990 and 2000. Rather, the real value of rural incomes decreased sharply in the first years of the 1990s, and then slowly returned to its 1990 real value by the year 2000, as well as becoming the lowest of all rural incomes in China by 1998 (Fischer 2002).

China's official poverty line of 865 yuan (US $105) per year is less than one-third of the World Bank's accepted global standard of US $1 per day. Thus, China's official statistics on poverty already vastly understate the number of people facing severe economic hardship and struggling to survive in a consumer economy. Even in light of this fact, the official statistics on poverty are still distressing.

By 2006, the total number of poor people in the whole of China was officially only 23 million, half of whom were concentrated in ethnic minority upland regions such as Tibet *(People's Daily* 2006). China claims that in 1994 there were around 480,000 people living below the poverty line in the "TAR", which constistuted around 20 per cent of its total population at that time, but only 70,000 Tibetans remained poor in the "TAR" in 2001, due to poverty alleviation efforts (*Xinhua* 19 June, 2001). International NGOs with fieldwork experience in Tibet say that this dramatic drop in poverty is merely an illusion, and that rural poverty is still widespread.

China's poverty alleviation efforts are based on three strategies: designating "poor" counties, providing subsidised loans to the poor and placing a strong emphasis on regional economic growth. In practice, the results are very uneven. The surge of economic growth in non-Tibetan areas and from the creation of township enterprises has seldom generated employment or income for the poor.

In 2005, 83,000 farmers and herders in the "TAR" that had an annual per capita net income of less than 300 yuan (US $37.5) were given 500 yuan (US $62.5) in government assistance. The number receiving assistance rose to 200,000 in 2006. It is anticipated that 230,000 Tibetan farmers and herders with annual incomes of less than 800 yuan will need direct assistance in 2007 (China Tibet Information Center 2007).

In Amdo province, the provincial government developed a poverty-alleviation plan in 1994, in line with the central government's requirements, and sought assistance from the UNDP for several sustainable development programmes. The programmes were based on the assumption that, having identified the poor areas, they could have accurately targeted results. However, poverty fluctuates in accordance with economic changes, migration and environmental factors. For example, it was reported that 380,000 people in Amdo province had fallen back into poverty by 2000 due to a prolonged drought (*Tibetan Bulletin* 2005). Recent statistics show that 670,000 poverty-stricken people currently live in 14

counties in Amdo, most of them in villages inhabited by ethnic minorities (TCDC/ECDC 2003).

In the Karze Tibetan Prefecture in Sichuan, a region where Tibetans officially comprise 78.5 per cent of the total population of 900,000, poverty is widespread. An official poverty alleviation plan for the prefecture noted that 273,700 people were lacking basic necessities like food and clothing, and around 465,300 were poor, with annual incomes ranging from 625 to 1,000 yuan (US $78–125). This implies a poverty rate of 51 per cent, based on the official Chinese poverty line (*Tibetan Bulletin* 2005).

Ismail Amat, vice chairman of the Standing Committee of the National People's Congress, said that although significant progress has been made in recent years, the "TAR" and Amdo province (Ch: Qinghai) still lagged behind in education, health and social security. He further added that the lack of development in these regions is due to local government failures to carry out national policies and laws, and a misuse of funds (*People's Daily* 2006).

Chinese Premier Wen Jiabao accepts that China's poverty line is too low. It appears that it has been kept low because the government wouldn't have the funds to assist the vast number of people that would fall under a more realistic poverty line. If the global norm of US $1 per day is used, 17 per cent of all Chinese are poor, and if the common figure of US $2 a day is the measure, then no less than 47 per cent of all Chinese are poor (World Bank 2005). But there is little enthusiasm in China today for large-scale spending on poverty alleviation, unless that poverty becomes a security concern.

In the "TAR" in 2004, rural households had an average annual cash expenditure of 614 yuan (US $77), plus a personal subsistence production of animal products and crops. China's statisticians assigned a nominal value of 411 yuan per year to this subsistence production, which increased the statistical income of nomads and farmers by 65 per cent (TSB 2005: TSY, table 8-15). This lifted their total income above the extremely low, official poverty line of 865 yuan (US $104) per year. The revised total was also narrowly above a second poverty yardstick of 958 yuan (US $116), which is the official threshold of "low income".

Another implication of this extreme poverty is reduced spending on education. The average urban household in the "TAR" spends 435 yuan (US $54) a year on education. Even the poorest five per cent of urban households, most of whom are the new Tibetan urban underclass, manage to spend 146 yuan (US $18) a year on an education, which technically is compulsory but also free for the first nine years. In the "TAR" countryside, rural Tibetans are able to spend only 26 yuan (US $3.25) a year on education (see Table 4.3).

There is little enthusiasm in China today for large-scale spending on poverty alleviation, unless that poverty becomes a security concern.

Have state subsidies helped to lift people out of poverty? Many scholars have critised China's poverty alleviation efforts for their ineffectiveness. China's poverty alleviation programmes exclude many poor populations, and the pro-growth interventions benefit the rich more than the poor. In the long term, the subsidies flowing into Tibet may trickle down to those living at a subsistence level and provide income growth. However, 50 years of input from Beijing have failed to create new opportunities for the majority of Tibetans.

The Growing Chasm Between Urban And Rural

Even today, the economy of the Tibetan Plateau displays many elements of the command economy of China's revolutionary era. This is ensured by Tibet's reliance on massive financing from Beijing and the dominance of state enterprises. Not only does Beijing dictate priorities for spending, it also directs the banks to allocate capital, which is already limited, to state projects only. Tibet is chronically dependent on massive external inputs aimed at generating pillar industries and eventual economic take-off. Another result of the Chinese subsidies that promote urbanisation is that, although China takes the need to increase farmers' incomes seriously, the income gap between rural and urban areas is widening dramatically. This is happening in spite of much rhetoric on liberalisation and utilising the comparative advantages of the Tibetan Plateau. These parity failures are especially marked in the "TAR".

Every year, the Statistical Bureau surveys a sample of urban and rural households to ascertain their actual expenditures (see table 4.3). Poverty experts worldwide regard such monitoring of actual spending as a more reliable measure of poverty than GDP per capita, which is a statistical average. The surveys give a detailed picture of the chasm between the urban elite in Lhasa and other "TAR" cities, and the poor rural hinterland.

The total disposable income of Tibetan farmers and nomads is considerably less than half of the average

Table 4.3 Selected measures of consumption and per capita expenditures by urban and rural households in the "TAR" (per year)

Measure of consumption on or spending category	Average rural households	Average urban households
Pork consumption (kgs/person)	2	13
All meats & eggs (kgs/person)	26	52
Vegetable (kgs/person)	22	106
Dining out	0	269
All foods	942	3,828
Telephones/100 persons	13	201
Transportation and communications	106	1,320
Medicine & health services	49	333
Education	26	435
Per capita consumption	**1,562**	**8,673**
Per capita income	**2,813**	**10,664**

Source: TSB 2006: TSY, table 8-1 to 8-21.
Note: Figures are in yuan unless specified. Not all categories of expenditure are presented.

income for China's peasants, and this gap is growing. Rural families' actual expenditures are higher than their disposable income, which puts a great strain on family finances and leaves no opportunity to save or put aside money for medical emergencies or education.

The urban equivalent is quite different. In 2004, average urban household incomes in the "TAR" were well above average urban incomes across China. Annual disposable monetary income exceeded actual spending by 768 yuan (US $93), enabling urban people to save or remit money to their relatives in inland China.

Household surveys for 2005 revealed further striking gaps. Urban residents spend on average 269 yuan (US $ 33.5) annually on dining out in restaurants, with the richest 10 per cent spending 930 yuan (US $116), an amount considerably greater than the total annual cash income of rural Tibetans. Urban dwellers spend 1,320 yuan (US $165) annually per person on transportation and communications, and have almost two telephones per person (just under one landline phone and just over one mobile phone), while in rural areas access to phones is minimal.

There is also a gap between urban and rural spending on health and medicines. This is especially pertinent in a system with no health insurance, where almost all expenses are borne by the patient. An average urban dweller spends 333 yuan (US $42) a year on health. The richest 10 per cent of urbanites spend 579 yuan (US $72) a year on health; rural Tibetans spend 91.5 per cent less (49 yuan). These are enormous gaps, making Tibet one of the most economically unequal places on earth.

These figures also reveal the extent to which Lhasa has become a Chinese city, with Chinese characteristics. There is significant consumption of culinary specialities of the Chinese, notably pork, fish and poultry. Tibetans are brought up to believe that all sentient beings have, in past lives, been one's mother, so should all be treated with compassion. To kill a large animal for meat, often necessary for survival in such a cold climate, is regrettable but a lesser sin than to kill many small animals for the same amount of meat. For the first time in Tibet's history, there is now significant consumption (primarily in the cities) of chickens, fish, pigs and other meats that Tibetans seldom touch, even though many lakes and rivers are full of fish. In 2005, urban dwellers in the "TAR" consumed 52.1 kilograms of meat and eggs per person. Since the Tibetan nomads do not commercialise their production, or give in to Chinese urgings to increase their slaughter rate, much of the meat consumed in urban Tibet is not rangeland beef or mutton, but chicken, pork and fish produced by immigrants on rented land close to the cities. A recent survey by the Tibet Statistical Bureau also itemises growing consumption of tobacco, sugar and fresh fruits, all of which are modern Chinese products.

As noted throughout this report, in contrast to other regions of China, the economy in Tibet is characterised by a state-dominated service sector that is largely non-productive and propped up by subsidies. For most rural inhabitants in the "TAR", however, the economy has literally stagnated despite the rapid growth in urban administration, construction of infrastructure and urban services. The sectors where Tibetans dominate – farming and herding – have been neglected and not benefited from

Tibet's rapid economic growth. The state has failed to invest in rural productivity or ensure that rural Tibetans have access to credit. Rural Tibet has not been linked to the subsidised urban economy. The main products of Tibetan labour, such as wool, dairy products, leather, live animals, barley, and medicinal herbs and ingredients, continue to be produced (often in great quantity) but receive consistently low prices.

Tibet doesn't even retain the income from its major extractive industries, as vertically integrated Chinese corporations perform the mining and transfer the raw materials to their own smelters and refineries. The money flow is entirely internal within these corporations.

If this is development, it is a distorted and selective form that excludes the many and privileges the few. It has systematically supported ethnic Han Chinese and excluded Tibetans.

Urban Social Problems

Urbanisation and modernisation have brought about changes in traditional values. Lifestyle changes have included diet composition, house structure and hygienic conditions, which have generally improved with the modernisation of Tibet. There is no denying the fact that many Tibetans also view cities as a sign of development and villages as underdeveloped.

But at the same time, the Tibetans believe that moral values have declined. Increased alcoholism, crime, unemployment, divorce, domestic violence and prostitution have been the social price for this urban development. Conspicuous consumption is common, not only among non-Tibetans who are making money, but even among the few newly wealthy Tibetans.

Chinese economists and planners have frequently despaired at the lack of a commercial attitude among Tibetans. The Tibetan custom of offering rather than retaining profits strikes the Chinese as backward and primitive, and seems to undermine the whole logic of growing a business and an economy.

Tibetan values, reinforced by many well-known proverbs and elegant sayings from lamas, emphasize the importance of sharing wealth rather than accumulating it purely for the sake of accumulation. It is said that the source of future wealth is to give away one's present wealth to the needy or as an offering to a monastery, where nuns and monks tend to the spiritual welfare of society and all living beings. For China, developing commercial cities is the key to breaking these traditions.

In 2001, Zhu Yalin, deputy director of Civil Affairs in Lhasa, stated that Lhasa had the highest divorce rate in China, at 20 per cent. He said that the reason for the high divorce rate was domestic violence by drunken husbands, who played *mahjong* until late at night and also indulged in nightclubs and prostitution (*People's Daily* 2001).

Despite a string of laws and regulations to control it, prostitution is flourishing in Tibet. Karaoke bars, gambling halls and discos, all made legal under the Chinese policy of economic reform, provide a literal breeding ground for this booming trade. Large-scale introduction of prostitution, particularly in Lhasa and Tsethang, took place in 1990. An international aid agency estimated in 1998 that there were 658 brothels on the 18 main streets of Lhasa, and 60 brothels in Tsethang (TIN 1999: 2).

The primary reason for the dramatic growth of the sex industry in Tibet is the large influx of a predominantly male immigrant population, who have been attracted by the construction boom brought about by rapid urbanisation. These workers, along with the many thousands of Chinese soldiers deployed in Tibet, add to the ranks of solitary males in Tibet.

The primary reason for the dramatic growth of the sex industry in Tibet is the large influx of a predominantly male immigrant population, who have been attracted by the construction boom brought about by rapid urbanisation.

According to some recent refugees, prostitution today is no longer limited to urban areas. It is rampant even in remote regions such as Ngari prefecture, in the sparsely populated area of far northwestern Tibet. This information came from a Tibetan with two years of experience in working for an international health organisation.

Although the majority of the prostitutes in Tibet are Chinese, the number of Tibetan women drawn to this booming trade is also increasing at an alarming rate. Some Tibetan girls are drawn into the profession because of easy money. According to a briefing paper by the Tibet Information Network,

> A small but growing number of young women come to the cities with the intention of becoming sex workers. They come with at least the implicit knowledge of their family. Some are already married and work to gather a certain sum of money for a defined goal, for instance constructing a house or getting together the capital needed to open a shop. This happens particularly in very poor

> regions like Nagchu. On their return home they enjoy great prestige for their contribution to the family's rise in living standards, but they also live in fear of people from the village uncovering their past as sex workers in the city (TIN 1999).

Most of the prostitutes are uneducated young girls, 15 years old or younger. Besides the unethical nature of allowing such young sex workers, this raises the spectre of sexually transmitted diseases, of which most young girls have no knowledge. Although no statistics are available on the prevalence of AIDS in Tibet, with so many migrant workers and prostitutes it is entirely possible that AIDS has become widespread. According to fieldwork conducted by health NGOs, Tibetan sex workers find it harder than their Chinese counterparts to insist that their clients use condoms in order to prevent the spread of disease. The lack of education and awareness among the general population about AIDS further aggravates this situation.

Apart from declaring a series of laws and regulations, the authorities lack the will to deal with the illegal sex trade. Despite the undeniable fact that the recent profusion of bars and karaoke establishments is causing social problems, including prostitution, there has been little effort to control them beyond the occasional crackdown on particular brothels. The new railway line will likely bring even more prostitutes to the area, since tourism can involve such indulgence and consumption.

China's development spending in Tibet has not improved the well-being of the entire population, but primarily benefited the urban elite.

Growing amounts of prostitution and divorce are unintended consequences of China's flawed economic development policies in Tibet.

These are some of the more identifiable emerging social problems that rural Tibetans notice when they visit the booming cities. They also cite a faster pace of life, increasing cynicism, and especially increasing individualism and selfishness. Many Chinese are willing to take advantage of others, and the Tibetans are learning that it can be profitable to fool strangers. This is very much in contradiction to the Tibetan custom of practising generosity, trust and compassion.

Increasing Social Exclusion

It was not simply by geographical accident that Tibet is underdeveloped today. There is nothing inevitable about Tibet lagging behind in modernisation. Factor endowments are not absolute. Some economists assume that remote mountain people are unavoidably poor, but this is a simplistic view.

As this chapter has argued, China's development spending in Tibet has not improved the well-being of the entire population, but primarily benefited the urban elite. It is also doubtful whether "popular participation in all spheres" (to quote the 1986 UN Declaration on the Right to Development) by Tibetans is actually permitted. Despite special policies and measures, the fundamental issue is that the Tibetan people are, at best, marginal participants in the development effort.

Amartya Sen, the Nobel laureate whose framework of development is used by the UN Independent Expert on the Right to Development, states:

> In judging economic development it is not adequate to look only at the growth of GNP (gross national product) or some other indicators of overall economic expression. We have to look also at the impact of democracy and political freedoms on the lives and capabilities of the citizens (Sen 1999: 150).

It is obvious that the Tibetan people lack the political freedom to make their own economic decisions. The majority of Tibetans are socially, economically and politically marginalised. Better transport and communication links may offer business opportunities and the chance to improve living standards, but most Tibetans remain excluded from their own economic growth by the increasing numbers of Chinese companies, entrepreneurs and migrant workers. The discriminatory imbalance between rural and urban incomes is acknowledged, but resolving it is no longer the priority; the assumption is that it will rectify itself once the economy has developed successfully. National economic development is of paramount importance (Bass 1998).

China trains the Chinese migrants not only to occupy key government posts, but also secure positions at the township level. This is intended to attract skilled officers who will implement China's policies to develop its western regions, as well as to undermine the local people's participation.

> The Chinese press has also announced the voluntary assignations of 6,000 Chinese university graduates to the western areas of China, including Tibet, to work on sanitation, health, agriculture and other projects (Saunders 2003).

The insecurity felt by urban Tibetans is directly linked to the persistent threat to their livelihoods from the influx of Chinese migrant workers. The Tibetan people face increasingly tough competition for jobs. Lobsang Sangay, a Tibetan legal analyst, notes:

> The continued migration of Han Chinese into Tibet has intensified the sense of separate identity among Tibetans, creating an increasingly overt feeling of 'us vs. them'. In almost all the Tibetan areas, conceptual and physical separation of the two groups has created two separate worlds. In their everyday lives in most of the inner towns and cities of Tibet, Tibetans work and live in physically segregated areas. Consequently, while the number of Chinese moving to inner urban Tibet has dramatically increased, the conceptual and physical separations between the two populations foster a strong desire in Tibetans to resist ethnic assimilation (Lobsang Sangay 1999).

For more information on social exclusion, see chapter three (Unemployment and Social Exclusion).

Environmental Impacts Of Urbanisation

Various chapters in this report demonstrate that traditional Tibetan practices of land use are the exact opposite of the pursuit of highly concentrated population, investment and resource use. Traditionally, Tibetans used almost all the available land by dispersing themselves across the landscape according to the season, in tune with the natural rhythms of seasonal productivity. This resulted in minimal negative impact on the fragile grasslands, which was essential because Tibet's intense cold and gale force winds can quickly strip soil from overgrazed land and reduce it to bare rock. Tibet is suited to dispersed human populations, and not to intensive concentrations of people that create massive negative local impacts. This is one basic reason why Tibet is unsuited to urbanisation, despite the fact that urbanisation is now a global trend.

The Tibetan Plateau is the world's largest and highest plateau, with an average elevation of 4,000 metres above sea level. The plateau's continental (and global) importance is derived from the fact that it is a watershed for ten great river systems that course through much of Asia – supplying water for nearly 50 per cent of the world's population. The plateau also plays an important role in shaping global weather. Once Tibet's fragile ecosystems are destroyed, they will be very slow and difficult to regenerate because of the cold temperatures and aridity of the plateau. Other cold and arid ecosystems once stripped of their soil and destroyed, have never been restored (Diamond 2005: 199, 252).

Chinese planners are supposed to consider the environmental implications of economic development in fragile ecosystems. However, despite a constitutional guarantee of environmental protection as a "national principle", most of China's environmental laws and regulations are weak and ineffective in practice. In Tibet, as in the rest of China, economic growth overrides environmental concerns.

The official Western Development programme contains a similar mixed message: it speaks of the need to take care of the environment, but at the same time emphasises the need to exploit natural resources. This language invites contradictory interpretations. Theoretically, practitioners could achieve a balance between these two competing objectives. Unfortunately, this is not possible in practice. Under the present development model for Tibet, knowledge flows in one direction only – downwards – from the State, which views itself as strong, educated and enlightened, to the Tibetans, who are seen as poor, ignorant and backward. Of course, evidence from around the world has shown that many indigenous people have achieved sustainable human development with minimal environmental damage.

Tibet is suited to dispersed human populations, and not to intensive concentrations of people that create massive negative local impacts.

As a result of China's policies on Tibet, the Tibetan Plateau must now sustain a human population that is close to double what it was 50 years ago. In spite of Tibet's vast land area, it cannot support this huge increase in population. Its highlands have less than two per cent of arable land, and more than 70 per cent of the land is grassland. The environmental outcomes of Tibet's current path of rapid economic development, urbanisation and immigration are waste creation, deforestation, grassland degradation, soil erosion, waste creation and biodiversity loss.

The early period of agricultural intensification, from 1950–1980, had a negative impact on livestock, carrying capacity and agricultural sustainability due to misguided policies and historical inexperience in managing pastoral production systems. In the 1960s, the rapid increase in settlers and soldiers, along with the confiscation and collectivisation of Tibetan farms and grasslands, caused the only famine in Tibet's recorded history, which resulted in the deaths of over 340,000 Tibetans. Ill-conceived efforts to boost the productivity of lands suitable only for nomadic grazing have also resulted in widespread desertification (Free Tibet Campaign 2006).

Rangeland degradation is a result of many factors, some of which are natural, but the increasing population on a finite land base is a major cause. Settlers who take up farming or livestock production will encroach on the increasingly marginal land, causing reductions in vegetation cover and soil fertility.

With regards to waste, the waste that is generated by towns and cities is returned to nature almost totally untreated (DIIR 2003).

There is also major concern about the likely impacts of the Gormo-Lhasa Railway, both directly and indirectly, through the new activities it will foster. The railway line passes through three nature reserves: Hoh Xil Nature Reserve in Amdo, Chang Thang Nature Reserve in the "TAR", and Keke Xili Nature Reserve in the northwestern area of the Tibetan Plateau. These reserves are habitats of many endemic wildlife species, such as the Tibetan antelope, wild yak and wild ass. The formation of new towns along the railway line will affect these animals' migratory patterns, feeding areas and microhabitats. Senior Chinese engineers and officials from China's Ministry of Railways have admitted that the construction of the railway will have a detrimental impact on Tibet's fragile ecology (ICT 2003).

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Some economists would say that progress is inevitable, and that Tibet's turn will come, even though it may be slow and uncertain. However, it cannot be assumed that rural Tibet is progressing. On the contrary, life support systems are being constantly destroyed. The degradation of the rangelands, the acceleration of desertification and the increasing land erosion are undermining both short-term progress in increasing yields and incomes, and long-term sustainability.

Especially given Tibet's pivotal importance to the continent's water supplies, Asian nations should take note of Tibet's deteriorating condition and encourage Chinese officials to protect the rooftop of the world.

CONCLUSION

For 50 years, Beijing's development strategy in Tibet has been to industrialise, intensify production and develop pillar industries, so that the economy will eventually take off. But after 50 years, that take-off is still to come. The Tibetan economy relies heavily on central government subsidies, and this dependence is intensifying. Subsidies are propping up the shell of an economy in a few urban areas and places of resource extraction, while the majority of the population is largely excluded, impoverished and has little access to services. Employment opportunities are restricted to the few enclaves where capital resources are being concentrated.

China's current remedy for Tibet is rapid urban growth. Investment in urban and transport infrastructure is supposed to enable sustained economic growth. While some growth will undoubtedly occur, these investments are not designed to involve, train or otherwise benefit the vast majority of Tibetans. China's priorities, as spelled out in its current Five-Year Plan and Western Development Programme, consist of the following: oil and gas extraction; salt and petrochemical manufacture; copper, chromite and gold mining; dam building to generate electricity for distant Chinese cities; pipeline and power grid construction; and a rail corridor to facilitate access to all of the above.

The many immigrant entrepreneurs and semi-skilled workers did help to spearhead modernisation on the Tibetan Plateau and support rapid growth in state enterprises. However, this growth has not benefited Tibetans, except for the few that live in urban areas and have the skills and connections to participate in the economy. Instead, China's policies have rapidly increased the income disparity between urban and rural areas and between the Chinese and Tibetans. Except for the few who are on the state payroll, the right to development remains a distant dream for most Tibetans.

Project that receive central government funding are not required to generate positive rates of return, even in the mid to long-term. The state finances numerous projects that fulfil non-economic objectives, such as border security, moving excess populations from overcrowded areas, populating the Tibetan Plateau with loyal subjects, and assimilating minorities into the national economy. These nation-building objectives often result in large-scale construction projects that make little economic sense.

Tibet's industrialisation is not based on regional characteristics and advantages, or on creating profitable enterprises, but on political and stability concerns. As a result, the new industries have performed dismally. Central funding and other forms of policy support have had to keep increasing in order to sustain them. Successive Five-Year Plans have renewed the pillar industry strategy for Tibet. The liberal subsidies and capital inflows are now

coming not only from central government revenues and loans, but also from wealthy provinces that are forced to invest in Tibet.

China continues to ignore the fact that development activities, including those associated with the Western Development Programme, must prioritise investment in the Tibetan people if economic growth is to take off. The massive investment in the hard infrastructure of railroads, highways, mines and cities has not been matched by an investment in the soft infrastructure of education and vocational training. As a direct result of the Chinese government's inattention, ineptitude or discrimination, Tibetans lack the modern skills and knowledge necessary to enter and support a modern economy.

Education, training and opportunities to participate economically are integral to Tibetans' human rights, as stated in the UN Declaration on the Right to Development. In the long run, the Western Development Programme must adopt a more balanced distribution of investment in income generation among urban and rural areas, and across ethnic groups. This should include taking measures to increase the commercial value of agricultural, livestock and other rural products. Besides directly benefiting over 80 per cent of Tibetans who live in rural areas, these efforts would also promote more sustainable development that could enhance local human resource capacities and rely less on outside capital, expertise and markets for its continued prosperity.

Development opportunities must be available to all citizens. If they are not, the urban elite will consume the natural resources at an unsustainable rate, and the rural poor may be forced to generate resources in an unsustainable manner. This will only add to the environmental degradation that is already rife on the Tibetan Plateau. Since the rivers that flow from Tibet sustain people throughout China, India and Southeast Asia – almost 50 per cent of the world's total population – unsustainable urbanisation and development must be curbed for the good of the entire region.

China must protect Tibet, the rooftop of the world, as well as honour the Tibetans' rights to development, and work in concert with a population that has always lived within its own means. The rapid urbanisation of Tibet and the influx of Chinese immigrants threaten to destroy Tibet. The consequences of continuing down the current path are dire, not only for Tibet, but for China itself and the rest of the world as well. Fortunately, if China changes its policies to be more appropriate to the Tibetan people and the Tibetan Plateau in the near future, there is still a window of opportunity to achieve sustainable economic development.

Whatever joy there is in this world
All comes from desiring others to be happy,
And whatever suffering there is in this world
All comes from desiring myself to be happy.

But what need is there to say much more?
The childish work for their own benefit,
The buddhas work for the benefit of others.
Just look at the difference between them!

Shantideva, a Buddhist master from Nalanda University, India, eighth century.
(Reprinted from DIIR, Tibet 2000)

CHAPTER FIVE

DAMMING TIBETAN WATERS

China is now speaking of a water crisis with great urgency. Tibetans speak of water very differently, even though the Tibetan Plateau is one of the most arid areas under China's control. These differing voices set the scene for an in-depth look at the many waters of Tibet and their snow peak origins in the glaciers. This chapter looks at Tibetan rivers, lakes and snowy sources from all perspectives: Tibetan, Chinese and global.

TIBET AS THE SOLUTION TO CHINA'S WATER CRISIS

According to a March 2007 report from the global environmental organisation World Wildlife Fund (WWF), four of the world's 10 most endangered rivers are Tibetan: the Drichu, Gyalmo Ngulchu, Zachu, and Sengye Khabab. Downstream, these rivers become some of the world's best known: the Yangtze, Salween, Mekong, and Indus, respectively. Nowhere else on earth is there such a concentration of major endangered rivers. As the WWF report describes, the threats include plans for numerous dams, pollution, overfishing and climate change (Wong, CM. et al. 2007).

So many Tibetan rivers are endangered because China has decided that Tibet will provide the solution to its water crisis. Even if Tibet can no longer yield much timber, and has not yielded as many minerals as China had hoped, Tibetan waters will save China from chronic overuse of its own rivers and underground water resources.

A major official report provides the following statistics on China's worsening crisis:

> The total stock of water resources in 2006 declined 9.1 per cent, annual average rainfall was down by 6.2 per cent; large reservoirs in China stored 180.6 billion cubic meters of water at the end of 2006, or 24.5 billion cubic meters less than that at the end of 2005. Some 35.78 million people and 29.36 million large domestic animals suffered temporary shortage of drinking water during the year (National Bureau of Statistics of China, Statistical Communiqué 2007).

River flows, rainfall and water storage are all in decline. China's population continues to grow and water consumption per capita rises. Since it is not practical to import water the way China imports raw materials, Tibet is seen as the answer. Tibet is now China's "Number One Water Tower". Amdo, Tibet's north eastern province, is especially important as both of China's great rivers, the Drichu (Yangtze River, Ch: Chang Jiang) and the Machu (Yellow River, Ch: Huang He), originate there.

China now has the most dam projects of any country, including on the Salween between the Tibetan Plateau and the Burmese border, and on the Mekong between the Tibetan Plateau and the river's exit into Laos, Thailand, Cambodia and Vietnam. These rivers are supposedly protected as part of the UNESCO Three Parallel Rivers (3PR) World Heritage Protected Area. The UNESCO World Heritage Committee is awaiting China's promised response to an urgent request for clarification of China's hydropower intentions for these rivers (Lopoukhine and Jayakumar 2006).

China's urgent need for water first reached a crisis point in 1998. Tibetan forests had acted as a sponge for water: they captured water in the monsoon season and released it into the rivers during the dry season. However, three decades of clear-cutting Tibetan forests destroyed their capacity to hold water. The result was devastating floods on the Yangtze, even though the year had normal rainfall. China then realised it had to choose between timber and water; no longer was it possible to take both from Tibet. China chose water, since timber could be – and now is – imported in vast amounts from Laos, Burma, and more distant tropical rainforests. China is now the biggest importer of tropical rainforest timber worldwide, much of it logged illegally, according to many reports (Telapak 2005; Environment Investigation Agency 2007).

China's thirst for water, for agriculture, industry and domestic use, remains unquenched. China's "hydraulic economy" is based on thousands of dams all over China. It is taking on massive projects, notably the grand idea of transferring water from the wet south to the parched north (Ch: *nanshui beidiao*). In 2006, China worked vigorously on south-to-north water transfer projects along two routes in eastern and central China. It spent a massive 11.9 billion yuan (US $1.5 bn), double the rate of spending on construction of the Beijing-to-Lhasa railway. Even this figure is dwarfed by the cumulative cost of the Three Gorges Dam: 131 billion yuan (US $16 bn) through the end of 2006.

But the projects keep getting bigger, especially in Tibet. China may soon start construction on the biggest engineering challenge yet, a third south-to-north route in the headwaters of Tibet's great rivers. In 2002, the total cost of these three diversion projects was estimated at 180 billion yuan (US $23 bn), 50 per cent more than the total cost of Three Gorges (Morton 2005: 37). If the existing detailed plans for this canal – known in China as the Great Western Route – are implemented, it may be the biggest water diversion project in history.

TIBETAN PERSPECTIVES ON WATER

Tibet is a land not only of great rivers that nourish almost the whole of Asia, but also of innumerable lakes, glaciers, and mountains that regulate the water supply. The mountains, capturing what little moisture drifts inland from the Indian and Chinese monsoons, hold a massive volume of water and release it gradually with the seasons. Even though rain and snow are highly concentrated in the summer months, and the Tibetan Plateau is quite arid, the glaciers, snow peaks, and rivers guarantee a steady flow year round. It is little wonder then that Tibetans regard their waters as wondrous, full of life, home to *lu* or *naga* spirits, to be strictly respected and not polluted (Palden Tashi 1998).

Tibet has a long lineage of *churagpa*, master tamers of the wild rivers. Many meditation masters controlled floods, engineered dikes, invoked rain in times of drought, and built bridges of forged iron chain links.

A well-known modern poem by a Tibetan intellectual, Dhondup Gyal, weaves classical meanings of rivers with a contemporary allusion to the youth of Tibet. He likens youth to the falling waters, determined that their voice be heard despite all difficulties.

> *Blessed auspicious water, good karma water, all-achieving water,*
> *Water with eight essential qualities, having all attributes,*
> *Water with 108 different rivulets, water of unity;*
> *You dare to flow over the steep rocky slope.*
>
> *Since you are the water coming from different sources,*
> *You have the courage to fall from the slopes of the low valley;*
> *The courage to bring different streams together.*
>
> *Open minded, strong, glorious splendour,*
> *Without pride or arrogance, flawless, a torrent flowing without cease.*
>
> *Able to discard dirt and impart good qualities;*
> *To develop youthful qualities with clean body and mind.*
>
> *(Dhondup Gyal 2000)*

Tibetans are finding it increasingly hard to maintain the clean, steady flow of rivers that must pass over steeper and rockier slopes, over dams, through industrial centres, and with increasing effluent and pollutant runoff.

Speaking of these modern threats to the purity of Tibet's water is not to say that Tibetans never harnessed or channeled water. Waterwheels (*chukhor*) are an old Tibetan technology, both for grinding roasted barley into flour (*tsampa)* that is the staple food of Tibetans and to turn big prayer wheels. Irrigation is also an old technology, organised by local farming communities. The short growing season on the Tibetan Plateau starts months before the summer rains, so water must be brought to the fields in spring to grow the highland barley.

It has been said that China was a hydraulic civilisation. The emperor, government and bureaucratic institutions, court, and standing army all came about through the effort to build and control water supplies. Tibet too was a hydraulic civilisation, but without feeling the need for so much central power backed by armies. Even large scale engineering of river flows is many centuries old in Tibet. The modern Chinese were not the first to introduce water technologies to Tibet.

Only a fraction of the monsoon clouds pass through the gaps in the Himalayas and reach Tibet. The clouds finally release their burden on the sacred mountains of Tibet, the sentinel gods paired with the goddess lakes below, the divine dyads of Tibetan traditional geography (Bellezza 1997). Although the snow may arrive in a violent blizzard, the mountains hold on to the water, releasing it slowly and steadily.

As the water flows lower and the valleys broaden, the wild mountain streams become increasingly tame and spread across the plains as great rivers. In the case of an overwhelming downpour, they may flood and they did so regularly in ancient times. In the 12th century, hydraulic engineers constructed a great embankment of huge rocks to protect Lhasa. Namkhai Pal, who mastered the Kyichu and tamed the floods, is still remembered today by Tibetans as a master of meditative realisation and as possessing great power over the capricious local gods of earth and water. His biography describes how some rocks were maneuvered into place by a fleet of 300 boats made of stitched leather, and others were moved by more mystical means. The result was an embankment "the

height as much as a horseman could hold up a spear. In terms of diameter it was broad enough to allow eight horsemen to gallop up and down upon it. It remained a wonder how it was raised. The embankment was built to last many years" (Sorensen 2003: 104).

When Namkhai Pal began walling off the Kyichu to protect the sacred places of Lhasa, he first had to stockpile "immeasurable amounts of grass, wood, meat and butter. They were able to fill a whole house with barley-corn to serve as remuneration for its erection" (Sorensen 2003: 103). This storehouse was accumulated not through a command or market economy, but by Namkhai Pal doing meditative retreat to clear his mind, and then soliciting charitable donations.

Namkhai Pal is but one of a long lineage of *chu ragpa*, master tamers of the wild rivers. After him there were many meditation masters, both monastic and wandering yogis, who controlled floods, engineered dikes, invoked rain in times of drought and built bridges of forged iron chain links. Thangtong Gyalpo, celebrated to this day as the visionary originator of Tibetan opera, is also known as the great *chag sampa,* the builder of iron bridges across rivers too steep, deep or fast to cross. His intention was not to promote trade and wealth accumulation but pilgrimage: to allow Tibetans to fulfil their heartfelt yearning to see the sacred sites of Lhasa at least once in a lifetime.

Lhasa, like Beijing, is built where a broad plain meets the mountains. Both lie on the boundary of the settled farming world and the mobile nomadic world of the mountains. The mountains to the north of Beijing are dry; on the far side is Inner Mongolia. The mountains north of Lhasa , while also dry, are much higher, towering more than two kilometres above a city which itself is at 3,500 metres. Lhasa is located in the path of a wild river that suddenly has a chance to spread out, and history records innumerable occasions, before the embankments were built, when the Kyichu in full flood found an entirely new course across the plain. It would devour farmland, eat away at the fields and bury cultivated land under huge deposits of sand.

Several hills in this plain are safe from the raging waters. The Potala Palace (not built until Lhasa was several centuries old) is perched on one such hill. However, the most powerful and spiritually significant places in Lhasa are on the plain, vulnerable to the full force of the river. Professor Sorensen considered whether the location of sacred places on the floodplain was intentional or not. He concludes that "the sanctum was erected precisely upon the most vulnerable locale. It was precisely here – in fact only here – that the potentially destructive forces could be kept at bay or tamed – in its very heart" (Sorensen 2003: 103).

Tibetan attitudes toward water are also shaped by the traditional belief in *nagas* and *lu*, or water spirits. Many Tibetan proverbs remind children to treat water with respect and keep it clean for fear of disturbing the spirits. The spirits are often honoured by elaborate seasonal rituals, which have been extensively studied (Palden Tashi 1998).

A final, perhaps surprising, aspect of the traditional relationship between Tibetans and their water is that, although fish were plentiful, Tibetans almost never fished. The Buddhist prohibition on needlessly taking life, and the view that all sentient beings regardless of size or intelligence deserve respect, mean that it is considered less harmful to kill a single, large animal (when necessary) than many small ones. Thus while many Tibetans eat some yak or mutton, fish and poultry were never consumed in meaningful quantities. Only in modern times have Chinese immigrants introduced industrial scale fishing to Tibet.

TIBETAN NEEDS: CLEAN WATER AND MILLENNIUM DEVELOPMENT GOALS

Before examining China's grand plans to capture Tibetan waters on an enormous scale, there is a simple and basic point to remember: Tibetans themselves need access to clean and potable water. Access to safe drinking water is a universal human right, one of the UN Millennium Development Goals (MDGs), and a good reason to look at water from a human viewpoint before considering the top-down view of central planners.

In Tibet today, the most pressing water issue is immediate and local: the supply of safe drinking water to villages. Amidst the issues of diverting Tibet's rivers to northern China, it is sometimes forgotten that Tibetan villages lack clean drinking water. They need simple pipes and hand pumps to save many women the backbreaking work of carrying water uphill every day. International NGOs have done much good work to improve water supply in villages, but there is a long way to go if China is to meet its MDG goal "to halve, by 2015, the proportion of people without sustainable access to safe drinking water" in Tibet by the target date.

The poor health of many Tibetans, documented in many international research reports, is strongly related to water quality and availability. Poor quality water causes high rates of hepatitis and other infections (Toole et al. 2006), and the effort of hauling water from streams far

An elderly nun stoops to fill her water pot from a poorly-designed village tap, with no platform to rest heavy pots. Chronic back pain is a major health problem in Tibet.

below villages causes frequent back injuries and debilitating chronic back pain among women (Foggin et al. 2006).

In March 2007, China announced that a modest part of its massive spending in the "Tibetan Autonomous Region" ("TAR") will include improving village water supplies. A recent news story stated:

> Tibet plans to extend clean drinking water to 1.2 million people by 2010 and will tackle the problem of contaminated drinking water for 300,000 people this year, said sources with the region's department of water resources on Wednesday. 'In many areas of Tibet, such as Qamdo and Nyingchi, water contains too much arsenic or fluorine, or too little selenium,' said Daindar Namgvai [Tendar Namgyal], a water resources department inspector. Tibet has the highest incidence of Kaschin-Beck disease – caused by a selenium deficiency in water – in the country. Almost one in ten Tibetans suffer from the disease, which bloats the joints. Almost three per cent of the Tibetan population are unable to work because of the disease. Tibetan households in rural areas not only suffer from unsanitary drinking water but are also forced to fetch water from faraway places. 'Sometimes, they have to carry the water on their backs several times a day, which makes their life even harder,' said Namgvai. With no wastewater treatment plant, the region is trying to find healthy water resources for rural dwellers, according to Namgvai (Xinhua 28 March 2007).

The excruciatingly painful "big-bone" disease, or Kaschin-Beck syndrome, with its crippling enlarged joints, is common in Tibet, and does appear to be due to the absence of the trace element selenium from water supplies. However, the latest Chinese plan only mentions the problem, without proposing any remedy (Mathieu, F., et al. 1997).

International development agencies with experience from recent years in providing water supplies in Dingri, southern Tibet, suggest that such work, when undertaken by central authorities, is sometimes done carelessly. There can sometimes be little thought to ensuring that the pipes will last for many years, the construction work may be independently supervised and substandard, or sometimes even need to be dug up and redone. This spending programme, while laudable, is for the "TAR" only. The other half of Tibet, spread among 80 officially designated Tibetan Autonomous Counties outside the "TAR", will miss out.

TIBETAN WATERS IN ASIAN AND GLOBAL PERSPECTIVE

Water will become an increasingly scarce resource in the future. Some analysts project that by the year 2025, two out of three people in the world will face water shortages. The World Commission on Water for the 21st Century warns,

> We are facing a world water gap right now, this minute, and the crisis will only get worse. The consequences of failing to bridge the world water gap will be higher food prices and expensive food imports for water-scarce countries that are predominantly poor. Already 800 million people are going hungry because they cannot afford to buy food (World Water Council 1999).

This water crisis is not confined to the future. The World Water Council says that, at present, over 450 million people in 29 nations face water shortage problems, a figure that is projected to jump to around 2.5 billion by the year 2050.

The Commission presents a grim picture of the global water situation:

- 1.4 billion people live without clean drinking water;
- 2.3 billion people lack adequate sanitation;
- seven million people die yearly from diseases connected to water; and,
- 50 per cent of the world's rivers and lakes are highly polluted.

The Tibetan Plateau plays a major role in stabilising global water and climate. It is estimated that glaciers cover 10 to 20 per cent of the total area in the Himalayas, while an additional 30 to 40 per cent has seasonal snow cover. Himalayan glaciers (including those in Tibet) cover around

100,000 square kilometres, storing about 12,000 cubic kilometres of fresh water. Tibet's glaciers cover about 43,000 square kilometres. The icy conditions rival those in the Polar Regions; some call Tibet a "third pole" (Bahadur 1997, 2004).

These snow peaks and glaciers enable Tibet to be the source of four major rivers that supply much of Asia. From the deserts of Pakistan and India to the rice paddies of southern Vietnam, from the great Tonlesap lake of Cambodia to the North China plain, Tibet provides Asia's fresh water. The Yellow and Yangtze rivers, China's twin lifelines, begin in the glaciered peaks of the "Roof of the World", as do the Brahmaputra and Indus, thousands of kilometres above their sprawling mouths.

Tibet receives little precipitation, but the high peaks capture what arrives. During the peak monsoon period, most of the rivers are fed by rainwater, while during the dry season most of the river water originates from glaciers (with some coming from groundwater). There are many towns in arid Gansu, just beyond Tibet, that are entirely dependent on glacial meltwater (Lu Aigang et al. 2005). These perennial sources provide stable or base flows. They are independent of seasonal precipitation and important in sustaining hydrological regimes.

The fact that the rivers flow relatively steadily throughout the year is all the more surprising because the rain and snow often arrive in sudden downpours and blizzards. As measured by Chinese scientific mapping, Tibet's precipitation is sudden and turns dry, stony streambeds into torrents. Gentle rain is a rare blessing. Given these conditions, it is a miracle that the rivers leave the Tibetan Plateau in a steady, reliable flow. However, as the scholar Per Sorensen has written, recently alternating extremes of drought and flood are now more common in the region (Sorensen 2003: 100–104).

Given these conditions it is amazing that by the time the rushing rivers of Tibet have reached the edge of the plateau, their flow is steady and constant, guaranteeing all downstream users the opportunity to secure their livelihoods. This taming of the raging waters by the special attributes of the Tibetan landscape and traditional hydro engineering of the Tibetan people is an aspect of a unique hydrology that is not widely appreciated. Even China did not know the source of its two great rivers, the Huang He (Yellow) and the Chang Jiang (Yangtze) until the 1970s. This was pointed out by the chairman of the Minority Writers' Association in China, Jamphel Gyatso, who noted that, until 30 years ago, the common Chinese belief was that these cradles of culture originated somewhere in the heavens, in the Tian Shan (Heavenly Mountain) or Kun Lun (Tib: Khunu) ranges.

Now, thanks to scientific mapping, China holds the perception that Tibet can save it from its thirst. China is awakening to the enormous range of environmental services that Tibet provides cost-free. The monsoon that brings rain and snow to the high peaks of Tibet is relied on by every Chinese rice farmer, enabling intensive use of the land. The monsoon draws the massive clouds that form over the tropical oceans, both the Indian Ocean and the South China Sea, deep inland and even across the barrier of the Himalayas.

The Tibetan Plateau has an enormous effect on Asia's hydrological cycle and weather. The enormous snow and ice fields directly impact the climate of the region. Studies indicate that their cooling extends globally. Ocean sediment analyses demonstrate that the Himalayan uplift has cooled the globe, even in Antarctica (Bahadur 2004).

Only recently have scientists realised how the Tibetan Plateau helps to create the monsoon. In winter, a stable cold high pressure system forms over Tibet, pushing away the jetstream which is diverted in its west-to-east path to the southern side of the Himalayas. The plateau is so big and high that even the jetstream must go around it. In summer, however, Tibet acts as a heat pump. As the rocky plateau heats up and reflects heat back into the thin upper atmosphere, a low pressure system forms over the Tibetan Plateau and attracts the monsoon. Then, as every person who lives south of Tibet knows, for several months massive rainclouds come from the Indian Ocean, dumping water all the way across India, Nepal, the Himalayas and on to Tibet itself. The monsoons of Southeast Asia, Japan, and China are also drawn inland by Tibet's summer heat.

If the winter snow in Tibet has been heavy and much of it remains on the ground, reflecting rather than absorbing heat, the monsoon that year will be meagre. Yet if the ground is dry and snow-free, Tibet's bare dark rock and vast pastures will absorb more summer heat and guarantee a bountiful monsoon. It is only quite recently that scientists have had sufficient data to feed complex computer models and understand how this works.

Close to 900 million human beings lived in the watersheds of the six major rivers that rise in Tibet at the beginning of the 21st century (as shown in table 5.1). If the watersheds of all the rivers originating in Tibet is considered, it covers about 47 per cent of the world's human population. Beyond the populations residing in the watersheds of these rivers are the additional hundreds of millions or billions who depend on monsoon rains drawn inland by the Tibetan Plateau.

The rivers of Tibet are the heritage of all Asians and of the world. They should be managed for the benefit of all

Table 5.1 Watersheds and human use of the some major rivers of Tibet

River	Basin Area (in sq km)	Population per sq km	Total population	Water (in cu m/person/yr)	Percentage of crop land	Percentage of irrigated land
Sengye Khabab (Indus)	1,081,718	165	178,483,470	830	30.0	24.1
YarlungTsangpo (Brahmaputra)	651,335	182	118,542,970	1,700-4,000	29.4	3.7
Gyalmo Ngulchu (Salween)	271,914	22	5,982,108	23,796	5.5	0.4
Zachu/Lancang (Mekong)	805,604	71	57,197,884	8,934	37.8	2.9
Drichu (Yangtze, Ch: Chang Jiang)	1,722,193	214	368,549,302	2,265	47.6	7.1
Machu (Yellow river, Ch: Huang He)	944,970	156	147,415,320	361	29.5	7.2
Total	**5,477,734**	**160**	**876,171,054**	**2,160-2,470**	**35.3**	**9.1**

Sources: Viviroli, D., Weingartner, R., and Messerli, B. 2003. Assessing the hydrological significance of the world's mountains. Mountain Research and Development 23: 32-40.
IUCN/WRI. 2003. Moving water. Available at www.iucn.org.
United Nations Environment Program, The fall of the water: Emerging threats to the water resources and biodiversity at the roof of the world to Asia's lowland from land-use changes associated with large-scale settlement and piecemeal development, 2005.

people downstream – not just for those Chinese who are fortunately positioned at the midstream and able to capture the water and its energy. Historically, Tibetans have taken great delight in these downstream connections, especially the understanding that the confluence of the Yarlung Tsangpo (Brahmaputra) and the Ganges connects Tibet to Bodhgaya, the place of Buddha's enlightenment. Tibetans today wish to ensure that their rivers serve all downstream population, not just those who are busy damming, draining and planning to divert these waters for selfish purposes.

The rivers of Tibet are the heritage of all Asians and the world. They should be managed for the benefit of all people downstream.

Tibetans upstream and the hundreds of millions of water users downstream have a common cause for concern about China's activities. China is even doing large-scale dynamite blasting to make it easier for large commercial ships to navigate the rivers (Hogan et al. 2004; Mekong River Commission 2003; England 2006). Tibetans know that these rivers should be respected as they are. Tibetans wish that all life downstream may benefit from an uninterrupted, unpolluted, year-round flow of pure water. However, the power to guarantee this is no longer in Tibetan hands.

TIBETAN WATERS IN CHINESE EYES

China's thirst for water is especially acute in the North China Plain, including Beijing. China's leaders are willing to consider even the most grandiose, wasteful and impractical projects to capture Tibet's water, if they promise to fix Beijing's water supply problem. Even though Tibet and Beijing are thousands of kilometres apart, separated by multiple mountain ranges, simplistic solutions abound that are based on the fantasy that Tibetan water can save Beijing. This is thought to be most achievable if China dams all of Tibet's major rivers in a gigantic, interconnected scheme.

Yarlung Tsangpo (Brahmaputra) Diversion

The most grandiose vision was published in a popular book by a former officer of the People's Liberation Army (PLA), Li Ling (Li Ling zhu 2005). His ideas on how Tibet's water can save China are not new. He proposes that China go beyond damming the Tibetan tributaries of the Yangtze, not only channeling them north to the Yellow River, but also damming the Yarlung Tsangpo (Brahmaputra) to send water northward. On a map it looks fairly simple. Not only do the headwaters of the Drichu (Yangtze, Ch: Chang Jiang) have a big flow to be

tapped, but so too does the Yarlung Tsangpo, which traverses the entire plateau from west to east before abruptly cutting south through the Himalayas, where it flows into the Indian state of Assam and Bangladesh as the Brahmaputra, son of the greatest of gods, Brahma.

If the path from the Yarlung Tsangpo to the Yellow River is sometimes uphill, and many other rivers must be crossed on the way, China could install massive pumping stations and storage dams all the way up. Mountain ranges also block the way, but the PLA's expertise in thermonuclear explosions could blast channels and tunnels. Twisting faultlines and active tectonic slippage make the entire route earthquake-prone, but China's engineers believe they can conquer all problems. Li Ling thinks big, proposing to make the deserts of Xinjiang bloom with Tibetan water and drought-proof the whole of northern China. The engineers who built the railway to Lhasa and the Three Gorges Dam are ready for the next challenge, according to rhetoric. China plans to better those feats by building the mightiest network of channels, dams and hydropower stations the world has ever seen.

Remarkably, this is taken seriously in Beijing. Before Li Ling, this idea was promoted by Guo Kai. In 1998, President Jiang Zemin lent his authoritative support to Guo Kai's vision in principle, while also stating that such a major investment must be found scientifically feasible. The central authorities sent an 11-man scientific team in 1999 to investigate. It was hardly a normal process of research, however; the scientists were accompanied by a team from China Central Television for a month, beaming back regular reports to titillate a nationwide audience. In 2002, the State Council, which is China's highest state institution, confirmed in principle its approval of the scheme.

The grandiosity of this project is evident from its title: the Shoutian, named after the start and end points. The first dam in Tibet would be at Suma Tan (Ch: Shoumatan or Shuomatan), and at the end the Yellow River would finally empty into the ocean, polluted and exhausted, in the huge port city of Tianjin, downstream from Beijing. The Shoutian spans almost all of China, from the far southwest to the far northeast. The name alone suggests that Tibetan water will save China.

The proponents of the project also call it the Great Western Route, a name echoing the Great Western Development programme first announced by President Jiang Zemin in 1999. *Xibu da kaifa* in Chinese is more accurately translated as Great Western Opening Up, or Great Western Extraction. The Great Western Route for transferring water from several southern basins to the Yellow River Basin exemplifies Jiang's vision on an extraordinary physical scale.

There is a long legacy in China of believing that sheer willpower can overcome all physical obstacles. China has an age-old history of hydraulic projects that preserve the will of the emperor in stone. Mao used to tell the story of the "foolish old man who removed mountains", but it seems that the old man was not foolish after all in his insistence that even a mountain can be removed with diligence and patience. A high proportion of China's top leaders graduated as engineers, many as hydro engineers. In the absence of an effective demand management

Table 5.2 Threats to Tibetan rivers

River	Percentage of forest	Percentage of original forest lost	Percentage of basin protected	Dams in basin*
Sengye Khabab (Indus)	0.4	90	4.4	(3)
Yarlung Tsangpo (Brahmaputra)	18.5	73	3.7	(3)
Gyalmo Ngulchu (Salween)	43.4	72	2.2	4 (5)
Zachu (Mekong, Ch: Lancang)	43.2	80	3.8	22 (25)
Drichu (Yangtze, Ch: Chang Jiang)	6.3	85	1.7	63 (101)
Ma Chu (Yellow river, Ch: Huang He)	1.5	78	1.3	40 (47)

Source: Viviroli, D., Weingartner, R., and Messerli, B. 2003. Assessing the hydrological significance of the world's mountains. Mountain Research and Development 23: 32-40.
IUCN/WRI. 2003. Moving water. Available at www.iucn.org.
United Nations Environment Program, The fall of the water: Emerging threats to the water resources and biodiversity at the roof of the world to Asia's lowland from land-use changes associated with large-scale settlement and piecemeal development, 2005.
**Figures in brackets are dams under construction with walls of 60 metres high or more.*

strategy to reduce water waste, China has turned to an even greater intensification of water impoundment.

The backers of the current idea are old army men, who worked to implement Mao's vision of overcoming mountains. They remember the days when a strong state gave resources to the army to conquer nature. In the 1960s, calculations of economic costs and benefits mattered less than nation-building and constructing a Third Front of heavy industry far inland, far from American or Soviet threats. Such nostalgia for the era of Maoist certainty and unity of purpose is strong in China, as has been noted by anthropologists and Sinologists (Barme 1996).

Every year, some 120 million tons of household sewage, mostly untreated, have been released into the Yellow River in Lanzhou.

The old revolutionary veterans are now highly active and influential, as a recent article in *Southern Weekend* describes:

> In 1988, Guo's Great Western Route first caught the attention of the military. Events progressed quickly and one year later, Zhang Jinong, then the minister of water resources, established the preparatory committee for the Shuoutian Canal. Since its founding, the committee has been headed up by army generals including Wang Dinglie. 'During the 1934-36 Long March after we trekked through the grassy swamps in Sichuan Province and finally arrived in the Gansu Corridor, we had nowhere to find water,' recalled General Wang, 88, former air force vice commander. 'After liberation I stayed in Xinjiang for five months, and further experienced the hardships of life caused by water shortage in western China.'
>
> The project, which has obtained support from a total of 118 generals so far, has a large backing among the NPC (National People's Congress) deputies and CPPCC (Chinese People's Political Consultative Conference) members with military backgrounds. In the 1990s, 208 NPC deputies and 118 CPPCC members came out with proposals supporting the project, six and ten times respectively (*Southern Weekend* 2006).

Even if this project is neither practical nor economic, the old generation may win. Momentum for it is building. Support is coming from central institutions, as well as – more importantly – the Party, as the *Southern Weekend* article goes on to describe:

> Han Shouwen, formerly Deng Xiaoping's personal secretary, stated that: 'On February 4 [2006], in the midst of the Spring Festival, the State Council instructed the Ministry of Water Resources, the National Development and Reform Commission (NDRC) and the general office of the South-to-North Water Diversion Project to carefully pore over the schemes outlined in the book.' Deng's former secretary is himself a member of the Shoutian Canal preparatory committee […].
>
> Prior to the book's publication, Guo Kai had already been invited to Zhongnanhai [the Party headquarters]. On August 2, 2005, he was first invited to the Policy Research Office of the Central Committee of the Communist Party of China (CPC), to give an account of his Great Western Route plan. 'From then till this June we had met 11 times altogether to discuss the issue,' Guo said (*Southern Weekend* 2006).

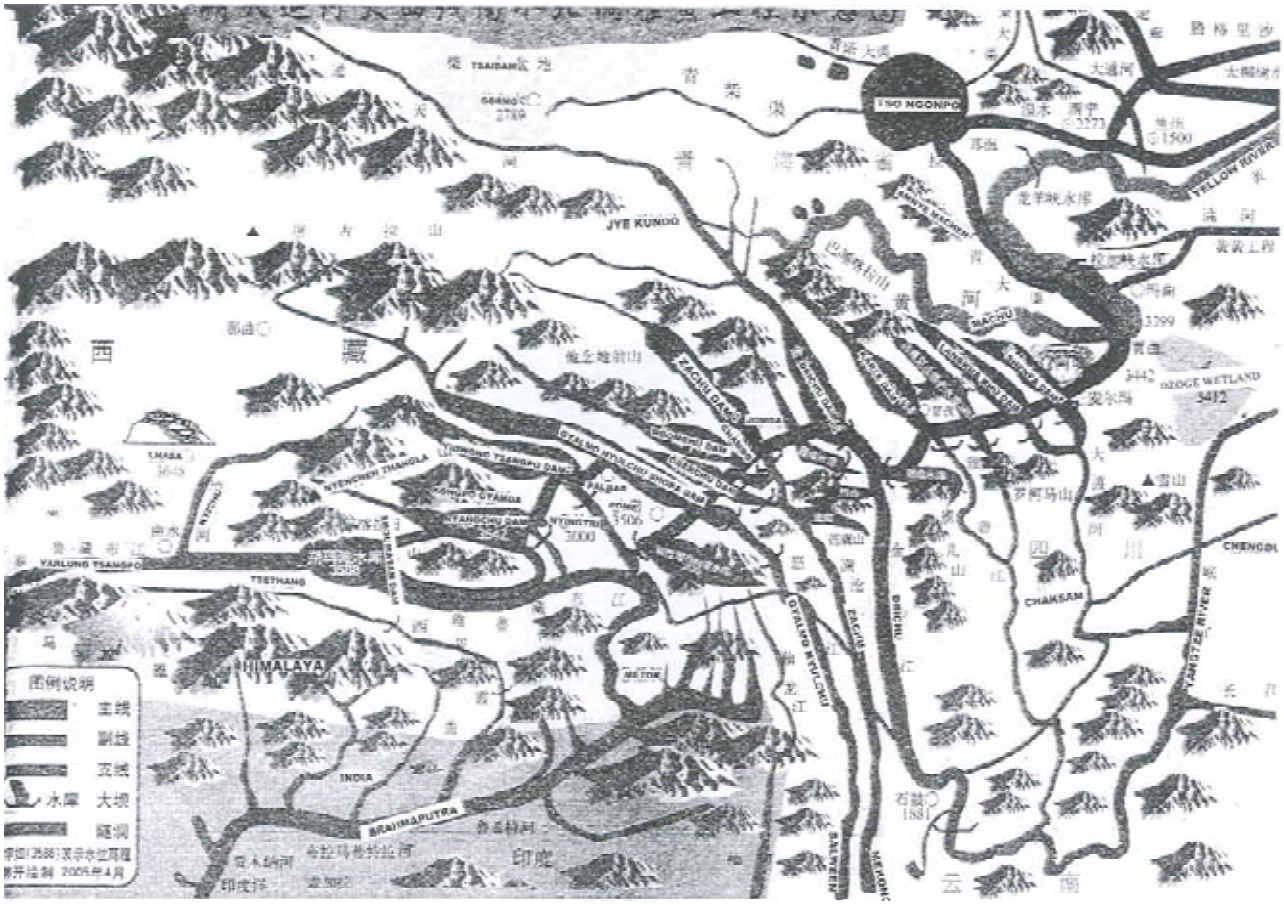
Such is the enormity of the plan that it has energised not only the old generals but also senior Party leaders. They are attracted to a project of a magnitude comparable to the Great Wall, which, as all Chinese are taught, was built at a cost of hundreds of thousands of human lives. The Great Western Route will also have a human cost, though its backers claim that only 25,000 people will have to be compulsorily displaced and resettled.

A major reason the Yellow River urgently needs much more clean water is the amount of untreated sewage and industrial waste being poured into it, as far upstream as Gansu. Investigative journalism by China's state television network in May 2007 showed sensational footage: "In the past 12 months, some 120 million tonnes of household sewage, mostly untreated, have been released into the Yellow River in Lanzhou, capital of Gansu Province in Northwest China, a report by China Central Television (CCTV) said. Ma Jun, director of the Institute of Public & Environmental Affairs, a non-governmental organisation based in Beijing, told *China Daily* that between 1980 and 2005, the volume of wastewater flowing into the river increased from about two billion to 4.3 billion tonnes, and now accounts for about one-tenth of its total volume.

> In Baiyin, Gansu Province, where metallurgy is a pillar industry, some 20 million tonnes of industrial sewage are released into the Yellow River every year. Wang Mingzhi, who lives in the area, told CCTV: 'Many of our 11-year-old children have no hair and bad teeth. Heavy metals in the water are very harmful to people's heath.' 'For companies that pollute, it is cheaper to break the law and pay the fine than it is to abide by the rules,' Ma said (Wang Zhuoqiong 2007).

It may be that China's March 2007 announcement of a 100 billion yuan spending programme in Tibet includes advance preparations for the Great Western Route water

Figure 5.1 Sketch map of Brahmaputra diversion plan



Source: Adapted from Li ling's Xizang zhi shui jiu Zhongguo : da Xi xian "zai zao Zhongguo" zhan lue nei mu xiang lu (Save China through water from Tibet). *Zhongguo Chang'an chu ban she.*

transfer. Altogether, 180 projects are to be undertaken in Tibet by 2010, but only a few have been publicly named. Since it is so controversial, inside as well as outside China, the Great Western Route is not named.

The logic of a masterplan

Li Ling's detailed, book-length plan, 17 years in the making, is worth a closer look. The section below summarizes his key points. The starting point is his insistence that the waters of Tibet are presently going to waste. From a productivist point of view, anything not made to serve human purposes is wasted.

The Shoutian, or Yarlung Tsangpo to Tianjin water scheme, is so big and audacious that it dwarfs the earlier proposal for a somewhat less grandiose scheme officially called the western route of the south-to-north water transfer. The original scheme captured the headwaters of the Drichu (Yangtze), diverting them to the Machu (Yellow River). Now the Great Western Route captures not only the Yangtze sources but also the Za Chu (Mekong), the Gyalmo Ngulchu (Salween) and the Yarlung Tsangpo (Brahmaputra).

The audacity of the Great Western Route is both its strength and weakness. The sheer amount of water it plans to impound would increase the flow of the Yellow River fourfold, an inundation of such magnitude that many doubters fear it will break banks and flood the North China Plain, causing ruin, as has happened in the past. But nothing less than such an audacious capture of all of Tibet's eastern rivers would be big enough to guarantee that flow would be sufficient to reach Tianjin and the ocean, by which time the flow would be heavily laden with industrial toxins. The total amount of water to be impounded and redirected is so enormous that managing it en route to China is in itself an extraordinarily complex task. The task will require much of Amdo (Ch: Qinghai) province to be turned into a vast pumping and storage

system (to handle the massive amount of water that will need to be impounded and redirected), which will, in turn, bring water to the deserts.

The plan and its effects

The Machu (Yellow River) winds its way through northern China: the deserts of Inner Mongolia, ultimately reaching Beijing and the port city of Tianjin. Early versions of the plan proposed that the waters of the Yarlung Tsangpo/Brahmaputra in southern Tibet be captured by a dam at its easternmost point, closest to China, just before it swings suddenly south towards India and Bangladesh. On a flat piece of map paper, this may appear logical, but, in reality, the Yarlung Tsangpo cuts a gorge so deep at that point – the deepest in the world – that the rock walls rise five kilometres into the sky on all sides. The Yarlung Tsangpo, as it cuts down into the rising Himalayas, is so narrow, wild and volatile that Chinese and American expeditioners only traversed this portion of the river, with utmost difficulty, in the late 1990s, though it has long been home to Tibetan Monpa tribes (Balf 2000; Walker 2000; McRae 2002; Heller 2004; Baker 2004). If a handful of experienced explorers faced such difficulty following the Yarlung Tsangpo through its gorge, how could a dam possibly be built there? How could the dammed water be carried over the Namcha Barwa mountains? Even for the Chinese, who are taught to believe that human will could conquer any physical obstacle, this does not make sense.

This did not deter Li Ling who simply moved his proposed first dam hundreds of kilometres back up the Yarlung Tsangpo, much further west and further from China. He now proposes a dam at Suma Tan, the gorge below Tsethang town, one of the most sacred districts of Tibet. A meditation cave of Padma Sambhava, the tantric master revered as the first Buddhist tamer of Tibetan minds, is located in a side valley nearby, as well as the place where the 15th century reformer Tsong Khapa wrote some of his most famous texts on the path to enlightenment. The great Fifth Dalai Lama was born in the area. The location also includes valleys and peaks sacred to Nyatri Tsenpo, the very first king of Tibet, and peaks which pilgrims regularly circumambulate, especially Lhamo Latso and Lha Gyari. A nearby village called Thangme would probably be submerged by the dam as the water fills.

Li sees an advantage in damming this location because it has an altitude of 3,588 metres above sea level, thereby reducing the need for pumping uphill. The route, however, is so long that much more pumping and storage would be required in areas where currently even Tibetan villages seldom have enough electricity for a single light bulb. The entire length of the canal from the first dam to its entry to the Yellow River is a drop of only 179 metres.

Blood from a slaughterhouse flows directly into a side stream of the Yarlung Tsangpo river at Tsethang.

Not all of the Great Western Route is easy. Li Ling's book estimates that along the 1,239 kilometres length of the route, six mountain ranges will need to be tunneled, amounting to 56 kilometres of tunnels, as well as six pumping stations where the terrain is adverse and water must be made to go uphill. There are many mountains to cross, as well as the gorges of the Gyalmo Ngulchu (Salween), Zachu (Mekong) and Drichu (Yangtze). In all, five major rivers would need to be crossed and dammed, and their water collected, all destined for the original cradle of Chinese civilisation, the far distant North China Plain. Under the plan, the last dam would be located in Amdo Ngaba, the portion of Amdo province hived off politically to Sichuan province, a remote and rugged pastoral region on the easternmost edge of the Tibetan Plateau which has seen only limited development. This final impoundment on the upper Gyarong Ngulchu (Ch: Dadu) would capture water far above Dartsedo.

If Li Ling's productivist project ever goes ahead, the point where pumped waters will enter the Yellow River is at the junction of three Chinese provinces, where northern Sichuan abuts southeastern Qinghai, and the southernmost prefecture of Gansu.

Chinese critics say Li Ling underestimates the human impact of the project. Independent research fieldwork surveys in the project area have only recently begun to temper the enthusiasm of the promoters. Since the project attempts wherever possible to utilise the lie of the land, it would drown farming valleys, even though sheltered areas below the plateau heights where farming is possible are already few. Most valleys are too steep, while the high

plateau above is too cold and windswept for agriculture. Farming land, integral to Tibetan households and local economies, is the most vulnerable part of this project that seeks to minimize construction costs by claiming that much of the route is a natural downflow, along existing valley floors, reducing the need for canal digging.

What makes all of this worthwhile, Li Ling says, is that Tibet will truly save China, not only the cities and industries along the downstream Yellow River, but also the deserts of China's north. Under the plan, the Shoutian Canal would meet the Yellow River at the point where the river, having been pushed westwards along the southern slopes of the holy Amnye Machen glacial snow peaks, is suddenly released onto a plain at Dzoge water meadow. Presently, the wetland of Dzoge absorbs vast amounts of water in its summer water meadows, slowing the river's flow at its peak and thereby acting as an enormous sponge that releases water slowly all year round. The proposed engineering solution would require speeding up the Yellow River to absorb the vast amount of water entering at this point, which will constitute one third of the entire volume of water extracted.

This will require sealing off the Dzoge wetland from the Machu (Yellow River), effectively killing it as a natural wetland, refuge for wildlife, alpine meadow pasture and carbon sink that absorbs greenhouse gases. The remaining captive water that cannot be absorbed by the Machu (Yellow River), as it curves around the western end of the Amnye Machen range, will need to flow ahead, in an artificial canal alongside the Yellow River, until it reaches a point where the valley is deep enough to accept the rest of the water. Only then will the remaining water, two thirds of the total extraction, be released from the end of the canal.

Tibet's greatest lake, Tso Ngonpo, (Ch: Qinghai Hu, Mongolian: Koko Nor) would become the most enormous storage pond for the entire scheme. The level of Tso Ngonpo, which has been falling slowly and steadily for thousands of years (Chen & Bowler 1986; Qian & Xuan 1983; Sun & Lock 1990), is to be raised by 35 m, which would flood a lot of fertile farmland. Only one quarter of the Tibetan waters pumped into Tso Ngonpo would then flow into the Yellow River. Other storage ponds are also planned, including the first in line which is planned for the Machu (Yellow River) itself in Amdo, even though the Yellow River there is already heavily dammed for hydropower. The location of the massive dam and storage pond will be Lajia in Machen county (*Qinghai sheng jingji dituji* 2004: maps 191–194). The effect on Lajia and Machen county could be devastating, since nomadic livelihoods are threatened by new restrictions on pasture use (see chapter one, Nomads and Grasslands) and the limited area suited to farming would be drowned.

At last, the remaining water would be destined, by canals constructed for the purpose, to make China's major northern deserts bloom. The deserts of huge arid provinces, Xinjiang and Inner Mongolia, the Junggar basin and its oil fields, the Alashan and Tenger mountain range in Inner Mongolia, the parched but now densely settled Hexi corridor in Gansu and the Tsaidam Basin (the most industrialized part of Tibet), would all receive water from the canals radiating from Tso Ngonpo. According to Li, China's dust storms, even those that obliterate the Beijing sky, will be history. Where there is now desert, forests will flourish. At the highest level, China's leaders are captivated by a vision that promises to be as great as the greatest of imperial water works of past emperors.

If Li Ling's project goes ahead, it is questionable whether all of the downstream Chinese provinces, intended to benefit, will actually gain. The Yellow River is long, and it makes a lengthy detour through arid Ningxia and the Ordos desert of Inner Mongolia, before it reaches the North China Plain where water shortages are now acute. Because the Yellow River flows through so many provinces, there are high-level political arguments between provinces. These provinces have long been engaged in political controversies about the allocation of water, particularly when water must be rationed and one or more province must miss out. Despite the seemingly enormous amount of water to be transferred, this battle over water will no doubt intensify if the project proceeds.

One such fight occurred in 2002, when coastal Shandong, heavily dependent on the Yellow River, sent a delegation to Beijing to argue – successfully – that the poor inland province of Ningxia should be deprived of water to save Shandong's crops. As a result, Ningxia, as well as Inner Mongolia, lost access to essential water, resulting in severe economic losses for both provinces (Wang Yahua 2003: 95).

Ningxia and Inner Mongolia learned a hard lesson from this and are determined not to let it happen again. Other provinces that stand to gain from the plan include: Gansu (the likely first beneficiary as it is in much need of water for its large programme of settling poor peasants in the parched Hexi Corridor); Ningxia and Inner Mongolia (each hungry for water for agriculture, as well as Inner Mongolia's coal and steel production plants); Hennan (another poor province located before the Yellow River reaches Shandong); and, finally, Shandong.

The waters of the Yellow River are presently allocated to these provinces by the Yellow River Conservancy Commission, a central statutory institution that, in 1987, established an official water allocation formula which provinces are expected to follow. Under the formula, 36 per cent of river flow is meant to remain in the river as environmental flow, to ensure that the river actually flows all the way to the sea and flushes pollution away, which in some years has not happened. Of the remaining water, specific percentages are allocated to each downstream province (Wang Yahua 2003: 96).

The facts of life favour upstream over downstream areas, since evaporation en route causes much loss of water. Despite the seemingly enormous amount of water to be transferred, it is unclear how much would be available to "save" Beijing, Tianjin and Shandong. Many provinces stand to lose if the project goes forward, especially the many Chinese provinces along the Yangtze, all the way to Shanghai. These Chinese provinces may well speak up against this Great Western Route, even when Tibetans cannot. They fear that as climate changes and droughts occur, the Yangtze could suffer a crisis year, as was the case in 2006. Drought years are exactly when the Great Western Route will be most likely to transfer Yangtze water to the Yellow River, but are also the time that water is most needed in the Yangtze Basin. There may be a contest for Tibetan waters, between north and south, Yellow versus Yangtze dwellers, with Tibetans excluded from the debate. This will be exacerbated by the impacts of climate change (see below for more details).

Tibetans are not able to participate in the Great Western Route project , even though Tibet is impacted the most.

Indeed, one major uncertainty of the plan is whether the Yangtze will still have enough water, especially in a drought year, when the Yellow River requires maximum diversion of water out of the Yangtze. Provinces along the Yangtze worry that, although the Yangtze is much larger than the Yellow River, there will be insufficient environmental flows in the Yangtze to flush out pollutants. A 2007 report by Chinese experts was examined recently by the media:

> The first comprehensive study into the health of the Yangtze found that 600km of the river were in a critical condition. Around 14bn tonnes of waste are believed to be dumped into the river each year. The river's aquatic life had been seriously affected, with the annual harvest of aquatic products falling from 427,000 tonnes in the 1950s to 100,000 tonnes in the 1990s, the report found. A huge reservoir created by the Three Gorges Dam – the world's largest hydro-power project – had also been seriously polluted with pesticides, fertilisers and sewage from passenger boats. 'The impact of human activities on the Yangtze water ecology is largely irreversible,' Yang Guishan, of the Nanjing Institute of Geography and Limnology, which helped compile the report, said (BBC 16 April 2007).

Response to the Great Western Route plan: Co-operation and criticism

Not surprisingly, given the tremendous scale of this project, it has generated much opposition. What is remarkable is that political campaigning and lobbying is happening openly in China, as in democratic countries. This is a sign of hope. However, Tibetans are not able to participate, even though Tibet is impacted the most.

The powerful provinces of Chongqing and Sichuan may decide to add their voices to those of the concerned scientists and NGOs, but the "TAR" government does not dare to speak up autonomously. The summer of 2006, in both Sichuan and immediately downstream in Chongqing, saw a severe drought, with great anxiety that the upper reaches of the Yangtze – the very waters to be sent north to the Yellow River – are already insufficient for the needs of Chongqing. Chongqing is a massive city, hub of the whole of southwest China, which is growing at a rate even faster than Beijing (Okadera et al. 2006).

In Beijing, the prospect of a magical solution to so many chronic Chinese problems has led to high level meetings, involving both promoters and critics, being convened to clarify the true worth of the Great Western Route and arrive at a definitive position.

> Ma Zongjin, of the Chinese Academy of Sciences, called on over 40 experts and officials to attend a conference on June 30, 2005, to evaluate the project's options. A recent newspaper article reported on the meeting as follows:
>
> At the meeting, all attendees agreed that water shortage is fast becoming an issue of national security, requiring urgent and immediate action,' said Ma. However, neither side is able to present convincing data based on meticulous field surveys. Guided by the State Council and with joint participation from all ministries and commissions concerned, an investigation mission was called for in the conference's final bulletin, enabling further preparations

> and deeper study for the project. 'Circumstances permitting, another conference will be held to discuss the programme's feasibility as well as to investigate vital issues of international cooperation,' said Ma (Southern Weekend 8 August, 2006).

In 2006, 50 scientists and Chinese NGOs, who opposed the plan, organised a field survey of the Great Western Route, followed by a workshop in Sichuan to report their findings and launch a public appeal to the provincial government. The scientists and NGOs reported that Sichuan, Qinghai and the "TAR" are the losing provinces within China, as well as the downstream countries including Burma, Laos, Thailand, Vietnam and Cambodia, even though each has been assured by project backers that they will actually benefit from the project in the form of flood control. The upstream losers are located in the area where pumped waters would enter the Yellow River, as northern Sichuan abuts southeastern Qinghai (Tib: Amdo), and the southernmost prefecture of Gansu. The issue has also mobilised Chinese citizens, who have formed alliances with the scientists who are sceptical of the practicality of such schemes. Many educated Chinese are tired of the inability of central leaders to resist the temptations of edifice projects. Dissent is permitted. These are promising developments and serve as signs that some people in China are questioning potential policies and the assumption that Tibet will provide a magical solution to China's water problem.

Tibetans cannot take part directly in these debates or form any advocacy NGOs that question policy proposals, since any attempt at organising these is quickly labeled "splittist" and is suppressed. The government of the "TAR", although it has most to lose and nothing to gain, remains silent. Tibetans can only look on, in the hope that others can articulate their concerns, and speak up for Tibetan waters, so that water can continue to run freely to the ocean, supplying billions of people along the way.

Certainly, it is slowly becoming known that Tibet is not the magical solution to China's problems. Instead, as international and Chinese scientists, and NGOs point out, the solutions are much more modest, immediate and practical. The main solution lies in the practice of demand management. Water in China is priced very low, thereby enabling irrigators to make great use of it. Demand management means pricing the water, used by Yellow River irrigators, to include the actual monetary and environmental costs of damming and pumping. This simple measure would raise water prices considerably, giving irrigators strong incentives to use water much more carefully, instead of flooding fields and spraying. Strategies of water demand management are undramatic but effective. They do not make headlines, or leave monumental legacies that future generations can point to. Demand management is of interest only to technical experts, to be found in obscure technical reports. Yet it is the key.

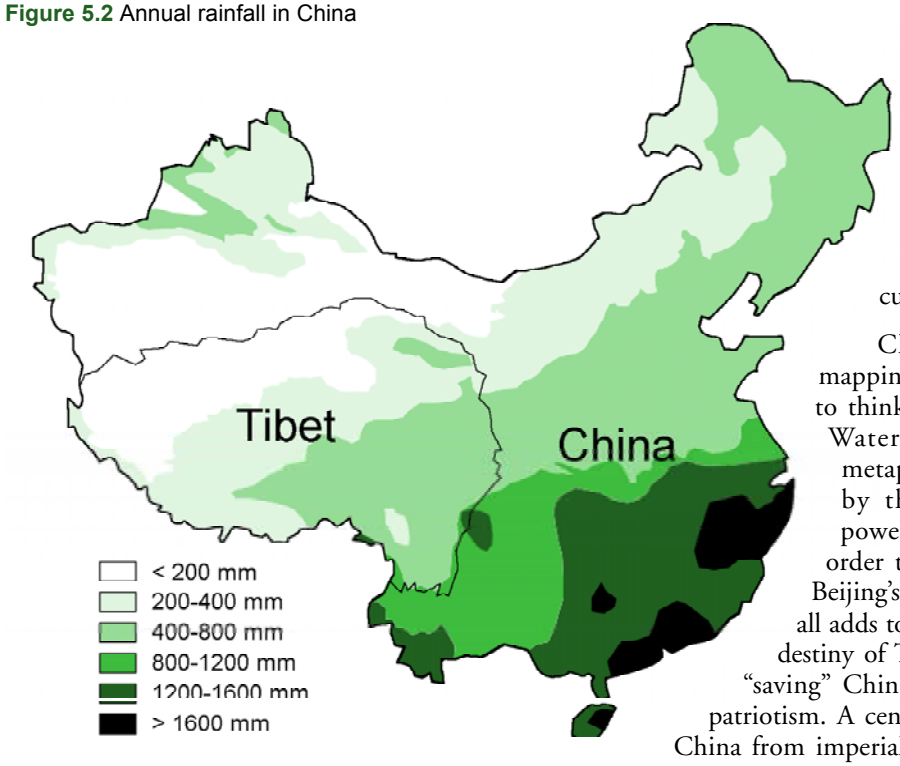
However, China persists with its attachment to grandiose solutions to complex problems. China had originally thought that Tibet would yield great riches for China, delivering enormous mineral treasures, but in reality the extraction of resources on a large scale has been difficult, as chapter six (Natural Resource Extraction) shows. Now Tibet appears, once more, in Chinese imaginations, as the source of another magical solution, this time to the problem of water. This can be seen in the way the Yarlung Tsangpo to Yellow River scheme is represented visually in the maps in Li Ling's 2005 book. The rivers are fat ribbons, enticingly exaggerated, and even bigger are the 13 dams needed along the way, as every possible Tibetan source is captured and added to the total flow.

In Beijing, while the project magnetises interest among leaders who envisage themselves being famous for centuries, it is also a project with a dangerous likelihood of failing, so the pressure is on to get it right, as highlighted in this report:

> Guided by the State Council and with joint participation from all ministries and commissions concerned, an investigation mission was called for in the conference's final bulletin, enabling further preparations and deeper study for the project. 'Circumstances permitting, another Xiangshan conference will be held later this year to discuss the programme's feasibility as well as to investigate vital issues of international cooperation,' said Ma Zongjian, of the Chinese Academy of Sciences (*Southern Weekend* 8 Au August 2006).the Chinese Academy of Sciences (*Southern Weekend* 8 August 2006).

Plastic waste litters the bank of a tributary of the Yarlung Tsangpo at Tsethang. In summer, the river rises and flushes the waste into the Yarlung Tsangpo.

Figure 5.2 Annual rainfall in China



Adapted from: Heilig, G., 1999, China Food. Can China Feed Itself? International Institute for Applied Systems Analysis, Laxenburg, Austria.

The other influential lobby group promoting the Great Western Route, in the hope of winning the construction contract, is the state-owned railway construction company that built the new rail line to Lhasa, which began operation in 2006, as the same report goes on to observe:

> Despite the force of the above criticisms, they fell upon deaf ears with Hu Zhenyi, vice general manager of the China Railway Construction Corporation. Hu's company recently completed the construction of the Qinghai-Tibet Railway. Comparatively to that undertaking, the Great Western Route project is an easy job for the railway engineering corps who have lain down tracks at sites higher than 5,000 meters, he said, adding, 'We have gained a great deal of experience in building dams, digging tunnels, protecting local eco-environments and resisting various altitude sicknesses.' He estimated that the project could be completed within six to eight years at most (*Southern Weekend* 8 August, 2006).

The fundamental assumption, on which the entire Great Western Route is based, is that Tibet has abundant water, which at present goes to waste. Diagrams promoting the project depict Tibet as a lake of inviting blue, awaiting the hand of man to send it north, across the horizon.

Yet as soon as one looks at a rainfall map of China, it is obvious Tibet is actually one of the drier parts of China, not as arid as the deserts of Inner Mongolia and Xinjiang, but much drier than the populous provinces where the majority of Chinese people live. This is an inescapable fact that is currently being ignored.

China has learned, through recent mapping and explorations of river sources, to think of Tibet as "China's Number One Water Tower". This new imaginary metaphor was promoted for many years by the Qinghai government and its powerful Water Conservancy Bureau in order to increase Qinghai's importance in Beijing's eyes and attract more funding. This all adds to the sense of the critically important destiny of Tibet to save China. The rhetoric of "saving" China is common and used as a sign of patriotism. A century ago, it meant planning to save China from imperialism, but today what is it that is in need of saving? China now needs saving from itself, from its greedy and wasteful capture and over-use of all of its own waters, including surface waters in rivers and lakes, and even the subterranean waters, which are also now running dry, especially in Beijing.

Can or should Tibet save China from itself? To many Chinese, it seems obvious that Tibet should play such a role, which makes Tibet important to China in new ways.

Historically, negligible usage rates of water resources in Tibet meant that nearly all of the flows were transferred to countries downstream. Until 1950, development in the Tibetan Plateau region was on a small scale and exploitation of natural resources was well within the sustainable limit. The Tibetan people prided themselves on the clear and pristine nature of their homeland. However, this changed dramatically with the application and implementation of development policies and strategies by the Chinese leadership which were deeply materialistic and exploitative.

A CLOSER LOOK AT DAMS ON TIBET'S MAIN RIVERS

In addition to the Shoutian Great Western Route megaproject analysed above, China has an extraordinary number of dam projects on Tibetan rivers that are being planned, under construction or recently completed. Some

are on the descent from the plateau, others just beyond the plateau. While the primary purpose of the Great Western Route project is to extract water for North China, the other dam projects listed below are almost entirely intended to generate hydroelectricity and seldom to meet nearby demand.

China has a grand plan to build a nationwide power grid to transmit electricity over great distances, from the wild mountain rivers of Tibet to the industrial cities of southern and eastern China. Building the power stations will come first, since their construction takes many years, but the entire grid is due for completion by 2015. This is known in China as the "west-to-east power transmission programme," matching the "south-to-north water transfer programme" discussed above. Gradually, the south-to-north water transfer became more ambitious in its proposed capture, in western China, of all of Tibet's major rivers. The locations of the hydro dams are well downstream of the water transfer dams, usually close to the edge of the Tibetan Plateau or on the dramatic descent of the rivers from the plateau. The Tibetan regions of Amdo (Ch: Qinghai), the "TAR" and Yunnan are all rich in hydropower potential and it is inevitable that Beijing plans to exploit the resources of these Tibetan regions.

The Chinese leaders of Yunnan province are especially eager to dam all of the province's rivers, one after the other, as a quick way to get rich and catch up with the wealth of the coastal provinces by becoming a hydropower exporter to Thailand and coastal Chinese industries. Yunnan provincial leaders have taken full advantage of the decentralization of central power in China in recent years, which has encouraged provinces to pursue their own agendas with little concern for the environment (Jahiel 1997).

The Yunnan provincial enthusiasm for dams seems to contradict the repeated calls, in the current Five-Year Plan, for development that is sustainable. At the highest level, China's top leaders cite social justice, sustainable development and ecological protection as guiding principles of the 11th Five-Year Plan for 2006–2010. The top leaders voice great concern over the widening gap between the rural poor and the urban rich, which leads to frustration and even instability. Yet there is no sign of slowing the rush to dam all the rivers in Yunnan.

A number of the dam projects are described in the following sections.

Machu (Yellow River, Ch: Huang He)

Source: Bayankala Mountains, Amdo (Ch: Qinghai)

Length: 5,464 kms, approx. 1,100 kms inside Tibet

The Machu (Ch: Huang He, Yellow River) has the highest recorded silt load of any other major river in the world, hence its English name. With every cubic foot of water, it carries about one kilogram of silt from the erosion of the Tibetan Plateau. This high silt load has greatly limited the use of water for power generation, urban consumption and industrial uses. The irrigation diversions mean that, in some years, the Machu no longer even reaches the sea. For example, in 1997, the Machu failed to reach the Yellow Sea for 226 days of the year. It is this acute scarcity of water that has led to the Great Western Route project outlined above.

The Machu is able to flow year round because the large Tibetan wetlands act as a sponge and help maintain water levels in the river. While still in Tibet, the Machu reaches a great bend as it passes the flank of the Amnye Machen range and then disperses into the vast wetland near Dzoge (Ch: Ruergai), described earlier in this chapter. This wetland, famed for its wildlife, especially migrating water birds, is the sponge that regulates China's year-round water availability. It both absorbs and steadily releases water, enabling the Machu to reach the sea, even in the dry winter months, despite its lengthy detour through the Ordos desert and the sand dunes of Inner Mongolia.

The Chinese government has sought to harness the power of the Machu, by constructing multiple hydropower dams, as detailed in Table 5.3. The river, however, has repeatedly fallen short of water demand. Because of the river's unpredictability and the high need for water in the surrounding regions, a massive construction project that would divert water from the Drichu (Yangtze River) to the North China Plain was initiated in the late 20th century .

The Tibetan province of Amdo (Ch: Qinghai), where the Machu and Drichu each has its first 1,000 kilometres or more, has a particularly large number of dams. This is not surprising as the area is the most industrialised part of Tibet, with oil and gas fields, petrochemical factories, energy intensive aluminium smelters and heavily polluting magnesium plants. These industries rely intensively on water as a low cost input in the manufacturing process, a source of cheap underpriced hydro electricity and a sewer for industrial wastes. Amdo is a hydro economy and its provincial Water Conservancy Bureau is the biggest and most impressive building in the capital city, Xining.

The official *Qinghai Economic Atlas*, published in 2004, lists 45 small hydro dams in Qinghai, seven large dams, and four very large dams impounding the Machu in a stepped cascade (*Qinghai sheng jingji dituji* 2004: 191). Much of the electricity is exported downstream to the refineries and smelters of the industrial city of Lanzhou. Several more large hydropower dams are planned, with

Table 5.3 Hydropower dams on the Machu (Yellow River, Ch: Huang He) and its tributaries

Name of the dam	River	Location	Dam size (height/crest length)	Storage capacity (in cu m)	Capacity of plant (in megawatt)	Status
Tsanga Gag(Longyangxia)	Yellow	Chabcha	178 m high	24.70 bn	1,280	completed 1986
Ngogyai Gag (Lijiaxia)	Yellow	Chentsa	165 m/458 m	1.65 bn	2,000	completed 1997
Gongboxia	Yellow	25 km from Xunhua county	133 m high	550 mn	1,500	completed 2006
Heiquan	Baoku	Datong	124 m high	172 mn	42	expected completion 2000
Gouhou	Tributary of Yellow	Chabcha	70 m high	3.1 mn	-	completed 1988, breached Aug.1993 1,257 deaths
Nina	Yellow	-	45.5 m high	-	200	exp. completion 2004
Laxiwa	Yellow	-	250 m high	1 bn	3,720	planned
Jishixia	Yellow	Yazi (Ch:Xunhua)	100 m high	272 mn	1,000	completed
Dragkhung Nakha (Zhiganglaka)	Yellow	Between Chentsa & Huolong	-	-	192	planned (with AES Corp., USA)
Liujiaxia	Yellow	100 km south-west of Lhanzhou	147 m high	-	-	completed 1974
Kangyang	Yellow	Chentsa	-	-	-	planned
Xionghou	Yellow	Xionghou	-	-	-	completed 1995
Qushi'an	Confluence of Bachu and Yellow	30 km west of Gepasumdo (Ch: Tongde)	-	-	-	completed late 1980s
Shawo Gag (Amixia)	Yellow	Downstream from Lijiaxia near Yazi Dzong	-	-	-	under construction
Dananchuan	Dananchuan	Near Dianzhong city	46.5 m/460 m	13.10 mn	-	completed 1974
Dashitan	Luobagou	Drotsang (Ch: Ledu)	43 m/396.5 m	4.24 mn	-	completed 1978
Yunguchuang	Yunguchuan	Dianzhong	43 m high/393 m	7.65 mn	-	completed 1978
Golmud	Golmud	Gormo	48 m high/60.4m	24 mn	32	completed 1979

12 listed for construction during the 10th Five-Year Plan period of 2001 to 2005. The *Qinghai Economic Atlas* lists, in detail, the power output of each and the capital allocated for construction, both by central and provincial governments (*Qinghai sheng jingj dituji* 2004: 192–195).

Qinghai's hydro economy has already almost fully exploiting the potential hydropower mapped by Chinese engineers. Already, there is little potential for further exploitation, especially if the Machu is to be replenished in its lower section to prevent it from drying up in the winter, as in the 1990s.

However, at the south-eastern edge of the Tibetan Plateau, a new hydro economy of intensive investment and exploitation is under vigorous construction. The Chinese provinces of Yunnan and Sichuan include substantial areas that are officially designated as Tibetan "autonomous" counties and prefectures. Here, three of the world's great rivers run in close parallel, each in its own deeply incised valley, separated by high ranges: the Drichu (Yangtze), the Zachu (Mekong) and the Gyalmo Ngulchu (Burma's Salween).

China is now constructing many large dams at great speed, resulting in serious creeping environmental problems, dam safety concerns and costly remediation. Chinese experts, such as economist Hu Angang and others, are critical of the State's grandiose infrastructure projects. They advocate smaller and more effective local infrastructure projects, which have greater potential to benefit the average citizen.

Table 5.4 Hydropower dams on Zachu (Mekong River, Ch: Lancang Jiang)

Name of the Dam	Location	Population displaced	Dam Height	Status
Liutonsiang	Dechen Autonomous Prefecture			6 years
Jiabi	"			6
Wuneng Long	"			7
Tuoba	"			9
Huangdeng				9
Tiemenkan	180.8 km distance to border			9
Gonguoqiao	Weishan Yi ethnicity Autonomous County	4,596	130	7
Xiaowan	50 km upstream of Manwan	28,748	292*	Dec2001-2012*
Manwan	Yun Xian County of Lincang Prefecture in Yunnan	3,042	132	1986 -1993
Dachoashan	131 km downstream of Manwan	5,200	120.5	1996 -2003*
Nuozhadu	Lancang Lahu Ethnicity Autonomous Co	14,800	260.5	12
Jinghong	Xishuangbanna Dai Ethnicity Autonomous Prefecture	1,700	118	2003 - 8
Ganlanba	"	58		4
Mengsong	"	230		6

Adapted from: Plinston and Daming (2000) in pp53 of China's Water Politics: In whose Interest? *by Tashi Tsering*
** China's Lancang Dams Endanger Millions both Upstream and Downstream– http://www.rwesa.org/lancang/intro.html*

Zachu (Mekong, Ch: Langcang Jiang)

Source: in Amdo (Ch: Qinghai)

Length: approx. 4,500 kms, 1,500 kms inside Tibet

Many maps of the Mekong, especially those focused on development, fail to include the upper Mekong in Tibet or show how far west into Tibet it rises. The "Greater Mekong Subregion", promoted by the Asian Development Bank (ADB), routinely omits all of the Mekong above Yunnan, shortening the river by a third.

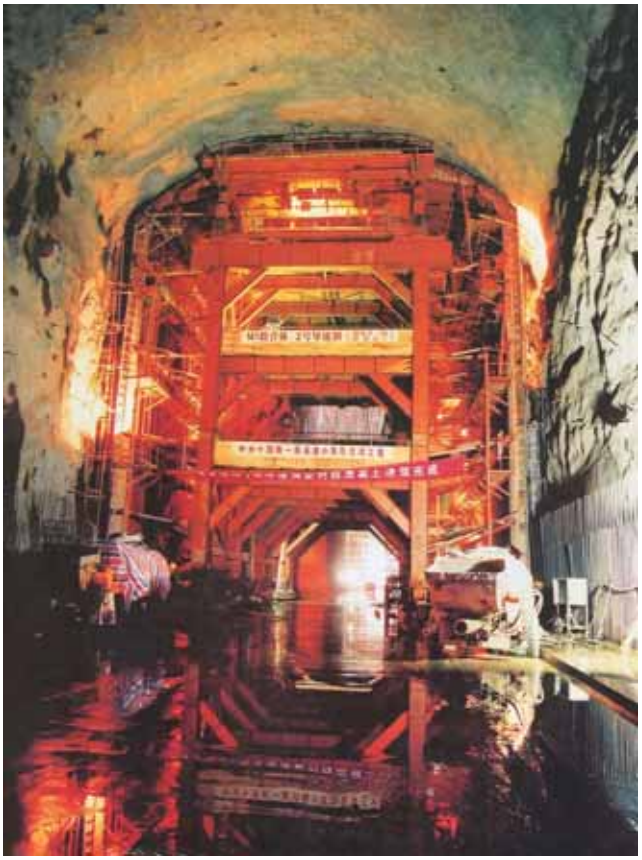
The Mekong is perhaps the most international of Tibet's rivers, watering six countries, and for many of these it is seen as a potential source of affordable hydropower. There are plans to build more than 30 dams. Yet the downstream

countries are increasingly worried that China is capturing the water for its own purposes and this will dramatically alter the flow of the river. In terms of hydropower, China's engineers have extraordinary plans for its rivers, especially the upper Mekong as it traverses Yunnan before reaching Laos, Burma, Thailand, Cambodia and Vietnam. A cascade of no less than 14 very large dams has been designed, with some already complete and others under construction. The uppermost six on this cascade of dams is in the Tibetan Autonomous Prefecture of Dechen (Ch: Diqing or Shangrila). The lower eight dams just beyond the Tibetan Plateau will be constructed first, since the terrain is less rugged and they are closer to the urban electricity markets (Magee 2006: 31; Lancang Jiang 2004). The remoteness of the area and absence of major local consumers are no barrier to this ambitious programme. The dams are designed to be integrated into China's national grid, enabling users in distant coastal Guangdong to consume the power, or what remains of it after the inevitable leaks from the transmission wires along the way. Thailand, also hungry for energy, has been willing to finance the dam construction, and the ADB also provides expertise and loans – all of which has set the stage for Yunnan to replicate Qinghai (Tib: Amdo) as a hydro economy run by engineers.

In addition to harnessing its energy potential, China has dynamited the Mekong rapids so that trade transported by boat can be increased from 100 to 500 tonnes. Thai farmers, NGOs and environmentalists regularly protest at China's selfishness, but have had little success in bringing about change in China's policy, largely because China has chosen not to join the Mekong River Commission, a group which brings together the Mekong countries in an effort to find common governance of a single watershed (Ryder 2004). The Greater Mekong Subregion (GMS), convened by the ADB, is another

group seeking an integrated approach to the river's management. However, it is also flawed because it includes Yunnan province yet excludes the Tibetan provinces that give birth to the Mekong.

Chinese ambition has also impacted the upper portions of the river which flow through the Tibetan region. Three of Tibet's rivers – the Gyalmo Ngulchu (Salween), Zachu (Mekong) and Drichu (Yangtze) – run in parallel gorges as they leave the plateau. At China's request, UNESCO agreed to list the three parallel rivers as a World Heritage protected area. This supports China's tourism plans for the area and the Tibetan part of Yunnan – now officially renamed Shangri-La. The area is to become a major hill resort and eco-tourist zone. Tourism and hydropower are the two major industries planned for this stunningly



Hydropower tunnelling through the mountains at the edge of the Tibetan Plateau.
Source: front cover of Yunnan shuili fadian (Yunnan Water Power) vol 22 #4, 2006.

beautiful portion of Tibet and the multi-ethnic mosaic immediately below the plateau. Yet there is an obvious contradiction in the construction of end-to-end huge hydro dams in the heart of a World Heritage site.

The specific areas designated for UNESCO World Heritage protection are the gorges, particularly the steep slopes above the rivers. But the rivers themselves, even though they give their name to the "Three Parallel Rivers World Heritage Area" (Ch: *Sanjiang*), were interestingly not included by China in the protected area, leaving China free to dam the area as it chooses. UNESCO's World Heritage Committee in 2006 warned that the Three Parallel River gorges would be officially listed as endangered, unless China scales back its hydropower programme (UNESCO 2006: 6–9). UNESCO's official agenda paper noted with alarm "a proposal currently under review by authorities for a large copper, lead and zinc mine that may impact on the property depending on the final boundaries". The agenda also proposed that UNESCO formally "Reiterates its continuing serious

concern over the potential significant impact from proposed hydro-power and dam development on the property and downstream communities and considers that any dam construction within the World Heritage property or significantly impacting the property would provide a case for inclusion of the property in the List of World Heritage in Danger; Notes with grave concern the findings of the mission in relation to proposed changes to the boundaries of the property which could significantly alter the values for which the property was inscribed, and mining operations within the property which threaten its integrity and values; Notes that additional information from the State Party on the potential impacts of dam construction, boundary changes and mining are essential, in order to fully assess the state of conservation of the property" (UNESCO 2006).

Now China wants to reduce the 1.7 million hectares protected by UNESCO by as much as 20 per cent, to allow more commercial development, especially tourism (Lopoukhine and Jayakumar: 2006). UNESCO is largely powerless in this situation. So too are the Tibetans, who are suspected of being "political" if they protest. Fortunately, others have increasingly spoken up with growing confidence in favour of conservation. At the grassroots level, many Chinese scientists and environmental NGOs are calling for long-term solutions to protect the environment in this area, not just short-term measures to address the present shortages of electricity and water downstream. The Yunnan Institute of Botany has established a Centre for Biodiversity and Indigenous Knowledge (CBIK, pronounced 'cubic') which establishes an international comparative framework for respecting both ecology and the traditional uses of these areas (Xu et al. 2004; Wilkes 2005).

Gyalmo Ngulchu (Salween, Ch: Nu Jiang)

Source: Nagchu county, central Tibet, rising in the Nyenchen Thangla range

Length: 2,800 kms, approx. 1,000 kms in Tibet

The Salween River is 2,800 kms long, flowing mainly through Central Tibet and Burma, then draining both eastern Burma and western Thailand. The Salween headwaters are a series of shallow lakes and marshes to the southwest, west and northwest of the Nagchu district of Tibet. This region of rolling hills within broad valleys is underlain by red sandstone and siltstone. From its start, the Salween River flows east until it nears the capital of eastern Tibet, Chamdo. From there it changes course and heads south toward the Khawakarpo Mountains near the town of Tseka, running nearly parallel to the Mekong River. Once in Kham Province, the two river valleys diverge

Figure 5.3 Chinese dams proposed for The Gyalmo Ngulchu river

Adapted from: Encyclopaedia Britannica 2005 Deluxe Edition CD-ROM; [and image file "site for 13 dams planned on Gyalmo Ngulchu (salween) Nujiang in Chinese.gif"].

and the Salween heads southwest into Burma, where it becomes that country's primary river.

Under the Chinese government, 13 dams are presently under construction on the Salween river in Yunnan Province alone, with the largest being a 34 metre-high dam at Chalong in the Nagchu Prefecture. China Huadian Corporation, a wholly state owned enterprise and controlling shareholder of the Hong Kong stock exchange (listed as Huadian Power International Corporation Limited), is the chief promoter of the proposed Nu river development in this area.

Drichu (Yangtze, Ch: Chiang Jiang)

Source: Dhangla Range in Amdo Province

Length: 6,380 kms

Regarded as the world's third longest river, the Drichu (Yangtze) originates in the Dhangla (Ch: Tanggula) mountains in northeastern Tibet, a range approximately

Table 5.5 Hydropower dam plans on Gyalmo Nyulchu (Salween River, Ch: Nujiang)

Name of the Dam	Location	Elevation above sea level (in m)	No. of people to be relocated	Dam height (in m)	Status
Song Ta	On the border of TAR & Yunnan	1,950	3,633	307	designed
Bin Zhong Luo	Nujian Lisu Autonomous Prefecture (Yunnan)	1,690	n/a	55	designed
Ma Ji	Nujian Lisu AP	1,570	19,830	300	designed
Lu Ma Deng	Nujian Lisu AP	1,325	6,092	165	designed
Fu Gong	Nujian Lisu AP	1,200	682	60	designed
Bi jiang	Nujian Lisu AP	1,155	5,186	118	designed
Ya Bi Luo	Nujian Lisu AP	1,060	3,982	133	designed
Lu Shui	Nujian Lisu AP	955	6,190	175	designed
Liu Ku	Nujian Lisu AP	818	411	36	site preparation 2003
Shi Tou Zhai	Baoshan Prefecture (Yunnan)	780	687	59	designed
Sai Ge	Baoshan Prefecture	730	1,882	79	designed
Yan Sang Shu	Baoshan Prefecture	666	2,470	84	designed
Guamg Po	Baoshan Prefecture	609	34	58	designed

Source: Update on Yunnan Hydropower Expansion, a working paper on Chiang Mai University's unit for Social & Environmental Research & Green Watershed, Kunming, PR of China, March 2004.

4,900 metres above sea level. From these mountains, the river flows east, southeast and then south through Tibet into the Chinese province of Yunnan. From there it turns northwest across the Sichuan Province and then flows east through central China, past Shanghai and enters the East China Sea, ultimately draining an area of about 1.8 million square kilometres. Throughout the year, the high mountains at the Yangtze's source cause it to flow rapidly for most of its length. However, fed by melting snows in the spring and rains in the summer, the Yangtze flows strongest in late spring and summer, and abates through autumn and winter.

The Tibetan headwaters of the Drichu/Yangtze have been severely impacted by at least three decades of uncontrolled logging of the catchment forests. The Chamdo area of Tibet's Kham province, which includes significant portions of the Mekong and Salween watersheds, was until recently home to extensive cold-temperate forests, largely of juniper, pines and spruce. It is highly relevant that in the Chamdo area, logging practices under Chinese occupation have been unsustainable and this is seen to pose a threat to the hydrology of these vital Asian rivers. Additional threats to Tibet's rivers also stem from the level to which Beijing allows the mountains surrounding the Yarlung Tsangpo, Mekong and Salween watersheds to become deforested as well as the strategy the PRC chooses for developing hydropower and irrigation resources on these rivers.

Logging was officially halted in 1998, after disastrous Yangtze downstream floods in a year of normal rainfall, but reforestation work has been only partially effective. This is because China relies on dispersing seeds by

aeroplane rather than by employing local Tibetan communities to plant and protect seedlings.

The Three Gorges Dam on the Yangtze, China's biggest hydropower project until now, has been deeply controversial for many reasons, including the displacement of large numbers of people whose resettlement has been largely unsuccessful and the fact that promises of raised incomes remain unfulfilled (Probe International 1993; Steil 2002).

Sengye Khabab (Indus)

Source: Sengye Khabab in Tibetan, meaning "the one flowing out of the lion's mouth"

Length: 2,900 kms

The Sengye Khabab, or the Indus as it is known in India and Pakistan, has its source to the north of the sacred Gang Rinpoche or Mount Kailash in arid western upper Tibet. At an elevation of 5,183 metres, it is also the source of the Yarlung Tsangpo (Brahmaputra) and Langchen Khabab (Sutlej) rivers. For much of the year, Tibet's glaciers and snowmelt feed the Indus river, whose volume is lowest in the cooler season, and greatest during the rains of the southwest monsoon from July to September and when the snows are melting in the mountains.

The Indus flows northwest for over 800 kilometres (500 miles) inside Tibet and then northwest into Ladakh, as the Sengye Tsangpo, and then into Kashmir. From Kashmir, it runs down through the mountains until entering Pakistan, where it becomes the region's principal river. Since most of Pakistan is arid or semi-arid, the Indus River system plays a vital national role. The watershed irrigates about 80 per cent of Pakistan's 21.5 million hectares of farmland, through an extensive network of canals. It finally empties into the Arabian Sea.

Irrawaddy

Source: Zayul County, Kongpo Nyingtri region, Central Tibet

Length: 2,170 kms

The Irrawaddy is fed by three rivers in Zayul County, near the border with India in Central Tibet. Though its flow is short in Tibet, it forms the source of one of the most important rivers in Burma.

A HISTORY OF POLLUTION AND OVERUSE OF CHINA'S RIVERS

China owns and operates more than 80,000 dams, about 22,000 of which are large dams, most built after the Communist takeover of 1949. By a conservative

Figure 5.4 Water diversion from the Yangtze to Yellow River through three routes.

Adapted from Tibet Justice Center.

estimate, that translates into one large dam per day since the emergence of modern China. In this process, millions of citizens have been displaced. Estimates are that 12 million Chinese people, equivalent to 650 every day, have been evicted and lost their homes. A 1994 World Bank summary explained:

> Since the founding of the People's Republic, more than 10 million people have undergone involuntary resettlement. This experience has not been entirely successful. It is estimated that 25 per cent of resettlers are better off than before, 25 per cent are at the same level as before and 50 per cent are not better off than before. This less than satisfactory situation is the result of inadequacies in regulations, planning, execution, and funding. The need to improve the situation is slowly being recognized (Woort 1994: 69)

Zhang Shaoshan, an official of the Office of Resettlement of the Ministry of Water Resources explains why life for those displaced by dam development is often miserable:

> Generally speaking, of the total number of resettlers, one-third was well resettled, one-third was marginally resettled, and one-third was poorly resettled. There are two main problems in the work of resettlement. One is that the per capita area of land available after relocation is much smaller than what people had before, and that the land's productivity is much lower. According to statistics, the per capita area of land is 1.5 mu of highly productive land before relocation and 0.5 to 0.6 mu [0.03 to 0.04 hectares] of slope or arid land after relocation, where yields are low, and the government must provide people with grain. In addition, they have little access to other jobs, thus their incomes are low. Furthermore, the standard of

> living of the inhabitants of the host area is also affected. The second problem is that public facilities in some receiving areas are incomplete, causing many difficulties for the resettlers, such as transportation difficulties, lack of necessary information, poor production conditions, a weak economic base, and slow economic development, and the economic gap between receiving areas and areas unaffected is becoming larger and larger.
>
> The remaining problems result from the lack of understanding of the complexity, arduousness, and impact on society of resettlement; from the lack of practical and scientific guiding principles for the formulation of policies, regulations, plans, and criteria; and from the improper handling of the relationships between state, collective, and individual interests (Zhang Shaoshan 1994: 66).

In 2005, the world's professional environmental monitoring agencies collectively published their assessment of the rivers of Tibet and of the Himalayan region. This joint report of the United Nations Environment Program, International Union for Conservation of Nature, World Conservation Monitoring Centre, International Centre for Integrated Mountain Development and other key agencies, found the following:

> Piecemeal infrastructure development has resulted in increased mining, hydro power development, poaching, deforestation of water sheds, agricultural expansion with increasing irrigation, redistribution of domestic animals into more marginal grazing lands and drainage of wetlands.

The Three Gorges Dam has been heavily criticised for its severe environmental and social impacts.
Photo by Richard Chamber

> Satellite images from 1960–2000 reveal great changes in environmental pressures both in urban, rural and even highly remote areas with progressing development.
>
> Impacts include overgrazing, erosion and deforestation following settlement along road corridors.
>
> A major cause of increased sediment load in rivers in wet seasons and decreases in water flow in dry seasons is unsustainable human land use practices.
>
> Unsustainable land use has resulted in reduced capacity of watersheds to manage monsoon and snowmelt driven floods.
>
> Expansion and population pressures have lead to increased settlement in flood-risk areas along lakes, behind former flood dikes, in drained wetlands, deltas or on steep slopes subject to land slides and erosion.
>
> Unsustainable land use practices are increasing both likelihood and impact of floods, especially for impoverished people (UNEP 2005).

These findings are no surprise. Ever since the days of Premier Deng Xiaoping's market reforms, rapid productivist economic growth has been a major policy in the People's Republic of China and this growth increases pollution and decreases biodiversity, aptly described by some as a "pollute now and pay later" policy.

One outcome of this unsustainable growth has been the degradation of water sources within much of the country. Today it is estimated that 88 per cent of China's rivers are polluted, many of which are so contaminated that they cannot sustain fish life (Brown et al. 1998: 10–21). They have been described as biologically dead and little more than a toxic soup of human and industrial wastes (Institute of Public and environmental affairs 2007). Some Chinese experts estimate that approximately 80 per cent of domestic wastewater is discharged without adequate treatment. The collection of untreated industrial waste, domestic sewage, leakage from outdated waste treatment systems and run off from agricultural fertilisers has affected rivers around many Chinese cities. This pollution has reached such epidemic proportions that of 134 rivers tested in 1994, 54 contained water unsuitable even for industrial and agricultural use (Wang Zhuoqiong 2007).

In financial terms, the total cost of this pollution is estimated to be a considerable percentage of China's annual GDP. A 1990 study by the U.S. East-West Center put the environmental loss to China's GDP at 2.1 per cent, with 41 per cent attributed to air pollution, 32 per cent to water pollution and 26 per cent to solid wastes.

Table 5.6 Dams on Drichu (Yangtze River, Ch: Chiang Jiang)

Name of the Dam	Location	No. of people to be relocated	Dam height (in m)	Status
Tak-Chong-Gak (Tiger Leaping gorge/Hutiaoxia)	Northeast of Shigu town, cutting across the Yulong & Haba snow mountains	nearly 100,000	-	-
Megoe Tso (Mugecuo)	*Near Dartsedo* (Kangding) county of Sichuan Province on the eastern edge of the Tibetan Plateau	-	50	-
Renzonghai Lake	Gangkar Mountian National Scenic Area in Ganzi's Ethnic Tibetan Autonomous County in Sichuan	-	-	-
Nyagchu	Yalong River	-	175	-
Thogthon Chuwo (Tongtianhe)	Nagchu	-	302	-
Tangjiezhi	Gyarong Ngulchu (Daduhe***)***	-	82	completed 1994
Xiangjiaba*	35 km from the junction of Drichu and Gyarong Ngulchu	-	273	expected completion 2017
Xiluodu*	149 km from Xiangjiaba	-	161	exp. compl. 2017
Baihetan*	198 km from Xiluodu	-	-	exp. compl. 2017
Wudongde*	180 km from Baihetan	-	-	exp. compl. 2017
Three Gorges**	Close to Yichang city in Sichuan Province	>1 million	185	exp. compl. 2009
Ertan	On the Yalong just before it meets the Yangtze	-	240	completed 1999

** Beijing Youth Daily Feb 12, 2003 as in http://www.usembassy- china.org.cn/sandt/estmews030703.html.*
*** China's giant dam:attempt to tame the Yangtze River with world's biggest dam raises controversy. April 17, 1995. www.findarticles.com/p/articles/mi_m0EPF/is_n24_v94/ai_16881348.*

When ecological damage was also considered, the total GNP loss rose to 7.5 per cent.

Similarly, a 1992 study by the Chinese Academy of Social Science's Environment and Development Research Centre put environmental loss at 4.5 per cent of GDP, with 45 per cent attributable to air pollution, 52 per cent to water pollution and three per cent to solid wastes. With ecological damage added in, the total GNP loss amounted to 10 per cent. In 1997, a World Bank study estimated environmental costs to China's GDP at eight per cent with 93 per cent attributable to air pollution and 7 per cent to water pollution. The World Bank air pollution damage estimates are based narrowly on quantifiable damage to human health alone, which the Bank puts at US $44.8 billion annually (Nickum and Lee 2006).

The toxic spills in China's Anhui Province in 2000 highlight the incredible costs of the pollution. The spill killed two million kilograms of fish and cost local fishermen US $1.5 million. Sources indicate that perhaps a thousand such incidents occur each year.

The human cost in China's pollution legacy is of course more devastating than any economic damage. The World Bank has calculated that 2.03 million Chinese people die

annually due to water and air pollution. In November 1997, the *New York Post* carried a story on the devastation of the village of Badui in the Gansu Province. Here, most people die in their middle age, women report multiple miscarriages and stillbirths, and many of the children suffer from mental and physical disorders. The villagers believe that these tragedies result from the state-run Liujiaxia Fertiliser Factory which dumps its wastes into the Machu (Yellow River, Ch: Huang He), just upstream from where the villagers draw their drinking water.

The retreat of the Amnye Machen glaciers has already reduced the amount of water in the Yellow River by 10 per cent, at a time when the river is almost exhausted.

In the Rebgong (Ch: Tongren), county of Malho (Ch:Huangnan) prefecture, Amdo province, an aluminium smelter at Maba village, requiring excessive use of hydroelectricity and run by local cadres, causes heavy air pollution. In this environment, the livestock, which form the main wealth of the region's farmers and herders, are dying of fluoride poisoning and their meat is rendered useless for human consumption (Tsering Dorje 2005).

Most studies by Chinese experts paint a grim picture of the water situation in China today. Grandiose projects like the Three Gorges Dam, West-East Power Transfer, South-North Water Transfer and its supersized new version, the Great Western Route, are Beijing's primary multi-billion dollar answers to the scarcity of water, in addition to reducing the widening income gap of its citizens and fueling the development of China's western region.

IMPACTS OF GLOBAL WARMING AND CLIMATE CHANGE: DESICCATION OF THE TIBETAN PLATEAU, MELTING OF THE GLACIERS

According to a major 2007 report, issued by the Intergovernmental Panel on Climate Change,

> Glacier melt in the Himalayas is projected to increase flooding, rock avalanches from destabilised slopes, and affect water resources within the next two to three decades. This will be followed by decreased river flows as the glaciers recede. Freshwater availability in Central, South, East and Southeast Asia particularly in large river basins is projected to decrease due to climate change which, along with population growth and increasing demand arising from higher standards of living, could adversely affect more than a billion people by the 2050s (IPCC 2007: 10).

Global warming and climate change are wreaking havoc on the Tibetan Plateau. A 2005 study by Chinese scientists, commissioned by Greenpeace and entitled "Yellow River at Risk: An assessment of the impacts of climate change on the Yellow River Source region", suggests that a crisis is coming (Ding et al. 2005). According to the Chinese scientists, when data on climate change is added to existing risks, a serious picture emerges of "glacier retreat, permafrost thawing, wetland and marshland drainage, and lake shrinkage and soil deterioration". The Chinese team focused their attention on the Amnye Machen mountain range, home of the hero of the epic of the Tibetan people, Gesar. The scientists reported that the Amnye Machen glaciers are not only melting but also collapsing. A massive collapse occurred in March 2004. Ice, boulders and snow avalanched down the mountain into the Qingshui river, blocking the flow, which resulted in a build-up of water behind the blocked dam. The following summer, in July 2005, the rockfall dam yielded to the buildup of water pressure and broke. "It burst in a glacial lake outburst flood causing a dramatic impact on the land, agriculture and people living downstream" (Ding et al. 2005).

Indeed, the scientists reported that the 58 glaciers of the Amnye Machen range are all retreating. Since they were first measured by Chinese scientists in 1966, they have retreated, on average, by 17 per cent. According to the Chinese scientists, "[s]ince 1966 the retreat rate of the glacier in this region is 10 times greater than in the past 300 years, which demonstrates that the retreat is accelerating". Some glaciers are less than one quarter of the length they were in 1966 (Ding et al. 2005).

The retreat of the Amnye Machen glaciers has already reduced the amount of water in the Yellow River by 10 per cent, at a time when the river is almost exhausted. Glaciers also contribute to the quality of river flow, by withholding water during the wettest summer months and releasing it slowly in the dry autumn and spring. Scientists call this the "wet island" effect. The great snow mountains of Tibet are like islands thrusting far into the ocean of sky, capturing all available moisture floating past, perhaps even attracting the clouds to them. On any rainfall map, Tibet is clearly one of the driest regions in China, but these wet islands, pinpoints on a map, have very high snow and rainfall. As the Greenpeace report says: "Acting as a 'solid water reservoir', the glaciers constitute an important part of the water source in this region. The water derived from the glaciers is a significant component in the northwest arid area and could supply

as much as 80 per cent of the water source to inland bodies of water in the region" (Ding et al. 2005: 25).

The catastrophic collapse of an Amnye Machen glacier in 2004 is just one of many recent factors conspiring to compromise Tibet's capacity as Asia's number one water provider. All available data on climate change trends in Tibet show a rapid rise in temperature, especially in the nightly minimum temperature in winter and spring, a rise in early rains and a decrease in summer rains (Ding et al. 2005). While these changes could be beneficial for crop farmers if the decreased summer rain remains sufficient for crops to ripen, the negative consequences are more widespread. According to the Greenpeace report: "incidences of rainfall have become more intense, with extremely heavy rain and blizzards becoming more frequent. This combination gives rise to more water and soil erosion, floods, landslide and avalanche" (Ding et al. 2005: 16).

Tibetans would like to join with downstream users, Chinese scientists and NGOs to protect landscapes, rivers and species threatened by the industrial hydro economy.

The dramatic weather changes also negatively affect the Tibetan people on the plateau. Tibetan farmers have always feared summer storms. A thundercloud can hurl hailstones that can destroy a crop, almost ready for harvest, in minutes. For a farming family, this can mean destitution. For the Tibetan Plateau, the consequences are equally serious. A rise in temperature, and a decrease in summer rain, increases evaporation and decreases the availability of groundwater. Tibetans who rely on wells will experience difficulty. At present, the groundwater resource of Tibet is vast – many times greater than the river runoff, as measured by Chinese scientists in the 2004 *Qinghai Economic Atlas.*

But temperature rises also mean the end of permafrost. In Tibet, the earth is frozen far from permanently. Much of Tibet is on the temperature borderline when it comes to freezing the water in the soil. In summer, the frozen water thaws and is able to drain away, often leading to a slumping in roads and railways. Summer melt and winter freeze are part of the great hydrological seasonal cycle of Tibet, part of the process that tames and slows the flow of water through the plateau and eventually down to other countries. As temperatures rise, this cycle speeds up, lowering water tables and draining wetlands.

A Tibetan culture hero, King Gesar, was king of Ling, which scholars locate on the shore of lake Doring. However, this cherished lake has now dried up altogether and does not appear on Chinese maps. Its sister lakes, Ngoring and Kyaring (Ch: Eling and Zhaling), are mapped, but they are shrinking. Tibetans very seldom take the lives of fish, but a Chinese fishing fleet has operated on these lakes in many recent years. Both lakes have dropped by 3 to 4 metres, leaving more than 300 square kms of bare sand newly uncovered at its margins. Such shrinkage has not only affected the surrounding ecosystems, but also reduced the supply of underground water, which has dropped by 7–8m, in some areas more than 10 metres. The drop of the underground water level has made the soil drier and further caused permafrost retreat and withered surface vegetation. The dry riverbeds and bare lake bottoms not only create critical problems for the Yellow River but have been factors in the severe desertification and salinisation in the area and have themselves given rise to many sandstorms (Ding et al. 2005: 34).

All of these factors lead to desiccation and desertification, and the drying up of the Yellow River. The wetland area near the Amnye Machen range decreased by 13 per cent in 15 years. As water drains away from the surface, it is no longer accessible to plants, and the yield of grasses has declined, affecting the livelihoods of Tibetan pastoral nomads. In the past, thawing permafrost fed water into the rivers, but now it is the other way round, as rivers feed their flow not downstream but underground.

CONCLUSION AND RECOMMENDATIONS

Ecotourism

One alternative to the massive hydro-construction projects is ecotourism. This is studied more closely in chapter seven (Tourism and Tibetan Culture). Not only does it eliminate environment modifications, but it could also spread income more widely and evenly among the rural population, including the most remote areas. However, the foundation of ecotourism depends on protecting the natural jewels at the heart of the region, such as Tiger Leaping Gorge and Megoe Tso, from being flooded from dam projects.

This contradiction is intensifying. Major international agencies such as The Nature Conservancy (TNC) and World Wildlife Fund (WWF) have been helping Yunnan provincial authorities to develop plans to conserve biodiversity and encourage wise, long-term decisions. But the voices of the engineers remain dominant. Even when

top leaders intervene to rein in the industrial wealth accumulation ambitions of local leaders, they still have to back away sometimes.

Payment for environmental services

China discovered in 1998 that it was paying the price, in flooding, of denuding eastern Tibet of its forests. China decided that although timber is expensive, precious and in great demand, water is even more precious. Timber can be sourced elsewhere; in fact, China is now the world's biggest importer of tropical timbers, from forests adjacent to Tibet in Burma and Laos, as well as logging legally and illegally in many other countries. Tibetans do not take the attitude that since logging in Tibet has largely (not wholly) stopped, China's logging of nearby neighbours is of no concern. Similarly, Tibetans hope its downstream neighbours will express their concern at the many ways in which Tibetan rivers are being degraded, exploited, impounded and disrupted.

Increasingly the concept of payment for environmental services is gaining attention. The current worldwide debate promoting payment for environmental services (PES) enables the creation of a human community that embraces an entire watershed. It establishes an ongoing relationship between people, transcending national boundaries and physical distance. PES is a concept that can bring the providers of environment services a source of income that enables them to meet their basic human needs, even though they have chosen not to take the usual economic development path which is costly to the environment. This is a way of connecting upstream and downstream, thereby creating a framework which unites a watershed, so that those who benefit accept their responsibilities to those who provide, and guarantee, that benefit.

Many of the rivers of Tibet are thousands of kilometres in length and they link the lives of billions of human beings. Tibetans provide environmental services for all downstream users by preserving these rivers as clean flowing, uninterrupted, steady and year round. These are substantial environmental services in an interdependent world in much need of environmental services that provide scarce water, or limit climate change. Tibet, in the heart of Eurasia, provides not only the water but also generates the monsoon that produces the waters of Asia. Tibetans would prefer to maintain the purity and steady flow of the rivers and the plateau that is the number one water tower for China, Southeast and South Asia. But Tibetans are poor, not allowed to voice their aspirations, and now face many dangers, including climate change, massive river damming, the ongoing erosive consequences of intensive logging of Tibetan river catchments, mining close to major rivers and increasing pollution.

Tibet needs help if it is to continue to supply major environmental services, that downstream users can no longer take for granted, now that so many dams are built and many more are scheduled. Tibetans would like to join with downstream users, Chinese scientists and NGOs to protect landscapes, rivers and species threatened by the industrial hydro economy. Chinese environmental NGOs are growing strongly supported by a groundswell of concern among urban Chinese, living at the polluted coastal end of abused rivers.

The best way of enabling Tibetans to maintain pure rivers, repair degraded grasslands and reforest logged mountain slopes above the rivers would be a joint approach to pay for the environmental services that Tibet provides. Such a fund could be used to assist China in achieving its objectives of:

1. reforestation
2. the return of sloping marginal farmland to grassland and forest
3. the establishment of protected areas, free of big dams
4. climate change mitigation through tree planting
5. vocational education for Tibetans to become active participants in river care and protected area management
6. training of Tibetan wildlife protection rangers, natural resource managers, meteorologists and hydrologists
7. remediation of river pollution in Tibet, such as the Norbusa chromite mine on the Yarlung Tsangpo river near Tsethang
8. effective and integrated water catchment management
9. recording and revival of traditional Tibetan river management skills, such as those of the historic *chu ragpa* and *chag sampa* (embankment and bridge builders)
10. reversal of encroaching desertification, especially in Amdo (Ch: Qinghai).

These 10 objectives require funding if they are to be effective. They will contribute to Tibetan capabilities for river management in the ongoing servicing of all downstream populations. Many of these programmes are long term. Many try to undo damage that has been ongoing for decades, such as the indiscriminate logging of Tibetan forests, which have stripped steep slopes of their capacity to absorb and slowly release water.

This is undoubtedly an issue for global governance, just as the continent of Antarctica and the deep oceans are governed by global treaties, not individual nations. If the rivers of Tibet are industrialised, the loss will be borne by future generations and by wildlife that has no voice.

To do nothing is no longer an option. It is no longer possible to just assume that Tibet will take care of itself and can be taken for granted. The massive loss of forest and degradation of grasslands in recent decades, due to failures of state policy, already mean that the hydrology of Tibet has changed. Runoff is faster, and the sponge has lost much of its capacity to hold water and release it gradually.

If the current list of hydro dam projects in north-eastern and south-eastern Tibet are constructed, and the water diverted from the Yangtze to the Yellow River, the integrity and sustainability of the Tibetan river system will be further compromised.

Taken together, the impacts of glacier melt, permafrost thaw, shifts in rainfall patterns, drying of wetlands, shrinking of lakes, massive hydropower damming, heavy industrialisation, mining steep mountain slopes directly above major Tibetan rivers, pasture degradation, deforestation, erosion, over use of pesticides and chemical fertilisers, climate change, the increasing frequency of extreme weather, salinisation and desiccation all mean that the ongoing capacity of Tibetan rivers to endlessly provide their environmental services to all downstream users is now seriously threatened.

Now is the time for all who benefit from the rivers of Tibet, the direct flow of water, and the monsoon rains that Tibet draws into Asia, to help Tibetans repair Tibet and its rivers. The Communist Party of China expresses its sincere concern for the region of Tibet where its major rivers are born. In the 11th Five-Year Plan for 2006–2010 the Party says "*San Jiang Yuan* (Three Rivers Origin) in Qinghai province has been listed as a special project under the '11th Five-year Programme'. President Hu Jintao, Premier Wen Jiabao, Vice Premier Zeng Peiyan, and relevant ministries and commissions have expressed their concerns and support for *San Jiang Yuan's* ecological conservation. According to a Beijing expert, San Jiang Yuan is China's largest piece of natural wetland that boasts high biodiversity, thus forming an ecological protective screen for sustainable development in the areas surrounding the middle and lower course of Drichu (Yangtze) and Machu (Yellow rivers). In recent years, however, San Jiang Yuan's ecological system has been upset by improper human activities. As a result, strengthening the protection and rejuvenation of the ecological environment in San Jiang Yuan region has a bearing on not only the fundamental interests of the residents there, but the overall development of China's realisation of a well-off society and the living environment of the Chinese nation in the future. The expert also suggested that a benign ecological cycle be set up in the region" (Wen Wei Po 2005). However, this need not mean the exclusion of nomads from their traditional grazing lands, nullifying their long-term land leases and compulsorily resettling them elsewhere, as described in chapter one (Nomads and Grasslands).

Tibet needs help, if it is to continue to supply major environmental services that downstream users can no longer take for granted, now that so many dams are built, and many more are scheduled.

Because of unpopular and poor practices in earlier years, since the early 1980s China has established a much stronger policy on resettlement, and laws now require an assessment of each dam's environmental impacts. How rigorously those laws are observed remains open to interpretation, as China struggles with many enforcement issues and the development of skills and manpower to work on these new areas.

Setting up "a benign ecological cycle" is easier said than done. The present cycle is destructive; its end result is desertification, a rapidly growing phenomenon in Tibet. The *chu ragpa* hydraulic engineers of the Tibetan past would be alarmed at the dangers and problems facing Tibet today. King Gesar lives on in the oral epics sung by Tibetan bards, but his lake has vanished. More will dry up and disappear unless Tibet's neighbours join China in paying for the environmental services that Tibet freely provides to all.

The solution, of establishing direct connections between upstream Tibetan water guardians and downstream users, creates a relationship between peoples far apart on long rivers. The Payment for Environmental Services (PES) model (Kallesoe and de Alvis 2004) achieves several worthwhile objectives, if carefully done (Rosales 2003). The benefits of PES were explained by the UN Food and Agriculture Organisation in a recent report (FAO 2004):

> PES systems present a series of advantages and opportunities which make them a promising mechanism to improve the conditions of water resources in watersheds since they can:
>
> Be used for sensitizing the participating population about the value of natural resources

Facilitate the solution of conflicts and the obtaining of consensus among the involved actors

Improve the efficiency of the allocation of natural, social and economic resources

Generate new sources of funding to conserve, restore and value natural resources

Transfer resources to socially and economically vulnerable sectors, which offer environmental services

PES schemes for water-related services in watersheds have greater probabilities of effectively improving resource management if there is a direct relationship between providers and users of services.

PES schemes are flexible, direct and promising compensation mechanisms, by which service providers are paid by service users. In a watershed context, PES schemes usually involve the implementation of market mechanisms to compensate upstream landowners in order to maintain or modify a particular land use which is affecting the availability and/or quality of the downstream water resource. Usually this compensation is generated from payments made by downstream water users. The establishment of cause-effect relations is required between the land use -upstream-and the water resource conditions -downstream in the watershed. In addition, PES schemes need to establish an information flow between service providers and users to facilitate the market exchange between both types of agents.

In 2006, the China Council for International Cooperation on Environment and Development (CCICED), reflecting the growing importance of PES, said:

> Fiscal transfer payments for environmental protection should be determined in accordance with the principles of distributional justice and 'common but differentiated responsibility'. Fiscal support from the centre is justified, namely where polluters are too poor to invest in effective pollution treatment and control, or where low-income levels give rise to affordability constraints in terms of payment for environmental services. The implication is that transfer payments to low-income or less developed areas that are environmentally significant should be prioritised (CCICED 2006).

The United Nations Food and Agriculture Organisation (FAO) now strongly promotes PES as a way of ensuring watersheds are conserved for all users (FAO 2006). This keen interest in Payment for Environmental Services is part of a new approach to watershed management that emphasizes the active participation of local communities in decision making (Zilberman et al. 2006). The World Bank also supports the new concept of Payment for Environmental Services (World Bank 2004).

In Asia, these new approaches are increasingly adopted in mountainous watersheds (Chapika et al. 2006). The World Conservation Union (IUCN) supports, or is a part of, programmes such as RUPES (Rewarding the Upland Poor for Environmental Services) in Sri Lanka, Philippines, Thailand, Vietnam, Indonesia, India, China and Nepal.

Tibetans have been completely excluded from any decision-making role in managing the future of Tibetan rivers, lakes, glaciers and watersheds. Participation will enable reconnecting with downstream users, mutual respect and a sustainable future for all water users. This is what Tibetans want. This means small scale projects, not megaprojects, with communities engaged, not excluded, as is happening increasingly today.

There are at last some signs that China is catching up with global best practice, and beginning to embrace participatory watershed management and payment for watershed environmental services (Li, Jin & Zuo 2006). Since 2005, international environmental NGOs, such as Conservation International, have been working with The Nature Conservancy and China's State Forestry Administration to carry out a pilot project at the foot of the Tibetan Plateau in Lijiang, Yunnan province, focused on watershed protection and reforestation. The project aims to set up a programme in which downstream water users, in the city of Lijiang, compensate upstream farmers for protecting the watershed. Conservation International is also collaborating with the Environment and Natural Resource Protection Committee of China's National People's Congress in research and projects to help inform the creation of payment for environmental services legislation in China (Birnbaum and Yu 2006: 195). These are promising signs that, in future, Tibetans will once more have a say in the fate of Tibetan water.

CHAPTER SIX

NATURAL RESOURCE EXTRACTION

Tibet is a vast land, abundant in natural resources that have sustained human life for thousands of years. Although Tibet is inland in the heart of Eurasia and far from the oceans that generate rain clouds, the rivers of Tibet always ran freely, watering the whole of Asia, in a great arc from Pakistan in the west to China in the north.

The custom of the Tibetan people over millennia has been to never endanger, pollute or lose these natural resources that sustain life. Resources were not itemised separately from their environment or pitted against distant market opportunities. The landscape was a universal resource that was cared for and respected by the local people.

Apart from forests that were partially turned into pasture, Tibet's resources were used sparingly until just a few decades ago. In particular, the vast mineral resources were seldom exploited for economic gain (Mills forthcoming). Only in the last five decades, since the invasion of Tibet by China in 1949, have efforts been made to locate and mine resources that are hidden deep inside the Tibetan Plateau.

China's pattern of development has been to intensively exploit natural resources in specific localities close to enclaves of major investment. Towns, cities, mines, highways and railways have been built by major investments of capital. According to China's 2000 Census, Tibet has a population of more than 10 million people, far greater than ever before (CSB and SEAC 2003: Section 10) – this does not even include the large military presence, or the immigrant non-Tibetans who remain registered in their original home provinces. China's military presence lives off the land in Tibet, with garrisons supported by farms on the outskirts of every Tibetan town. This is an intensification of the human use of the highest and coldest inhabited area on earth. Whether the natural resources of Tibet can actually sustain such an increase remains to be seen.

On the one hand, China's capital input is frequently enumerated and publicised as proof of China's generosity in enabling Tibetans to transcend their dependence on nature. But the natural capital, that is being consumed by China's intensive development of Tibet, goes uncounted. The rivers, sky, soil, grasslands and forests have all been treated as free public goods and common pool resources that belong to no one, with no inherent value until being captured, dug up or chopped down.

Many resources that were once taken for granted in Tibet have now become scarce, endangered or degraded. Timber is scarce even in eastern districts, where homes are traditionally made of wood. Formerly green and nourishing pastures have turned into eroded wasteland, and many animal species that were once common in Tibet are now almost extinct. Even some medicinal ingredients that are in great demand in China, such as the grassland caterpillar fungus or *cordyceps sinensis* (Tib: *yartsa gumbu*), are being exploited unsustainably.

As His Holiness the XIVth Dalai Lama has said:

> Recently a few thousand Tibetans from India went to their native places in Tibet. When they returned, they all told the same story: They said that about 40 or 50 years ago there were huge forests in their native areas. Now all these richly forested mountains have become bald like a monk's head. No more tall trees. In some cases the roots of the trees are even uprooted and taken away. This is the present situation. In the past, there were big herds of animals to be seen in Tibet but few remain today. Therefore much has changed (HH Dalai Lama 2004: 66).

Many wild species, such as the Tibetan antelope (Tib: *chiru*), are now endangered. Their number is at last rising, but is still perilously close to extinction after decades of slaughter by non-Tibetan immigrants, even after poaching was declared illegal in the 1990s. One of the most pervasive problems, addressed in detail in chapter one (Nomads and Grasslands), is the degradation of grasslands. Ever since China dramatically increased herd numbers all over Tibet in the 1960s, the extra grazing pressure on the grasses and sedges of the Tibetan rangelands has resulted in a widespread loss of grassland. There are many instances of loss of living turf, erosion, increase in toxic weed, pest infestations and even desertification.

Natural resources includes wildlife and plants, grasslands, minerals, salt and hydropower. However, this chapter focuses on those resources which are commercially exploited and transported to China, and have major impacts on Tibet's environment – especially forests, fossil fuels and mineral resources. Hydropower is covered in detail in chapter five (Damming Tibetan Waters).

In the following sections, China's overall approach to Tibet's natural resources since 1950 is examined, which has involved both extensive exploration and actual extraction. China's demand for these resources is then assessed, including its announcements regarding the further exploitation of the Tibetan Plateau and the prospects offered by the new railway line from Gormo to Lhasa, and beyond.

The mining activities in Tibet are analysed by looking closely at the four metals of greatest interest to China today – gold, iron, chromite and copper – each of which is being exploited extensively in quite different ways, driven by a constantly increasing demand in China and causing severe environmental problems in Tibet. Despite the lack of transparency in China's state-owned mining industry, this chapter cites the names and locations of some of the major deposits that are being mined, or are being prepared for mining.

Timber is scarce even in eastern districts, where homes are traditionally made of wood. Formerly green and nourishing pastures have turned into eroded wasteland, and many animal species that were once common in Tibet are now almost extinct.

Finally, after summing up the findings, this chapter offers recommendations on how modern natural resource management, currently practiced in other parts of the world, could also be applied to Tibet, in order to protect both the environment and the rights of the local people.

TIBETAN TRADITIONS OF NATURAL RESOURCE STEWARDSHIP

There is a long history of the use of metals in Tibet for sacred images, temple finials, oracular mirrors, iron chain bridges, armour, coinage, reliquaries, jewellery and ceremonial offerings. The earliest Tibetan metalwork, such as *thogchags* amulets, are thousands of years old. Among the gifts that the Tibetan people sent to the emperors of China, during the 12th to 14th centuries, were a suit of golden armour, a complete miniature city and sumptuous golden vessels, such as a wine jug in the form of a goose that stood more than two metres high (Clarke 2004: 40; Lo Bue 1991: 54, 57; Singer 1996: 32).

Tibet has a rich tradition of metalworking, and the government of pre-communist Tibet employed 150 gold and silversmiths in a workshop just below the Potala Palace (Clarke 2004: 45). There are many Tibetan words for the tools of these expert craftsmen, their techniques and products. These craftsmen could stretch a mere 11 grams of silver into a necklace wire of more than a kilometre in length (Clarke 2004: 48). Metalworking, especially in Tibetan villages, was a winter livelihood, and a valuable source of off-farm income for the season when nothing grows and there is no work in the fields (Clarke 2004: 43; Clarke 2002: 114).

Between 1959 and the late 1970s, many of these craftsmen were persecuted as "class enemies":

> Any skilled craftsman who had worked as a jeweller, a gold or silversmith became automatically 'class enemies'. Image makers were also particular objects of disapproval since they produced religious objects. Of the eight skilled image makers who had worked in *rTse gdong* before 1959, six died during this time from torture, malnutrition or by suicide (Clarke 2002: 127).

Despite two decades of persecution, these metal working traditions have survived, and were in great demand when the Tibetans began rebuilding their destroyed monasteries, starting in the 1980s.

Tibetan culture traditionally frowned both on mining, as it disturbs the earth and its spirits, and on forging metals in the blacksmith's fire. Metalworking was actually defined as a "deplorable" occupation, forbidden to monks. Tibet was often preferred to buy its metals from others. In particular, it turned to the growing kingdom of Gorkha Nepal to mint its coins, and ceased this arrangement only after Nepal's failed attempt to invade Tibet (Bertsch 2002: 33). The ironlink chain bridges that were built in many parts of Tibet by the great meditator Tangthong Gyalpo, for the purpose of encouraging pilgrimage, were made from iron ore that was mined from the southern edge of the Tibetan world, in what is now known as Bhutan.

The mines in Tibet that provided raw materials were invariably small, and were worked without tunnelling, chemicals or explosives. Today they would be called artisanal mines. Gold was obtained almost entirely by sluicing alluvial gold flecks from stream beds, rather than by digging. There are many recorded instances of gold nuggets that were found in the earth being returned, out of respect for local gods (Clarke 2004: 40). Because gold is plentiful in many Tibetan places, its use was common. An English traveller in Tibet in the 1880s noted that "in Lhasa, even the poor people wear gold jewellery" (Gill 1883: 136).

The balance that was struck in Tibet between mining and conservation was geared toward minimal disturbance. The curator of Tibetan jewellery at the Victoria and Albert Museum, London, explains: "The comparative lack of

organised mining in Tibet, and certainly of deep mining, has been the result of the strongly held Tibetan belief that mining is offensive to the earth spirits who, if angry, send illness, crop failures and other misfortunes" (Clarke 2004: 40). These popular taboos engendered caution by associating mining with danger. Even now, when Tibetans hear of collapses and cave-ins at the Chinese mines in Tibet, they are not surprised because they believe it is entirely natural for the earth spirits to protest.

Tibet is now flooded with cheap Chinese semi-automated metalwork, crudely stamped from dies and moulds, and the Tibetan craftsmen have lost their livelihoods, except for a select few who make high quality pieces (Clarke 2004: 46).

COUNTING AND CATALOGUING TIBET'S TREASURES

The modern fashion of counting, cataloguing, quantifying, itemising and databasing all natural resources was introduced to Tibet by China. After China took over Tibet in 1950, Chinese scientific exploration teams spread out to discover what could be obtained, as Tibet's land was almost entirely unknown both to China and the rest of the world. Travelling overland and with the help of aerial photography, teams of geologists and meteorologists quickly began the colonial project of systematising, quantifying, regularising and naturalising the exotic resources of Tibet.

As a result, the land was no longer understood through the eyes of those who knew it best. All the accumulated knowledge of Tibetans, of their land and water, was ignored. The Chinese assumed it was merely the knowledge of backward people who were slaves to nature. What had been the domain of local Tibetan communities – the grassland of the plateaus – fast became the object of China's scientific gaze. The land's potential for intensified meat manufacture was quantified by satellite photo calculations of sunlight, biomass and stocking rates. Pastures, known locally and intimately for their seasonal qualities, were transformed by being mapped into units of potential hydropower energy output, mineral reserves, long haul transport corridor routes, crop intensification zones and river impoundment sites.

In this manner, since the 1950s, Tibet's environment has been divided into designated areas of finite natural resources, which have been quantified in order to make them available for human exploitation. Once catalogued, the resources became the property of various bureaucracies that have different and often competing responsibilities for their exploitation. Decisions about natural resources are no longer made by the people of the land, whose lives depend on the moderate use of these resources. The power to make decisions on natural resource was instead transferred to distant cities. Hence, the decision makers have seldom even seen the places whose fate they control.

In general, gaining knowledge about natural resources is to be welcomed because it provides an opportunity to protect and preserve those resources. For example, thanks to China making Tibet available to the gaze of the scientific community, the plant and animal species that are endemic to Tibet can now be identified, and efforts can be made to protect them from extinction. Unfortunately, the cataloguing done by Chinese scientists also exposes Tibet's natural resources to damaging exploitation.

RESOURCE EXTRACTION

Ever since China took control of Tibet, the extraction of minerals has been its main priority. China's development policy has made the mining industry one of the nation's pillar industries. However, China's lack of capital and Tibet's remoteness have meant that for many years the exploitation of minerals has been opportunistic, haphazard, small in scale, artisanal, and often highly destructive to the environment.

Tibet has a rich tradition of metalworking, and the government of pre-communist Tibet employed 150 gold and silversmiths in a workshop just below the Potala Palace.

Initially, exploitation was carried out with great haste and little consideration for the consequences, rather than in a scientific, carefully planned manner. Gradually, over the decades, careless exploitation rushes by the local authorities have been replaced by the systematic exploitation of natural resources, controlled by higher levels of authority. The exploitation of Tibetan wood, minerals, oil and gas is now conducted on a large scale. The resources are transported to distant Chinese markets by large, state-owned enterprises, and sometimes in partnership with transnational corporations and organisations such as the World Bank.

Forests

The first natural resource to be consumed in a modern way was the great forest of eastern Tibet. This is the best watered part of Tibet, and has long had mature forests of spruce, fir, juniper, larch, cypress, oak, bamboo and rhododendron on its steep slopes, perched above the wild mountain rivers that rush toward lowland Asia. These

forests have served many purposes to Tibetans for centuries. They were sustainable sources of shelter, rest, firewood, mushrooms, medicinal plants and construction timber. While the nomads may have occasionally cleared a section of forest in order to expand their pastures, they preserved the majority of the forest, especially on the northern face (Daniel Winkler).

Following the Chinese occupation, chainsaws tore into the Tibetan forests all through the 1960s, 1970s, 1980s and well into the late 1990s, clearing whole valleys of all their trees without exception, and leaving the mountain slopes without protection from erosion. The felled trees were often simply slid into the rivers, to be recovered downstream in lowland China. Innumerable logs were damaged or smashed en route by the wild mountain rivers, making their sacrifice senseless.

It was not until the disastrous floods of the middle and lower Yangtze river in 1998, a year of average rainfall, that China realised it was paying the price of stripping Tibet's forests. Only after the forests had been almost entirely stripped did the logging finally stop in the name of water conservation. China had to choose between Tibetan timber and Tibetan water, and decisively chose water, which cannot be imported. Logging does continue today, but on a lesser scale. Some of it occurs legally and some by ingenious methods of flouting the law, such as deliberately starting forest fires so that the leaves are burned and the trees die, while the valuable trunks remain standing. The trees are then officially declared useless, and are free to be harvested.

Gradually, over the decades, careless exploitation rushes by the local authorities have been replaced by the systematic exploitation of natural resources, controlled by higher levels of authority.

Reforestation has been China's official policy since 1998. Well-managed forests can be renewable natural resources, provided that the soil has not eroded away and the local climate has not yet altered due to deforestation. Reforestation, however, is not always done skilfully. The most common method is to drop tree seeds from aeroplanes, which is known as "ariel sowing". Whether this method can succeed in recovering the cool temperate and cold climate forests of Tibet, after decades of destruction and erosion, remains decidedly uncertain. Especially on the steep, upper slopes and areas with little rainfall, the seeds from aeroplanes rarely turn into trees. Both the environment and the Tibetan communities would be better served if local people were employed to plant and cultivate the new trees.

Meanwhile, according to 2005 reports by the World Wildlife Fund and the Environmental Investigation Agency, China has shifted its exploitation of forests beyond Tibet to neighbouring Burma and Laos (Zhu Chunquan et al. 2005: 41; EIA and Telapak 2005: 22). These reports show in detail that China is now the world's biggest importer of tropical timber, much of it logged illegally because the trade is so profitable.

China's imports continue to grow fast, according to the International Tropical Timber Organisation's (ITTO) monitoring reports. In May 2007, ITTO reported that: "China expands trade of forest products. According to China's Customs, the country's imports of timber raw materials such as logs grew substantially in the first quarter of 2007" (ITTO 2007).

Non-timber forest products

In addition to the massive deforestation, there has been indiscriminate and unsustainable exploitation of non-timber forest products, particularly caterpillar fungus or *Cordyceps sinesis* (Tib: yartsa gumbu), matsutake mushrooms or *Tricholoma matsutake,* and hosts of other medicinal herbs. Although the use of the caterpillar fungus herb in Tibetan medicine dates back a few hundred years, the Tibetans traditionally regarded digging up *cordyceps* as taboo, and believed that such practices would harm the spirits of the land, which in turn could make the lands less productive. Over the past few decades, this herb has been harvested for sale in distant markets, driven mainly by Chinese consumers, who refer to the herb as *Chongcao,* a highly valued tonic in traditional Chinese medicine (Daniel Winkler).

Trade in Tibetan herbs and mushrooms is growing rapidly. Today, globalisation has reached even the most remote places in Tibet, and many wild plant species, which are rare and found only on the Tibetan Plateau, are being harvested and sold online to the international market by Chinese companies. Mismanagment by the local authorities, who freely issue licenses to collect herbs to any outsider who offers official bribes, is also a source of social tension between the local Tibetan people and the hordes of outside diggers. These diggers from outside often leave holes uncovered after digging, which leads to grassland degradation.

Though many local Tibetans earn substantial income from the trade, an increasing number of outsiders are exploiting these resources, and their unsustainable harvesting is undermining the ecosystem and threatening the very source of these resources. Local Tibetan farmers

and nomads do not have the support networks required to achieve a powerful selling position, nor do they receive any training to ensure high product quality and more sustainable use of natural resources. Instead, a small number of middlemen and companies in the Chinese lowlands are making huge profit from this trade. Daniel Winkler, a free-lance researcher, has noted that in the Kham region of Dechen, unsustainable harvest techniques have substantially reduced the output of matsutake mushrooms in recent years. There have been similar reports of a drastic reduction in the output of *cordyceps* across most of the Tibetan grasslands.

Salt being extracted from Tibet through the use of modern machinery.
Credit: Tibet Museum. DIIR

It is obvious that Tibetan communities can benefit from assistance in managing these non-timber forest products and introducing sustainable harvesting techniques, as well as in packaging and marketing these products. The careful cultivation of these medicinal and horticultural plants could transfer knowledge, generate sustainable income, and simultaneously reduce the pressure on their populations in the wild.

Minerals

The four Tibetan minerals of greatest interest to China are gold, iron, chromite and copper. They are being mined to differing extents at selected locations on the Tibetan Plateau. These minerals, their exploitation in Tibet to date, and the prospects for their future mining are discussed in this section.

Oil and gas are being exploited on a huge scale in the semi-arid Tsaidam basin, in Tibet's far north, and China is now the world's biggest importer of tropical timber, much of it logged illegally because the trade is so profitable.

In addition to the resources mentioned above, a number of other minerals are being extracted from Tibet. To date, over 126 different minerals has been identified in Tibet. Salts are being extracted from the many salt lakes of Tibet and fed into plastic manufacture, potash fertiliser and magnesium metal production.

The petrochemical refineries at Gormo (Ch: Golmud) and the highly polluting magnesium factory at Kamalog (Ch: Minhe) both use Tibetan oil and salt as their raw materials. The Kamalog factories that process magnesium salts and ferrochrome are located at the junction of the Tsongchu and Julakchu rivers, which are both tributaries of the Yellow River on the Qinghai-Gansu border, and spew toxic waste both into the sky and these rivers.

Uranium, an important material for nuclear development, is also being mined. Tibet has the world's largest deposits of uranium. The location of the deposits were identified by the former Ninth Academy, which was involved in nuclear development close to lake Kokonor (Tib: Tso Ngonpo). The largest uranium mine is in Thewo, part of the Kanlho (Ch: Gannan) prefecture of Gansu province. In Thewo, due to pollution from this mine, many Tibetans and their domestic animals have died of mysterious illnesses, and many babies have been born with deformities. Other known uranium mine locations include Tsaidam Basin, Yamdrok Tso and Damshung. The actual sites of uranium resources are closely guarded by the Chinese military, and thus it is hard to source further information on them.

There is also a new lithium extraction industry in Dartsedo (Ch: Kangding), Karze (Ch: Garze) prefecture,

Sichuan located in eastern Tibet. This Canadian and Chinese joint venture plans to extract not only lithium but also rare elements including beryllium, niobium and tantalum. The U.S. Geological Survey report on China's mineral industry states:

> In May 2004, Jihai Lithium Ltd., which was a joint venture between Sterling Group Venture Inc. of Canada (75%) and Sichuan Province Mining Ltd. (25%), received a mining permit from the Bureau of Land and Resources of Sichuan Province. The Development and Reform Commission of Sichuan Province also approved the establishment of the joint-venture company in August. Jihai planned to develop the Jiajika lithium deposit, which is located 70 kilometers (kms) from Kangding (Ch: Dartsedo) County, Sichuan Province. The deposit was evaluated from 1959 to 1992 by several exploration teams in Sichuan Province. The deposit had 74 lithium-bearing veins and contained more than 450,000 tonnes of lithium, 17,000 tonnes of beryllium oxide, 4,500 tonnes of niobium oxide, and 2,200 tonnes of tantalum oxide. Initially, the company planned to process 240,000 tonnes/yr. of ore and to produce 47,320 tonnes of lithium concentrates (USGS 2005: 8.11).

While an environmental impact and water preservation study has reportedly been conducted, there has been no attempt to obtain the approval of the Tibetans of Dartsedo, nor any attempt to negotiate with local Tibetan communities to ensure that they benefit from it.

Energy

Adequate energy supply is one of the pre-requisites for infrastructure development. China's energy consumption rose by one third between 1989 and 1996, and this rapid growth is set to continue, according to several analysts. For example, according to *People's Daily*, Beijing is already running short on natural gas supplies. It needs 23 million cubic metres of natural gas per day, which is four million more than the maximum supply of their gas company (*People's Daily* 2004b).

Oil and gas are exploited on a huge scale in the semi-arid Tsaidam basin (Ch: Chaidamu), in Tibet's far north. In the northeast and southeast of Tibet, massive hydropower dams are being constructed on the Machu (Yellow River: Ch: Huang He), Drichu (Yangtze River: Ch: Changjiang) and Zachu (Mekong River: Ch: Lancang), with many more soon to begin construction.

The energy output of these dams is all destined for the downstream industries and cities, as described in chapter five (Damming Tibetan Waters). China's aluminium industry is heavily dependent on these hydropower dams, especially in Gansu province. In Tibet itself, the Rebgong aluminium smelter at Mepa (Ch: Maba) village pours toxic fluoride-laden smoke over the fields and grazing land of Tibetan farmers, which kills their sheep due to fluorosis (Tashi Chonphel 2005). Meanwhile, most Tibetans have no electricity at all.

The infrastructure that allows this exploitation of large amounts of oil and gas in the Tsaidam basin began construction as far back as the 1980s. The railway that connects this oil and gas-rich sedimentary basin to China was constructed over 20 years ago, and usually two million tonnes of oil a year has been extracted ever since. Some of the oil is processed at a substantial petrochemical refinery complex at Gormo (Ch: Golmud), which exclusively employs Chinese migrants, not Tibetans. From there, refined petroleum is sent by pipeline to Lhasa, and by rail tanker wagon to fertiliser factories in the cities of Amdo (Ch: Qinghai) and Gansu. Much of the oil is sent directly by rail to Lanzhou, capital of Gansu province, for refining.

In recent years, China has discovered not only oil but also natural gas in the Tsaidam Basin. In the late 1990s, in partnership with the Italian oil company ENI/Agip, a pipeline to Lanzhou was built to extract Tibetan gas on a large scale. That pipeline is now interconnected with the gas pipeline that starts in Xinjiang, to the north of Tibet, then traverses through Amdo (Ch: Qinghai), and is eventually pumped all the way to Shanghai. The prosperity of Shanghai depends directly on the extraction of Tibetan gas, which is a finite and depleting resource. A second parallel pipeline through Qinghai was announced in 2007, to transport gas all the way to Guangdong, on China's south coast. Eventually this gas will be sourced from Kazakhstan, and the Tibetan Tsaidam gas, currently committed to the Lanzhou and Shanghai markets, will be available only as a backup (Dow Jones Energy Service 4 April, 2007).

In Gansu, the 11th Five Year Plan (2006-2010) proposes further intensification of petrochemical industries that are dependent on Tibetan oil, gas and hydroelectricity. According to news reports, Gansu province plans to build three large-sized chemical bases during that time, "focusing on petrochemical, synthetic material, paint and polymer processing" as well as "isocyanic acid ester, fluorine chemical and fine chemical in new fields" (Asia Info Services 2005).

Energy resources, including hydropower and gas, are being exploited primarily to meet the growing demands of the booming industries in eastern China, rather than to assist human development or industrialisation in the western regions. The resources of western China are not being used to benefit local economies. What Chinese

authorities call the "trickle-down" effect is not felt in the west, even after China's launching of the "Western Development" campaign in 1999.

TIBET'S BIODIVERSITY

Tibet is one of the few regions of the world where limited scientific research has been conducted on the biological aspects of its many species. Hunting was traditionally decried in Tibet and only a small number of poor people indulged in it for their survival. But since China took control of Tibet, many wild animals and birds have vanished through destruction of their habitat, or have been slaughtered by indiscriminate hunting in the name of sport and to furbish China's illicit trade in wildlife products.

China's recent assertion in a white paper that no single species has become extinct in Tibet does thankfully appear to be true, but it did admit that a number of animals are "on the verge of extinction". Similarly, the International Union for Conservation of Nature's 1990 Red List of Endangered Animal Species mentions 30 Tibetan animals (Tibet Justice Center 1992).

Chinese conservation measures for Tibet were initiated long after similar efforts had been introduced in mainland China. According to the State Environment Protection Agency (SEPA) of China, by the end of 2000, there were 17 national and provincial level nature reserves in the "Tibet Autonomous Region" ("TAR"), which account for 40 per cent of the total area of nature reserves in China. Amdo alone has 50,000 square kilometres of nature reserves. But the total number of nature reserve staff in the "TAR" was 163 – the lowest among all of China's provinces (SEPA 2000). Dr. Schaller has similarly pointed out that these reserves lack rangers, trained staff, vehicles and enforcement powers necessary to apprehend the poachers.

Some scenic areas of the plateau, like Dzitsa Degu (Ch: Jiuzhaigou) in eastern Tibet, which is a UNESCO World Heritage site, were supposed to protect one of the last remaining Giant Panda habitats. Yet no pandas have been spotted in Tibet for years. Evidence of the unrestricted hunting of endangered species for trophies continued to appear in official Chinese media until very recently, which entirely contradicts China's stated conservation efforts.

Many wild species, such as the Tibetan antelope (Tib: *chiru*), are now endangered. Despite a recent rise in the total number of Tibetan antelope, their number is still perilously close to extinction after decades of slaughter by non-Tibetan immigrants, even after poaching was officially declared illegal in the 1990s. According to a group of western adventurers, while they were trekking along the Khunu mountain range bordering Gertse district of Ngari in early 2007, they witnessed some non-Tibetan immigrants on their jeeps and bikes chasing Tibetan antelope. The travellers also found fresh carcasses of over 20 Tibetan antelope that had been slaughtered and skinned for their precious *shatoosh* wool.

In addition to this direct threat, China's white paper also reported that the introduction of new, exotic species to Tibet was an environmental achievement and increases biodiversity. However, this practice is globally recognized to be a serious threat to the endemic indigenous species.

China's growth continues to be rapid, and Chinese planners expect that the nation will soon be unable to meet its own demand for resources using only domestic sources, including Tibet.

China is also known for its trade in various animal products, such as tiger bones, rhino bones and bear gall-bladders, as well as many other items that are all highly valued in Chinese traditional medicine. They also have the largest captive wild animal compound in the world, used to extract animal body parts for medicinal purposes, which is the main driving force behind the global increase in wildlife trafficking. This exposes the truth about the effectiveness of China's conservation efforts and warns us of the future plight of these innocent animals. It seems that Beijing is still unable or unwilling to distinguish biodiversity conservation from economic production.

China has been ratified to the International Convention on Biodiversity, and we welcome this move toward protecting biodiversity and enforcing new wildlife legislation. Unfortunately, the current reality falls far short of genuine species protection. We remain hopeful that Beijing will step-up its efforts to implement the official policies by enhancing regulatory and enforcement mechanisms over biodiversity conservation.

Making the nature reserves a true safe haven for wildlife must be complemented by an appropriate legal and regulatory system – both of which are clearly lacking at present. There is an acute need for the employment and training of rangers, and to endow them with the power to enforce legislation against the poaching of endangered Tibetan antelope and other rare wildlife. Local Tibetans ought to be trained and employed to manage the existing nature reserves – they are accustomed to the difficult

terrain, and their religion and culture preaches respect and care for all wildlife and nature.

RISING DEMAND FOR RESOURCES IN CHINA

The rise of China has had a global impact on the price of metals. The depth of China's demand for metals was summed up by the China Council for International Cooperation on Environment and Development (CCICED):

> Although China currently accounts only for about four per cent of global GDP, its metal consumption is disproportionately larger, with 16 per cent of the world's consumption. China is the largest consumer of copper, iron ore, steel, tin and zinc, the second largest consumer of aluminium and lead, the third largest consumer of nickel, and the fourth largest consumer of gold. The country now consumes 35 per cent of the world's iron ore. It produces more steel than the US and Japan combined. China depends on minerals imports which reached US $140 billion in 2004. Nevertheless commodity prices have risen to historical peaks, as global mining efforts cannot keep up with the demand of Chinese mills, building sites and car factories (CCICED 2006).

China's growth continues to be rapid. The predictions contained in the 11th Five-Year Plan (2006-2010) are based on high levels of demand for the consumption of natural resources. China's planners expect that the nation will soon be unable to meet the demand for resources, often essential to industrial modernity, using only domestic sources, including Tibet. Likewise, international suppliers of resources to China are confident that their demand will continue to grow. The Australian Bureau of Agriculture and Resource Economics (ABARE) predicts that China's resource consumption per person has a long way to go before it reaches the level of Korea or Japan:

> Even though China is one of the world's largest metals consumers, per person metal consumption remains substantially below that of Japan and Korea. This reflects China being in the early stages of the economic development process. However, as economic development continues, both domestic consumption and exports of metals intensive products will rise. As a result, metals consumption will rise on a per person and absolute basis. Given that China already consumes significant quantities of metals, the medium term outlook for growth in consumption is very positive (Maurer et al. 2004: 308).

Although China's domestic production of minerals continues to rise (see table 6.1), this production cannot keep up with the even greater increase in demand. A 2006 demand forecast states:

> Demand for copper will also surge at annual rates of 10 percent or above, due to China's growing power network and construction boom. Experts assess that by 2010, China will have to import 57 per cent of its iron ore, 70 per cent of its copper, and 80 per cent of its aluminium and a substantial amount of other minerals. On the whole, China's import of minerals annually grows 21.6 per cent (Holslag 2006).

China has announced that it intends to deal with rising resource shortages by focusing on smarter ways of conserving resource consumption. China's top leaders propose to:

> [...] adhere to the policy of expanding domestic demand and blaze a new trail to industrialization featuring high scientific and technological content, good economic returns, low resource consumption, little environmental pollution, facilitate a balanced development between rural and urban areas and among different regions, and concentrate more on building a harmonious society, with the view to bringing China's economic and social development to the track of sustainable development that is people-centered, balanced and all-dimensional (Hu Jintao 2005).

This is an ambitious range of goals, literally trying to combine both fast growth and "low resources consumption". The Communist Party's official target for 2006-2010 is as follows:

> [...] the development of the western region and renewal of the old industrial bases in the northeast and elsewhere should continue, the central region should be promoted to rise, and the eastern region should be encouraged to develop faster (Xinhua 2005).

The Party went on to say that great efforts must be made to develop a recycling economy, thereby making efficient use of resources and protecting the environment. However, it is hard to believe that the fast growth of eastern China will be able to "develop faster" in economic terms, while simultaneously ensuring "low resources consumption".

CHINA'S UNFULFILLED PLANS

When the modern age of resource cataloguing began, some resources were given a numerical, monetary value and others were not. The intact, sustainable and productive grassland landscapes of Tibet, curated and managed by the nomads for many centuries, were not counted as natural resources by Chinese scientists. The supposed value of Tibetan natural resources has been calculated since the 1960s. These calculations, despite their glaring omission of the grasslands, provided China with tantalising

prospects of wealth and seemed to fulfill the promise of fabulous riches that is inherent in China's name for Tibet, *Xizang*, which translates as "treasure house of the west".

The Chinese media routinely announce that the value of the natural resources of Tibet is several billion yuan. In May 2004, for example, the *People's Daily* reported:

> It was learned from the Land and Resources Department of the Tibet Autonomous Region that years of prospecting and surveying on mining resources show that Tibet is rich in mining resources whose potential value is estimated at about 650.5 billion yuan (US $78.4 bn). With advantageous ore-forming conditions and low extent of exploitation Tibet is expected to become an important mining base of China [...] Its geological structure may enable China to search for mines in short supply and large-scale and super-scale mining areas [...] Among 173 types of ores, Tibet has 100 of them, of which more than ten are in short supply in China and 36 have verified deposits. A total of 1891 mine-producing areas have been discovered in Tibet. 103 mining areas have been listed in deposit table of which 30 are energy resources mining areas, 34 are metallic ore areas and 39 are non-metallic ore areas. Among the mining areas that have been listed in the deposit table, 19 are large-scale deposits, 18 are medium-scale and 66 are small-scale deposits. Among the mines whose deposits have been verified, copper (molybdenum) and lithium have the largest deposits in the world [...] Seventeen kinds of ore deposits such as chrome ore, crystal, corundum and high temperature terrestrial heat are rated among the first nine nationwide (*People's Daily* 2004a).

Table 6.1 Estimated production of selected mineral commodities in China (in tonnes unless otherwise specified)

Commodity	2001	2002	2003	2004	2005	Average annual increase
Iron Ore *(in thousand tonnes)*	220.000	231.000	261.000	320.000	420.000	17,55%
Natural Gas *(in mill. cubic metres)*	30	33	35	41	50	13,62%
Silver *(mine output, Ag content)*	1.910	2.200	2.400	2.450	2.500	6,96%
Copper *(mine output, Cu content)*	587.000	568.000	610.000	742.000	762.000	6,74%
Gold *(mine output, Au content)*	185	192	205	215	225	5,02%
Crude Oil *(in mill. barrels)*	1.210	1.240	1.260	1.300	1.350	2,77%
Chromite *(in thousand tonnes)*	182	180	200	200	200	2,39%
Lithium minerals *(all types)*	16.000	16.000	17.000	18.000	19.000	4,39%
Salt *(in thousand tonnes)*	34.105	36.024	34.377	37.100	46.610	8,12%

Source: USGS 2005, Table 1.

Recent reports by state media announced even greater deposits. In February 2007, for example, the *China Daily* reported 600 newly found deposits of copper, iron, lead and zinc ore on the Tibetan Plateau, as the result of an exploratory study launched in 1999. According to Zhang Hongtao, vice director of the China Geological Survey Bureau, the reserves may hold "30 million to 40 million tonnes of copper, 40 million tonnes of lead and zinc and billions of tonnes of iron", including 300 to 500 million tonnes of high-grade iron ore deposits in Nyixung (Tib: Nyishung), part of Tsochen county in the "TAR" (*China Daily* 2007).

China's Western Development Program (*xibu da kaifa*), launched in 1999, has special provisions to encourage natural resource exploitation in Tibet and other western provinces. Detailed regulations that announced central government incentives were promulgated in 2001, including "Preferential Policies on Mineral Resources". One of the goals mentioned is "to cultivate a market of mineral properties and promote the legal transaction of prospecting and mining rights" (State Council of the PRC 2001: 9).

China also tries to encourage foreign investment in mineral extraction. In an analysis of the legal situation in China regarding mining rights, the US Geological Survey concluded:

> In 2000, the State Council issued a decree to allow foreign investors to establish wholly owned mining companies to

Table 6. 2 Summary of the major known deposits, mines and smelters in Tibet

Mine name	Mineral Ore	Location	Remarks
***Norbusa** mine*	chromite	Chusum, Lhoka prefecture, TAR	mined intensively
***Padma** mine*	iron ore	Ngaba, Ngaba prefecture, Amdo	large scale mining began 2006
***Kamalog** metal extraction*	magnesium	Salt lakes, Tsoshar prefecture, Amdo	
***Jiajika** extraction*	lithium	Dartsedo, Karze prefecture, Sichuan	
***Mepa** smelter*	aluminium	Rebgong, Malho prefecture, Amdo,	
Tsaidam Basin	oil and natural gas	Tsonub prefecture, Amdo	large scale extraction of oil began 1980s, gas late 1990s
***Nyishung** deposit*	iron ore	Tsochen, Ngari prefecture, TAR	not yet mined
***Shetongmon** deposit*	copper	Shigatse prefecture, TAR	mining due to begin 2010
***Yulong** deposit*	copper	Jomda, Chamdo prefecture, TAR	mining due to begin
***Toshasumdo, Dralhaka, Mangdrung and Malasumdo** deposits*	copper and gold	close to Yulong, Jomda, Chamdo prefecture, TAR	not yet mined
***Mangya** mine*	**asbestos**	Tsonub prefecture, Amdo	operating many years
Tsaidam Basin	potash (potassium salts)	Tsonub prefecure, Amdo	17 million tons extracted annually
***Yangla, Xue Ji Ping, Hongshan** deposits*	copper	Gyalthang, Dechen prefecture, Yunnan	not yet mined
***Bonghe** deposit*	gold	Gyalthang, Dechen prefecture, Yunnan	not yet mined
***Kelu, Liebu, Chongmuda and Chenba** deposits*	gold	Lhoka prefecture, TAR (Area of Gangtesi Cu-Au belt)	not yet mined
***Duoba-Jijiemu, Danbolongwa, Shuangpengxi** Gold Mine, **Jiangligo** Copper Mine, **Qiadong** copper/silver deposit*	copper, gold, and silver	Malho prefecture, Amdo	not yet mined
***Tanjian** mountains deposit*	gold	Tsaidam, Tsonub prefecture, Amdo	not yet mined
***Tomorite** deposit*	gold	Tulan, Tsonub prefecture, Amdo	not yet mined
***Nakartse** deposit*	gold	Lhoka prefecture, TAR	not yet mined intensively
Norbusa	diamonds	found in the chromite belt along Yarlung Tsangpo river, TAR	not yet exploited
Draknak	chromite	near Amdo town on the Lhasa rail route, Nagchu prefecture, TAR	mined 1980s, abandoned, may be reopened due to closeness to railway
***Qulong** deposit*	copper	Meldrogungkar, TAR	not yet mined
***Sashitang** deposit*	copper	Tsigorthang, Tsolho prefecture, Amdo	not yet mined
***Menyuan** mine*	copper	Tsojang prefecture, Amdo	mined since 1950s
***Terney** mine*	copper	Golog prefecture, Amdo	mined since 1989
Pulang	copper and other minerals	Gyalthang, Dechen prefecture, Yunnan	not yet mined

> prospect for and to exploit minerals in China; owing to a lack of clarity in regulations and legal definitions, however, exploration companies were reluctant to invest large amounts in China. Under the current law, prospectors have mining rights, but the law does not explain clearly how such rights can be guaranteed. In addition, local governments have been known to charge higher taxes and fees for foreign companies to explore in their jurisdictions (USGS 2004: 9.2).

This lack of clarity may be one reason why foreign investment has remained relatively low. Moreover, despite the press reports on newly found deposits and Chinese policies, even domestic investment in mining in Tibet has yet to take off on a large scale. The available data shows that natural resource extraction in Tibet has been restricted to certain areas, and to specific minerals and energy resources. From the viewpoint of mining enterprises, smelters and metals manufacturers, both in China and internationally, Tibet is too distant and lacks the necessary infrastructure and disciplined industrial workforce.

IMPACTS OF THE NEW GORMO-LHASA RAILWAY AND THE PROPOSED EXTENSIONS OF LHASA TO SHIGATSE, AND LHASA TO NYINGTRI

The policy changes of the Chinese government have not yet attracted substantial investment in resource extraction in Tibet. However, the central authorities have extended the railway connection from China, through the Tsaidam Basin city of Gormo, all the way to Lhasa, and it has been operational since July 2006. This was the first ever extension of long-haul, bulk freight capacity into central Tibet, and it looks set to make a big difference to the economics of mining. For the first time, high-volume, bulk commodities can be economically transported across the vast distances that separate Tibetan resources from industrial users, who are mostly concentrated in eastern provinces, thousands of kilometres away. Tibet may no longer be too far away, as was previously the case. The "TAR" could, for the first time, be fully integrated into the Chinese economy, because the railway has dramatically reduced the costs of extraction.

The single rail track from Gormo to Lhasa will probably be expanded to double track, and its planned extension to the copper deposit at Shetongmon, to the west of Lhasa, has been set a completion date of 2010, at a cost of 11 billion yuan. To the east of Lhasa, similar plans are in place for a Chengdu-Nagchu-Lhasa rail line that will traverse through the copper zone of Kham. This will enable the effective extraction of copper from Yulong, and the many significant copper and gold deposits nearby, to be delivered by rail to the same smelter in Gansu that the Shetongmon copper goes to. In addition, there are plans to install a more expensive railway line, financed by the Asian Development Bank, that will connect Lhasa, via Nyintri, to the railway in Yunnan, from Dali to Lijiang at the foot of the Tibetan Plateau. Such a line would enable access to many more copper and gold deposits in Kham. The mappers of the Lhasa-Yunnan line, officially called the Yunnan-Tibet route, emphasized the strategic and economic importance of a line that could pass through the most densely populated areas of Tibet, unlike the Gormo to Lhasa line, which primarily runs through sparsely populated, alpine desert.

The mappers of the Lhasa-Yunnan line emphasized the strategic and economic importance of a line that could pass through the most densely populated areas of Tibet, unlike the Gormo to Lhasa line, which primarily runs through sparsely populated, alpine desert.

This should not be seen as a mere extension of the railway to Lhasa. It will also create a new loop that connects central Tibet to all of China, reinforcing military logistic backup and trade, and consolidating China's control over Tibet. The *Peoples Daily* declared:

> [the] railway is of great political, economic and military significance to accelerating the regional economic development of Tibet and western Yunnan Province and to strengthen ethnic unity and national defence (*People's Daily* 12 Nov, 2000).

The second major rail connection to China's urban hubs and industries seems likely to go ahead soon, judging by the confidence expressed in 2007 by Wayne Gao of Zijin Mining, the transnational state-owned mining giant that runs the Yulong copper mine in Kham. Interviewed by Reuters, Gao explained that:

> Small scale production has already begun at the mine, which is newly accessible thanks to a railroad that reached the Tibetan capital of Lhasa last year. 'It is not necessarily worth it to transport raw materials from Tibet to the coast. For instance, there are smelters in Gansu,' Gao said (Hornby 2007).

However, the existing rail line which terminates in Lhasa is far from being "newly accessible" to a mine at Yulong, near Jomda, hidden in the rugged forested ranges of the far east of the "TAR". If the Yulong mine were to proceed, it would be prohibitively expensive to truck the

copper concentrates by road to the Lhasa railhead, then to rail this freight, which itself is 75 per cent waste rock, a further 2000 kilometres to the Gansu smelter. This scenario is made all the more improbable by the highways, which are regularly damaged by massive landslides (Yanjun Shang 2005).

Nonetheless, the Yulong mine operators have abandoned their earlier plans to build a smelter at Yulong, which would have eliminated the need to transport vast quantities of concentrates across great distances. This is in line with the current Chinese government policy to close small scale "artisanal" mining and smelters in favour of allowing bigger corporations to hold an effective oligopoly, strengthening their market dominance and profitability (USGS 2007: 9.6).

Nevertheless, the cost of extracting minerals from Tibet, on an international scale, remains prohibitively expensive. The necessary preconditions for large scale extraction are the creation of substantial infrastructure, especially railways and highways, and a large scale electricity supply to concentrate the ores or smelt them to pure metal. Another prerequisite is a full range of urban infrastructure, especially if the technical staff have to be recruited from other provinces, since no training has been provided to the local Tibetans. Schools, hospitals, civic facilities, accommodation and modern services all need to be instituted.

These are major expenses. Until the central authorities create these necessary infrastructures, any major capital investment in mining will be restricted. In recent years, however, China has proved that their will to develop the western regions is strong. This is clearly visible in the planned extension of the railway to Shigatse – a further attempt to exploit Tibet's natural treasures.

Table 6. 3 Extraction of selected resources in Amdo (Ch: Qinghai) in 2004

Commodity	Annual Output (1000 tons)	Value Of Output (1000 yuan)	Profit (1000 yuan)
Total	331392	827377.04	2565867
Crude Oil	2220.2	503773.00	1750770
Natural Gas**	179356 mn cubic m		304640
Coal	2494.9	28072.12	3385.5
Geothermal Energy	246.6	36.00	13
Iron	411.6	3224.30	3435
Manganese	8	64.10	61
Chromite	3	140.00	5
Copper	343.4	6424.77	7386
Lead	73.3	1972.69	3310
Zinc	1026.1	72039.00	367781.3
Furnace Refractory Quartzite	441.1	1047.30	1739.9
Salt	1083.1	15085.73	1629.1
Potash	17107	156628.13	105187.6
Asbestos	1539.4	16409.64	3204
Limestone For Cement	1580.2	1828.17	3036
Quarrying For Roads	1244.3	2032.19	3082.9
Brick Clay pits	1610.7	7205.12	6630.3

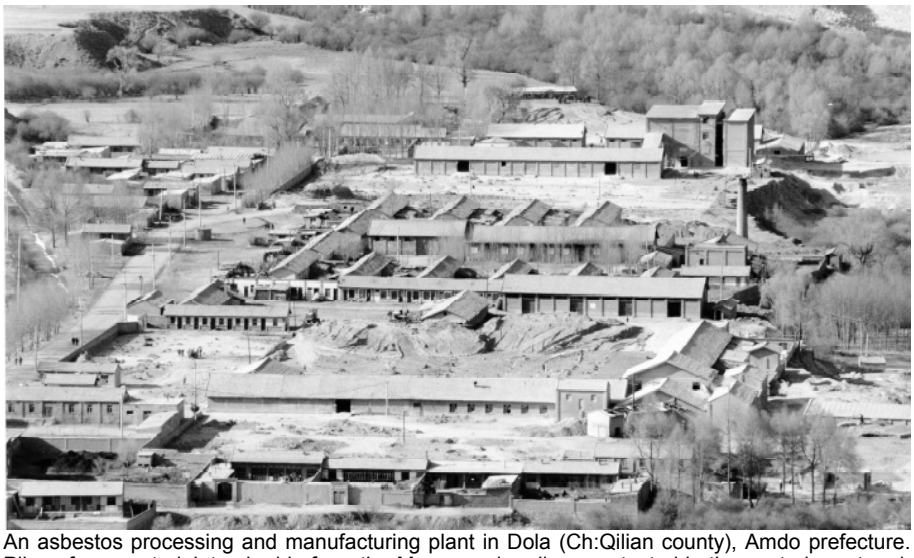
Source: CSB 2006: Qinghai Statistical Yearbook 2006, table 3-21, 59-60.

AMDO: CHINA'S LONG ESTABLISHED MINERAL PROVINCE IN TIBET

While the new rail line to Lhasa greatly increases the likelihood of mineral extraction from the "TAR", China has also mined in Amdo (Ch: Qinghai), on a large and highly profitable scale, for many years. The rail line into the mineral-rich Tsaidam Basin of Amdo was completed in the 1980s, and enabled both extraction and processing plants to be built on this semi-arid, nomadic pasture.

The latest production statistics for key mineral resources show that the exploitation is now intensive. The total declared profit of the 683 mining companies in Amdo in 2004 was 2.56 billion yuan (US $310 mn) (QSB 2006: Qinghai Statistical Yearbook, table 3-21). To a poor province that is heavily dependent on central subsidies, this is a lot of money and could be even more if these enterprises, nearly all state-owned, were not so overstaffed with non-Tibetan immigrants. Resource extraction is a major employer, and some of the older and more dangerous mines are labour-intensive, with little

investment in technology or employee safety. However, China's recent policy of amalgamating the many small mining companies into a few big ones is already paying dividends. The proceeding section about copper shows that a single company, the biggest equity stakeholder in the new Yulong mine in the "TAR", made windfall profits in 2006 from the sharp rise in metal prices.



An asbestos processing and manufacturing plant in Dola (Ch:Qilian county), Amdo prefecture. Piles of raw material, trucked in from the Mangya mine, lie unprotected in the central courtyard, blown into the lungs of workers by the wind.
Source: Tibet outside TAR

Asbestos mining, mostly at Mangya, close to the Xinjiang border, has persisted for decades, despite the known health risks. In 2004, this mine employed 2,984 people. This number is exceeded only by the 8,377 employees of the 43 barely profitable Amdo coal mines; the 6,814 employees of the highly profitable potash extraction from the salt lakes; and the 5,661 employees of the spectacularly profitable oil industry, whose annual extraction of 2.2 million tonnes of Tibetan oil accounts for almost 70 per cent of all resource extraction profits (QSB 2006: Qinghai Statistical Yearbook, table 3-21).

Four industries – oil, zinc, gas and potash – account for 98 per cent of all declared profits. Amdo now produces 33 million tonnes of raw commodities for China every year, more than half of which are the potash salts essential to chemical fertilisers. Altogether, 51 minerals are extracted from the earth of Amdo, according to Qinghai official statistics, the most significant of which are included in table 6.2.

By examining the situation more closely, in the prefectures of Amdo, we find that resource extraction is highly concentrated in Tsonub prefecture (Ch: Haixi), which includes the Tsaidam Basin. However, there are also 329 mining companies operating outside Tsonub and the Siling (Ch: Xining) municipality (QSB 2006: Qinghai Statistical Yearbook, table 3-22). Almost all are state-owned and make very little profit, yet continue year after year to employ substantial numbers of Chinese workers, and continue operations. Such under-capitalised, low-technology mines are often environmentally destructive because they cannot afford to comply with environmental legislation, and are often owned by local governments. There is often a conflict of interests as these local governments also have a legal responsibility to implement environmental laws.

TIBETAN GOLD

For decades, Chinese geologists have swarmed over the entire Tibetan Plateau, seeking the mineral wealth prophesised in the traditional Chinese name for Tibet, *Xizang*, literally "the treasure house in the west". *Xizang* now refers to today's "Tibet Autonomous Region" ("TAR"), and as yet there has been comparatively little exploitation of its minerals. However, in Kham and Amdo, the eastern realm of Tibetan civilization, Chinese geologists have discovered a whole province of minerals: copper, silver, lead, zinc and – the most precious of all – gold. While conventional gold mining relies on gold veins in crystalline rock, where it is found in lumps, the newly discovered deposits in Tibet consist of disseminated gold – submicroscopic particles that are evenly distributed throughout huge volumes of sedimentary rock and remains of ancient sea beds. The deposits are porphyry type deposits, in which the metals are evenly diffused, in low concentrations, throughout a massive host rock (Xu et al., 1992; Li Zhiping and Peters 1998; Taihe Zhou et al. 2002, Singer 2005: http://wrgis.wr.usgs.gov/open-file/of02-268/).

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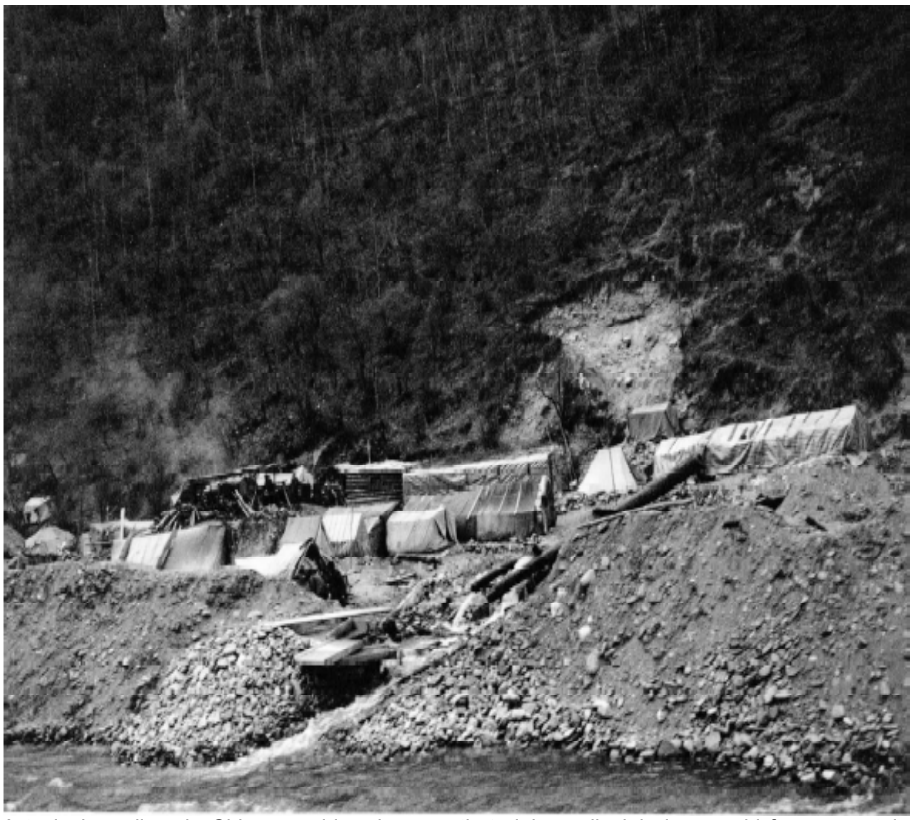

A typical small-scale Chinese gold rush camp that sluices alluvial placer gold from mountain streams. This camp is located in Karze in eastern Tibet, above Derge town, near the Cho-la Pass. *Source:Tibet Outside TAR 1997, p 967.*

These sedimentary-hosted deposits are an entirely different proposition, both environmentally and economically, from the classic gold rush search, when anyone who found the coveted surface nugget could strike it rich. Despite the low concentrations, with copper content at less than one per cent, and gold even less than that, these deposits are extremely profitable when mined on a substantial scale. However, the large scale, capital-intensive operations that are required to achieve this also have large scale environmental effects. Massive quantities of rock have to be moved, crushed and processed in order to extract the one or at most two per cent of copper and gold content (Li Zhiping and Peters 1998).

Under-capitalised, low-technology mines are often environmentally destructive because they cannot afford to comply with environmental legislation, and are often owned by local governments. There is often a conflict of interests as these local governments also have a legal responsibility to implement environmental laws.

Since the first discovery of porphyry type deposits in Nevada in 1960, similar deposits have been found in many countries, but nowhere as numerous as in China and Tibet, where a recent report by the U.S. Geological Survey counted 113 known gold deposits of this kind (Li Zhiping and Peters, 1998). As a result of the geological process of formation, the Tibetan Plateau – particularly the Sino-Tibetan frontier – is a zone rich in disseminated gold, with dozens of deposits already identified along its border regions.

We can see from these detailed reports that in eastern Tibet, both in Kham and Amdo, at least 16 gold deposits have been identified by the research team. The total amount of gold in these Tibetan deposits is around 300 tonnes.

The decision to go ahead with such a major project depends on two main factors: the percentage of copper diffused throughout the host rock, and the total size of the ore body. Mines are profitable only if the copper concentration is above 0.5 per cent. In the biggest ore bodies, found in Gyalthang (Ch: Zhongdian) of Dechen (Ch: Diqing) prefecture in Yunnan province, the copper concentrations are 0.5 to 0.7 per cent. At Hongshan, 60 kilometres northeast of Gyalthang, the copper concentration is 1.01 per cent. This is highly suited to commercial use. As for the size of the deposits, the first major copper mine, now under construction at Yulong near Chamdo, has an ore body of 850 million tonnes. Other deposits are smaller – Yangla has 70 million tonnes, Xue Ji Ping 60 million tonnes and Hongshan 30 million tonnes. These three deposits are close together, and can be viewed as one single deposit of about 200 million tonnes (Tyrwhitt 1996). These preliminary figures are likely to rise as exploratory drilling provides even more precise information on the extent of the ore bodies. Compared to other big mines with similar geological structures, such as Ok Tedi and Lihir, both in Papua New Guinea, that each hold around 500 million tonnes (Jackson 1982: 16),

the Tibetan porphyry deposits of copper and gold are world class and highly commercial.

But there are other factors that determine which ores are mined, and whether the mining will be quick and superficial, extracting only on the highest concentrations, or whether it will be thorough and slow, extracting the full deposit, including the large volume of low concentration ores. As well as considering the concentration of copper, sometimes the additional share of gold is a decisive factor. When the gold prices are buoyant, not only in the short-term but also possibly for the entire lifetime of the mine, the cut-off point, above which a deposit is deemed economic, may be as low as 0.5 grams of gold per tonne of rock processed.

An alluvial rock crushing machine, positioned in a dry river bed, in Dawu county, Karze prefecture, eastern Tibet.
Source: Tibet Outside TAR 1997, p 796.

Some of the deposits in the steep ranges of Kham are profitable. Although the gold at Bonghe, 30 kilometres south of Gyalthang, is below commercial concentrations in its main ore body (between 0.1 and 0.5 grams per tonne), there are smaller areas that hold a gold content of between one and four grams per tonne. In other nearby ore bodies, gold concentrations can be more plentiful. The average grade is 2.5 grams per tonne, and can rise to up to seven grams per tonne in some areas. There are places where shallow trenches have revealed gold concentrations as high as 62 grams per tonne (Tyrwhitt 1996). Again, applying this logic, the deposits near Gyalthang (Ch: Zhongdian), Yunnan province, would be profitable and are worth exploiting on a large scale. The deposit at Shetongmon, near Shigatse in the "TAR", which is currently being explored, appears to hold a similar amount of gold – almost four grams per tonne, according to the latest studies (Continental Minerals 2007).

Another factor used to determine whether, and how, to mine is the presence within a deposit of smaller areas of higher concentrations, known to geologists as *skarn*. When significant skarn deposits occur, they are often closer to the surface. Their relative accessibility and higher concentration of copper equate to fast profits. These may be used to finance a larger, long-term operation, or a quick asset strip which removes only the skarn and capping, leaving the remaining ore body less economically viable for future generations to revisit. Current available data shows that skarn is substantial both at Yulong and Yangla, with as much as 70 million tonnes located at Yangla in Yunnan, averaging 1.5 per cent copper content – three times the usual concentration (Tyrwhitt 1996).

The Yulong-Yangla-Gyalthang belt of copper and gold could be highly profitable and mined on a scale never seen before in Tibet.

On the basis of all of these tests of mine profitability, the Yulong-Yangla-Gyalthang belt of copper and gold could be highly profitable and mined on a scale never seen before in Tibet. The Norbusa chromite mine is biggest of its kind in Tibet. This situation has been confidently reported by the Chinese media:

> Experts agree that the development of west China will bring about infinite opportunities for the jewellery economy. According to calculation, large and super-large unexplored mineral resources are mostly located in western regions of China. In light of the fact that 60 percent of the gold reserves and the gold mines of the highest grade are all located in central and western regions, the Gold Bureau of the State Economic and Trade Commission recently set up a leading group for the work of western development, so as to further intensify the efforts for exploring gold resources of western regions (*People's Daily* 17 May, 2000).

China is energetically seeking gold from Tibet, and elsewhere in western China. For example, four new copper

and gold deposits are under active investigation in the Lhoka (Ch: Shannan) prefecture, along the Yarlung Tsangpo river, similar to the Shetongmon deposit further up-river. These have been named by Chinese geologists as Kelu, Liebu, Chongmuda and Chenba (Li Guangming et al. 2006). What holds back the mining process is not the quality of the deposit, but the absence of adequate transport and infrastructure to connect it to China.

The available data suggest that Tibet's ore grades may well be sufficient to attract the interest of transnational mining corporations, which can pick and choose among ore bodies worldwide. With the active help of foreign investors and foreign research institutes, the intensified search is now being orchestrated at the highest levels of China's party-state. The reason for this is that the demand for gold is accelerating, while the production is stagnant. The vast and little-understood area of western China is once again being proffered as the solution to the problems of eastern China.

CHINA'S SOARING DEMAND FOR GOLD

Although China has become the fourth biggest gold producer in the world, its own demand for gold far outstrips production, according to the governments and international agencies who monitor the gold industry. Despite great secrecy surrounding the exact figures, China consumes at least 400 tonnes of gold a year, and produces half that amount from mining within its own boundaries. Demand for gold is strong in a country where gold remains a universally accepted method of maintaining liquid assets that are beyond official scrutiny, come in a compact and portable form, and are easily smuggled out. Illegal and semi-legal holdings of gold stimulate illegal production from mines and surface operations. Local officials collude with local entrepreneurs, and together they keep the central authorities in the dark about active mining, despite regulations that insist that all gold must be sold to the central authorities. The ability of lower levels of government to effectively defy the orders of Beijing results in much unrecorded mining, and unreliable official statistics. Unofficial mining happens without official supervision, or implementation of the regulations controlling environmental impacts.

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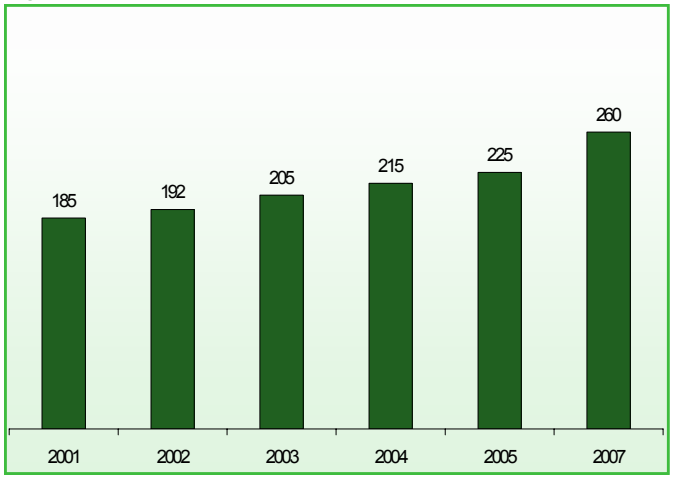
Figure 6.1 Gold production in China (in tonnes)



Source: *USGS 2007,table 1.*
Note: 2007 data is forecasted; source: National Development and Reform Commission (Platts 9 April 2007).

Demand for gold drives consumption steadily higher for several reasons. The black economy, persistence of smuggling, tax evasion, corruption, capital outflow, and transfer of public assets to private hands all generate a demand for gold as the preferred form of capital outside of the banking system. Rising prosperity, and the trend toward conspicuous consumption, favours the wearing of gold as a sign of success. The new uses of gold in electronics, as a technically ideal conductor, have dramatically increased gold demand. The manufacture of such electronics, since they are labour-intensive, is increasingly concentrated in China. In western countries, gold has become another commodity, valued for its actual uses. But its price still soars during times of economic or political crisis, as flighty capital seeks a way of insulating its value against political shocks. Despite China's prosperity, gold is still seen as the ultimate defence against predations of the state, and the ideal form of concealed wealth.

Because the demand for gold is so strong, production in China rose rapidly in the 1980s, but slowed down in the 1990s as the nature of economic deposits shifted. Since 2000, it has increased steadily with an average gain of five per cent per year (see figure 6.1).

China's gold production in 2007 is likely to reach 260 tonnes, according to the forecasts of the National

Development and Reform Commission (Platts 9 April, 2007). Amdo (Ch: Qinghai) now produces 3.25 per cent of China's refined gold, or 8.45 tonnes, which at 2007 prices is worth US $164 million a year. In 2007, a Canadian company, Maxy, in partnership with China's Western Mining, announced the discovery of another gold and copper deposit at Malho (Ch: Huangnan), in Amdo. The corporate press release (Canada Newswire 2007) named the deposits as Duoba-Jijiemu and Danbolongwa, which are close to some other named mines; Shuangpengxi Gold Mine; Jiangligo Copper Mine, with 2.5 million tonnes of 0.5 to 0.9 per cent copper concentration; and Qiadong copper and silver mine, with 0.6 to 1.5 per cent copper concentration.

Immigrant Chinese fortune-seekers block a stream at Nyarong, seeking alluvial gold. *Source: Tibet outside TAR 1997, p 898.*

> The properties are readily accessible by road and located approximately 181 km from Xining (Tib: Siling) City. Over 20 mineralized occurrences, each of a different nature, have been defined in the region and at least seven of these are medium to small scale operating Cu [copper], Au [gold] and Cu-Au mines located in the vicinity of the permits (Canada Newswire 9 March 2007).

The gold deposits in Amdo, in the Tanjian mountains, are attracting a lot of attention (Chen Zhiyong 2005), especially those in the Tsaidam basin at Tomorite, near Tulan (Zhang Shuanghong 2003). Other deposits of international interest are located at Nagartse in the "TAR" (Tyrwhitt 2004). This Nagartse area in Lhoka (Ch: Shannan) has been mined for many years, with a substantial mining town of Chinese immigrants.

Commercial conferences are regularly held in China, bringing together gold producers, investors, official planners and regulators. At a 1999 conference, Ouyang Wei, editor of *China Money*, explained that in China's largest cities, half of the population now owns gold jewellery – in Guangzhou province, that figure rises to 75 per cent. However, "the rural population, with no gold-owning tradition and no money, is unlikely to become a large consumer" (*Financial Times* 1999).

Because of these drivers of demand, China has become a major importer of gold, and has strong incentives to discover more gold within China to satisfy the pent-up demand. In many policy statements, Chinese officials have made it clear that they expect western China to provide more gold mines, as these areas are the least explored to date. However, the west is also furthest from the capital, least densely populated and easiest to mine illegally without Beijing's knowledge. The west also has small local populations who struggle to mobilise themselves in defence of their resource heritage.

China has become a major importer of gold, and has strong incentives to discover more gold within China to satisfy the pent-up demand. In many policy statements, Chinese officials have made it clear that they expect western China to provide more gold mines,

So far, there has been very little foreign involvement in mining in China, except for gold and more recently copper. But with the right scale and technology, and a supportive regulatory regime, the gold mining and treatment costs could be much lower than most deposits. There are less than US $60 in mining costs per ounce of recovered gold, and US $97 in treatment costs (U.S. Dept. of the Interior 1994). Such low figures mean higher profits and higher rates of return per ounce of gold produced. As the demand and pressure have steadily grown, there has been a major worldwide shift in the type of gold deposits that are economically viable. The amount of necessary gold in parts per million (ppm) of the host rock has declined. It has become profitable, with the right technology, to extract gold from rock containing as little as 50 ppm of gold, or even less.

A floating dredge becomes frozen in a river in Lithang in mid-winter. These machines destroy fish habitats, muddy the water and alter stream beds in their quest for gold.
Source: Tibet Outside TAR 1997, p 688.

The major rise in the global gold price since 2004 makes exploitation more commercially profitable, and attracts more international investors.

China's gold industry has recently been transformed. New types of deposits are being regarded as economical and the target locations have been identified over a long stretch of the Sino-Tibetan frontier. The technology of extraction, and partnership with foreign capital and expertise are similarly new. This is an unprecedented situation, brought about by a confluence of profitability, technology, foreign direct investment and China's access to the Tibetan Plateau. However, this new situation also presents a number of challenges that have to be addressed, otherwise both the environment and the local population will once again suffer. In 2003, His Holiness the Dalai Lama commented:

> As companies seek to be guided by more socially and environmentally responsible values we need to ask what corporate responsibility means. This is an especially challenging question for the increasing number of foreign companies working in or looking at working in Chinese-ruled Tibet. This commercial and corporate interest comes at a time in Tibet's history when ordinary Tibetans have no real say in their country's development. Tibetans should be participating, directing and benefiting from this development especially when it concerns the exploitation of Tibet's non-renewable resources such as gold. Therefore, I appeal to all foreign mining companies, and their shareholders, who are thinking about working in Tibet to consider carefully about the ethical values when embarking on such a venture (ATC 2003).

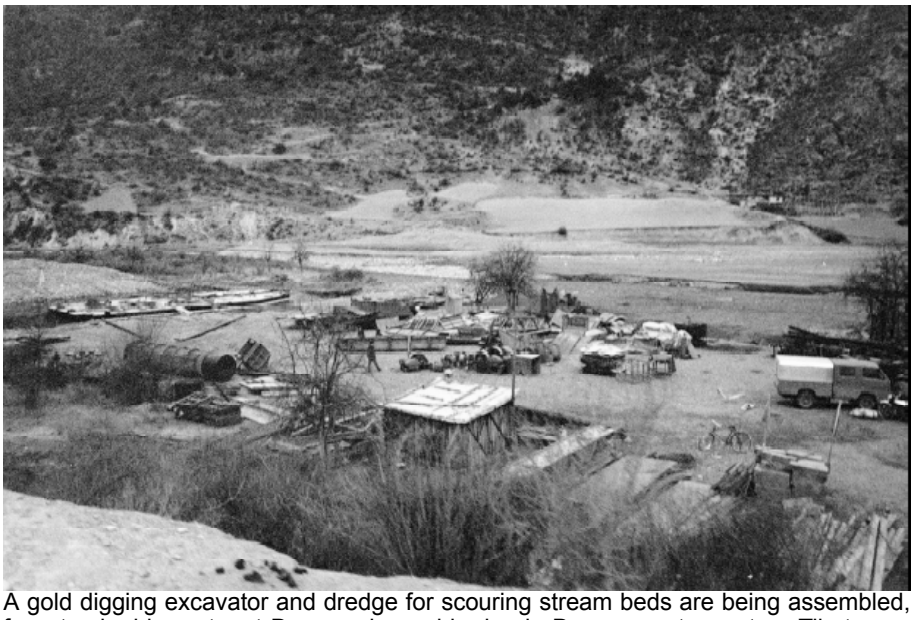
There is no way to extract gold from Tibet without liberating the highly toxic arsenic, which is a major poison that can threaten the biodiversity of Tibet's highly sensitive zone – a transition between alpine and temperate biomes.

TIBETAN IRON ORE, CHROMITE AND STAINLESS STEEL

China's construction boom has created an enormous appetite for steel. In 2007, steel consumption in China is forecast to further rise by 13 per cent to 448 million tonnes (Kendall 2007). Steel is the skeleton of modernity, and China imports vast quantities of iron ore, mainly from Australia and Brazil, to make up for the shortfall in domestic production. In 2005, imports amounted to 40 per cent of the total available iron ore (USGS 2007, pp. 16, 23). These imports are ideal for the major steel mills on China's coast, who can directly receive the special ships that are designed to carry iron ore. Most of China's steel mills are close to the coast, and far from Tibet, where the latest major discovery of iron ore has been announced, in the arid region far west of the "TAR". The deposits are at such a remote location that, even though they may be far better in quality than China's usual domestic iron ores, their commercial exploitation is not inevitable. A new discovery at Nyishung, south of Tari Namtso lake in Tsochen county, was proudly announced in 2007. The Nyishung deposit, if official media reports are to be believed, has around 500 million tonnes of iron ore, averaging 55 per cent iron content (Xinhua China Economic Information Service 13 Feb 2007, *China Daily* 2007). By comparison, the iron ore deposits in Orissa, India, are nearly eight times bigger, and the ore averages 62 per cent iron, and hence it has become one of India's biggest exports to China. The mines found in Australia and Brazil tend to be even larger.

Substantial investment to extract such distant Tibetan iron ore would only be made if the price of the steel delivered to the mill, per tonne, was globally competitive. It is seldom commercially worthwhile to invest in the extraction of a bulky commodity, such as iron ore, unless

there is sufficient iron to keep the mine operational for decades. Nyishung could potentially produce 20 to 30 million tonnes a year over a long period, but that would do little to reduce China's huge dependence on imports. An analysis of the feasibility of a Nyishung iron mine is provided below, based on the data published by *Xinhua*.



A gold digging excavator and dredge for scouring stream beds are being assembled, from trucked-in parts, at Damangduo gold mine in Derge county, eastern Tibet.
Source: Tibet Outside TAR 1997, p 960.

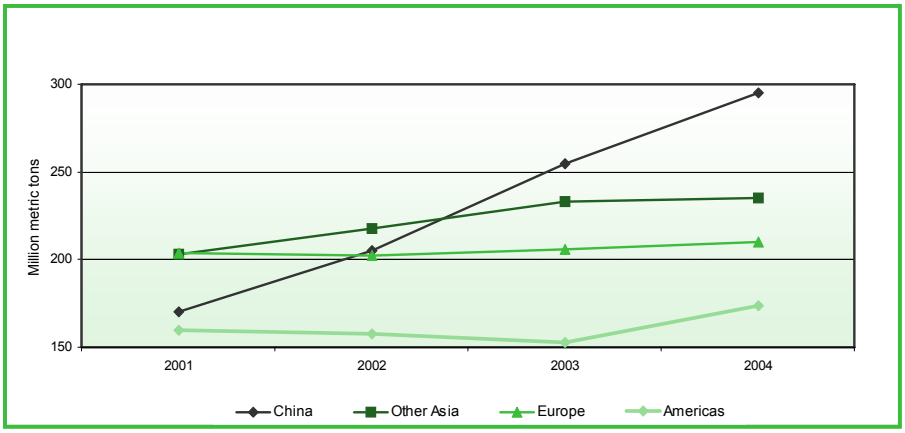
The key factor that makes the exploitation of Nyishung iron uncertain is the cost of getting it to China's steel mills. The single rail line from Lhasa that passes through Gormo, Siling (Ch: Xining) and Lanzhou connects Tibet with the Chinese rail network and has a freight capacity of 7.5 million tonnes a year, according to China's railway official. The entire track would need doubling if it were to carry a commercial quantity of iron ore. Nyishung is a very remote area in the far west of Tibet, almost completely lacking in modern infrastructure, and hundreds of kilometres from the planned extension of the rail line to Shigatse by 2010. A rail extension even further, to Nyishung, would serve little purpose other than for iron ore extraction, and would cost billions of yuan to traverse alpine desert. The cost of the single track that runs the 1,140 km from Lhasa to Gormo, according to official figures, was US $4.2 billion. A further 900 kms to Siling and Lanzhou would need to be constructed, with double tracks, if bulk commodities such as iron ore were to be shipped out.

China's Railways Ministry claims that rail operations have cut freight costs in and out of Tibet by 75 per cent. The official cost of rail freight on the Lhasa line, of 0.12 yuan per tonne per kilometre (Liu Dan 2006), means that it would cost 240 yuan (US $30) for a tonne of minerals to travel more than 2000 kms from Lhasa to Lanzhou, the closest Chinese city with substantial smelting and refining capacity. At that price, iron ore would not be competitive, but copper and gold would be. Even if the iron ore mined at Nyishung were bulk freighted at half this advertised rate, as has been agreed for the Shetongmon copper mine (as detailed below), the freight cost from mine to steel plant would still add at least 150 yuan per tonne (US $19) to the total cost of the iron ore. This overland haulage cost compares unfavourably with ocean shipping costs, making it comparably too expensive to deliver ore to the mills overland. Until 2004, China's steel mills rarely had to pay more than $40 per tonne for top quality iron ore, and even at the 2006 and 2007 peak price of $80 per tonne, the rail freight process from Nyishung would add a further 25 per cent to the costs.

The only steel mills close to Tibet are the new stainless steel plants at Jiuquan, in Gansu province, and Panzihua, at the foot of the Tibetan plateau in Sichuan province. Panzhihua was built in the 1970s, at enormous cost to both the Chinese people and to the environment, at the time when Mao's word was law. He decreed that, for military security reasons, a steel mill must be built at Panzhihua as an essential part of the so-called "Third Front", also known as China's strategic rear.

Situated in the remote mountainous area of Sichuan, the location of the Panzihua steel mill defies all conventional logic for locating major industries. The maintenance costs are extremely high and the iron ore at Panzhihua is now running out. A major iron mine in Baima, north of Panzihua, on the eastern edge of the Tibetan plateau, is the only reason that Panzhihua is able to remain open. There is now great potential for Tibetan iron ore mines to substitute for the nearly exhausted mine in Panzhihua. The US Geological Survey reports that Baima's designed mining capacity is 6.5 million tonnes of iron ore per year (USGS 2004: 9.8). This is a substantial operation, and together with the iron mines in Tibet, could supply more than half of Panzhihua's total requirements, thus enabling the mill to maintain its output of 3 million tonnes of crude steel annually.

Figure 6.2 Demand for steel in China, the rest of Asia, Europe and the Americas



Source: Menzie 2004, 32.

TIBETAN CHROMITE MINING

Chromium is a very useful metal – when it is added to steel, the steel never rusts. Stainless steel has a thousand uses, from everyday kitchen bowls and knives to industrial chemical tanks that are impervious to corrosion. Burgeoning domestic spending power has increased the demand for stainless steel in washing machines. Hydropower dams rely on stainless steel for underwater conduit pipes, and nuclear energy, currently under vigorous expansion in China, uses stainless steel as the basic structural material for nuclear reactors.

Panzhihua could improve its output performance by opening new iron mines, as it has done in Baima. It can also extract the vanadium and titanium from its ores. Despite the high value and multiple uses of these metals, they have only recently been extracted from the magnetite in Panzhihua's furnaces. Vanadium, when alloyed with steel, improves its strength, ductility and resilience. The steel maintains its hardness at high temperatures, withstands shock and resists rust, which makes it ideal for axles, gears and the springs of land or air vehicles, especially if both vanadium and chromium are added. Vanadium from Baima and chromium from Norbusa provide China with sources of the two metals that are needed to manufacture these special steels.

The metal titanium also has many uses. It is strong, light and can withstand considerable heat, which makes it ideal for military uses in aircraft and jet engines. Missiles and spacecraft are also made predominantly of titanium. The presence of both titanium and vanadium in the Panzhihua ore is particularly useful because titanium-vanadium alloys are used in missile cases, jet-engine housings and nuclear reactor vessels.

Only recently has it become apparent quite how much of China's might was thrown into the construction of the Panzhihua mill. The policy was so secret at the time, that it was only decades later, as its architects published their memoirs and internal Party documents came to light, that it became clear how the Chinese state had actually made Panzhihua the centre of its war mobilisation. It seems inappropriate that, at least in the case of iron ore, China is extracting resources that originally belonged to the Tibetan land and its people, and using them to modernise the weaponry of China's military for use against the Tibetans and the world in general.

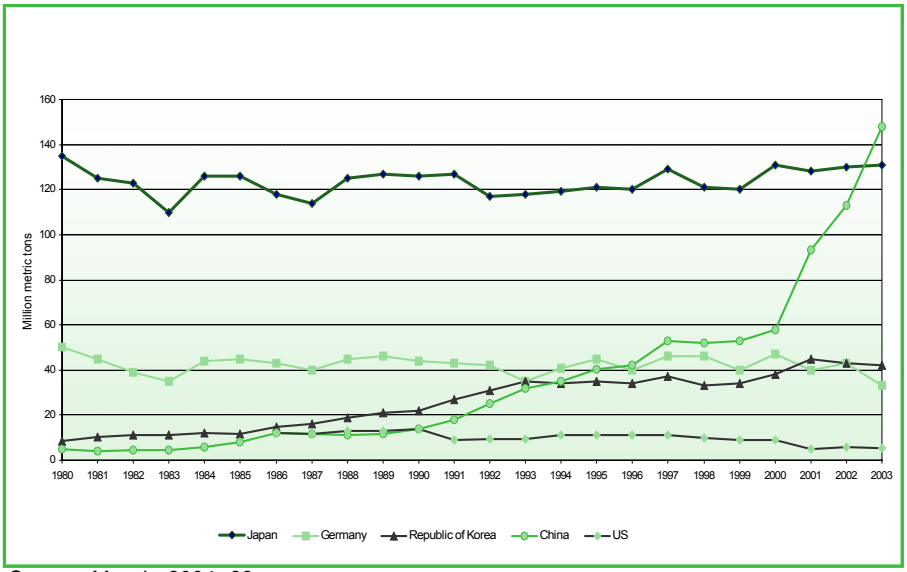
Demand for stainless steel is soaring, yet Chinese domestic production of it lags far behind. The problem is a critical shortage of chromium. Chromite, the ore containing chromium metal, has never been found in China itself, but can be found in Tibet. Tibet has two long, thin belts of chromite that stretch across the plateau from the far west to the extreme east, in ophiolite rock that also contains diamonds (Bai Wenji et al. 2006). In 2003, Chinese scientists reported findings of diamonds and other ultra high pressure rocks (Yang JS et al. 2003), and a Japanese team of scientists recently confirmed the occurrence of diamonds in the Norbusa chromite belt (Yamamoto 2007). The chromite deposits of Tibet are of remarkably high purity, and much of the rock in which they occur is iron, so there is very little waste when it is smelted in steel furnaces. However, chromite production has not kept pace with demand.

The Norbusa chromite mine, just downstream from Tsethang on the banks of the great Yarlung Tsangpo River, is considerably older than the Baima iron ore mine. While China now has insufficient iron ore and is increasingly reliant on imports, its shortage of chromium has long been even more acute. In 2005, imports supplied at least 94 per cent of China's chromium requirements (U.S. Geological Survey 2007: Table 1, 4).

The first place where Tibetan chromite was mined, however, was not the present location along the Yarlung Tsangpo river. Before Norbusa, China originally mined chromite north of Lhasa, along the other major chromite ophiolite belt at Dongchao (Ch: Dongqiao), near Draknak in Nagchu. The Dongchao deposit was mined in the 1980s, but in the absence of adequate energy supply, or cost-efficient transportation technology, it

halted production, even though there was a remarkably high chromite content. Today, this original location has assumed a fresh significance, because the new railway to Lhasa crosses the chromite belt, and it is no longer difficult to connect the mine to the railway. Dongchao is only 80 kilometres from the highway and railway corridor, and is located on a road running west from the highway, with its junction at the small town of Draknak, also known as Amdo (not to be confused with Amdo, one of the major provinces of Tibet). The Dongchao mine can be found near a saline lake which is entirely self-contained, so all of the toxic runoff would be concentrated in the lake. One of the highways to the far west of Tibet runs from Amdo town, via Dongchao, and runs all the way down to the border with Ladakh. This highway mostly follows the ophiolite zone, in which further chromite deposits may yet be found. These deposits could also be brought to the railway at Amdo town, even if no spur line was built to Dongchao.

Figure 6.3 Leading importers of iron ore between 1980 and 2003



Source: Menzie 2004, 23.

The Tibetan deposits of chromite that are being mined are of sufficient quantity, and extraordinarily high quality, to sustain much higher levels of extraction than are currently planned. The extraction of chromite from Tibet is now lagging far behind China's demand, even at a time when plans for a massive new iron ore mine in Tibet are being vigorously pursued. Current chromite output from Tibet is barely 200,000 tonnes a year, compared to three million tonnes of imports in 2005 (USGS 2007: Table 1, 4). It is not only the coastal stainless steel makers, such as Baosteel in Shangai, that have come to rely on imports. Even a new stainless steel mill in Gansu, far closer to Tibet than the coastal mills, signed a contract with South Africa for its chromite supply, rather than relying on Tibetan sources (Bromby 2004).

At the start of the new millennium, China's national government announced a major programme to urgently increase China's manufacture of stainless steel:

> China has set the ambitious goal of dominating the home market for stainless steel and clinching part of the international market in the next 10 years, according to the metallurgical department (CEInet 2000a).

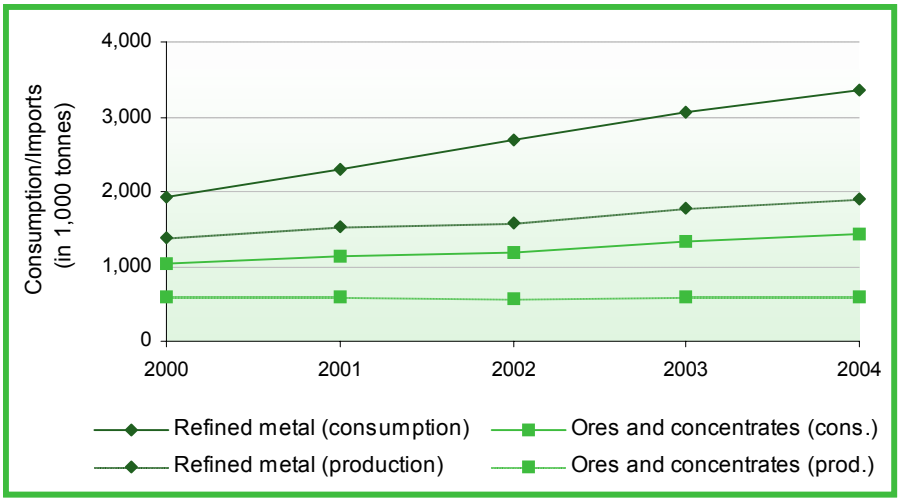
The reason for China's new concern for self-sufficiency was not only the high domestic demand, but also China's entry into the World Trade Organisation (WTO). The WTO required China to stop its state protection practices, which gave advantages to domestic producers and penalised foreign steel makers who were seeking access to the Chinese market. The state was orchestrating a new scheme to boost stainless steel production, even before the WTO opened China's doors for steel consumption. They had plans to "raise the stainless steel market share from the current 25 per cent to 70 per cent by 2005" (CEInet 2000a). In order to achieve this increase in production, China's production capacity for chromium minerals, a raw material for stainless steel, "[was] expected to reach 170,000 tonnes in the year 2000 and 240,000 tonnes in 2005" (CEInet 2000b).

Nuclear energy, currently under vigorous expansion in China, uses stainless steel as the basic structural material for nuclear reactors.

The output of chromite from Tibet was to increase by 70,000 tonnes over the period of the 10th Five-Year Plan (2001-2005), an increase of 41 per cent, in order to meet the state target of 240,000 tonnes in 2005. Whether or not this was actually achieved is uncertain, but it marks a considerable intensification of Tibetan chromite mining.

The Norbusa chromite mine may see great expansion now that the distance, by road, from the mine to the Lhasa railway terminus is only 160 kilometres. This reduces the costs of transportation dramatically. In addition to Norbusa, even more Tibetan chromite deposits

Figure 6.4 Consumption and imports of copper in China from 2000 to 2004



Source: Maurer et al. 2004.

will become economically viable with the new railway. The extraction of chromite from Tibet will become more competitive and may help China to reduce its dependence on imports. China is not only determined to produce much more of its own stainless steel, but it also wants to locate production closer to Tibet.

TIBETAN COPPER

Today, copper is a vital component in China's development and industrialisation, but it is in short supply as a raw material. It is valued for its electrical conductivity and is used by the electrical industries in construction, telecommunications and electronic products.

China's copper mine output has constantly risen over the past decade, increasing from an estimated 439,000 tonnes in 1996 to 762,000 tonnes in 2005 (USGS 2001: Table 1; USGS 2007: Table 1). However, domestic consumption has now outpaced the production rate. Since 2004, China has been the world's largest consumer of copper, even surpassing the United States. China's copper mines, meanwhile, meet only 45 per cent of the requirements of the copper smelters. The remaining 55 per cent must be imported. In 2005, this cost China a total of US $6.9 billion for ore, concentrates and scrap. In the same year, China had to spend US $9.8 billion to import various other copper commodities (USGS 2007: Table 1, 4). This supply and demand imbalance, and the cost of imports, mean that improving domestic copper mine production has become a priority for China.

After Jiangxi province, on China's eastern seaboard, the "TAR" has the largest copper reserves in China (TIN 2002: 30-33). This discovery was highlighted by the Chinese media:

> Chinese geologists have discovered 16 large copper, iron, lead and zinc ore deposits along the Qinghai-Tibet Railway route since 1999, said the country's top geological surveyor. Geologists initially found five non-ferrous metal deposits along the 1,956-kilometer railway with total possible reserves of more than 20 million tonnes of copper and 10 million tonnes of lead and zinc, said Meng Xianlai, director of the China Geological Survey (CGS) under the Ministry of Land and Resources. They included a copper deposit of Qulong in 'TAR' with a proved reserve of 7.89 million tonnes, second only to the country's largest copper mine in Dexing, Jiangxi Province, said Meng. The CGS predicted the possible copper reserves in Qulong could reach 18 million tonnes, making it the biggest copper deposit in China (Xinhua 24 Jan, 2007).

The Qulong deposit, near Jiama (Tib: Gyama) in Meldrogungkar, is being intensively tested by geologists (She, HQ et al. 2006). The most important copper deposits, however, are to be found in Yulong in the east, and in Shetongmon in the centre of the "TAR". The Yulong belt of Jomda (Ch: Jiangda) county, in Chamdo, in the east of the "TAR", stretches for up to 400 kilometres and is one of the most significant of Tibet's verified mineral deposits outside the Tsaidam Basin (Liang Huaying et al. 2006). According to the Institute of Mineral Resources in the Chinese Academy of Geological Sciences, the deposit is 15 to 30 km wide and "contains one giant, two large, and two medium-to small-sized porphyry copper deposits" (Hou Zengqian et al. 2003). According to the latest estimates, Yulong has 14 to 18 million tonnes of prospective reserves of copper (Xinhua 2007). Yulong has been closely investigated by geologists in the hope that an understanding of how the concentrations of copper occurred, millions of years ago and deep underground, will enable more such deposits to be identified (Jiang Yao-Hui 2006).

Yulong is one of the many known copper deposits in Tibet, which have – due to remoteness and poor infrastructure – not been developed until recently. Exploitation is further impeded by the harsh climatic conditions that force mines to remain closed during the winter. However, after many years of delaying the construction of a mine in Yulong, recent reports indicate that infrastructure development, as well as regulatory permissions, are almost complete (*People's Daily* 2005;

Steelguru 2006). The Yulong copper mine is now predominantly owned by a Chinese, transnational, state-owned mining company, Zijin Mining (Reuters 25 Jan, 2007). Zijin is listed on the Hong Kong stock exchange and holds equity in mines in Zambia, Mongolia, Australia, Peru and various other countries (Investors Chronicle 2007). The company reported a massive profit in 2006, due to rising copper prices (*Metal Bulletin* 2007). Zijin Mining, now China's largest gold miner, is the product of China's developmentalist program of amalgamating smaller companies into bigger agglomerates that are able to perform on the world stage. Zijin definitely has the capital necessary to ensure that the Yulong copper and gold deposits, after many delays, are finally mined. Following a share float on the Shanghai Stock Exchange in 2007, it expects to raise a further $1 billion in capital for investments in expansion (Source).

Zijin has been slow in getting Yulong into production, not for want of capital, or shortage of copper demand, but because as yet there is no rail line available, closer than Lhasa, to transport the copper concentrates to a smelter, and the company has decided not to go ahead with smelting the copper ores to pure metal at Yulong itself. The plan for Yulong is the same as for Shetongmon (as detailed below) – to transport the copper concentrates from Tibet to the Jinchuan smelter in Gansu. The difference between the two operations is that Shetongmon will have a rail line at the mouth of the mine to take the concentrates the 2000 kilometres to the Gansu smelter, whereas Yulong copper, in rugged forested hills, north east of Chamdo, must first be trucked to the rail head at Lhasa.

This may be one reason why production at Yulong is still on a small scale, and may remain limited unless a rail line east, from Lhasa to Nyingtri or all the way to Chamdo, is built. This is no small undertaking. Zhang Jianping, deputy director of the Planning Department of China's Railway Bureau, confirmed that two extension lines from Lhasa, one to Shigatse and one to Nyingtri, were due to begin construction in 2006 (China Tibet Information Center 19 July, 2007). These extensions will allow far greater production at Yulong. It is certain that the Yulong copper is destined for the Gansu smelter, as Wayne Gao, one of the heads of Zijin Mining, told Reuters:

> It is not necessarily worth it to transport raw materials from Tibet to the coast. For instance, there are smelters in Gansu,' Gao said. Zijin already sells concentrate from its copper mine in Xinjiang, in the far west, to Jinchuan Group Ltd. in Gansu. 'Tibet is very remote. So anything we develop there, whether Yulong or elsewhere, we have to do an environmental impact report first. And in that report, of course we have to address future environmental protection measures and steps to take during the development,' Gao said. Development of the mine, which accounts for about a tenth of China's copper reserves, got the go-ahead from China's environmental agency last summer. But Zijin ran afoul of environmental authorities this winter, after a breach of a tailings dam at its mine in Guizhou triggered a tightening of China's standards. 'It's clear that in the future we will have to strengthen our environmental procedures,' Gao said (Hornby 2007).

One of the copper mines that is threatening Tibet's landscape.
Credit: Tibet Museum, DIIR

Wayne Gao's confidence that a railway will be built to take Yulong copper concentrates to a Gansu smelter is reinforced by the size and high quality of the Yulong deposit, and the four other major deposits nearby. All are in the rugged forested range that separates the Zachu (Mekong) watershed from the Drichu (Yangtze) valley. The four major copper deposits near Yulong are: Tosha sumdo (Ch: Duoxiasundo), east of Chamdo and close to Chunyido, 60 kms south of Yulong; Dralhaka (Ch: Zhalaga), just west of Jomda, 30 kms from Yulong; Mangdrung (Ch: Mangzhong), near Khargang village and very close to Jomda, 35 kms from Yulong; and Malasumdo (Ch: Malasongduo), between Samdrupshung and Kyanbel villages, 70 kms south of Yulong. Two of these deposits, Toshasumdo and Malasumdo, add a further 464 million tonnes of copper to Yulong's massive 850 million tonnes. Taken together, this cluster of copper deposits provides a

Box 6.1 China will subsidise the Continental Shetongmon mine by:

- Building and paying for all construction costs of the railway lines between Shetongmon and Jinchuan, via Lhasa, Gormo, Siling and Lanzhou, a distance of over 2,500 kilometres. The cost of the rail line extension from Gormo to Shetongmon via Lhasa is 37 billion yuan.
- Providing hydropower to the copper concentrator, which will use large amounts of electricity.
- Accepting a low freight rate of US $31 per tonne (250 yuan) of copper concentrate sent by rail from the mine to the smelter. China's announced freight rate on the Lhasa railway is 0.2 yuan per tonne per kilometre, which would require the mines to pay 500 yuan per tonne to get the concentrates to the smelter. The actual rate paid is half of this advertised rate, covered by yet another central subsidy.
- Exempting the mining company from paying any form of tax to Beijing during its most profitable early years of operation, until the mine has repaid all of its expenses. It is then supposed to pay a 15 per cent tax for five years, and then 30 per cent, an arrangement which gives the company maximum opportunity to finance further expansion of the mine.

strong incentive to build a rail line from Lhasa to Nyingtri, and beyond.

In August 2001, China reported the discovery of a new huge copper deposit in the Gang Tesi Range (Ch: Gangdise Shan or TransHimalaya), in the southern area of the "TAR", after a geological survey (*People's Daily* 2001). This long mountain range runs parallel to the Himalayas and is now the object of intensive Chinese geological research, including the newly named deposit of Chongjiang (Xie Yuling et al. 2007). The research indicates that the Gang Tesi copper vein in Tibet is expected to become another "world-level" copper mine, with potential deposits of 23 million tonnes.

This vein is not only rich in copper, but also in iron, gold, silver and other mineral ores that amount to over 200 million tonnes. It lies in the mid-east of the Gang Tesi Mountains in Shetongmon (Ch: Xietongmen) county, close to Shigatse and the main highway that connects Lhasa with Nepal. It is also close to Tibet's major river, the Yarlung Tsangpo. Transportation is therefore quite convenient, with direct rail access, due for completion by 2010, connecting the vein to the smelter in Gansu, 2000 kilometres away. The transportation project is financed by the central authorities so the mine is easy to exploit. There is a hydropower station only 10 kms away, but it lacks the capacity to power a smelter, since it also supplies the second largest city in central Tibet, Shigatse. The mining project is now a joint effort of Vancouver-based Continental Mineral, a company fully owned by Hunter Dickinson Inc., and China's state-owned, Gansu-based Jinchuan. Official sources claim that the electricity supply is probably sufficient for concentrating the copper ore, which would then be taken to the Gansu smelter. Most of Tibet's copper, including the Yulong and the Shetongmon deposit, is of the porphyry type, meaning that the copper is scattered throughout the deposit, resulting in relatively low concentrations of copper in the rock. The actual proportion of copper is approximately 0.43 per cent, which means that more than 200 tonnes of rock has to be dug, crushed and chemically treated in order to produce one tonne of copper. Three quarters of all the rock mined will therefore be piled up at Shetongmon once the copper has been extracted. This rock is highly acidic, and will be held in a valley until being neutralised by adding locally mined limestone, and then sealed with clay in order to prevent leakage (Stakiw 2007).

The profitability prospects of Tibet's first large scale copper mine look promising, due to the extension of the Gormo-Lhasa railway. Once loaded onto rail freight wagons, the nearest copper smelter is the Jinchuan Nonferrous Metals Corporation in Gansu, which currently has the capacity to smelt 120,000 tonnes of copper a year, and plans to expand production (USGS 2007: Table 2). The railway, as the company reveals (Stakiw 2007), will greatly reduce the transport costs, making it much more likely that this deposit of copper and gold will be exploited. In 2007, the company's head, Gerald Panneton, told a Canadian mining magazine:

> What makes this project economic is that between 2000 and 2005, they (the Chinese) built a railroad between the town of Golmud and Lhasa, and it is to be extended all the way towards the project. What this does, because of the existing rail system that you have in China, is give you access to all the smelters (Stakiw 2007).

The output that is loaded onto the rail wagons in Shetongmon is 25 per cent copper, with small but valuable amounts of gold (30 grams per tonne) and silver (300 grams per tonne), all destined to be smelted into pure metals in Jinchuan. The total tonnage currently sent by rail from Shetongmon to the Jinchuan smelter is 200,000 tonnes a year, from which 50,000 tonnes of copper metal are extracted by the smelter (Stakiw 2007).

If the price of copper stays at US $6000 a tonne, the planned annual production of 50,000 tonnes will sell for US $300 million. If the production of 200,000 ounces of gold a year happens as planned, at current gold price of US $620 per ounce, the Jinchuan Nonferrous Metals

Corporation will make a further US $124 million a year. This combined annual revenue of US $424 million does not yet include the substantial amount of silver that is also extracted.

Over the lifetime of the mine, a total of 4.3 million ounces of gold are to be extracted, which means the company will earn a total of US $2.7 billion from gold alone. This calculation is based on the 2007 gold price of US $620 per ounce, but gold may yet increase further in price. A total of 2.1 billion pounds (almost one million tonnes) of copper will be produced during the mine's lifetime. At the current price of US $6000 per tonne, this will earn the company US $6 billion. Altogether, taking account of the gold, copper and silver content, the company will earn well over US $10 billion over the lifetime of the Shetongmon mine.

China hopes that Shetongmon will be a model for future mines in the "TAR" (Stakiw 2007), and encourage foreign investments. The firm Continental, which owns the Shetongmon mine, has brought even more land close to the mine and is drilling to see if more copper is available. Any agreement made over the future of Shetongmon will establish a precedent for further mining in Tibet. China is subsidising the Continental Shetongmon mine in many ways (see box 6.1).

Box 6.2 The Shethongmon project fails to comply with Tibetan Guidelines for the following reasons:

- It is on a scale that is too large to be beneficial locally to the Tibetan people.

  It depletes precious Tibetan resources for the profit of distant Chinese state-owned partners and a Canadian company, with only modest royalties provided at provincial level and inadequate compensation locally.
- The location is only less than a kilometre from the Yarlung Tsangpo River, which is the great waterway not only of Tibet but also India and Bangladesh. Bangladesh already faces an arsenic crisis in its water. If the highly acid toxic wastes produced by this mine during 40 years of mining, or after mining ceases, should ever seep into the Yarlung Tsangpo, the lives of a hundred million people downstream will be at risk.
- Mining depletes the heritage of Tibet, with no acknowledgement that all Tibetans, other than some local people, are the losers. There is not even a resource depletion tax.
- Never before has mining on such a scale happened in Tibet. There is nothing inevitable about a mine that increases China's copper production by little more than one per cent, but impacts negatively on an area close to one of Tibet's most historic towns, namely Shigatse. The large number of mines in Tibet, on a much smaller scale, invariably caused destruction, and provided opportunities for an uncontrolled influx of Chinese immigrant workers into Tibet, which marginalises the Tibetan people in their own land.
- Local communities in the areas affected by mining have had no opportunity to seek and obtain independent expert advice on short and long term consequences of mining. There has been no satisfactory program of education, in close cooperation with local communities, establishing a local learning community able to consider carefully the many complexities of mining technologies and techniques. Only after a full process of action research run by local people is it possible to contemplate such a project.
- The above points, among many others, are only a preliminary listing of our Tibetan concerns" (EDD 2007).

In a meeting held in London in 2007, executives from HDI/Continental Minerals briefed representatives of the Central Tibetan Administration (CTA), based in Dharamsala, India, on their mining plan for Shethongmon. The CTA is concerned that this project, which will dig out about 10 million tonnes of rock from the Tibetan earth every year, will see an increased influx of Chinese immigrants and have drastic social, cultural and environmental impacts. The CTA expects anyone who sincerely wants to benefit Tibet and the Tibetan people to base their plans on their well-established Guidelines for International Development and Sustainable Development in Tibet (provided in full after chapter eight, Sustainable Development and the Population Footprint). These guidelines should serve as the basis for a mining code and govern all aspects of these projects. The CTA statement from the meeting with HDI/Continental Minerals is provided in box 6.2.

At Shetongmon, Yulong and other places, copper and gold may be the main attractions, but the silver often associated with them is an attraction in itself, and silver mining has become substantial in many areas of Tibet.

Copper deposits in Amdo (Ch: Qinghai) province, although not on the scale of Yulong or Shetongmon, have been mined for some years and significant reserves have recently been discovered (TIN 2002: 33-34). In 2004 alone, 343,00 tonnes of copper were mined in Amdo (QSB 2006. Qinghai Statistical Yearbook, table 3-21, 59). The Sashitang deposit is located in Tsigorthang (Ch: Xinghai), Tsolho (Ch: Hainan) prefecture, Amdo, 350 kilometres southwest of Siling. It contains 420,000 tonnes or 62 per cent of Amdo province's total copper reserves (USGS 2001: 9.6; Li Daxing et al. 2003) and has been operational since August 2004. Other Amdo copper mines can be

found in Menyuan Hui Autonomous County, Tsojang (Ch: Haibei) prefecture, and in Machen county (Ch: Maqen), Golog prefecture.

Mining in the region of Tsojang began in 1958 and expanded to a medium scale enterprise in 1983. The copper mine, known as Terney (Ch: Deerni), in Golog (Ch: Gulou) prefecture has been operational since 1989. As well as copper, it also contains many subsidiary minerals, such as zinc, molybdenum, gold and silver. As a replacement for the exhausted deposits in eastern Yunnan, which have been mined by China for many years, Yunnan Copper Company Ltd. is now planning to mine in Tibet, namely the Pulang and Yangla mines in Dechen (Ch: Diqing or Shangrila) prefecture. The Pulang deposit has been analysed closely by Chinese geologists and described as:

> massive sulfide deposits in the northern segment and plenty of porphyry copper deposits in the southern segment, of which the Pulang porphyry copper deposit is one of the representatives. Like the Yulong porphyry copper deposit, this porphyry copper deposit is also one of the most important porphyry copper deposits in the eastern Qinghai-Tibet Plateau (Zeng PS et al. 2004).

In August 2001, China reported the discovery of a new huge copper deposit in the Gang Tesi Range, running parallel to the Himalayas, which is expected to become another "world-level" copper mine.

According to the U.S. Geological Survey, Yunnan Copper will spend US $362 million on developing these resources (USGS 2004: 9.7).

COPPER PRICE RISE THREATENS TIBET'S RESOURCES

Since the 1999 launch of President Jiang Zemin's "Western Development" campaign (Ch: *xibu da kaifa,* literally translated as "Open up the great west"), the top priority has been the construction of huge infrastructure, such as railways, hydropower plants, roads and industries. As a consequence, there has been an unprecedented rise in the demand for copper. The copper mines that were opened during the 1950s and 1960s are nearing exhaustion. China is now looking to its western regions to open up known deposits that have not yet been developed, and is pushing forward with exploration work to discover new reserves.

China's growth and reliance on imports has resulted in major price rises in most metals and energy resources in recent years. This trend has had worldwide impacts and will most likely have major consequences for Tibet. Deposits that were once considered too distant and too difficult to be mined economically may now be economic, as long as the prices remain high, which seems likely. With the advent of the railway, which crosses a major mineralised zone of chromite-rich ophiolite, the intensified, large-scale extraction of Tibetan natural resources has become more probable.

Access to copper deposits is being prioritised because the Chinese authorities are determined to invest in the developmental infrastructure of Tibetan areas. However, China faces a shortage of energy supply. There are plans to make the copper belt of eastern Tibet, and the Yunnan hills just beyond Tibet, a major hydropower generating zone, capable of exporting electricity over great distances to Chinese coastal cities. Some of this electricity, in addition to being sent south to Thailand and east to Guangzhou, could also be sent north, into Tibet. From here, this electricity could provide power for copper smelting or chemical processes, which can concentrate copper ores sufficiently to facilitate their transportation as a bulk commodity to a smelter.

China struggles to source its energy requirements, as its energy consumption grows concurrent with economic development. China's quest for more energy for its industrialisation is bound to increase the demand for copper ore, even more than expected, and extensive copper exploration is currently underway.

China spends over US $12 billion a year on importing copper in various forms, according to US Geological Survey data. This is a major expense, which rises quickly – China's appetite drove copper prices up by one third in 2005 alone, and by 58 per cent from early 2004 to the end of 2005. This demand, coupled with the railway, makes copper extraction from Tibet an increasingly viable option.

A NEW SITUATION: THE ARRIVAL OF TRANSNATIONAL MINING CORPORATIONS

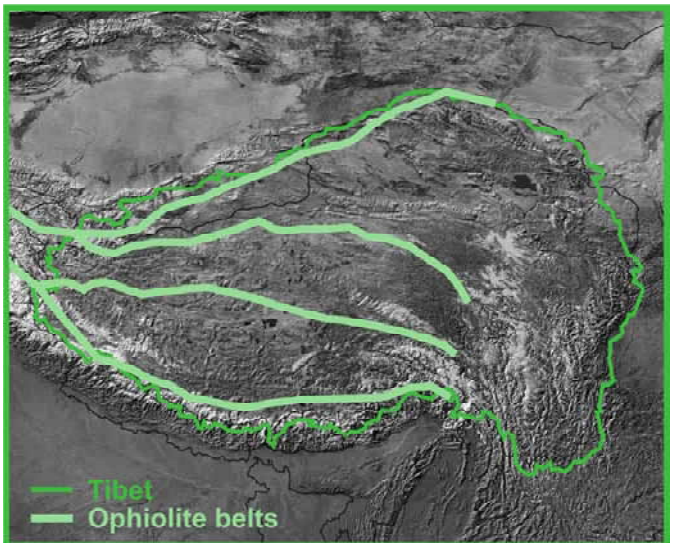
Today, Tibet's resource heritage is being threatened with more exploitation than ever before. This is the result of a conflux of several conditions, some of which have already been covered in this chapter. Firstly, there is the existence of a railway network that links the two main zones of mineralisation in Tibet to the metal and energy markets of China's industrial boom. The first mineral zone discovered in Tibet, at the Tsaidam Basin, was connected by rail to China in the 1980s. The second zone discovered was the ophiolite belt of southern Tibet, particularly the

section that forms the course of the Yarlung Tsangpo river, as it traverses Tibet from west to east. This zone can now also be reached by the railway to Lhasa, which began operation in 2006 and will have an extension, along the ophiolite belt to Shigatse, completed by 2010.

The construction of these rail lines involved much tunnelling and geological work, and thus the discovery of many new mineral deposits along the rail route, which were publicly announced in 2006. Bulk freight trains, using the new railway line from Gormo (Ch: Golmud) to Lhasa, allow the convenient and cheap transportation of large amounts of minerals to destinations throughout China. They opened up the Tibetan Plateau to intensive exploitation of its natural resources.

The planned extension of the railway network to Shigatse by 2010 will further improve the economic prospects for mining in Tibet, especially along the Gang Tesi Transhimalayan range parallel to the rail line. The expansion of extraction capacities in Tibet – especially for resources that show a continuous rise in world market prices, like copper, iron and gold – is a major objective of not only the Chinese authorities, but also increasingly of foreign mining corporations that provide the necessary experience, technology and, last but not least, investment.

Figure 6.5 Locations of the ophiolite belts in Tibet, rich in copper and many other mineral resources.



Adapted from Guilmette, Carl. Petrology, Geochemistry And Geochronology Of Highly Foliated Amphibolites From The Ophiolitic Mélange Beneath The Yarlung Zangbo Ophiolites, Xigaze Area, Tibet. Geodynamical implications, dissertation presented to Université Laval, Québec, 2005: 4.

Secondly, the structure of China's mining industry has been transformed. Although it remains a state-owned monopoly, with only a handful of foreign investors, these state-owned mining companies have now become large transnational conglomerates, with plenty of capital. Until recently, there were innumerable small, state-owned mining companies, often owned by geological prospecting units and local governments, that seldom had enough capital to establish large mines. They were able only to make frequent announcements about the valuable Tibetan assets that they controlled, but this failed to attract any capital. Consequently, major projects, such as the Yulong copper mine north of Chamdo in Kham, made slow progress towards commercialisation and actual mining.

In recent years, China's mining industry has undergone a dramatic process of mergers, which economists term "agglomeration". The innumerable small companies have disappeared, swallowed up by the new giants that were created by the state in the hope of building "national champions", as they are referred to in China. These new national champions often raise large amounts of capital in order to expand their investments. They do so by selling a portion of their ownership to Chinese or international investors, usually by floating shares on the Hong Kong or other stock exchanges. Among the newly agglomerated national champions who own major Tibetan deposits are Zijin Mining and Western Mining – the largest shareholders in the Yulong copper mine. In 2006, Zijin Mining made more profit – US $2.2 billion – than the entire mineral and energy sector of Amdo (Ch: Qinghai) province (*Metal Bulletin News Alert Service* 2007).

In the 1990s, China's many oil companies were agglomerated, by order from above, into these few giants, after it became apparent China would have to seek much of its oil internationally (Nolan 2001). In the early years of the 21st century, a similar agglomeration can be seen in the mining and metals industry, with the same purpose of competing globally for the raw commodities that China needs. China's new mining giants are given preferential access to capital markets, which enable them to raise the extra funds for their expansion plans by floating shares, while at the same time escaping shareholder accountability and scrutiny. Financial analyst James Kynge explains:

Over the lifetime of the Shethongmon mine, its operating company will earn a total of US $2.7 billion from gold alone. Altogether, including gold, copper and silver, the miners will earn well over US $10 billion.

> The first years of the tenure of Hu Jintao, who took over from Jiang Zemin in late 2002, have been marked by a

> distinct emphasis on the primacy of large, efficient state-owned companies. Companies typically float less than one third of their share capital, so even if minority shareholders banded together, they would still be unable to influence the decisions of the board of directors. Lax disclosure rules mean that listed companies are required to divulge a bare minimum of financial information, and even that, it has transpired, is often false. The decision as to which companies may be listed is made not on the basis of financial health but by Party officials, with the predictable result that only a small number of companies are private and the rest are corporate offspring of the Party and the state (Kynge 2006: 193-6).

Thirdly, the prices of almost all metals and energy resources rose dramatically worldwide in 2005 and 2006, due in large part to China's demand. This carries two consequences for Tibet. Higher prices mean that it is now more profitable to extract Tibetan resources, even though there is a substantial upfront investment cost for all the infrastructure required to extract, process and transport the minerals from remote Tibetan areas to distant Chinese industrial markets. The price rise was highly beneficial to the profitability of the new national champions, such as Zijin, which now have extensive cash reserves from their windfall profits, and therefore a great deal of capital available for major expansion.

These three key factors have conspired to entirely transform the mining sector in Tibet. Everything that is required for intensive exploitation is now in place. Beijing has detailed geological knowledge of all the major Tibetan deposits, each named in this chapter, as well as many more that are in the process of being fully mapped and their commercialisation planned (Source). Some projects, such as the extraction of two million tonnes of Tibetan Tsaidam oil a year, have persisted for decades. China now has in place, at state expense, the essential infrastructure – railways and power supply – for intensive exploitation. The large, state-owned mining corporations with investment capital, as well as strong market demand, boom time prices and modern technology, will enable exploitation to reach levels that Tibet has never seen before. China now has the need, will, capacity and commercial viability to mine Tibet on a grand scale.

Ever since the beginnings of Chinese rule during the 1950s, Tibet's resources have been in serious danger of exploitation. The rapid extinction of species and intense deforestation of the Tibetan Plateau seem to finally be on the decrease after recent policy changes in Beijing. However, exploitation of the most profitable treasures, buried in deposits of gold, silver, iron ore, copper and many other minerals, is now on the horizon.

Despite the numerous announcements made about the new discoveries of vast amounts of mineral resources, China has until now – compared to international standards – mined only small quantities. The main reason for this should be seen in simple economic terms, rather than a lack of political will. Tibet lies far from the regions of China that have the largest demand for mineral resources, and this distance adds major costs to the extraction process. Furthermore, the climatic conditions make it difficult to develop and operate mines in Tibet, as work is often only possible during the summer months.

A new era of intensive exploitation may be on its way, with capital-intensive mines replacing the innumerable older, smaller mines. The recent increase in government financed capital construction, especially of railways, together with capital invested by Chinese and foreign transnational mining companies, add up to a substantial investment and need to be kept secure. The armed forces are now responding to this situation:

> The role of Xinjiang and Tibet as both suppliers and conduits of resources necessary for China's continued economic growth has resulted in a re-evaluation of both regions' importance. Tibet possesses large amounts of zircon, chromium, rutile, magnesium and titanium that are needed by China's heavy industries. Large amounts of cobalt and copper also lie astride the Qinghai-Tibet Railway. The strategic value of these regions and their resources has resulted in the increased deployment of China's offensive mechanized forces to these regions in order to prepare for any contingencies that might threaten its interests. The vehicles and weapons in the new mechanized division are lighter than those in other PLA mechanized units, reducing their logistical footprint and providing tactical mobility, allowing for more roads and bridges to be used during operations. Lighter units are also more easily re-fueled and re-supplied. On the few good roads in the rural regions of Xinjiang and Tibet, the ability to operate for extended periods is an invaluable advantage. Presently, only wheeled armored fighting vehicles operate in Tibet; tracked infantry fighting vehicles armed with 30mm automatic cannons and heavier support weapons would greatly assist these forces in the event of a widespread insurgency or an attack by Indian forces (Andrew 2007).

IMPACTS OF MINING IN TIBET

By nature, mining involves the production of large quantities of waste. The amount of the waste produced depends on the type of mineral extracted, as well as the size of the mine. Particularly when the deposits are of the porphyry type, as found in Yulong, mines have to operate

on a large scale, extracting thousands of tonnes of rocks per day in order to produce a profitable amount of processed or refined mineral ores. The disposal of large quantities of waste poses a tremendous challenge for the mining industry and could significantly impact the local environment.

For example, the concentrations of gold found in the identified deposits can range from less than one to over seven parts per million. For each tonne of gold extracted, up to a million tonnes of ore has to be mined, treated and dumped, with its soluble wastes washing into nearby streams. The official gold reserve in China is 630 tonnes, scattered over 100 locations, but it is strongly concentrated in 18 sites that each have over 20 tonnes of gold, and some as much as 50 tonnes (Li Zhiping and Peters 1998: 9).

Such deposits, in contrast to the sudden gold rushes of the poor and displaced peasants for alluvial gold, will invariably be mined with a heavy reliance on machinery to move the huge tonnages of rock. The extraction of disseminated gold can only be undertaken effectively by state-owned enterprises, or enterprises backed by county, prefectural or provincial authorities. The extraction must be on a scale large enough to maximise profits, which will also inevitably maximise environmental impacts.

To extract disseminated gold, large amounts of energy and water are required to mine the rocks, crush them and leach the gold out of them. This increase in industry may well clash with the needs of the local population in the affected regions. While there are many gold mines in remote areas of Tibet, the newly discovered belt of disseminated gold deposits along the Sino-Tibetan frontier is located at one of the best-watered parts of Tibet, which has historically supported greater concentrations of Tibetans than anywhere else on the plateau.

In addition to the indigenous population, many Chinese migrants have settled in this area, putting strain on the finite limits of the steep slopes to sustain such high population densities. These mountainous areas have been subjected to intensive land use and their optimal output has already been achieved. Their sustainability could easily be compromised by the introduction of a major industrial user and environmental pollutant.

Air pollution, noise pollution, seismic impacts, soil erosion, loss of biodiversity, dislocation of local populations, land degradation, impacts on forest and grasslands, and pollution of watercourses are only some of the potential impacts that mining can have. It is thought that the impacts are often more pronounced for open-pit mines than for underground mines, which tend to produce less waste. Mining waste contaminates the water bodies, and often leads to substantial reductions in water quality and the destruction of aquatic ecosystems, which is one of the most severe potential impacts of metal extraction.

Water pollution

Water pollution is one of the biggest challenges faced by China today. The pollution of water bodies tends to result from three primary factors: sedimentation, acid drainage and metal deposition. The erosion from waste rock piles, or runoff after heavy rainfall, often increases the sediment load of nearby water bodies. High sediment concentration increases the turbidity of natural waters, which reduces the light that is available to aquatic plants for photosynthesis. When the sediments settle on the streambed, they decrease the depth of the streams, and result in a greater risk of flooding in the event of high stream flow. Mining may also modify stream morphology by disrupting a channel, diverting stream flows or changing the slope or bank stability of the channels, which significantly reduces the water quality (WRI 2003).

China's quest for more energy for its industrialisation is bound to increase the demand for copper ore, even more than expected, and extensive copper exploration is currently underway.

One of the most serious concerns in water pollution is acid drainage, which occurs when sulphide-bearing minerals, such as pyrite or pyrrhotite, are exposed to oxygen or water and produce sulphuric acid. The presence of acid-ingesting bacteria often accelerates this process. Acidic water can subsequently leach other metals in the rock, resulting in the contamination of both surface and ground water. Waste rock, which accounts for more than 80 per cent of the rock mined at many copper sites, tends to contain high concentrations of sulphide, toxic metals and non-metals (Moran 2001). These waste rock piles are often the source of acidic effluents. This acid drainage can have severe impacts on aquatic life, and can also be hazardous to human beings if the acidic waters are discharged into nearby streams and surface waters.

Most mining operations use certain reagents or heavy metals, such as cyanide, mercury and other compounds, to process valuable minerals (WRI 2003). Cyanide and mercury are particularly valued for their conductive properties and are therefore in frequent use. The release

of metals into the environment can be triggered by acid drainage or through accidental releases from mine tailings impoundments. While small amounts of heavy metals are considered essential for the survival of many organisms, large quantities are toxic. An aqueous concentration of heavy metals has disastrous impacts on both plant and animal species.

Water pollution can harm humans, livestock, aquatic animals and wildlife. Famous examples of water contamination caused by copper mining include the Bay of Ite in southern Peru, where marine life has disappeared completely from the central area of pollution (Diaz et al. 1991), and the Ok Tedi tributary of the Fly River in Papua New Guinea, where contamination has harmed the lives of approximately 50,000 people in more than 100 villages (Ghazi 2003).

China now has in place, at state expense, the essential infrastructure – railways and power supply – for intensive exploitation, as well as large, state-owned mining corporations with the investment capital, strong market demand, boom time prices and modern technology to enable exploitation on an unprecedented scale in Tibet.

Another serious environmental consequence of the current mining practices in Tibet is the irrational use of resources, which destroys much of the fragile topsoil. Grassland erosion on the Tibetan Plateau, and the consequent siltation of water courses, is already a serious problem. China's efforts to develop more western mines herald even more large-scale destruction of Tibet's unique natural ecosystem. For instance, Continental Minerals, a Canadian subsidiary of the Hunter Dickinson group, is developing the gold, copper and silver deposit in Shetongmon (Ch: Xietongmen), with an announced intention to mine 10 million tonnes of rock annually, from which 50,000 tonnes of copper will be smelted. (Continental Minerals 2007).

The water supply to this mine will be drawn from the Yarlung Tsangpo (Brahmaputra river), which is less than one kilometre downhill from the mine. The mine is scheduled to begin operating in 2010, when the rail line extension to Shigatse will be complete. Once the operation starts, many Tibetans fear that the river will be polluted from the release of mine waste and tailings, disturbing the ecosystem of the rivers and affecting the many populations that live downstream.

All of the Tibetan deposits of invisible, sub-microscopic gold particles are in arsenic laden pyrite. There is no way to extract the gold without liberating the highly toxic arsenic, which is a major poison that can threaten the biodiversity of Tibet's highly sensitive zone – a transition between alpine and temperate biomes. While gold is less than 10 parts per million (ppm), arsenic is abundant in some Chinese locations. Concentrations of 4400 ppm, 18,900 ppm, 39,900 ppm and even 150,000 ppm have been reported by Chinese geologists (Liu Dongsheng et al. 1994; Li Zhiping and Peters 1998: 79). Symptoms of *arsenicosis* (arsenic poisoning) include skin lesions, skin cancers, circulatory disorders, hardening of the liver, enlargement of the spleen and kidney disorders. Experts estimate that 4.5 million people are already at high risk of this disease in China, with over 35,000 confirmed cases of arsenicosis (Luong et al. 2004: 586).

Another toxic metal that is associated with these gold deposits, occurring in concentrations as high as 100 ppm, is mercury, which is especially dangerous to the food chain and accumulates over time. In addition, cyanide is almost always used for leaching the gold out of such deposits. This avoids the major expense of finely milling the ores into small particles. Instead, the ore can be piled in a heap and then treated with cyanide, most of which is recovered, but not all.

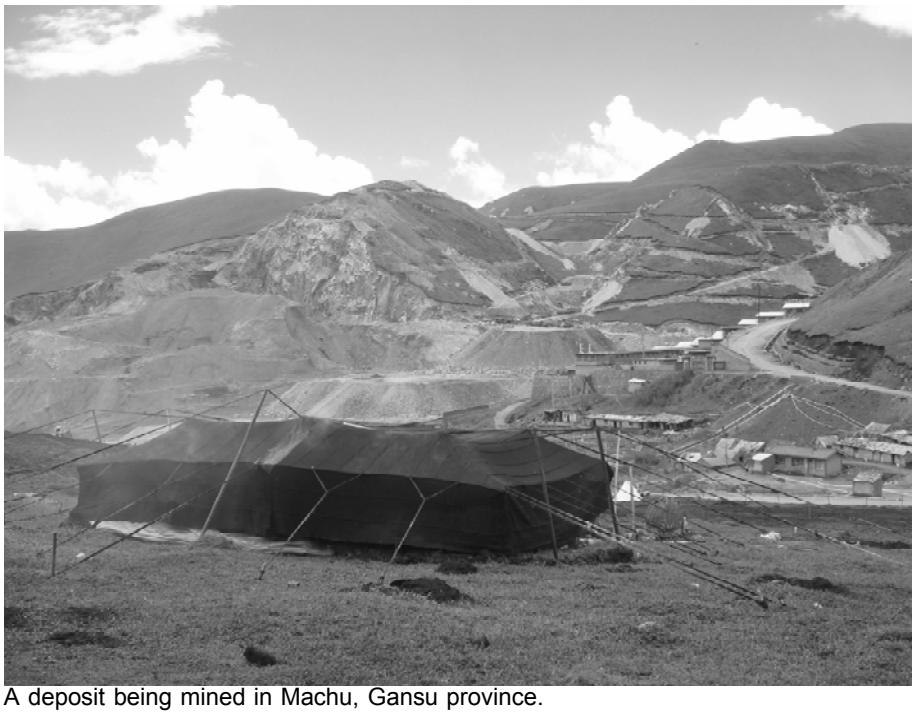
This combination of cyanide, arsenic and in some cases mercury, all toxins with potent effects on living tissue, poses a serious threat not only to the inhabitants of the mine's surroundings, but also to all downstream life. The runoff from these Tibetan mountainous areas feeds into the great rivers of Asia including China's own Yellow and Yangtze Rivers, far downstream, which rely on pure water from the Tibetan Plateau.

INDIRECT IMPACTS

In addition to the issues described above, mines also presents many environmental and social challenges that emerge from the disruption to ecosystems and local communities. Mining requires vast access to land and natural resources, such as water, which may compete with other land uses (WRI 2003).

Often the large-scale impacts of mining occur indirectly, from projects such as road-building and the subsequent colonisation. One of the major concerns about mining is the displacement of local residents in order to make way for the development of mining industries. This seriously threatens the traditional livelihoods of the local people. Even when mineral development results in national economic growth, the benefits are not always shared equitably, and the local communities who are closest to the source of mineral development often suffer the most (WRI 2003).

Article 9 of the Chinese constitution states that the government owns all of the nation's resources. To the Chinese authorities, these resources are assets of the state that are available for them to exploit whenever they choose. Mining may be able to provide jobs in an otherwise economically marginal area, but there are often restrictions. In Tibet, as a result of the implementation of Chinese policy on a local level, these jobs are being awarded to non-Tibetans, at the expense of the local Tibetans. The conditions for employment opportunities favour skilled Chinese immigrants, and the Tibetans are often unable to compete. This bias encourages even more Chinese migrants to settle in Tibet, and exacerbates the socio-economic marginalisation of the local Tibetans.


A deposit being mined in Machu, Gansu province.

Moreover, the increasing number of Chinese immigrants settling in Tibetan areas is putting pressure on the environment, and unpredictable stress on its carrying capacity. This results in the further shrinking of arable land, loss of wildlife biodiversity, and increased exploitation of natural resources, including forest wealth.

In China's eyes, the extraction of resources is seen not as exploitation of underdeveloped areas for the benefit of wealthier areas, but as the essence of development for these remote, pastoral, nomadic areas. The authorities, at provincial, prefectural and county levels, enthusiastically promote mining and see little reason to propose caution on environmental or social grounds. On the contrary, they have vested interests in extracting the resources as quickly and cheaply as possible. Until now, there has been no involvement of local people in the decision-making process, and the affected regions are largely beyond any effective policing by environment agencies or local authorities.

Foreign investment and the neglect of local stakeholders

China hopes to accelerate its gold production by 2010 by utilising large-scale, capital-intensive technologies, in association with foreign partners who are familiar with such processes. Foreign partners are essential, but they are wary of China's reputation. Red tape, political interference, lack of infrastructure and the sovereign risk associated with China's national policies and stability problems have made China the second riskiest country to invest in, according to ratings by Australian gold mining companies. China's advantage, however, lies in the low risk of local communities staking any land claims over mining territory, which only reflects the powerlessness of local stakeholders to voice concerns. China also was rated as having a very low risk of strikes, or disruption to production by workers, which reduced its overall risk rating (Roberts 1994).

On account of this generally high investment risk, none of the largest gold producers have yet invested in China. The smaller gold corporations, which are actively mining gold in Tibet, aim to extract the recoverable gold quickly, without making any major investments in roads, railways, schools or health centres for the local workforce, who are trained and employed by the mining company. Under these conditions, the local stakeholder communities receive very few benefits, but have to cope with all of the long-term detriment and costs.

CONCLUSION AND RECOMMENDATIONS

Under China's Western Development Program (*Xibu Da Kaifa)*, the development of Tibet into the "world's largest eco-environmental protection base" and "strengthening construction of the ecological environment" is listed as one of six "important strategic points" proposed by the "TAR" government. In this, a strong convergence can be found between Chinese policy

and His Holiness's five-point peace plan, which proposes turning Tibet into a zone of peace and environmental protection. The Yangtze River flood of 1998 clearly demonstrated how environmental disturbances on the Tibetan Plateau can have drastic impacts on China's lowlands. However, another one of the six "important strategic points" is to "speed up the pace of prospecting and developing important mineral resources". It remains to be seen how China will reconcile these contradictions in its policies for development in Tibet.

China today faces a big challenge and needs to take a tough decision on whether it is serious about protecting the environment. A cost benefit analysis of natural resource exploitation on the Tibetan Plateau needs to be seriously examined. The fact that the fragile, high mountain ecosystem of the Tibetan Plateau has a far-reaching ecological impact, both on China and beyond, presents a very strong argument against a development model based on resource exploitation – particularly in light of China's consistent failure to implement protective regulations.

When the Shetongmon begins operation, scheduled for 2010, the Brahmaputra river will be polluted by the release of mine waste and tailings, disturbing the ecosystem of the rivers and affecting the many populations that live downstream.

Ideally, there needs to be moratorium on any kind of natural resource exploitation on the Tibetan Plateau, unless an extensive cost benefit analysis proves it to be of overall benefit. This is not really a matter of saying 'no' or 'yes' to development, but about understanding the long-term impacts and deeper, complex environmental implications of undermining this high mountain ecosystem.

It seems that both China and multinational mining companies are intent on exploiting Tibet's natural resources on an unprecedented scale for this region. The Tibetan Plateau is not only a fragile mountain ecosystem, it is also a disputed land that is inhabited by an ethnic minority nationality. Therefore, there is bound to be close scrutiny and strong public opinion on any major natural resource exploitation projects that involve multinational companies.

The Guidelines for International Development Projects and Sustainable Development in Tibet, provided in full at the end of this report, are intentionally vague on the issue of large commercial projects, such as mining and dams, because they fully support the idea of establishing the Tibetan Plateau as a "zone of peace and environmental protection". However, in deference to current realities, it is hoped that any natural resource exploitation projects in Tibet will take heed of the issues raised in the guidelines and of the following recommendations for a new approach to natural resource management.

A new approach to natural resource management

Tibet, in every field of development, is still lagging far behind the provinces of mainland China. Development in the form of mineral exploitation is not benefiting the Tibetan community at all. These non-renewable, valuable and finite resources flow out of Tibet in the same direction as the profits – directly into Chinese national revenue, and into Chinese and foreign companies. The local Tibetans are seldom trained or employed in the mining workforce. Local Tibetans only stand to gain looted, wasted and polluted landscapes from the mining business, as well as further marginalisation as a consequence of the non-Tibetan settlers. Royalties are paid to Beijing, but not to the local communities or counties where the damage occurs, and who bear the cost of remediation once the mining is complete.

Water pollution caused by mining is extremely hazardous in Tibet, as are the many other ecological impacts of this industry. As the source of several major rivers, supplying water to hundreds of millions of people all over Asia, the protection of the Tibetan Plateau should be a collective concern for many downstream countries, including China, who depends greatly on the environmental flows of the Yangtze, Mekong and Yellow Rivers. Poisonous substances, both from the mined rock itself and from the chemicals used for the extraction of minerals, endanger the well-being of vast numbers of people once they reach these rivers or their tributaries.

With regard to the numerous social and environmental impacts of mining, China has a vital responsibility to treat the resources in a way that cares for both people and nature. To achieve this, the central authorities must examine best practices that have already been established across the world (Satterthwaite and Hurvitz 2005). In today's world, natural resource management (NRM) has entered a new phase. There is now a strong, worldwide awareness that many natural resources are finite. Unfortunately, they have often been squandered, and their extraction and use have been wasteful, polluting, and harmful to humans and other species.

Modern NRM is respectful of the local communities in whose domain the natural resources are found, and

offers them new roles as stewards and guardians, with intellectual and property rights to the resources. This new NRM approach positively involves local communities in decision-making. This process starts with actively seeking to understand their customary, indigenous knowledge, and including it in the databases that facilitate resource management decisions.

Mining companies across the world are increasingly adopting this NRM practice. The new NRM approach is inclusive, and takes into account the long-term consequences of mining, rather than focusing narrowly on the technical extractability of specific resources and measuring profitability only in financial terms (ICMM 2006). This practice also prioritises biodiversity conservation, habitat preservation, sustainable livelihoods for communities that are directly impacted by extraction, and a full calculation of the costs of river pollution and release of climate changing gases that are caused by resource extraction. Modern ecological economics make it possible to accurately calculate the total loss of amenity, natural beauty and world heritage when the construction of a hydropower dam dominates an exquisitely beautiful landscape, similar to the dam recently proposed by China's hydropower engineers at Mugoe Tso lake, in eastern Tibet.

Although the new NRM approach has been adopted globally, it has made limited progress in China. If China were to adopt a more holistic approach to resource extraction and management, wiser development decisions could be made. Despite its high level of civilisation, China lags behind the developed world in many key areas. If it is to attain its goal of being recognised as equal to the most developed nations, it must be seen to actively adopt this new NRM practice.

The Tibetan people, who have so far had no say in the exploitation of Tibet's valuable resources, welcome the new NRM concept, and hope that it will lead to a genuine change in natural resource management. A genuine change means not only coming to different decisions, but introducing a different way of making those decisions. The local communities must be involved in the decision-making process, have their views respected and see some benefits from the mining profits. This change requires a move away from centralised, top-down decision-making to an inclusive process that honours local knowledge, which is the key to true sustainability.

The new railway, arrival of foreign mining investors, and creation of state-owned mining giants are all pressing reasons to propose a new approach, such as NRM, to mining in Tibet. This will be essential in ensuring that China's new commitment to sustainable development is genuinely sustainable. The only way to achieve this is through co-management, in which the local communities have a real say in how Tibet's natural resources are treated.

“Ancient cultures which have adapted to their natural surroundings can offer special insights on structuring human societies to exist in balance with the environment. For example, Tibetans are uniquely familiar with life on the Himalayan Plateau. This has evolved into a long history of civilisation that took care not to overwhelm and destroy its fragile ecosystem.”

His Holiness the XIVth Dalai Lama
(Reprinted from DIIR, Tibet 2000)

CHAPTER SEVEN

TOURISM AND TIBETAN CULTURE

The number of Chinese tourists coming to Central Tibet, which China calls the "Tibet Autonomous Region" ("TAR"), and to other areas of Tibet, continues to rise rapidly, and is likely to total four million in 2007. With a booming tourism industry and rapid infrastructure development, the "roof of the world" is fast becoming a must-visit destination for people from all over the world.

This chapter begins by looking into the origins of tourism in Tibet and its development over time. It discusses some of the challenges that tourism poses to the Tibetan people and the environment of Tibet. In addition, it highlights how China has influenced the tourism industry, offers some insight into how tourism can be developed to benefit the local Tibetan people while conserving the environment, and presents a case study of the impacts of mass tourism and the importance of tourism for Tibet's cultural survival. Finally, it proposes some efficient strategies for improving the current weaknesses in the tourism industry.

ORIGINS OF TOURISM IN TIBET

Tourism is not new to Tibetans. Tibetans have long been mobile and often undertake lengthy trips to distant places for spiritual purification and to earn merit. Today, pilgrimage is a specialised branch of the global tourism industry, but in Tibet pilgrimage has a long history. It is the subject of many guidebooks written over the centuries and is undertaken by many Tibetans, especially in the colder months when pastoral nomads and crop farmers have little work to do. In Tibetan, pilgrimage guidebooks are called *gnas-yig* and *lam-yig,* or guides to the path. In recent years, these have been studied in depth by fascinated Western scholars (Filibeck 1990: 1–10; Buffetrille 1994a: 2–22).

The Tibetan tradition of pilgrimage describes the traverse of the Tibetan landscape as an external analogue of the traverse of the mind, for the purposes of inner transformation. Pilgrimages were deliberately long and arduous in order to loosen the grip of habit and open the self to a new understanding. To purify the cluttered mind, the emphasis was on simplicity rather than comfort, piety rather than consumption, patience rather than speed, and a collective acceptance of hardship en route rather than a leisurely observance of the exotic. The point of a pilgrimage was to collapse distinctions between inner and outer, person and holy place, self and other. A huge literature has been written about the journeys of inspirational yogis around the vast Tibetan Plateau. These *rnamthar* (biographies) and *mgur* (songs) give a voice to the pilgrims' spontaneously generated inner experiences in specific places. These texts remain among the most popular Tibetan writings. Tibetans love these songs, the stories of the saints who spontaneously produced them, and the places they evoke and sanctify. These places are still popular destinations for pilgrims today.

Archaeological evidence suggests that Tibetan civilisation began in the arid far west of Tibet (Bellezza 2001). Thousands of years ago, what is now the Jhangthang alpine desert was populated by farmers in settled villages, with irrigation channels for their crops. The most sacred pilgrimage places are in this arid region, at the holy mountain of Gang Rinpoche (known to Indian pilgrims as Mount Kailash) and its neighbouring lake, Tso Mapham (also known as Manasarovar). As the climate gradually changed, the Tibetan population shifted east; but to this day many people still make the pilgrimage to these holiest of places, walking round and round the mountain. This is a difficult circuit that even the fittest of pilgrims take two days to complete. This introduces something of the Tibetan tradition of pilgrimage – a profound desire for self-transformation.

DEVELOPMENT OF TOURISM IN TIBET

The origins of international travel to Tibet date back several hundreds of years, when scholars and monks were the most frequent travelers, in pursuit of spiritual enlightenment. In fact, religion was a central issue in the first direct encounters between Westerners and Tibetans. The first Europeans to set foot in Tibet were Christian missionaries, such as Andrade (1580–1643) and Desideri (1684–1733) (Dodin and Rather 2001: 392). Some other early international visitors included Alexander Kinloch (1892), Hamilton Bower (1894), C.G. Rawling (1905), Pyotr Kozloff (1908) and Sven Hedin (1909), all of whom marvelled at the natural beauty and abundance of wildlife on the plateau (DIIR 2003: 7). This extraordinary richness and biodiversity was in no small part a result of the Tibetans' traditional way of life, which was characterised

by self-sufficiency, isolation from the industrialising world and a desire to live in harmony with nature. Until recently, this limited use of natural resources by the Tibetan people had helped to keep the beauty of the landscape intact.

In addition to the plateau's ecological appeal, there are many unique cultural attractions for tourists in Tibet. Tourists are often captivated by the traditional villages and towns, and especially by the many religious and historic monuments – the mostly Buddhist monasteries, temples and palaces which have been the focus of Tibetan culture for well over 1,000 years. Often these cultural sites are situated amidst natural attractions such as mountain vistas and opportunities for trekking, mountaineering and sightseeing. Visitors are also drawn to Tibet by the desire to connect with the Tibetan people and to experience the authentic Tibetan culture and way of life.

Despite the fact that people have been travelling to the plateau intermittently for centuries, until the middle of the 20th century Tibet was largely untouched and unexplored by both mainstream international and domestic tourism markets. In fact, it was not until 1980 that the "TAR" was first opened to tourists, reaching a total of 43,000 foreign arrivals in 1987 (TSB 2005: TSY, table 14–5). These modest numbers were due to restrictive conditions, such as the requirement to obtain a special permit in addition to a Chinese visa, and the requirement that tourists come only in groups, escorted at all times by an official guide – all at considerable expense to the tourist. These legacies of a command economy were slow to disappear from Tibet, especially central Tibet. In other areas designated by China as Tibetan Autonomous Prefectures (TAP) and Counties – the provinces of Qinghai, Gansu, Sichuan and Yunnan – restrictions were not so severe.

The tourism industry has not been constant, mainly because of a series of demonstrations in Lhasa and other parts of Tibet. Tourism dropped sharply in the late 1980s and then picked up slightly to about 10,000 foreign arrivals in 1990 (TSB 2005: TSY, table 14-5). In 1987, tourism development was declared to be a desirable economic activity for the purpose of earning foreign exchange, and for the first time it was included in the national plan for social and economic development (Zhang 1995). With more than 100,000 foreign tourists visiting the "TAR" between 1990-1996, bringing in over US $48 million, tourism in the "TAR" quickly became one of the pillar industries of the local economy (WTN 5 May 1997).

After 1997, the total number of tourists continued to increase annually, mainly due to the rising interest among Chinese people to visit the "Land of Snow". While the number of Chinese tourists was about three times the number of international visitors in 1997, the ratio changed dramatically to 11:1 in 2005 (see figure 7.1).

The number of foreign visitors also shows a general upward trend, which was broken only in 2003. The decline of foreign tourists in that year was primarily because of the outbreak of Severe Acute Respiratory Syndrome (SARS) in some provinces and cities of China. It resulted in a huge loss of foreign exchange earnings: Tibet's revenue from foreign tourists decreased by about 65 per cent (about US $33 mn) in that year alone. Although the Tibetan areas did not report any SARS cases, the State Tourism Administration decreed that foreign tourists would not be allowed to visit the Himalayan territory of Tibet (WTN May 2003).

Tourism in Tibet revived as soon as the outbreak was under control. A new tourism policy was implemented, and the tourism sector was able to rebound in the proceeding years. Some restrictions on overseas tourists to Tibet, such as the requirement for a confirmation letter for tourists from Hong Kong and Macao, and the requirement for foreign visitors to be in a group of at least five people, were eased (WTN Jan 2003). Tourism was gradually evolving from a command

Figure 7.1 Number of tourists and foreign exchange earnings between 1997 and 2005 in the "TAR"

Data source: TSB 2005: TSY, Table 14-5 and China Tibet Information Centre 2006.
Note: International tourists include foreigners, overseas Chinese and tourists from Hong Kong, Taiwan and Macao.

system to a market system, as was already happening in the rest of China.

Since then, tourism has grown rapidly in Tibet. Given the latest attempts to encourage tourists to visit the Tibetan Plateau – such as the opening of the Gormo-Lhasa railway and intensive advertisement campaigns – the figures can only be expected to keep rising in the future.

TOURIST INTEREST IN CONTEMPORARY TIBET

International interest in Tibet was partly stimulated by the many books by adventurers who had slipped in to the so-called "forbidden land" in the 19th century. Today, with His Holiness the Dalai Lama and other Tibetan Buddhist teachers known throughout the world, international awareness of Tibet is high. From a narrowly commercial viewpoint, this makes Tibet a "brand" which enjoys high recognition and respect, with great potential as a tourist destination.

In China, curiosity about Tibet has also grown. Many magazines and TV documentaries show Tibet as a desirable and special place to visit, and consequently people are overcoming their fear of travelling there. The completion of the railway line to Lhasa in 2006, linking central Tibet with all the major Chinese cities, provides a convenient and affordable way for Chinese to visit Tibet.

China seeks to lure international visitor traffic by declaring the fictional "Shangri-la", created in the 1930s by James Hilton in his novel *Lost Horizon*, to be a literal destination in eastern Tibet. Many tour companies advertise trips named "Destination Shangri-la" or "Exotic Tibet", where they take large groups of tourists to places within the Tibetan areas of the "TAR", Sichuan, Qinghai, Gansu and Yunnan. These advertisements mirror the phrases used by the Chinese Government in their establishment of the so-called "Shangri-la Eco-tourism Area" that overlaps parts of Sichuan, Yunnan and the "TAR". Ironically, within the "Shangri-la Eco-tourism Area", China seems to measure success by the development of roads and airports (Li 2003). The exotic image of Tibet that has captured the Western imagination since the first reports of European explorers is now being exploited by the Chinese tourism industry (Hansen 2001: 100-106).

Potentially, this high level of interest in Tibet could be skilfully managed to bring benefits to all. Tourism can be designed to spread economic benefits beyond towns and cities to remote rural areas, places where communities are poor and have few opportunities to earn extra income. The concept of poverty alleviation through tourism, ecotourism and pilgrimage tourism is well developed, and around the world there are many success stories. Ideas for how to do this in Tibet are presented in a following section. Against this potential for beneficial outcomes, we should assess what is currently happening.

CENTRAL TIBET AS A MARKET FOR PACKAGE TOURISM

Over the last twenty-five years, tourism has become one of China's most important development goals on the Tibetan Plateau. Successive Five-Year Plans have cited tourism as a "pillar industry" for uplifting the Tibetan economy. As modern China continues to move toward a market-based economy, service industries are becoming more important, especially in Tibet where there has been limited industrialisation. In this way tourism has the potential to become a viable economic alternative to production-oriented industries. It could support the traditional Tibetan lifestyle, as well as provide employment for large number of Tibetans and non-Tibetans.

China's desire to develop tourism on the plateau has manifested itself in projects such as the Gormo-Lhasa Railway Project (the new portion of the Beijing-Lhasa Railway), and the reconstruction of several monasteries which were destroyed before and during the Cultural Revolution (Buckley 2002). In fact, 1999 was even labeled as "The Year of Ecotourism" in China, which demonstrates the government's zeal in promoting tourism as a leading catalyst for development.

Tourism can be designed to spread economic benefits beyond towns and cities to remote rural areas, places where communities are poor and have few opportunities to earn extra income.

China already speaks of Tibet as a "rail economy" (*Xinhua* 10 Dec, 2006), following the multiple impacts of the first reliable, cheap, all-weather, all-year transport link between Tibet and the major cities of China. To what extent can a single rail track transform the Tibetan economy? Will the rail line facilitate comparative advantage, enabling Tibet's economic takeoff by giving Tibetan entrepreneurs access to China's markets? For example, there is a high demand in China for Tibetan dairy and animal products, and dairy consumption is rising fast. According to economic theory, Tibet should be able to lift its rural industries, and the incomes of poor nomads, if it has a rapid and reliable link to distant urban markets.

Until 2006, there was not a single route out of Tibet that was timely and reliable enough for perishable goods to get to market. Comparative advantage, a key concept of neoliberal economics, suggests that Tibet could significantly benefit from the new railway.

In the railway's first year of operation, the evidence suggests that market access opportunities for the rural population were limited to the few producers who live close to the railway line, which traverses the least populated quarter of Tibet. A much larger impact than these new export opportunities has been the dramatic growth of services related to tourism, primarily concentrated in Lhasa.

Official figures show that tourist visits have leapt dramatically. Some 2.45 million tourists visited Tibet in 2006, which was a 36.1 per cent increase on the previous year. Revenue from tourism was approximately 2.7 billion yuan (US $338 mn), an increase of 39.5 per cent on the previous year, and accounted for 9.3 per cent of the GDP of the "TAR". To accommodate this explosive growth, authorities have decided to expand the local tourism industry further and are preparing to receive 4 million tourists in 2007 (*People's Daily* Jan 2007). According to Zhang Qingli, party secretary of the "TAR", Tibet's tourism industry is "developing well".

If the official projections bear out, tourist arrivals to Lhasa will jump from 1.8 million in 2005, before rail traffic began, to 4 million in 2007, when the railway will have completed its first full year of service.

This growth is not only due to the railway line, which has the capacity to convey large numbers of tourists to Lhasa at highly subsidized prices, but also to the airlines slashing their prices in response. A regular train service has forced airline companies to offer discounts for the first time after years of monopoly on the route. For example, some air fares from Chengdu (the capital of Sichuan province) to Tibet have dropped by as much as 70 per cent, and are now almost 250 yuan (US $31) cheaper than a sleeper-car train ticket (*Xinhua* 6 Dec, 2006). According to statistics released by the airport authority, Lhasa's Gonggar Airport handled over a million passengers in 2006, up 17 per cent from 2005. This increase is mainly attributed to booming tourism, according to a local aviation official. If the official projections bear out, tourist arrivals to Lhasa will jump from 1.8 million in 2005, the last full year before rail traffic began, to 4 million in 2007, when the railway will have completed its first full year of service. This is an enormous 122 per cent increase in two years.

Chinese entrepreneurs are rushing to occupy the new business opportunities created by this surge in tourism. For example, a group of businessmen from distant Wenzhou quickly spotted a new real estate boom: The immense opportunities brought by the railway have triggered an investment craze among business people from inland areas. Private investment into Tibet soared to 2.8 billion yuan (US $350 mn) in the first three quarters, compared with 5 billion yuan (US $625 mn) throughout the five-year period between 2001 and 2005. By the end of 2006, Tibet was to witness the inauguration of its largest shopping centre in Lhasa, a 75 million yuan (US $9.4 mn) project of five businessmen who come from Wenzhou, which is a booming manufacturing centre in the eastern Zhejiang province (*Xinhua* 10 Dec, 2006).

IMPACTS OF TOURISM IN TIBET

Despite its financial benefits, the tourism industry is too unreliable and unstable to base a national economy on. It is greatly influenced by uncontrollable factors, such as geopolitics, weather, health scares and international currency fluctuations. After the 9/11 terror attacks in the USA, it took several years before many Americans felt they could travel overseas again. Health scares are also powerful deterrents to travel. China has a long history of perceiving the Tibetan Plateau as a source of disease. In former days, the fear was of the plague; now it is of avian influenza.

The most basic thing to realise about modern tourism is that, within local communities, people often suffer as much as they benefit. Tourism also increases the potential for environmental degradation. However, if tourism is based on a credible environmental plan, consults with responsible NGOs, and emphasises the involvement of the local people, it can be highly beneficial. For these reasons it is pivotal that any efforts to further develop tourism be well thought out and carefully executed according to these principles.

Unfortunately, there is little evidence to suggest that China will cooperate well with NGOs that are experienced in designing low impact, village-based tourism. Among these are the Care and Share Foundation and the World Wildlife Fund (Studley 1999a). The Nature Conservancy has also been involved in planning tourism projects with Tibetans. These and other NGOs have experience in designing tourism in ways that minimise harmful impacts and maximise benefits to local host communities.

This is a different model from how most of China's protected areas are currently managed. China's rural parks

and wildlife reserves are usually neglected because they are seldom close to major transport corridors and no one wants to work far from urban business opportunities. Staffing is done on a central allocation basis, so employees are often poorly motivated and do not work conscientiously. This system of management is not effective in truly protecting nature.

There is a widespread perception that Tibet is so cold that it can only be a summer destination, but this mindset is slowly changing. Compared to the tourist seasons in some other countries, Tibet enjoys a relatively long peak season, lasting from April to October, but winter is still a very slow period (see figure 7.2). The seasonal nature of the tourism industry is likely to influence Tibet's economic, social and environmental status, either negatively or positively depending on how it is developed. If tourism development depends on considerable investment in

s that remain empty for half the year, then tour operators will charge high prices in summer to make up for idle time. However, if tourists can be motivated to be more like Tibetan pilgrims, and travel throughout the year, then tourism need not be dependent on overcharging in the summer and high capital investment.

Notwithstanding the potential benefits tourism has to offer Tibet – potentially providing jobs and career opportunities – it faces numerous challenges. If unregulated, it could be highly detrimental to the Tibetan people and the plateau's ecosystem. Table 7.1 illustrates the conflicting positive and negative impacts that a tourist economy can have.

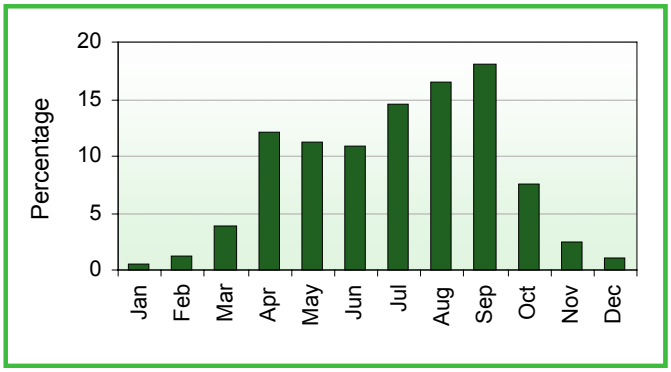
This mix of impacts has been experienced by village communities all over the world, including many areas of the Himalayas, outside of China, that are culturally Tibetan. Inside Tibet, as tourism begins to spread, the negative impacts need not be inevitable as long as care is taken to get the balance right.

Economic impacts

One of the most attractive elements of tourism is that it is often seen as a job creator. It even has the potential to spread employment opportunities to remote areas that, for tourists, are attractive because of their natural beauty and historic role as places of pilgrimage.

However, on the downside, tourism does not guarantee equal employment opportunities for all. Within Tibet, tourism has been part of a development effort for development's sake, and not part of a holistic plan to improve the local standards of living. Generally speaking, the missing element in Tibetan development has been

Figure 7.2 Seasonal flow of tourists in the "TAR"



Adapted from: Li Lihua and He Jingming 2002: 218.

the involvement of the Tibetan people in the local economy and administration. Tourism hospitality positions require somone with training. Even for the menial jobs, several years of schooling are necessary, and since China has not provided most Tibetans with even a primary level of education, very few are able to get jobs in the tourism sector. These jobs are almost always given to non-Tibetan immigrants, which only serves to further marginalise the Tibetans.

Tourism generates wealth, but does this wealth stay in Tibet? Tourist money can "leak" from an economy. Tourism in China is highly centralised, with high levels of government involvement; tourists often book transport and accommodation, or even an entire tour package, in advance by paying a tour operator based in a Chinese city. When money is paid through these channels, the tourist dollars never reach Tibet, except in small amounts for local services. Tibetan retailers and producers can also fail to benefit because foreigners often demand imported materials, such as cigarettes and pre-packaged food. Because these products come from outside suppliers rather than locals, profits are withheld from the local economies. In addition to these threats, tourist expenditure can cause local inflation. The prices of all products will inevitably go up if there are many tourists who are willing to pay higher prices. The products may then become out of reach for locals.

Cultural interpretation: Who speaks for Tibet?

A telling example of the social exclusion of Tibetans is the regulation of tourist guides. In trying to draw their own picture of Tibetan history, the Chinese authorities have created obstacles to Tibetans working in tourism. Skilled Tibetan guides have many restraints imposed on their work. For the 2006 season alone, 70 new migrant tourist guides were sent from China under its so-called "Guides from Inland to Aid Tibet" (*Tibetan Review* May 2006). These Chinese

Table 7.1 Potential positive and negative impacts of tourism

Possible Impacts on	Positively, tourism can ...	Negatively, tourism can ...
Livelihood goals	... support livelihood goals such as economic security, cultural life, and health, e.g. by increasing income of workers and entrepreneurs, contributing to cultural restoration, and catalysing improvements in hygiene.	... undermine economic security, self-determination, and health, e.g. by creating dependency on a volatile industry, creating local inflation, disempowering residents from decision-making, and exacerbating the spread of disease.
Livelihood activities	... expand economic options, e.g. by creating employment and small business options for the unskilled and semi-skilled; by complementing other activities, such as providing earnings in agricultural lean season; or by development of transferable skills.	... conflict with other activities, e.g. by constraints on animal grazing, removal of land and natural resources from agricultural production, conflicts with busy agricultural seasons, increased damage to crops and livestock, or relocation of locals for new projects.
Capital assets	... build up assets – natural, physical, financial, human, and social; e.g. enhanced physical assets if earnings are invested in productive capital or infrastructure; or enhanced natural capital if sustainability of natural resource management is improved.	... erode assets; e.g. lost access to natural resources if local people are excluded from tourist areas; eroded social capital if conflict over tourism undermines social and reciprocal relations; or eroded physical assets by over-burdening physical infrastructure (sewage, roads, water supply).
Policy and institutional environment	... improve the residents' ability to influence policy, e.g. by expanding local markets or focusing policy-makers' attention on marginal areas. Participation in tourism planning and enterprises can give residents new status, information and skills to deal with outsiders.	... exacerbate policy-making, e.g. by diverting attention, resources and infrastructure investment to tourism from other necessary local activities. Also, improved transport access and markets can undermine local production.
Long-term livelihood priorities	... 'fit' with people's underlying long-term priorities, e.g. to diversify against risk, or build buffers against drought by developing an additional source of income which is not subject to drought.	... create threats to long-term security, increase economic vulnerability due to dependence on volatile tourism, or drive the extinction of endangered animals due to new disturbances.

Adapted from: Caroline Ashley, Charlotte Boyd and Harrold Goodwin, ODI 2000.

guides are often graduates from college programmes that teach an officially approved version of Tibetan history and culture, so that questions from tourists are answered in accordance with Chinese propaganda. The growing numbers of Chinese guides are displacing the Tibetan guides who can speak in depth – from personal experience – of Tibetan culture.

In 2003, 100 Chinese tour guides were brought in to promote an image of Tibet that the Chinese government consider acceptable. Meanwhile, the Tibetan tour guides, some of whom had learned English in India, had problems getting work because the Chinese feared that they would present a conflicting version of Tibetan history (TCHRD 2003; Saunders 2003). Three people who worked in the "TAR" tourism industry were interviewed by the Tibet Information Network and revealed some of the problems that Tibetans are forced to deal with under Chinese control (TIN Oct 2003). One interviewee cited uncertainty and ever-changing policies as the primary problems that a Tibetan tour guide faces. The Guide Company, established in 2000, is a part of the Chinese government that organises tours for travel agencies, and also pays and gives licenses to tour guides. Tour guides are put into three categories: A, B and C. Category A guides are mostly Chinese and receive the greatest pay and benefits. Generally, this respondent said, things are much easier for Chinese guides because the system is set up in their favour. Another interviewee stated that the Tibetans who learnt English in India used to be able to get around the bureaucracy, but not since the Guide Company was established. At

one point, the 60 or so Tibetan tour operators who were educated in exile had their licenses cancelled by the Chinese authorities (*Tibetan Review* June 1997). These testimonies outline the inequalities of the tourism industry in the "TAR". Tibetans are either too undereducated to be a meaningful part of the tourist economy, or they are marginalised because they received education and training in exile.

If China mistrusts Tibetans who have learned English in India, the logical alternative would be to invest in teaching English to Tibetans in Tibet. However, this option has not been considered. Access to English is seen as access to modernity, and it is effectively reserved for the best-connected Chinese in the larger towns. The bilingual education policy adopted by the Chinese government leaves Tibetans with few options. One of the critical points of this policy is that Tibetans are supposed to attain fluency in Chinese before they are allowed to begin learning any other languages. Chinese is the official language of bureaucracy, administration and tourism in Tibet, but few Tibetans are fluent in it. Contracts, regulations, permits, banking loans and deposits are all conducted in Chinese. This heavily disadvantages any Tibetan entrepreneurs in the tourism market. Tibetans are seldom eligible for business loans because they lack documented evidence, in Chinese, of their economic track record and credit worthiness.

A lack of proficiency in Chinese has been the reason given to relocate Han Chinese guides into Tibet. Hence, the inadequate education system in Tibet is part of the dilemma with tourism and is partly responsible for the economic exclusion of Tibetans (Bass 1998: 251-261).

The exclusion of Tibetans as guides means that bright young Tibetans lack this career opportunity and are not given training. The human capital of Tibet is not receiving investment, and the tourists are often frustrated that no one can adequately explain sites that they are visiting. But even more than that, this monopoly raises fundamental and disturbing questions about who is speaking for Tibet. It makes subalterns of Tibetans. Subalterns may not speak – they are spoken for. They cannot occupy subject positions that recognise their ability and right to speak for their own lives and culture. The whole process of cultural translation is in the hands of the non-Tibetans in Tibet. The Chinese present their official interpretation of Tibet to domestic and international visitors, while the Tibetans look on, in silence, with only incidental opportunities to speak for themselves.

Socio-cultural impacts

Tourism can affect the local culture, lifestyle, society and self-image. Communities in other developing regions, such as Latin America and Africa, have actually found their local economies damaged by the rapid and poorly planned development of a tourist economy. They also faced the unanticipated alterations in lifestyle and diet that accompanied it. In Ladakh, Northern India, after the rise of tourism and modern goods, many local people began to eat the newly imported food, took on foreign habits and rejected their former lifestyle (Norberg-Hodge 1994: 81-100).

The "inferiority complex" that if often faced by the local hosts can be one of the most negative impacts of tourism. John Studley reported the following:

> Tourism often results in stratification between the rich and poor, tourist and local, that is fuelled by the new consumer culture. Locals invariably begin to regard themselves as 'poor.' When a society loses its self-reliance and depends on foreign wages, necessities like food and shelter become unaffordable. The globalisation of the economy transforms the local and self-sufficient society that relies on farming and herding, into a consumer-oriented and dependent one. Convinced that internationally manufactured goods are superior, they reject their own, locally produced goods and try to make ends meet in the seasonal monetary economy. They lack wealth and status in the new tourist society and often descend into self-rejection (Studley 1999a: 4).

The human capital of Tibet is not receiving investment, and the tourists are often frustrated that no one can adequately explain sites that they are visiting.

There is nothing innately superior about internationally manufactured goods, nor is the glamorous image of tourists necessarily accurate. The people who live in the tourist areas never see tourists working, and sometimes assume that they do not work at all. Seeing affluent travellers who live a life of seemingly perpetual recreation and relaxation is a powerful and misleading sight for anyone.

Nonetheless, authors like Adams (1995) and Oakes (1998) describe how Tibetans, and other minority ethnicities in China, have managed to intelligently negotiate a place in the modern world that does not require a loss of culture. Michaud (1993), in his cases from Ladakh and Thailand, illustrates that there are some possibilities for villagers to overcome their objectification at the hands of this new political economy.

Box 7.1 Tibetan monks encounter with Chinese tourists

I sat with two Chinese women next to some monks when I came to the temple to light butter lamps. These two very clean-cut Chinese women with rosaries in their hands have studied Buddhism for many years in a monastery of the Nyingma school in Kham. One of them had studied at the Serthar monastery for 7 years and was recently expelled from the monastery by the authorities. Their self-built little hut had been forcibly pulled down.

They are very devoted and would circumambulate the inner circle of the Jokhang temple one hundred times each day. I know them from the temple and we all know Nyima well. Each time before entering the temple, we would sit by his ticket stall chatting and drinking sweet tea together.

Perhaps curious about seeing monks and women together, or perhaps curious about seeing monks and Chinese women chatting freely, the novelty-hunting lenses of the two men discretely moved toward them. Seeing them, Nyima laughed and said jokingly: "Do not take photos, there are secrets here and photos are not allowed."

"What secret? Let's have some photos taken of it," said the two men. As if having photos taken by them is a great honour. We ignored them and continued with our conversation about a lake being under the temple in the past.

After a while, we had forgotten about the two men. In fact, they had been creeping about behind us taking photographs the whole time. Seeing this, Phurbu was irritated and asked them in his broken Chinese not to take photos. Pointing to the Tibetan woman who was talking to Phurbu earlier, one of the men, thinking the Tibetan woman would not understand Chinese, said: "We are taking photos of her, not you."

Phurbu was even more angry and said to him: "No photos, she is my sister."

Then the other man was furious. "Why can't we take photos of you? What right have you got to stop us from taking photos," he said loudly, with his face red.

Right?! Hearing this word made me unhappy and I said: "What right have you got to take photos?"

"This is a public place, don't you know that,'' he argued back.

"This is not a public place. This is a temple," I raised my voice, "Even if this is what you regard as a public place, we are not public property or exhibits. What right? Have you heard of image right?" "We have right to take photos. We have the right." The two men waved their cameras and punched their fists in the air.

"Enough of you," said Phurbu and he stood up.

Standing up, "There are temple regulations," said Nyima.

"What right have you got," I said and also stood up.

The two Chinese women stood up too. They did not say a thing but politely asked the two men to leave. It was like expelling these two Chinese from the temple.

Of course, they would not be expelled. Just that it felt like it. These two men seem to think they have the right. Perhaps this feeling is coming from their profession or it is a feeling coming from deep within. Surely, travelling in the land of one of the 56 minorities you have the right to do what you want. Who can stop you?

Excerpted from Woeser 2003

In keeping with the idea of cultural preservation, Article Four of the Chinese Constitution states: "The people of all nationalities have the freedom to use and develop their own spoken and written languages, and to preserve or reform their own ways and customs". Despite this assertion, Tibetan minorities have been faced with great obstacles in preserving their own language and customs. This becomes apparent in the case of the tourism industry. The recent large-scale development of tourism, renovation of world heritage sites and construction of the world's highest railway have put Tibetan culture at risk.

The Potala Palace in Lhasa, former winter palace of the Dalai Lama and a World Heritage Site since 1994, holds priceless objects and relics of Tibetan Buddhism. However, today it is just an empty museum devoid of any living spiritual presence. China uses the Potala Palace purely as a tourist attraction; there is even an amusement park set up beside it. Lhasa, the primary tourist destination inside Tibet, has been almost completely converted into a Chinese city in order to make the soldiers and Han Chinese settlers feel at home. Lhasa is now overrun with Chinese blockhouse apartments, karaoke bars and brothels –

Buckley (2002:107-120) ironically regarded it China's own contribution to Tibetan culture.

The United Nations has urged the Chinese government to maintain the Potala Palace and to develop the area around it with greater cultural sensitivity. However, the resulting "facelift" in the autumn of 2004 consisted mainly of superficial changes to buildings, using a modern Chinese style (TIN 2004), and was limited to central Lhasa only. "The question remains though, whether similar initiatives will be taken in other parts of the 'TAR', such as Shigatse or Tsetang, where the recent flurry of building activity is unabashedly in a grandiose modern Chinese style" (TIN 2004). Furthermore, the need for culturally sensitive development is important for places outside the "TAR" as well, such as in parts of the Shangri-la Ecotourism Area.

In another affront to the Tibetan people, the project to renovate central Lhasa did not involve any Tibetan contractors, but instead used imported Chinese migrant workers. On a tape smuggled out of Tibet in 2004, Tibetan workers expressed their grievances about the repairs done at the Potala Palace (*Voice of America* 2004). Han Chinese builders – with no knowledge of traditional Tibetan building techniques – were given the renovation contracts, which skilled Tibetan builders were not allowed to win. According to the Tibetan workers, the repairs were mishandled and are now threatening the Palace's structure. This example shows that Tibetan companies are prevented from business opportunities even in something as culturally specific as traditional Tibetan construction work.

In her first book, *Notes on Tibet*, Woeser, a noted Tibetan writer, raises concerns over the behaviour of Chinese tourists toward the native Tibetans (see box 7.1).

The influx of tourists into sacred religious sites, solely on the hunt for novelty, is now common in Tibet. Places where sacred and transformative religious dances used to be performed are now packed full of tourists, with no restrictions on noise levels or photography. The atmosphere at even the most sacred of temples is no longer quiet and solemn; some tourists, talking freely and pointing at items, even bump into pilgrims who are carrying sacred butter lamps (Wang Lixiong and Woeser 2005: 42). This disturbs both the monks, who are engaged in their religious practice, and pilgrims, who may have to exit the temple without having fulfilled their desire to make offerings, say prayers and purify their minds.

Environmental impacts

Apart from having economic effects, tourism can also present threats to the environment. In Tibet, the environmental impacts of tourism development have included deforestation, soil instability, traffic congestion, air pollution, trail degradation, garbage and litter, and human waste pollution.

According to the regional tourism plan for Tibet, prepared in 1990 by the UNDP and the WTO, the development of tourism could cause damage to the natural environment in four principal ways:

- Ecologically sensitive areas may be subjected to greater pressure by being opened up for tourist visits and activities.
- In less sensitive areas, the introduction of relatively large numbers of people on defined routes or at specific places (engaging in activities such as trekking and mountaineering) may cause a general degradation of the immediate environment, and generate large quantities of refuse and sanitation problems.
- The penetration of roads into previously inaccessible forest areas may encourage the establishment of settlements on slash-and-burn principles – the removal of vegetation for cultivated agriculture – or the commercial extraction of timber.
- Erosion could arise as a consequence of building operations and the construction of roads in mountainous areas of heavy rainfall.

The influx of tourists into sacred religious sites, solely on the hunt for novelty, is now common in Tibet. Places where sacred and transformative religious dances used to be performed are now full of tourists, with no restrictions on noise levels or photography.

The commercialisation of a famous hot spring by the Terdrom Tourism Company that resulted in massive trash and waste problems is one of many examples of the environmental degradation caused by tourism. The Terdrom Hot Spring is located in Meldro Gungkar County, about 150 kilometres east of Lhasa. Tibetans have considered it a sacred site for over 1,200 years, ever since Padmasambhava (Guru Rinpoche), the founder of the Nyingma School of Tibetan Buddhism, stayed in the area for years of retreat and meditation. According to legend, he once hurled his thunderbolt towards a mountain cliff,

A waste dump near Terdrom Hot Spring, in Meldro Gungkar County.
Photo by Eva-Maria Rieht

splitting it into two. This not only released the snowmelt to the farming land below, but shook the earth beneath, sending masses of bubbles to the surface which then formed the spring (Wang Lixiong and Woeser 2005).

While the spring had been protected for centuries due to its spiritual significance, in recent years the area around the holy spring has been trashed and polluted. A German tourist who recently visited the spring describes the present pollution and sanitary problems:

> The Terdrom Hot Springs are very much polluted by waste and the sanitation facilities were in a very bad condition when I visited there in spring 2005. The river that runs right next to the hot spring is polluted with garbage like plastics, car wheels, and a lot more. The women's toilet was full and the excrements were already flowing out of the toilet into the direction of the pool of the hot spring. When we, a group of four tourists, saw this, we decided not to stay there overnight as we had planned to and went on to Drigung Thil monastery instead. I was really shocked by the amount of trash at the hot spring, even though the surroundings there are so pretty and the hot spring itself still is too, the environment is spoiled and I think, if this goes on, tourists prefer not to take a bath there. Because of the bad sanitary facilities, people were going to the toilet right in front of all the people next to the hot spring, polluting it with excrements. In a lot of areas, in Lhasa, for example at Drepung monastery, as well as in tourist places on the countryside, you can see a lot of trash lying around and the inhabitants as well as the tourists have no other option than to throw their waste just into the countryside or take it the long way back to Lhasa, where there is the next possibility to get rid of the trash. I am afraid that this will discourage tourists and pollute a country that is so beautiful.

Another good example of the environmental degradation caused by tourism is that of the holy mountain of Gang Rinpoche (6,714 metres), known to many as Mt. Kailash, which is situated in far western Tibet. From time immemorial this area has been sacred to Hindus, Buddhists, Jains and the followers of Bön, Tibet's indigenous religion. Even today, pilgrims from all over the Himalayas and beyond travel to the mountain to perform the arduous practice of Parikrama or Kora (circumambulation) of the mountain. Gang Rinpoche is the source of four major rivers in Asia – the Karnali, Sutlej, Indus and Brahmaputra – which are the lifeblood of the heavily populated lowlands of South Asia. The construction of luxury hotels, roads and restaurants in Darchen (at the foot of the holy mountain) is transforming the once inaccessible Gang Rinpoche into a popular tourist resort. A decade ago, the only rubbish around the mountain was that of the organic materials cast away by Tibetan pilgrims. However, since commercial development has taken place, trash is accumulating at an alarming rate. This includes hazardous waste, such as batteries containing heavy metals and discarded petroleum products from vehicles (Bellezza 1995).

China recently announced its intention to invest 100 billion yuan (US $12.5 bn) during its 11th Five-Year Plan (2006–2010) in 180 projects in the "TAR", including building the world's highest airport at Ngari, in western Tibet (Buckley and Benjamin 27 March, 2007). If this happens, Mount Kailash will not be far away from further environmental degradation. The airport will make it more accessible to tourists. The current approach to tourism in Tibet does not take these threats into serious consideration.

There is an urgent need for a new kind of tourism, not only due to the fragile environmental conditions but also

because tourists increasingly expect undisturbed environments. A new trend in tourism is to enjoy environments in their original and natural form. Local people in the tourist business are aware of the environmental awareness that is felt by tourists. This may also help to convert rural dwellers into conservationists. The new concepts of sustainable tourism include Ecotourism and Pro-Poor tourism, as discussed below.

Mass tourism

Within Tibet, mass tourism could not fully develop until improvements in technology and large-scale infrastructures had occurred, which would allow the transportation of large numbers of people in a short space of time to popular tourist destinations. China has achieved a major step forward in mass transportation by building the railway line to Lhasa. In light of this development, many problems are now arising from the large-group tourism commonly practised in Tibet. Since most tourists are part of organised tours, the government authorities have very strict control over where tour groups are allowed to go. As a result, tourists only see the sides of Tibet that the authorities will allow them to see. Contact with local Tibetans is minimised, which not only limits the authenticity of the experience but also economically excludes the Tibetans, as mentioned previously. Therefore, the mass tourism currently practised in Tibet is of highly dubious benefit to Tibetans. Furthermore, group tours can have a heavy environmental impact, not only because of the quantity of people, but also by repeating the same routes over and over – causing erosion, pollution and waste.

The Potala Palace provides a visible example of the destructive impact of mass tourism that is managed by the Chinese. Increasing numbers of tourists are visiting the Potala Palace and it has begun to threaten the ancient heritage site. Prior to the Chinese invasion, this palace that embodies the spiritual and political heart of Tibet was under constant guard, with access limited to a small number of visitors. Today, anyone can visit the palace. The building, along with its precious artefacts and paintings, is continuously under structural threat. The traditional structure of the palace cannot bear the masses of visitors. Camera flashes are damaging the *thangkas* (sacred wall hangings). This damage has obliged the local officials to reduce the number of tourists visiting the Potala Palace. On July 1, 2006, the Tibetan cultural authorities issued a regulation limiting the daily visitor quota to 2,300 – 1,600 from tourist groups and 700 Tibetan Buddhist believers and individual tourists (Lin Li 28 Aug, 2006). This experience demonstrates that group tourism can pose a threat to cultural as well as environmental sites, if the stream of tourists is too concentrated.

To overcome the problems generated by mass tourism, the most appropriate solution is to spread tourists throughout the region, within the framework of responsible tourism policies. To reduce the pressure at overcrowded tourist sites, new destinations should be explored and developed in accordance with the requirements of local tradition. This could result in a sustainable tourism industry that evades serious environmental and social problems.

Tourists only see the sides of Tibet that the authorities will allow them to see. Contact with local Tibetans is minimised, which not only limits the authenticity of the experience but also economically excludes the Tibetans.

Ecotourism, as explained below, offers a valuable opportunity to achieve this goal. A mass tourism approach concentrates primarily on economic gain, whereas ecotourism and ethnotourism are designed to concentrate on educational and conservation activities, while generating sustainable but not necessarily maximum profits.

TOWARD A RESPONSIBLE TOURISM: SUGGESTED SOLUTIONS

Having understood the wide range of possible impacts of tourism, it becomes clear that to protect the environment, the local people and cultural traditions, monetary investment into the tourism sector is not enough. Development of tourism in Tibet can only be beneficial if it is practised in a sustainable way and benefits not only the Chinese economy and large tour providers, but local Tibetans as well. To achieve this, special attention has to be paid to tourism's effects on the local traditional culture, the fragile Tibetan environment and the economic situation. The following sections describe several of the possible ways to manage tourism while creating sustainable development within Tibet, including focusing on cultural survival and environmental protection.

Cultural survival

Cultural survival is an essential part of a sustainable tourism plan and is crucial to tourism in Tibet. By helping the Tibetan people to gain greater access to the tourism economy, China will not only conserve Tibetan culture but also benefit Tibetans environmentally and economically. Culture – the intangible rules and traditions

that a people create to bring a sense of order to their collective lives – determines human behaviour, and is therefore at the heart of all environmental issues. The people supplying tourism services, and the tourists who require tourism services, each have their own cultures. It is the interaction between these different cultures that can determine the experience and impacts of tourism.

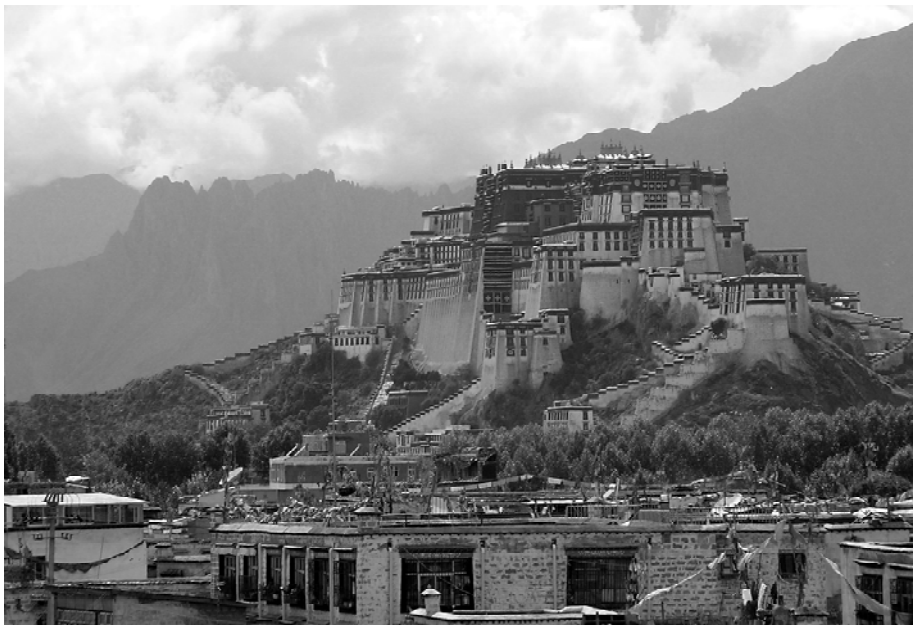
The five categories of suppliers of tourism in urban Tibet are the Chinese government, the local governments, private Chinese companies, private companies controlled by China's ethnic minorities and private companies run by foreigners. Out of these five categories, the one with the least power is that of the ethnic minorities.

There are two major groups of tourists (the consumers) in Tibet: Chinese and regional tourists, and Western tourists. Tibet receives far greater numbers of domestic tourists than of foreign tourists. As described previously, the Beijing-Lhasa Railway has triggered an explosion in Chinese tourists in Tibet. Since the opening of the Gormo-Lhasa Railway on July 1, 2006, it has transported a massive 1.18 million tourists (Zhang, Sophia 10 Jan 2007).

Foreign-owned private companies constitute a very small part of the tourist economy, but they do have a lot to offer to Western tourists because they speak the same language and share the same (or at least a similar) culture. Minorities and especially Tibetans also have great potential to cater to Western tourists. They have the advantage of intimate knowledge of the land and roads, and often have a network of friends and relatives in the region. Unfortunately, the conditions in the current tourist economy are such that Tibetan guides do not have good access to Western tourists because the Tibetans still lack opportunities to learn English and gain training as guides or businessmen. The Chinese and local governments could grant language training to Tibetan guides as a small part of a holistic environment plan. A holistic training approach should also include ecology. If guides were equipped with ecological knowledge, and more Tibetans were active in the tourist economy, there would be a wide scale impact on tourism that would help both the Tibetan people and the Chinese tourism industry as a whole.

Unless it involves the Tibetan people in the economy, China runs the risk of further segregating and alienating the local population. As long as Tibetans are at the margins of the tourist economy, they will not be able to benefit economically, present their culture honestly and accurately, protect their sites – environment, historic or sacred – or even protect themselves from the potential inferiority complex that can accompany this form of tourism. Involvement, support and some degree of control by Tibetans are absolutely essential to achieve a culturally and environmentally responsible tourism.

Tibet's impressive landscapes and deep cultural history are especially conducive to tourism – whilst at the same time being less conducive to industrial and commercial development. An important part of Tibet's allure for Western travellers is its isolation. Tibet lies beyond the industrialised, urbanised and homogenised world. Therefore, modernisation strategies to develop transportation corridors, factories and large-scale industrial infrastructure threaten the Tibetan Plateau's greatest asset. Outside of a few urban centres, Tibet is still a very traditional region, so much so that an official Chinese white paper on Tibet repeatedly uses the word "primordial" to describe Tibet (State Council of PRC 2003). As China's urban population expands, it is to be expected that Tibet will become a popular choice for the urban masses who wish to escape their overcrowded cities. It is a global trend that as urban centres continue



The Potala Palace, former seat of the Dalai Lama, now the primary tourist attraction for visitors to Lhasa.
Photo by Ran & Limi

to grow and expand, so too does the desire to flee cities and enjoy a vacation in a remote place. Tibet is naturally suited to serve this need for the Chinese people. However, if Tibet is industrialised like the rest of China, its ability to draw nature-seeking and city-tired domestic tourists will diminish.

Hotel on former Kumbumthang land

Tourism that is designed to enhance cultural survival can be crafted to appeal to both Chinese and international tourists. It could achieve goals of the PRC – such as an improved international image and better economic development – with less capital investment than the current approach. Additionally, increased contact between Tibetan tour operators and Chinese vacationers would help to decrease the tension and form better relationships between the Chinese and Tibetan people. However, increased opportunities in the tourist economy alone will not completely fix the unequal socio-economic opportunities for Tibetans, nor end Han chauvinism. Han chauvinism toward Tibetans has been suggested as an explanation for the difficulties that Tibetans face in achieving the same quality of life and comparable opportunities as the Chinese (Barnett and Meysztowicz 2004:163;). A fairer tourist industry would, however, train Tibetans in skills that could improve their position and show that, through their own merit, an equal status is warranted. Increased Tibetan participation in the economy and in daily enterprises – in the tourism sector as well as in other fields – could be one of the most effective ways to improve current social relations on the Tibetan Plateau.

In response to tourists who seek to experience a typical villager's life, Oakes (1998) discusses the beneficial potential of "staged authenticity" that can be set up in some places to display "authentic replicas" of village life for tourists. This eases pressure on villagers to "perform" whenever a tourist bus arrives at their home or dancing grounds. It sets aside time and space just for tourism, and, after a performance, villagers can get back to their usual life, which may include dances and other performances within their private community. Staged authenticity and the production of authentic replicas enable villagers to control tourism, both from excessive intrusion and from distant tour operators.

Many other ethnic minorities in China use this strategy. This is a remarkable development that could be extended to Tibet. Ethnic minorities are discovering that they can enter the tourism industry, as there is a curiosity among both international and domestic travellers about the minority cultures. In other ethnic minority areas, there has been less state intervention and the tourism industry has grown more organically. In these areas, villagers have catered to the growing tourist demand by building their own replica villages to receive visitors, where they stage dances and other performances that highlight their distinct culture and lives.

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The villagers are in control of these enterprises. Although in some cases they have grown so much that bigger urban-based enterprises have sought to take them over, the majority are still run by the villagers themselves. The villagers decide how to represent themselves to visitors and how to manage the pressure to perform at times that are convenient for visitors. They stage displays of authentic culture in spaces custom-built for the purpose, thus preserving their own private space beyond the gaze of the tourists. This arrangement works well for all involved. Tourists get to see, and participate in, local dances and

performances, while the villagers get to maintain a private community.

Unlike Bhutan – where tourism is based on the concept of high value through a very limited number of tourists – Tibet cannot currently provide tourists with an authentic Tibetan village experience because there are simply too many tourists. "Staged authenticity" could therefore suits the needs of both Tibetans and visitors, by creating designated areas with large capacities that can simulate Tibetan culture. Tibetans could maintain their daily life without disturbance from visitors, and the tourists could experience a sample of the local culture.

Ecotourism

The acceleration of economic development inevitably leads to an increased exploitation of resources, which in turn leads to environmental degradation. In fact, conventional investments in development tend to threaten the environment more than they conserve it. Sustainable development seeks to avoid this and skilfully "develop while protecting". However, the pollution and "environmental externalities" caused by the current tourist industry in Tibet have actually reduced the natural beauty of areas that are intrinsic to the industry itself. Our case study of Dzitsa Degu (Ch: Jiuzhaigou) is an example of a sublime destination that has been almost ruined by aggressive commercialisation; a proliferation of hotels and luxury villas, bus stops, helipads, airports and urban characteristics now mar the exquisite beauty of the valley and its nine Tibetan villages. Fortunately, the sustainability mindset has created some more benign alternatives to mass tourism. For the past few decades, other niches of tourism – such as ecotourism – have become more popular. Tourists are demanding experiences of higher quality and greater diversity. The demand for ecotourism is growing fast.

One of the major benefits of ecotourism, which would benefit Tibet, is that it provides an economic justification for the protection of areas that might not be protected otherwise.

Although there is no current universal definition of ecotourism, it is widely understood to be tourism that is aligned with conservation – primarily of the natural environment, but also of culture. All of its definitions emphasise the need for sustaining the assets on which tourism relies. One useful definition of ecotourism is provided by Ceallos-Lascurain: "travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas" (Boo 1990: xiv).

One of the major benefits of ecotourism is that it provides an economic justification for the protection of areas that might not be protected otherwise. Ecotourism has encouraged the establishment of protected areas and reserves. At the Parc des Volcans in Rwanda, for instance, protected areas shield endangered gorillas from poachers. Monteverdes Reserve, in Costa Rica, is an excellent example of a private park that generates enough revenue from entry fees to cover maintenance costs. Nature tourism can also make significant contributions to the national economy (Boo 1990: xvii).

China's Agenda 21: White Paper on China's Population, Environment and Development in the 21st Century is an important document that is designed to influence China's planning and policies to achieve sustainable development in the 21st century. This paper outlines China's plans to fulfil its pledge, made to the Rio Earth Summit of 1992, to create a sustainable future. It recommends that

> New routes for tourist attractions should be opened up and tourism resources should be protected to promote pollution-free and environmentally-sound tourism. Tourist-oriented road transportation facilities, airports and related services (including catering establishments) should be constructed. Appropriate ways should be found to solve problems in sewage disposal, refuse collection, goods transportation, waste disposal and to strictly control sources of hazardous pollution at scenic spots (State Council of the PRC 1994).

In September 2006, a group of Chinese environmental organisations and official institutions released an "Ecotourism Guide". For the first time, developers and managers were given guidelines on how to establish eco-friendly tourism in China. Xiaoyi Liao, head of Global Village Environmental Education Center in Beijing and one of the main developers of the guide, said: "The new guide will help officials learn to respect local traditional cultures and natural environments, as well as understand the benefits to local communities" (Feng 2006).

Since the advent of ecotourism, the natural environment has been the core selling point. Even with ecotourism, however, there is growing concern about the detrimental impacts on the environment, as activities are often based in sensitive natural areas (Butler 1991). Some of the common adverse impacts include infrastructure development to accommodate tourists and staff, and

Box 7.2 Strategies of ecotourism

- Educate travellers on the importance of conservation.
- Provide an equitable share of economic benefits to local communities, and direct revenues to people living adjacent to protected areas.
- Emphasise the need for local ownership, planning and management of parks and reserves, and economic development.
- Do not exceed the social and environmental carrying capacities.
- Train locals in conservation.
- Develop infrastructure in harmony with the local environment and building traditions, based on appropriate technologies that conserve local flora and fauna.
- Involve locals in decision-making.
- Include aspects of ecotourism in national tourism policy.
- Create training programs with tour operators and tour guides. Training should include natural resource education and tourism management skills.
- Monitor the quality of nature tourism services and facilities.
- Select local guides and use local products in all nature tourism services.
- Conduct environmental education programs for tourists.

physical damage to the landscape, flora and fauna by tourist activities (Tisdell 1996). Even though ecotourism should be less detrimental to nature and culture than conventional tourism, it can still have adverse effects if not carefully managed.

In the past decade, over 84 national sites of scenic beauty and 500 historic and national relic sites have been declared all over China, including in Tibet. However, rapid tourism development has resulted in a number of on-site problems, apparently caused by poor planning, continuous changes of management, lack of co-operation between multiple agencies and the absence of a centralised management system. Employees in protected areas are often poorly motivated because they were given those jobs rather than choosing them; those who would rather be somewhere more conducive to making money often resent being posted to a beautiful but remote area.

Skilful management is critical in order to successfully tackle the myriad challenges of managing protected areas. These challenges include pollution, soil erosion, urbanisation, litter, industrial waste, haphazard or inappropriate location of concessions (hotels in particular), inappropriate building styles, poor maintenance, acid rain, erosion of traditional culture and social values, inequitable benefit sharing and the "McDonaldisation" of tourism (Studley 1999b: Section 8.1).

Ecotourism and ethnotourism have great potential on the Tibetan Plateau. The number of tourists arriving in Tibet, usually seeking an exotic, "real" experience, is increasing every year. To accompany this increase, there has been rapid development of the infrastructure required for transportation and accommodation. The challenges of coping with the environmental and social degradation caused by tourism must be addressed. To achieve this, this report recommends that ecotourism and ethnotourism be practised across the Tibetan Plateau. "Ethnotourism" would likely mean pilgrimage tourism, with visitors mingling with Tibetan pilgrims en route to sacred, powerful places. Visitors would learn to travel without too many home comforts and to participate in the tradition of purification through pilgrimage.

In order to avoid possible negative impacts, ecotourism should also be carefully planned. This requires the training of Tibetan entrepreneurs in remote areas to improve their skills and understanding of the ecotourism market. The standard tour circuits could then be designed to cover wider areas. If ecotourism is not well managed, the natural beauty of the land could be degraded or destroyed. This would harm the very assets that attract tourists and cause pollution, ultimately deterring tourists. For this reason, it is important to adopt these strategies correctly.

Pro-Poor Tourism

Tourism has always been developed with the motive of economic gain and not primarily to incorporate environmental protection or eliminate poverty. The majority of profits from tourism are captured by centralised tour operators that are based in the distant cities where travellers book their package tours. This leaves very little profit for the local communities that actually provide the services and experiences for tourists to enjoy. Fortunately, nature tourism and ecotourism are growing rapidly among policy makers, tourists and advocates from the tourist destinations. These approaches put more emphasis on the need to protect the environment and local culture. The same determination should be applied to eliminating poverty in tourist destinations. Poverty is prevalent in rural Tibet, largely because China's strategy in the 1980s of rural industrialisation ("township and village enterprises" or TVEs) failed to generate much employment or off-farm income in Tibet, and also because the subsequent strategy of the 1990s focused investment only on urban enclaves. Unless rural Tibetans migrate, they have little

Table 7.2 Enhancing the participation of the poor in tourism enterprises	
Barriers to participation in tourism	**Actions that can reduce barriers**
Lack of human capital	Education and training targeted at the poor, particularly women, to enable employment and self-employment opportunities.
Lack of finance, credit	Expand access to micro-finance. Promote a gradual pace of tourism development, avoiding crash development through outside investment. Finance by the government.
Lack of organisation. Exclusion by organised interests	Recognise and support organisations of poor producers. Create organisations with human capital from poor areas and financial capital from the government.
Being located far from tourist sites	Develop tourism assets and infrastructure in poor areas where a commercially viable product exists.
Lack of market power. No ownership/control over resources of market value. No bargaining power with investors	Strengthen local tenure rights over land, wildlife, cultural heritage, access to scenic destinations, and other tourism assets. Use the planning process to encourage potential investors to develop their own strategies for enhancing local benefits for the poor.
Regulations and red tape that exclude the poor from registered and promoted tourism services	Minimise red tape and revise or remove regulations that exclude the least skilled. Ensure that regulations embrace sectors and activities operated by the poor and include appropriate standards and processes.
Inadequate access to the tourist market	Enhance vendors' access to tourists, e.g. through siting resorts near public access routes and vice versa, or supporting markets for informal and small-scale sellers in towns or adjacent to national parks.
Limited capacity to meet the requirements of the tourist market	Business support to improve the quality and reliability of supply and transport links.
Under-development of domestic, regional, and independent tourism (as compared to international tourism and all-inclusive packages)	Incorporate domestic, regional, and independent tourism into planning strategies. Avoid an excessive focus on international tour agencies and all-inclusives.
Government support is targeted to the formal sector	Recognise the importance of the informal sector; support it in planning processes.

Adapted from: Ashley et al. 2000.

opportunity to earn cash income, pay taxes, or invest in basic farming equipment. Yet these poor Tibetans often live in areas of extraordinary beauty and deep historic significance – all potential assets for tourism.

According to "The National Human Development Report for China", presented by the United Nations Development Programme in 2005, China's wealth gap between rural and urban communities is among the highest in the world. Over 80 per cent of the population in the "Tibet Autonomous Region" ("TAR") is rural (TSB 2006: TSY, table: 2-4), with an income equal to one-fifth of urban residential income. Per capita GDP in the "TAR" for 2003 was 3,837 yuan (US $463) in rural areas and 19,891 yuan (US $2,402) in urban areas (UNDP 2005:160). Pro-poor tourism is directly comparable to pro-rural tourism in Tibet. Promoting rural tourism, with the motive to eradicate poverty, is the main goal of pro-poor tourism in Tibet.

A large number of Tibetans who live in rural areas are suffering not only from poverty, but also from the fact that many of them were forced to sell their land in order to make room for tourism development. In their book *Unlocking Tibet*, Wang Lixiong and Woeser quote some investors speaking about an incident that took place at Terdrom Hot Spring, in Meldro Gongkar county:

> In the past all the land belonged to the nunnery. Later, when the hot spring opened to the public, the county government first built a guesthouse here, having promised to compensate the nunnery. But not a single dime was given to them in the end. As a matter of fact, we are going to take advantage of them; they want to make profit out of such a tiny place, how come? No big deal. They can refuse to give us their property now. Gradually, we are going to be the city eating up the villages; we are going to round up the whole gangs (Wang Lixiong and Woeser 2005: 51-60).

This description of "the city eating up the villages" exposes the mindset of the investors, who are only thinking about maximising profit. As shown by Lixiong and Woeser, this attitude can lead to the serious deception of rural dwellers.

The benefits of tourism for the poor depend on whether and how they can participate economically in the industry (see table 7.2). Allowing poor people rights over land and natural resources enables them to negotiate and secure benefits from tourism. Also, if the poor have access to dynamic and flexible forms of social capital, their participation in tourism will bring them greater economic benefits. For example, in Bali, most restaurants are managed either by families or by traditional voluntary associations, with clear rules for division of work and revenue. This system is also used for car and bicycle rentals and running minibuses and guesthouses. People have added rooms for tourists to their traditional homes. At Indonesia's Bromo Tengger Semeru National Park, activities such as horse and jeep rides are organised through associations that ensure that all their members have access to a fair share of the market (Shah 2000). Tibetans are accustomed to working together in such community-based organisations, such as the *rukor* in which five to 50 nomad families work together for the benefit of the community.

Rural tourism in Tibet officially started in 2002. It is supposed to be guided by the local government; the Tibet Tourism Board and its branches are in charge of giving training to the villagers. "Villagers benefit from tourism by earning wages, development of village infrastructure constructed by the company using a part of the tourism income and aid to the poor population not involved in tourism activities" (Li Lihua and He Jingming 2002: 219-220). The progress so far shows that a small amount of pro-poor tourism is imminent. However, it is not yet practised on a large scale and needs wider promotion.

Tourism outside of Lhasa: An instructive experience

Until 2006, the most attractive part of the Tibetan Plateau for tourists was not Lhasa, but a remote corner of the plateau that few Tibetans had even heard of: a spectacularly beautiful valley of nine walled Tibetan villages, known as Dzitsa Degu (Ch: Jiuzhaigou). Dzitsa Degu is on the eastern rim of the plateau, readily accessible from Chengdu (for further details, see the Case Study following this chapter).

Dzitsa Degu, designated a UNESCO World Heritage area in recognition of both its natural beauty and its potential to protect the giant panda, attracts three million visitors a year. This is an enormous number for such a small area. The pandas and the Tibetan villagers were eventually driven away by the massive proliferation of urban construction, including luxury villas for the newly rich. No one has seen a panda there for many years. For years, the Tibetan villagers were under pressure, increasingly excluded from farming their own land, forbidden to continue providing hospitality to overnight visitors, and reduced to working as cleaners in the tourism enterprises.

However, the once-marginalised villagers are now making a comeback, earning substantial incomes both as employees and as shareholders in the newly-privatised company that runs the protected area. The company is also investing in re-Tibetanising its architecture and featuring Tibetan culture as one of the main attractions. This 21st century turnaround was assisted by inputs from major international non-governmental organisations (NGOs), such as the World Wildlife Fund and The Nature Conservancy. All of these organisations agreed that Dzitsa Degu had pursued quantity rather than quality, to the point where the visitor load was incompatible with the purposes of a protected area. The revised idea is to attract ecotourists who are willing to pay higher prices for an authentic encounter with nature and Tibetan culture.

This new approach is a fortunate win-win situation for all parties. The Tibetans, after being excluded and marginalised, are once more active participants. The flora and fauna may be able to recover. Tourists get a more satisfying and meaningful experience. And the major players – the Chinese tour operators and accommodation owners – maintain their profitability from less but higher paying tourists. It is not yet clear whether this win-win logic will work well in the long-term, but it looks promising.

Now that Lhasa has eclipsed the remote Dzitsa Degu as the number one tourist attraction on the Tibetan Plateau, will it experience the same cycle of marginalisation and eventual return of Tibetans to centre stage? In Dzitsa Degu the cycle of exclusion and renewal took many years. It may be a long time before Tibetans have a real say and central role in hosting, guiding and interpreting Tibetan

The sacred Mount Kailash (Tib: Gang Rinpoche), a pilgrimage destination for Hindus, Jains, Buddhists and Bönpos.
Credit: Tibet Museum/DIIR

civilisation to tourists. At present, all indicators point to the increasing marginalisation of Tibetans, with almost all economic niches, except the most unskilled, being taken by Chinese immigrants.

GUIDELINES FOR RESPONSIBLE TOURISM

Apart from the integrated concepts of ecotourism and pro-poor tourism, there are many other ways to avoid the potentially negative impacts of tourism. Preparing tourists for their visit to the Tibetan Plateau may be one of the key ways of promoting responsible tourism. In Germany, there are tour operators who ask their clients to do a course that educates them about Tibet. In the United States, people flock to national parks and other natural areas for recreation, but ecological problems arise when tourists do not know how to behave around wildlife and ecologically sensitive areas, or when there is inadequate infrastructure for issues like garbage disposal, traffic and water. Unfortunately, the local and national governments in Tibet are not skilled at handling the issues of environmental and social degradation that Tibetan conservation areas are facing. The development of tourism and protection of the environment should work hand-in-hand – along with the involvement of local Tibetans. This would create a win-win-win scenario for the economy, environment and local Tibetans.

It has to be recognised that tourism is a principally economic endeavour that is capable of damaging many aspects of the environment. So far, China's approach to tourism has only been economic – as a means of creating wealth for tour companies. However, if tourism can be incorporated into a more holistic environmental plan, then it can have positive instead of negative impacts. A multifaceted approach, bringing together economic, environmental and cultural interests, is essential for the Tibetan Plateau. The regional tourism plan for Tibet, compiled by the World Tourism Organisation in 1994, reviewed the possible social and environmental impacts of tourism. It recommended some solutions that take into consideration the sensitivity of Tibetan culture and the environment. It further explained how to establish alternatives to conventional tourism. For example:

- Zones of environmental interest should be declared as natural protection areas under environmental conservation legislation.
- The number of daily visitors to holistic monuments should be tracked. This number should not exceed the monument's visitor carrying capacity.
- Impart a public education programme about tourism.
- Develop the concept of spreading tourism throughout different areas, for social and environmental reasons.
- Improve regional economic linkages in order to utilise local products and services.

The plan further proposed a tourist code of conduct to be observed by all trekkers, mountaineers and travellers:

- Not to kill any animal, nor cut or remove any plant for fuel or for any other purpose.
- Not to damage crops nor harass domestic animals.
- Not to pollute any river, stream, spring or other source of water.
- Not to dispose of any litter, refuse or other items except in authorised refuse containers or in pits dug in accordance with regulations.

- Not to dispose of human wastes except in accordance with established sanitary procedures.
- Not to graze pack animals.

This code should be distributed to every tourist, and especially to those going trekking or mountaineering. The responsibility for policing the code should be placed with the people who accompany the tourists as guides, organisers, or liaison officers. The local government authorities would be responsible for maintaining adequate refuse containers (WTO 1994).

Trekking and mountaineering are unfortunately causing severe ecological damage from overuse and poor disposal of refuse. The removal of rare plants, cutting of vegetation for fuel, and grazing of pack animals on thinly grassed upland areas has resulted in erosion and caused some resentment among the nomads and local residents. To reduce these impacts, the collection of plants (especially rare plants) should be properly managed. The cutting of vegetation for fuel should also be controlled. Tourists should be required to carry fuel and enough fodder for their pack animals. Educating tourists is key to achieving these goals.

Refuse disposal is a particularly difficult problem in remote areas. The Himalayas are already becoming seriously polluted by refuse from trekkers and mountaineers. One option is that refuse bins be placed along the trails and at campsites. The refuse would then be periodically removed for disposal in an acceptable manner. An alternative approach would be to require trekkers to carry their refuse out with them or bury it in pits of sufficient depth. For sanitation, the use of toilet tents and pit latrines should be required for trekking groups. At the more intensively used places, permanent sanitary facilities should be established.

Other preventive measures should be taken for the sake of Tibet's environment and culture. For example, efficient use of energy and materials is one of the basic principles of environmental protection. To economise on energy and materials, there are a number of modern innovations that can be introduced at relatively low cost. For instance, solar heating systems could be adopted, thereby saving not only the environment but also expenditure in the long run. This would reduce the need for the construction of hydropower dams. Similarly, ecological toilets should be purchased that work by microbial degradation and consequently reduce water consumption. In addition, tourists should be encouraged to save water, electricity, fuel and other materials wherever possible.

The control and reduction of noise pollution is another factor of responsible tourism. Motor vehicles should not be allowed to enter certain protected areas. Wherever this may seem unfeasible, the honking of vehicle horns should at least be restricted.

Responsible tourism also means honouring the local culture. It is crucial to find a way for everyone to appreciate Tibetan culture, instead of disregarding it as just the backdrop for their vacation. This is especially true for Chinese visitors, who may not have been exposed to a balanced history of Tibet and its culture. There are promising signs that the popularisation of Tibet is gradually creating a more positive image of Tibet in China. Some Chinese guidebooks to Tibet now explain in great detail the many sites of historic significance and the restorative health-giving properties of Tibetan places, practices, medicines and traditions.

It is crucial to find a way for everyone to appreciate Tibetan culture, instead of disregarding it as just the backdrop for their vacation. This is especially true for Chinese visitors, who may not have been exposed to a balanced history of Tibet and its culture.

The private sector, especially tour operators, plays a critical role in preparing domestic tourists to have a responsible stay on the Tibetan Plateau. Adequately preparing tourists for their visit should be a main feature of Tibet's tourism development plan, along with establishing new conservation areas and encouraging local Tibetan participation in the planning and implementation of tourist activities.

Another way of incorporating local people in the tourism industry is to create joint management areas. These allow the local people, who are often the objects of tourism, to participate in decisions that they are affected by. In Africa and Australia, joint management areas have allowed indigenous people to have control of the areas visited by tourists. The indigenous groups are therefore able to care for those sites in the way that their traditions and goals require. Kakadu in Australia is a good example of a National Park Service effectively utilising Aboriginal cultural knowledge in conservation and land use management. The joint management process has proved sufficiently flexible to evolve and adapt, helping the Aboriginal people to achieve their own aspirations (Australian Indigenous Law Reporter 1999).

In the case of Tibet, the Tibetan people should be granted more control of monasteries, temples and sacred landscape locations. The present concentration of power

in the village and township heads, who are answerable to the cadres above them rather than to the people they represent, does not encourage any local initiative or active stewardship.

According to Norberg-Hodge, lifestyle dangers emerge whenever two cultures meet and an exchange of ideas and lifestyle choices takes place. She introduces the idea of "counter-development" to psychologically protect the people who are objects of tourism (Norberg 1991: 157–179). Counter-development relies on the decentralisation of power – that is, giving people in local communities more control over their lives instead of surrendering it to the power brokers of capital cities and corporate offices. Norberg-Hodge points out that such a direct connection to the international economy can make it difficult for some communities in the developing world to sustain their traditional way of life . She has established a programme consistent with this theory in Ladakh (a culturally Tibetan area of India), where tourists work in the fields alongside villagers. This approach shows the tourists and the locals that farm work is a valid way of life and should not be abandoned for the glamorous attractions of urban life. Similarly, this report suggests that the use of counter-development – localising control of the tourist market – could provide a valuable way for tourism to have a more positive impact on the Tibetan Plateau.

At first glance it seems unlikely that China would adopt such an approach to tourism. However, their regulations and laws are no longer enforced as uniformly throughout China as they used to be. Local leaders are gaining more freedom to make their own decisions (Barnett 2001: 288). Given these developments, perhaps there may be some scope for changes that would benefit both the people and the natural environment of Tibet.

According to Article 119 of the PRC Constitution:

> The organs of self-government of the national autonomous areas independently administer educational, scientific, cultural, public health and physical culture affairs in their respective areas, protect and sift through the cultural heritage of the nationalities and work for a vigorous development of their cultures.

This article grants the provincial government certain rights to preserve and promote the region's culture and environment. The provincial government can also devolve power and authorise the abbots or heads of temples to promulgate their own laws in order to maintain peace and sanctity at their temples. In addition, the abbots or heads would be able to designate special times when only pilgrims could access the temples and monasteries so that they could perform their religious activities without disturbance. Such an opportunity to entrust power to the local people should exist not only on paper, but be put into practice.

Unfortunately, the local government of the "TAR" has seldom exercised its power to legislate in accordance with local conditions, despite the provision made in the above article and the Autonomy Law of 1984. One exception is that the local government has at last forbidden tourists to attend *bar-do* funeral ceremonies, which are private occasions where relatives employ a specialist to cut up the body of the deceased and present it as an offering to the birds. This recycling of the physical body is an integral part of the process of letting go of the dead and allowing them to pursue their next rebirth. There has been a morbid fixation among Chinese and international cameramen to film these "sky burials", even though Tibetans find such intrusion offensive. This prohibition, however, is a rare instance of a respectful regulation on tourism by the government. There is no sign of legislation to control the new brothels that blight Tibetan towns and cities, or to restrict the routine influx of tourists into the sacred rituals of monasteries.

CONCLUSION

Tourism has been an intrinsic part of China's economic development plan for Tibet ever since the "TAR" was "opened" to tourists in the 1980s. Tourism in Tibet has boomed in recent decades, consisting largely of domestic Chinese tourists. While such large-scale tourism has provided a new source of profit for the Chinese, it also comes with a series of negative impacts – increased economic inequality, the disruption of social structures, and the degradation of fragile ecosystems on the Tibetan Plateau.

The development of tourism in Tibet must be pursued in a way that is both sustainable and beneficial to Tibetans. Otherwise, the very environment and culture which attracts the tourists will suffer. The Tibetan people are likely to resist tourism development if it threatens to harm them, their culture, their land, or the environment. On the other hand, responsible tourism has the potential not only to generate economic benefits, but also to preserve Tibetan culture.

One of the most distressing aspects of the rapidly developing tourism industry is the exclusion of the local population. Tibetans, who already face marginalisation under the newly established, Chinese-ruled society, face numerous barriers to participating in the tourism sector. Only when local Tibetans are involved will tourism be able to realise its full potential to generate economic benefits and improve local living standards. Tourism

policies should always be developed and implemented with the participation of the Tibetan people.

Better education is the first step to achieving this goal. Providing more educational opportunities to Tibetans, and making the Tibetan language more prominent, are important steps in the empowerment of the Tibetan people. Tibetans should also be taught Chinese and English as second languages, since these are the primary languages of most tour groups in Tibet. The education system should train Tibetans with the skills and desire to share their heritage and landscape with visitors. But the challenges spread even wider than this. At the broadest level, Tibetans need to have the right and the means to both participate in decision-making and to operate tourism enterprises.

This means educating Tibetans in the needs and desires of domestic and international visitors. Currently, very few Tibetans have the opportunity to learn these skills. It also means teaching Tibetans about business planning and administration. Traditionally, Tibetan businesses are seasonal, and they tend to quickly distribute their profits – often as religious offerings. Tourism requires longer-term planning, longer times than customary seasonal trading, and fair access to capital. Outside of Tibet, many Tibetans run successful travel agencies or own and operate hotels, but such opportunities are extremely limited inside Tibet. The tourism industry is increasingly dominated by large Chinese companies that do not offer training to the local Tibetans.

The increasing interest in Tibetan culture invites non-Tibetans to manufacture and display pseudo-Tibetan products in order to make some money. In the meantime, Tibet's true culture is at great risk of extinction. Historical sites of high esteem were renovated by Chinese architects who had scant knowledge of the Tibetan structures. International conservators have reported that some renovations have caused irreparable damage to the original structures, especially in the case of wall murals. This is a tragedy that a responsible tourism industry would not allow. Responsible tourism would protect these sites and the local ways of life, and prioritise low-impact, locally-managed tourist activities.

There is also a role for international tour operators. Chinese tour operators are debasing tourism by encouraging guides to push tourists into shops, so that they can gain extra profits on commission from these sales. Tour operators based outside of China have both a responsibility and unique opportunity to train Tibetans and set a new standard for the industry. Tour operators can establish a best practice model by taking clients into rural areas, perhaps on pilgrimage, and providing them with an authentic encounter with Tibetans, which would satisfy both host and visitor. This would demonstrate a more responsible and locally beneficial way of doing business.

Perched on the top of the world, Tibet's environment is fragile. Mass package tourism, as practiced by the millions of visitors to Tibet, is no doubt taking a severe toll on the plateau. Today, the environment is universally recognised as the key to the survival of mankind. Every possible effort must be taken to safeguard it.

Sustainable tourism, such as ecotourism and pro-poor tourism, should become the priorities of the tourism industry. Developing a holistic tourism strategy that improves the overall quality of life in Tibet, and encourages local involvement in decision-making, is the linchpin to achieving sustainable tourism in Tibet. Future developments in this sector should be guided by clear, eco-friendly and culturally sensitive principles that set a new standard both in policy and practice.

■

An Ethical Approach to Environmental Protection

"Peace and the survival of life on earth as we know it are threatened by human activities which lack a commitment to humanitarian values. Destruction of nature and natural resources results from ignorance, greed and lack of respect for the earth's living things.

'This lack of respect extents even to earth's human descendants, the future generations who will inherit a vastly degraded planet it world peace does not become a reality, and destruction of the natural environment continues at the present rate.

'Our ancestors viewed the earth as rich and bountiful, which it is. Many people in the past also saw nature as inexhaustibly sustainable, which we know is the case only if we care for it. It is not difficult to forgive destruction in the past that resulted from ignorance. Today, however, we have access to more information, and it is essential that we re-examine ethically what we have inherited, what we are responsible for, and what we will pass on to coming generations.

'Clearly this is a pivotal generation. Global Communication is possible, yet confrontations more often than meaningful dialogues for peace take place.

'Our marvels of science and technology are matched if not outweighed by many current tragedies, including human starvation in some parts of the world, and extinction of other life forms.

'Exploration of outer space takes place at the same time as the earth's own oceans, seas, and fresh water areas grow increasingly polluted, and their life forms are still largely unknown or misunderstood.

'Many of the earth's habitats, animals, plants, insects, and even micro-organisms that we know as rare may not be known at all by future generations. We have the capability, and the responsibility. we must act before it is too late."

"As people alive today, we must consider future generations: a clean environment is a human right like any other. It is therefore part of our responsibility towards others to ensure that the world we pass on is as healthy, if not healthier, than we found it."

His Holiness the XIVth Dalai Lama
(Reprinted from Tree of Life: Buddhism and protection of nature)

CASE STUDY TWO

MASS TOURISM IN DZITSA DEGU

China recently announced that it forecasts four million tourists to visit Lhasa and the "Tibet Autonomous Region" ("TAR") in 2007. Such a massive number of visitors will undoubtedly have a great impact on the sacred city. How will Lhasa handle so many new presences, their cameras closely focused on the city and its people, while maintaining its long-standing identity as a place of pilgrimage and inner transformation? A review of the tourism trend in another Tibetan location that is already inundated with tourists – remote Dzitsa Degu on the far eastern edge of the Tibetan Plateau – provides a background for answering this question.

Dzitsa Degu of Ngaba prefecture, known worldwide as Jiuzhaigou in Sichuan, is a UNESCO World Heritage Area and receives three million tourists every year. Until 2006, Dzitsa Degu received far more tourists annually than Lhasa, primarily because it was offered as a package vacation to Chinese domestic tourists, eager for a convenient and beautiful holiday location within easy reach of Chengdu city. It has also been offered as a holiday package to international tourists. This case study examines the tourism trend in Dzitsa Degu. How has this influx of visitors affected the Tibetans who live in the nine stockaded villages that gave their name, both in Tibetan and Chinese, to this sublimely beautiful valley?

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The writings of Tibetan historians in the 1980s – who sought to record Tibet's past and present, amidst relentless attempts by officials to erase and appropriate the same information – provide a picture of daily life in Dzitsa Degu. The historians describe a district that was densely settled by Tibetan standards, consisting of small villages that were grouped together in co-operative federations. The villages were highly self-sufficient, ploughing the gentle slopes of the valley floors with a cross-breed of yak and cattle, known to Tibetans as *dzo*. They cultivated oats and buckwheat that, after being threshed by the men and winnowed by the women, were ground to flour in order to make noodles and a kind of straw, stored on rooftops, that was used for bedding, kindling and winter feed for domestic animals. In addition, the villagers grew a wide range of vegetables including turnips, beans and cabbages that develop well in a wet, cool climate. The villages also grew flax, which was spun and woven into clothing. Rather than wearing their traditional *chuba* robes long, as in the cold areas, the villagers preferred to hitch them at the knee and wear leggings of cloth to keep out the damp and cold. They also wore broad-brimmed felt hats, often with feathers in.

The courageous scholar Geshe Muge Samten (1914–1993), who spoke up against the Communist Party nationalities policy as early as 1981 in defence of Tibetan identity, provides one of the most detailed and recent accounts of Dzitsa Degu. His account begins when Tibetans first arrived in the area over 1300 years ago, after the Tibetan empire negotiated peace with the Tang dynasty of China and armies, recruited from central Tibet, were demobilised to Dzitsa Degu. Many different communities formed in the area, based on their ancestry. Tibetans who live to the east of Jiuzhaigou, at the very edge of the Tibetan Plateau, in what is now called Pingwu county, still call themselves Dagpo after the district east of Lhasa where their ancestors were recruited to become soldiers. Around Jiuzhaigou, Tibetans often call themselves Khonpo after Kongpo in the south east region of central Tibet. Around Hongyuan (Tib: Kakhog), they are locally known as Sharba, signifying their descent from soldiers that were recruited from far western Tibet (Upton 2000: 3–26). Muge Samten describes their daily life vividly:

> In terms of mutual respect between old and young and mutual respect between men and women, Dwags po (Dagpo)people are identical to other Tibetans. Such customs as sitting cross-legged, men cutting the meat, and women kneading the dough for noodles are also pan-Tibetan customs. Houses are square and made of stone, and have a south-facing enclosed yard. They have a wooden ladder-like staircase. The livestock live downstairs, the people live upstairs. Offerings are arranged on top of a cupboard and such things as porcelain bowls and brass platters are arranged in the cupboard. In the centre of the house there is a metal brazier with three legs, and the

> head of the household sits at the head of the hearth or toward the north. There is a room for religious offerings on the top floor, and grass and straw are stored above that. With the exception of officials and rich people, no-one has stools or tables – this is also like other Tibetans (Upton 2000: 11).

The Dzitsa Degu district receives 700 millimetres of rain every year. Unlike most of Tibet, it even receives reliable rains in early spring, which enables early planting and a long growing season, by Tibetan standards. New World crops, including maize, potatoes and amaranth, were introduced centuries ago. The richer landowners hired the poorer ones as wage labourers, rather than treating workers as their property. Beyond the fields, the control of forests and upland pastures was collective, and decisions were made by the entire settlement.

In a district where most land was steep and most forest dense, communities were isolated and intensely local in their social life. As often found in the Himalayas, local loyalties were strong, and central authority was weak. The community was proud to owe loyalty neither to distant Lhasa or to even farther Beijing. The local rulers frequently cemented alliances through marriage.

At the urging of scientists, and in the hope of protecting the native pandas and preserving this exquisitely beautiful landscape in which Tibetans have lived and farmed for many centuries, UNESCO added Dzitsa Degu to its World Heritage list in 1992. In 1997, the area was doubly honoured when UNESCO's Man and the Biosphere Programme (MAB) added it to its list of world Biosphere Reserves. But these designations have actually been the downfall of Dzitsa Degu instead of its salvation. Rather than saving the pandas – which have not been sighted in Dzitsa Degu for years – Chinese bureaucratic entrepreneurs cashed in on the natural capital of the area's beautiful steep valleys and on the social capital of the World Heritage and Biosphere Reserve titles awarded by UNESCO. Chinese tourism enterprises, with patronage at the highest political level, began converting natural and social capital into monetary capital, which led to huge profits. These profits were captured by enterprises that enclosed, surrounded and now suffocate the nature reserve. This has driven away any remaining pandas, and is now driving out the Tibetans themselves, all in the name of conservation.

A multi-layered waterfall in Tibet – a glimpse of a fairyland.

Dzitsa Degu lies below the nomadic pastures of Ngaba prefecture, and historically the villagers bartered their crops for the nomads' products, such as butter and wool. Today, the connection between the upland pastures and the valley has been cut. The valley is now presented to Chinese visitors as if it was only recently "discovered", and has no history. The valley faces south, down to the hot plains and thick air of Sichuan, rather than facing upwards, to the rangelands above, like it used to.

This erasure of Tibetan history is so extreme that even a scientific report by Chinese scientists for UNESCO in 1999 reported as follows:

> The area was an almost virgin land hidden in the high mountains of the northwestern Sichuan Plateau for thousands of years. Local Tibetan people lived a self-sufficient life, having little association with the external world, except through narrow paths for travelling by horse. Outsiders had no knowledge of the rich biological resources of Jiuzhaigou until 1975, when it was simultaneously found to be a rare beauty in the world. And so the prologue of Jiuzhaigou's current heyday was opened (UNESCO 1999).

Jiuzhaigou was "discovered" in the same way that European explorers "discovered" the Americas or Australia, immediately relegating the indigenous people, who had inhabited these areas for millennia, to incidental natives with no claim to ownership. The landscape was considered too important to be left to the natives, who were seen as having failed to develop its potential.

Tibetan history is not celebrated in this World Heritage area and Biosphere Reserve; instead, a doctored history of China is transposed onto a Tibetan landscape. This new history talks of Chinese poets and sages wandering in the mountains, composing elegiac verses and evoking scenes of ineffable harmony with spare brush strokes. This is what presently attracts the many tourists from Taiwan, Hong Kong and Singapore who flock to the area. The values that China has inscribed onto this Tibetan farmland are evident in the prose of Chinese writers. A glossy official book on China's World Heritage sites describes Jiuzhaigou in the following manner:

> The mountains, lakes, natural primeval forest and unique scenes make Jiuzhaigou a fairyland [...] Scenes change according to the season and the area is particularly colourful in autumn when the wind makes kilometres of tree belt along the lake undulate like a sea wave […] trees grow in the water and flowers blossom in the middle of lakes (CNTA 1999: 39).

This is quite restrained compared to writings by other Chinese authors. In the *China Pictorial*, in a photo essay entitled "The Fairyland of Jiuzhaigou", Ren Hua writes:

> Jiuzhaigou is like a bright pearl mounted in the southeast Qinghai-Tibet Plateau adjacent to the Sichuan Basin. Since few people travelled there, the mountains and valleys were not discovered and developed until the 1970s […] Legend has it that Wonosmo, the goddess of the mountain, dropped a mysterious mirror, a love object given by Dag, the god of the mountain, and the broken pieces became more than 100 lakes […] The Tibetans praise the Long Lake as 'an unfilled treasure gourd.' There is a majestic view of snowy peaks and glaciers opposite the Long Lake. In addition there are the Five-Flower Lake, Twin-Dragon Lake and the Colourful Pond. The Tibetan girls often praise the mountains and lakes in pleasant folk songs (Ren 1994: 38–41).

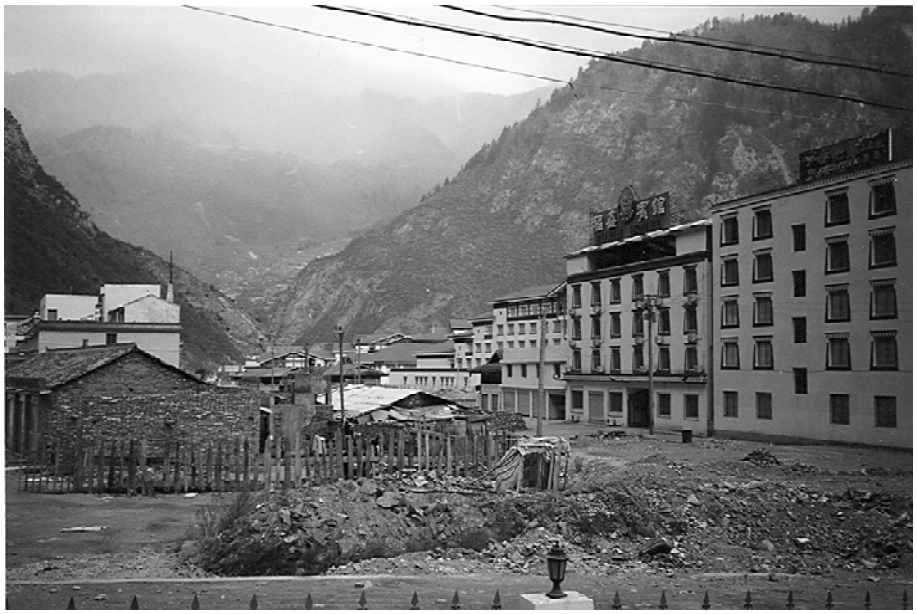
The story told to tourists is somewhat magical, and any mention of human presence has been erased: "Since few people travelled there, the mountains and valleys were not discovered and developed until the 1970s" (Ren 1994). The area was considered undiscovered prior to the Chinese takeover: "cut off by high mountains and special topography, [this area] was rarely penetrated. Not until half a century ago, after the Chinese Workers and Peasants' Red Army had marched a long way, only to confront its grim visage, did it become widely known" (Anon 1990: 2). This erases the Tibetan rebellions that were held against Chinese advances in the area in the 1740s, 1860s and 1920s. It also wipes out the entire history of Tibetan stewardship of these steep valleys, which are located in the highest rainfall zone of Tibet, in easily eroded limestone country. Indigenous Tibetan knowledge is rejected, and Tibetan traditions of biodiversity conservation are expunged.

In 1984, Premier Zhao Ziyang drew attention to this remote area with the now famous quote: "Guilin's scenery ranks top in the world, but Jiuzhaigou's scenery even tops Guilin's". This edict by a top leader carried the force of law, and permitted local county governments to become entrepreneurial without fear of being labelled capitalist roaders, as they would have been only a few years earlier. The officials of Nanping county saw that their moment had come. The natural capital of this limestone ravine, on a tributary of the Min Jiang river that feeds into the Yangtze, was ideal for exploitation. Although the surrounding forests had been heavily logged, the ravine was too steep for commercial logging access, and within it the nine Tibetan villages lived a largely self-sufficient existence, with little connection to lowland China. What had seemed a picturesque backwater quickly became a major asset that could generate considerable wealth for the county cadres.

Jiuzhaigou was "discovered" in the same way that European explorers "discovered" the Americas or Australia, immediately relegating the indigenous people, who had inhabited these areas for millennia, to incidental natives with no claim to ownership.

Dzitsa Degu – known in Chinese as Jiuzhaigou – is naturally stunning. The long walks up the valleys offer vistas at every turn that, to Chinese tourists, seem to express the elements of classical Chinese landscape compositions in harmonious balance. Framed by snow mountains and clear skies above, with travertine pools of clear water in many colours below, the vistas offer sharp crags, dense rhododendron forest, dramatic limestone karst landforms, waterfalls, spring flowers and autumn colours. To the Chinese, this was a landscape that represented China's past, when poets and painters sat with brush in hand, ready to make the few strokes that turn nature into art and express the balance of yin and yang. The nine stockaded Tibetan villages of Dzitsa Degu were deemed ideal for recreating classic Chinese traditions, which most Chinese people only see in movies. As a result, the name Dzitsa Degu was heard no more. The area was retrospectively assigned a Chinese lineage, as reported by a UNESCO fieldwork report: "Formerly 'Ciu Hai' (Green Lake), or 'Yang Tong', Jiuzhaigou was later named for the nine (Chinese: Jiu) Tibetan villages in the gullies" (UNESCO 1999).

Even with Zhao Ziyang's official endorsement, it took many years for Jiuzhaigou to become a major travel destination. A decade after Zhao's blessing, the 1994 Lonely Planet guidebook to China listed Jiuzhaigou as a destination only for hardy backpackers who were willing to brave chaotic transport, abysmal food, dangerous roads, and outbreaks of the plague. Visitors were urged to allow a week to 10 days for the round trip by road, as it took two to three days on overcrowded local buses to get there. Other guidebooks either make no mention of Jiuzhaigou



Intriguing modernity in recently constructed buildings

at all, or dismiss it, as in the 1989 Fodor Guide: "it is isolated and difficult to reach".

Preparing Jiuzhaigou to meet the needs and desires of local, national and eventually international tourists involved a great deal of time and money. The capital – mostly required to upgrade the facilities at the entrance to the heritage area – was generated primarily by profits that had been obtained in earlier stages of the resort's life cycle. Jiuzhaigou now receives three million paying visitors each year, and is posited as a major destination for both foreign and domestic tour packages.

There was no question of China considering the Tibetans as stakeholders in the planning and management of the tourism enterprise, but nor was there any suggestion that they be expelled.

The area now has a helipad and an airport, allowing premium payers to fly out of Chengdu and be delivered at the gates of Jiuzhaigou in one hour. Sichuan province has spent 900 million yuan (US $109 mn) upgrading the highway to Jiuzhaigou, although the road's sharp turns, coupled with the commercial turn-around pressure on drivers, still results in many accidents.

The worldwide promotion of Jiuzhaigou as a travel destination continues to intensify. A steady upward trend in the number of visitors is expected to maintain its current exponential growth. This is a commercial success, and attracts sufficient numbers to steadily increase hotel construction and marketing budgets. A major factor in the promotion of Jiuzhaigou is that, quite early in the trajectory of its resort life cycle, it was designated as both a World Heritage site and a Biosphere Reserve by UNESCO.

These seals of global approval hold enormous value in attracting tourists, but they also mean considerable scientific scrutiny by the government officials who manage these destinations. There are very few other parts of Tibet under such intense scientific gaze.

The sheer weight of visitor numbers, as mass tourism intensified, has pushed this site and its Tibetan inhabitants inexorably in one direction. From the moment China discovered Jiuzhaigou in 1975, during the final throes of the Cultural Revolution, the fate of the Tibetans was in jeopardy because Jiuzhaigou no longer enjoyed a harmony of livelihoods and landscape, in which people and place co-existed – inseparable, compatible, mutually sustaining and interdependent. Whether the Tibetans have a place in this paradise, or whether they are merely intrusions in the wilderness that compromise the integrity of a tourist's fairyland, was questioned from the moment that modern China first discovered the area. Now those questions have an answer – one that rigidly excludes Tibetans from their gardens and farms in the name of science, wilderness and beauty.

China started campaigning for the World Heritage listing of Jiuzhaigou in 1982, only three years after they had exhausted their intensive logging of the Minshan range, which spans an area that includes Jiuzhaigou. Anthropologist Hill Gates, in her 1988 field diary, recorded her impressions of the road approaching Jiuzhaigou:

> Many of the hills we now drive through are logged off, stripped and eroding […] The valley we ascend is dotted with logging towns interspersed with Tibetan villages in which the houses are all now made of stone, fortress like […] The little van cruises along an astonishingly good road, the main route to Tibet, carrying timber from the interior and military convoys back (Gates 1999: 117–136).

The situation with the pandas soon became critical. In Jiuzhaigou, as early as 1983, American zoologist George Schaller noted: "Bamboo is scarce, and pandas are only rare visitors". By 1996, there were only 17 pandas left in Jiuzhaigou, and a 1989 survey by China's Ministry of Forests and the World Wildlife Fund described the remaining population as "small and totally isolated". Scientists then suggested that the panda habitat might be saved if all the panda reserves in the area could be joined together, but bureaucratic rivalries meant that this never happened, and now it seems that the pandas have entirely disappeared.

It took a decade for China to achieve this desired World Heritage status and an additional five years to attain the Biosphere Reserve inscription. Initially, when Jiuzhaigou was first brought to China's national gaze, the Tibetan villages were seen as intrinsic part of the colour and exotic variety of the landscape. They were not necessarily a major attraction, but nor were they seen as problematic or contradictory to tourism. There was no question of China considering the Tibetans as stakeholders in the planning and management of the tourism enterprise, but nor was there any suggestion that they be expelled. Unfortunately, it is not uncommon for indigenous people to be expelled when a metropolitan capital chooses to locate major enterprises in their homelands.

Despite a ravine too steep for logging, and a chain of Tibetan villages too backward to be worth bothering about, Jiuzhaigou suddenly became the key to Nanping's wealth. What had been a peripheral area, useless and usually left to its own devices, was suddenly central. There were many fortunes to be made, not only by the local cadres, but, as Jiuzhaigou grew and grew, by investors who built luxury villas nearby as exclusive residences for those in power.

The tourist numbers continued to grow and the contradictions continued to intensify. Global science, represented by bodies such as UNESCO, UNEP and WWF, persisted in listing animal conservation and biosphere protection as the top priorities, but were caught by the fact that they had already classified these areas as natural monuments and areas of scenic and historic interest, which all focus on the human perspective. A natural area becomes a monument only through human eyes.

The human gaze is the foreground – the pandas, takin and other rare species are firmly in the background. Even from this perspective, in an area that has been accorded special status because of its human historic interest, are the right humans and history being celebrated? Until quite recently, very few Chinese people actually lived in this area of nine Tibetan villages. The only human history of any depth in the area is that of Tibetan history. Not only were there Tibetan farming villages in this frontier zone, but there is also a long history of Sino-Tibetan relations, which has now been airbrushed from contemporary discourse. The Tibetans rose in revolt against Chinese metropolitan taxes and control between 1858 and 1865, and again between 1924 and 1926. Tibetan uprisings against Chinese incursions and full-scale invasions, both military and commercial, have occurred for centuries, even as recently as the 1970s. It is this history of Tibetan resistance that contemporary China denies. To concede that Jiuzhaigou did not miraculously manifest itself out of nowhere would be to risk placing it firmly in Tibet, adjoining it to the vast Tibetan grasslands, and connecting it with a long history of conflict and contest with China.

The number of visitors arriving at Jiuzhaigou grew so much that commercial considerations were soon threatening to destroy this beautiful valley, its panda habitat, and the role of the Tibetan villagers.

Jiuzhaigou has steadily repositioned itself as upmarket, attracting arrivals from greater distances, with greater discretionary spending power, who are willing to pay for higher standards of accommodation. It has graduated from a destination to a full resort. The attraction of Jiuzhaigou is no longer just the beauty of its landscape and the ethnic dances of the Tibetans, but also the luxury accommodation that is available in the five star hotels and villas – all privately owned by rich residents who like to play host to friends and clients.

Any retained profits have been reinvested in this gradual upmarket move, to the point where Jiuzhaigou is now marketed internationally, as well as among Chinese expatriates and domestic tourists. The resort life cycle has moved on. As saturation point approaches, Jiuzhaigou will be able to switch to premium payers rather than a constant escalation of regular tourists. In 2000, at the urging of Sichuan province, Jiuzhaigou was included in the 10 top tourist destinations to be freed from state price controls, thereby making admission to this World Heritage and Biosphere Reserve affordable for all (*China Daily* 1 Sep, 2000).

In February 2002, the Kuwait Fund for Arab Economic Development announced that it was investing

US $20.5 million in the construction of a new airport, close to Jiuzhaigou. Kuwait's contribution was only part of the total project cost of 777 million yuan (US $93.6 mn). The airport was designed to handle 600,000 passengers annually by 2010 (*China Daily* 2002), which would make it one of the busiest airports on the Tibetan Plateau. Kuwait agreed to a grace period of four years in which neither interest nor capital would have to be paid on the loan, so that the debt could be serviced by the revenues that would be generated once the airport is operational. The agreement that established the loan is government-to-government, signalling the extent to which Jiuzhaigou is seen as a national project. The Kuwaiti funds provided 21.9 per cent of the total cost of construction, and the rest was financed by the Sichuan and national governments, including the allocation of money raised through the sale of bonds (*People's Daily* 2000 and 2001).

In recent years, the future has started to look brighter for the Tibetans. Consultant international NGOs have recommended that Jiuzhaigou adopt a 'quality over quantity' approach to tourism.

Some wealthy visitors are already flying in. There is presently a small airfield at Jiuzhaigou, and in late 2000 the first flights began. A helipad was constructed some years ago. Not surprisingly, the number of visitors arriving at Jiuzhaigou grew so much that commercial considerations were soon threatening to destroy this beautiful valley, its panda habitat, and the role of the Tibetan villagers. Regulations that had intended to preserve the beauty of the area actually made life harder for the Tibetans.

China's nationwide "grain-to-green" programme of the 1990s outlawed any ploughing of the land and prevented the Tibetans from sowing their usual crops. Regulations that forbade the Tibetans from accommodating visitors in their homes further reduced their employment opportunities, and left them with no role and no income. In the late 1990s, it looked as though the Tibetans might be excluded altogether, in the name of conservation and protection.

Fortunately, in the early years of this century, the future started to look brighter for the Tibetans. Consultant international NGOs, including the World Wildlife Fund and The Nature Conservancy, recommended that Jiuzhaigou adopt a 'quality over quantity' approach to tourism. This requires a new strategy that is aimed at the premium-priced, international ecotourism market, similar to the strategy adopted in Bhutan. In order to attract ecotourists, there has been a major investment in Tibetan-style architecture, and the Tibetans have now become shareholders in the privatised company that operates the tourism enterprise.

So this story, despite its many setbacks, does end hopefully. The Tibetans are making a comeback, both behind the scenes as shareholders and in the visible foreground, and are finally being recognised as central to the attractions of Jiuzhaigou. This means that man and nature are no longer being seen as mutually exclusive or contradictory. The Tibetan tradition that humans and nature can, do and must live together may yet prevail. Maybe one day even the pandas will return to Dzitsa Degu.

■

CHAPTER EIGHT

SUSTAINABLE DEVELOPMENT AND THE POPULATION FOOTPRINT

This final chapter with three sections, sums up this report within the broad framework provided by the concept of sustainable development. The purpose of this chapter is not to review the past again but to look ahead to the future, to long-term, sustainable approaches to land and livelihoods. A new approach could repair the damage done to the grasslands of Tibet, lighten the human footprint, and restore human services, income and dignity to rural life.

A series of brief case studies of sustainable development in practice, both in Tibet and in countries facing similar problems to those of Tibet, will also be discussed. These case studies are heartening, and show that with careful planning and an attitude of inclusiveness much can be achieved, in contrast to the ineffective, statist, top-down approaches of the past.

SECTION ONE: PROBLEMS AND SOLUTIONS FOR THE LONG TERM

Throughout the years, China's basic mistake has been to assume that nature must be conquered. China believed that all Tibetan land had to be made more productive and that the Tibetan Plateau was suitable for intensive production. China, haunted by memories of famine, insisted that grain be grown wherever possible, even on steep dryland slopes, and that forestland and grassland be destroyed and ploughed for crops.

The reality is quite different. It is foolish to equate civilisation with conquering nature. The basic characteristics of the plateau – high altitude, intense cold, short growing season, aridity and semi-aridity – all mean intensive land use is unsustainable. As the chapters of this book demonstrate in great detail, the Tibetan Plateau is best suited to extensive production that makes light, seasonal, mobile use of the entire land, without leaving a harmful footprint.

China and its policies for Tibet have changed dramatically over the years. Revolutionary communism gave way to capitalist accumulation, but productivism remains a core belief that affects all of China's highly interventionist policies for Tibet. Productivist intensification means concentrating investment, people and economic activity in urban centres, resource extraction enclaves and in the transport corridors that provide connections to inland China. Intensive production is concentrated spatially, in selected, favoured, well-endowed areas, while other areas experience neglect and under-investment. Beyond these intensive zones is a vast land of snows that is slowly and steadily degrading.

In Tibet, China's productivist focus has produced extreme inequality, manifested by a fast growing gap between rich and poor, coast and inland, urban and rural, east and west. Many analysts have expressed alarm at these widening extremes. China sees the Tibetan Plateau as poor, inland and rural, the most marginal of marginal provinces. Tibet is commonly depicted as *huang, ye, xu* and *kuang,* (wasteland, untamed, barbaric, empty and vast), as well as *luohou, pinkun* and *pianpi (*backward, poor and peripheral). These negative views obscure a basic fact: nature is not for conquest.

DISEMPOWERING TIBETANS

From a human development perspective, what has been entirely missing from China's policies is the active engagement of Tibetans in plans and projects for the future. Beijing has failed to empower local Tibetans. Chapter three (Unemployment and Social Exclusion) showed how most fields of employment and business sectors are still dominated by non-Tibetans. Central planners avoid giving any priority to investing in Tibetan human capital. This is the remit of the schools, but chapter two (Education) showed that the education system in Tibet is so poorly funded and of such a low standard that the human potential of Tibetans is being wasted. If China were genuinely committed to improving Tibetan livelihoods, it would have invested in building their potential, instead of just infrastructure and production. But to date, it has chosen not to do so.

The right of Tibetans to participate in the development of Tibet and enjoy economic and social development is expressly stated in the UN Declaration on the Right to Development: "The right to development is an inalienable human right by virtue of which every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental

freedoms can be fully realized" (United Nations 1986). China, however, has ignored this important declaration.

China's latest official plans talk of "putting people first, *yiren weiben*" (see discussion of China's 11th Five-Year Plan below). But in Tibet this is yet to happen. Party cadres and officials remain firmly in control. The concerns of villagers and township residents are suppressed, as Chinese sociologist Zhao Shukai found in his fieldwork in Sichuan and Gansu provinces, at the edge of Tibet, and elsewhere:

> Higher levels of government in China give responsibility for all of the dirty work – collecting taxes, enforcing the birth control policy, and preventing social unrest – to the townships. At the same time, they systematically usurp activities that raise funds easily or bring quick successes. Though they claim to be concerned with the methods township officials use to carry out this dirty work, they only become concerned when 'social stability' is threatened (which, of course, is blamed on township officials). This situation reaches its absurd extreme in the way that higher officials blame township party secretaries for any petitions arising from events in their townships, regardless of whether these petitions have anything to do with the actions of township officials (Kipnis and Smith 2006: 4).

The basic characteristics of the plateau – high altitude, intense cold, short growing season, aridity and semi-aridity – all mean intensive land use is unsustainable.

Tibet remains doubly disadvantaged, suffering both from its remote inland location far from gilded coastal China and from the urban bias of the state investments on which the "TAR" economy depends, since it lacks adequate internal revenue (see chapter four, Urbanisation and Inequality). For these reasons, it is the rural Tibetans, not the urban immigrants, who are most disadvantaged. Their livelihoods are compromised by cadre rent-seeking, yet they must also pay up front for basic human services such as healthcare and education, in the absence of any responsibility being taken by central government. The failure of the state to invest in rural Tibetan livelihoods, or to listen to Tibetan voices, stands in stark contrast to sustainable development practices worldwide (Borrini-Feyerabend 2000).

POPULATION FOOTPRINT

Further exacerbating the problems in Tibet is China's failure to understand that the human population (excluding the floating population) on the Tibetan Plateau of 10 million (CSB 2000 Census) is unsustainable, pressing too heavy a footprint on an ecology that tenaciously clings to life, enduring intense cold, blizzards and erosive gales.

The population of the Tibetan Plateau exceeds 10 million, of which 5.5 million are Tibetans and the rest are of various immigrant nationalities, mostly Han Chinese. Detailed population projections for the Tibetan Plateau by Chinese and European demographers to the year 2030 show that total population will rise by a minimum of 1.96 million or even by as much as a further 2.62 million people, depending on fertility rates and internal migration (Liu, Li and Zhang 2003). Not only will the total human population of Tibet grow between 2005 and 2030 by 23 to 30 per cent, but far more people will reside in cities. By 2030, between 43 and 52 per cent of all people in the "TAR" and Amdo (Ch: Qinghai) will be urbanised, compared with approximately 30 per cent at present (Toth et al. 2003). If these population projections are correct, then the 2000 Census population total of 10 million people on the Tibetan Plateau will become 12 to 13 million by 2030, which is at least double what has been sustainable for centuries. The demographers' projection of 13 million human inhabitants may even happen much faster, now that China is constructing what it calls a "railway economy" in Tibet, attracting many more non-Tibetan immigrants (*Xinhua* 10 December, 2006).

It is now time for long term solutions. China's Western Development Program and 11th Five-Year Plan should adopt a more balanced and equitable distribution of investment and income generation between urban and rural sectors, as well as among ethnicities. This will require additional measures to increase the commercial value of output by rural producers in the agricultural, livestock and rural industry sectors. These efforts must also invest in local human resource capacity, thereby decreasing reliance on outside capital, expertise and markets. China should move away from productivism and look to more long-term, sustainable strategies for Tibet.

THE GLOBAL WITHDRAWAL OF PRODUCTIVISM

The spatial shrinking of productivism is a world wide phenomenon (Boyle 1998). The idea that a nation like China move away from its productivist policies, towards long-term sustainable strategies, is not new. Geographers and natural resource management experts now speak of productivism as a paradigm that is losing its dominance. Instead, sustainable development, sustainable livelihoods

and environmental repair are becoming increasingly prominent.

Technologies of production are changing productivism in practice. It is no longer necessary for marginal and remote lands, distant from urban markets, to be made as productive as possible. Productivism has actually decreased the space it requires, as it continues to intensify production close to the cities.

Technological mastery over the means of production has intensified to such a point that soon most of the planetary human population will live in cities. It is projected that by the start of 2008, more than half of the human race will live in cities. This is made possible by bringing everything to the cities, including fossil fuels, electricity, water, wood, metals and innumerable other commodities. The footprint of the cities is big, even bigger than the resource base of the entire planet, according to many calculations of the world's finite capacities.

In China, it has become cheaper to keep dairy cows in huge concrete sheds close to cities, trucking in their feed, than to allow cows to wander around on grass, and have milk collected from many small farms scattered over a large area. Likewise, meat production is increasingly concentrated in huge sheds where animals can barely move, and instead are penned, fed, watered, expected to grow to adult size and then slaughtered. These sheds are located close to the cities. China has less and less need for the grasslands, and no plans to make productivist use of the associated wool, meat or dairy products, except in a few areas, notably in Inner Mongolia, where dairy production is industrialised. Even in Tibet, China plans to fatten animals for slaughter in pens, close to the cities, and make the grasslands marginal, if not redundant. (Zhao and Chen 2005). The case study that follows chapter one (Nomads and Grasslands), on the grasslands of Golog, further explains this situation.

China has now overtaken even Japan and Italy as the biggest global manufacturer of woollen cloth, yet none of the wool that China currently uses comes from Tibet (Lafitte 2006). The richer an economy becomes, the more it focuses on short-term accumulation, intensively pursues profit, and relies on intensive use of land that is directly connected to urban markets by modern transport. The conversion of the Tibetan Plateau from extensive to intensive land use has often been disastrous. A similar situation occurred in Inner Mongolia, where ploughed pasture failed to produce crops in dry years and reduced the soil to dust, which created enormous sandstorms that still blow across Beijing, even in the year of China's Olympic triumph.

Productivism is steadily withdrawing from areas that are marginal or peripheral (Boyle & Halfacree 1998; Holmes 2002). Geographers have tracked the retreat of productivism in many countries, where the areas now withdrawn from productivist activities are quite sizeable. The trend of abandoning productivist uses of marginal regions is most evident in vast areas that have always been difficult to use in a profitable manner. For example, the huge self-governing Nunavut Arctic Canadian lands of the indigenous Inuit, and the tropical savannas and interior desert of Australia, home to indigenous Aboriginal peoples, are no longer useful for productivism, except for small locations where mining is possible. The Highlands of Scotland offer another example (Holmes 2002).

Norway has now recognised that an addiction to productivism is in nobody's best interest. A Norwegian social scientist recently wrote:

> Ideals of a productivist agriculture in the western world have faded as the unintended consequences of intensive agriculture and pastoralism have led to environmental problems. In Norway and Australia, there has been an increasing acceptance of the equal importance of social and environmental sustainability as well as economic sustainability. Alongside this shift is a belief that primary production needs to move away from an intensive, productivist-based agriculture to one that may be defined as post-productivist (Bjorkhaug and Richards 2004).

Even in Tibet, China plans to fatten animals for slaughter in pens, close to the cities, and make the grasslands marginal, if not redundant.

The greatest retreat of productivism can be found in Siberia. For seven decades, the Soviet Union allocated extensive resources to the industrialisation of its vast Siberian territories, in ways that are quite similar to China's efforts in Tibet over the past five decades. Despite intense cold, permafrost and vast swampland, the Soviet Union was committed to mobilising the full capacity of communism and allocated many resources to the harnessing of remote Siberia's enormous hydropower potential, mineral and oil wealth and endless forests. Siberia was to be assimilated into the Soviet Union, by force if necessary, using the coercive assimilation of the many indigenous populations. Dissidents and political prisoners were coercively deported to Siberia as a labour force to build, among other things, new cities, hydro dams, mines, scientific research stations, logging camps and paper mills.

This expensive experiment collapsed with the fall of the Soviet Union. Today, Siberia is productive only in select locations, where there are diamonds, gas and oil that can be profitably exploited despite the vast distances of the land. Most of the productivist economy of Siberia, formerly maintained only by endless subsidies, failed in the 1990s once the subsidies were no longer forthcoming. This left nearly all of Siberia needing to revert to other uses.

Some analysts argue that the assumption that Siberia could be made into a modern industrial economy was one of the greatest mistakes of the Soviet era. They assert:

> Today, thanks to Soviet economic policies, Russia has a severely distorted economic geography. In particular, a huge portion of modern Russia – cities, factories, and people – lost in the distance and cold of Siberia. Until Russia's leaders come to terms with Siberia's misdevelopment – and overdevelopment – during the 20th century, their efforts to build a competitive market economy and a normal democratic society are likely to fail (Hill & Gaddy 2002).

Tibet continues to be a place where the state intervenes vigorously, with large scale and expensive projects. The Tibetan people play almost no part in these grand plans, except as labourers.

In Europe, the ideology of productivism supported farmers for decades as they produced more than Europe could consume, leading to the famous "butter mountain" and "wine lake" of Europe. The excess production was exported by subsidising the price, thereby creating unfair competition for farmers in poor countries. Throughout this time, environmentalists protested about the loss of biodiversity due to intensive factory farming. Fair trade activists asserted that poor farmers in poor countries were being made poorer by this rampant production for production's sake. The same farmers are now being paid by European governments to restore wildlife habitats on their land, instead of growing crops.

Europe has decelerated its productivism, and is turning instead toward sustainable production, which involves making more space available for nature, forests, wildlife, national parks and protected areas. Already nine per cent of the total land of Europe is protected from productivism, under the *Natura 2000* program, and the target of 12 per cent will likely be achieved.

For decades, China has experimented with productivism with the same original intentions as the rest of the world, converting vast Tibetan areas that are best suited to extensive land use into intensive zones of production. The experiment has failed. China should now actively withdraw and accept the fact that almost no land in Tibet can be sustainably used for intensive production.

CHINA'S LATEST PLANS FOR TIBET: UNSUSTAINABLE INDUSTRIALISATION OF MEAT PRODUCTION

Tibetan officials, who are the recipients of high salaries, now say, with a mixture of pride and sadness, that Lhasa is indistinguishable from Beijing. As in Beijing, districts have been bulldozed to make way for wide, straight boulevards lined with public buildings that display the full spectrum of a successful, developmentalist state and the arrival of individualistic, consumer modernity. Lhasa now has glossy, glass-fronted shopping malls, hotels, broadcasting networks, transport hubs, a large railway station, universities, museums, entertainment centres, discos, Party cadre training schools, libraries, hospitals, security equipment and powerful policy banks that are obliged to finance projects that they know will never be profitable. Lhasa has become a showcase of modernity and material affluence.

The rhetoric of the current Five-Year Plan, which ends in 2010, emphasises human capabilities as much as GDP growth. However, there is little sign of human capital becoming a high priority in the persistently top-down, developmentalist programmes that have been specifically announced for Tibet.

As chapter four (Urbanisation and Inequality) has shown, the current brief for Tibet is to remain at the bottom rung of the development ladder as an extractor, collector, aggregator and supplier of raw materials for use in distant Chinese provinces. Only gradually may Tibet progress up this pre-ordained ladder of social evolution to a more advanced stage. Tibet continues to be a place where the state intervenes vigorously, with large scale and expensive projects that provide, at state expense, the necessary preconditions for profitable investment in extraction. The Tibetan people play almost no part in these grand plans, except as labourers.

As long as the Tibetan economy, people's mode of production, and accumulated knowledge of the land and its limits are all ignored, Tibet will remain at an early stage in development in the eyes of the central leaders. As a result, sustainability is hardly seen an issue for Tibet. China's rhetoric about balancing the drive for growth with inclusive human capacity building seems to be restricted to the rich provinces only. There are no current signs of a major investment in the actual economy of rural Tibet, or in training Tibetans for entry into modern vocations.

This is evidenced by the allocations in the massive 100 billion yuan spending programme for the "TAR" between 2007 and 2010. The new investment package is the outcome of a special meeting of the Communist Party Politburo. The plan is nothing more than a strong continuation of China's decades of productivist emphasis on heavy infrastructure. Despite China's rhetoric in the 11th Five-Year Plan, there is no shift towards broader, long-term, inclusive sustainable development. There is no policy aimed at empowering the strengths of the traditional Tibetan rural economy; no policy for promoting full employment among Tibetans; no programme of targeted poverty alleviation for specific households in dire need; no plans for livestock insurance or other skilful ways of making pastoral nomadism more stable; and no plans for the provision of health insurance or basic social safety welfare in rural areas of Tibet. Despite China's rhetoric about investing in human capital, none of the above issues are even mentioned in the recent "TAR" spending programme.

Instead, 180 new projects were announced, nearly all of which are hard infrastructure projects. These projects were taken from a list presented, and lobbied for, by "TAR" Party Secretary Zhang Qingli, the latest in a long line of non-Tibetan Party Secretaries.

China Daily reported that "Beijing will invest more than 100 billion yuan (US $12.5 bn) in Tibet by 2010 in a move by the central government's unprecedented level of support for the Himalayan region's development. The money will be spent on 180 projects, including an extension of the Qinghai-Tibet Railway between Lhasa and Xigaze [Tib: Shigatse]". Zhang Qingli, Tibet's Party secretary, said it was a very rare move for the Politburo to have commissioned such a study on public works in a region. Qiangba Puncog [Jampa Phuntsog], chairman of the government of the "Tibet Autonomous Region", said the government investment would be the main driving force for development in the short term. "Normally, regional planning isn't discussed in the State Council's regular meeting [...] but Tibet is unique, and it has been assigned a key area of development," he said. The report went on to conclude:

> Thus, the State Council regular meeting studied projects under Tibet's 11th five-year plan. Hao Peng, the regional government's deputy-chairman, said that all these projects were designed with an investment of about 78 billion yuan (US $10 bn) and completing the projects might need another more 30 billion yuan (US $3.8 bn). Wang Taifu, an economic researcher from the Tibet Academy of Social Sciences, said that Tibet would soon witness its big stride of development with the support from the central government (*China Daily* 28 March, 2007).

In other words, nothing has changed. There is no sign that China now understands or appreciates what is fundamentally different about Tibet, the landscape or the people's traditional mobile mode of production. As in the past, the emphasis in this latest plan is on hydropower plants that will provide electricity for cities, mines and ore concentrators, as well as on the creation of more railways, highways, airports and hotels for mass tourism.

There is no sign that China now understands or appreciates what is fundamentally different about Tibet, the landscape or the people's traditional mobile mode of production.

In fact, rather than focusing on the sustainability of the "TAR" countryside after years of failed policies, China is now exposing it to productivism, which had previously taken place only in cities, extraction enclaves and transport corridors. The 2007 Politburo spending programme includes a 10 billion yuan package for the rural areas of the "TAR". Some aspects of the package are to be welcomed, such as a greater investment in primary and secondary education, and in village water supply – although similar promises, for example that all Tibetan children will receive nine years of schooling, have been made many times before without being delivered (see chapter two, Education). China has also announced that by 2010, 60 per cent of children in the "TAR" will be attending (not just enrolled in) senior secondary schools. But since there are so few senior secondary schools actually in the "TAR", and the ones that do exist are a long distance from where most Tibetans live, this proposal will require a massive capital construction programme. It will also require the training and recruitment of many new teachers. If all of this does happen by 2010, it will do much to achieve Premier Wen Jiabao's favourite slogan of *kexue fazhan guan*, or 'scientific developmentalist viewpoint', and actualise the long overdue investment in Tibetan human capabilities.

While there are a few encouraging programmes in this recent Politburo spending programme, there are many aspects that are troubling. The overall emphasis is on making Tibetan nomads more productive so that they will produce more meat for the new immigrant cities in Tibet. Official Chinese media reported:

> Encouraged by the market opportunities opened up by the Qinghai-Tibet Railway, Tibet is starting to adopt a more innovative, market-oriented approach to farming

and animal husbandry in order to lift its rural and pastoral population out of abject poverty. An official from the Office for Poverty Eradication and Development of Tibet Autonomous Region said a range of ventures would be set up in the altiplano region's rural and pastoral areas in the years to come. According to him, the new ventures will target cereals, oils, fruits and vegetables, farms capable of raising more than a million head of cattle, sheep, pigs and chickens, and will be accompanied by a new processing and marketing network *(Xinhua* 15 December, 2006).

This latest push for sedentarisation, commercialisation, higher slaughter rates, more meat production and larger scale operations may well happen, even though it is clearly not what the Tibetan people want or need.

In some Tibetan areas, farmers are now given subsidies to invest in poultry and aquaculture, despite their traditional dislike of raising animals solely for the purpose of slaughter. Hao Peng, Chinese deputy-chairman of the "TAR" commented that, within the rural development programme, "much of the money will be spent in rural areas in an effort to raise the income of farmers and herdsmen. And the pastoral region was expected to undergo a fundamental improvement" (*China Daily* 28 March, 2007). Under the programme, pastoral nomads would receive access to electricity and phone lines, but only if they settle in one location and cease their traditional mobile livelihoods. For nomads, access to electricity, education and landline phones is desirable, but not if it halts sustainable mobility. These services can be delivered flexibly, using mobile tent schools, rural mobile phone coverage and portable, solar-powered electricity. These are technologies and techniques that have been used successfully in other areas, such as in Mongolia. But China's top-down approach aims to "civilise" the nomadic pastoralists by forcing them to settle on allocated, fenced, leased land blocks that belong to the state, and that can be reclaimed by the state in the name of new policies, such as reforestation or watershed protection.

Large spending plans have been announced many times before, but the programmes are rarely implemented. This time, however, the plan is backed by a substantial investment of 10 billion yuan, which covers a short period that concludes in 2010. This latest push for sedentarisation, commercialisation, higher slaughter rates, more meat production and larger scale operations may well happen, even though it is clearly not what the Tibetan people want or need.

Chapter one (Nomads and Grasslands) and chapter five (Damming Tibetan Waters) explained in detail how large areas of Tibet have been designated as water catchment protected areas, from which nomads are excluded; while in other areas, nomads are officially urged to increase slaughter rates, and to allow more animals to "come out" for slaughter. Are these policies of exclusion and mass production contradicting each other?

The growing urban population in Tibet is consuming ever more meat. All official provincial yearbooks for areas in the Tibetan Plateau show that meat consumption is steadily increasing, especially in the immigrant cities, and especially in meats that Tibetans seldom eat, such as fish, poultry and pork (see chapter four, Urbanisation and Inequality). Chinese statisticians annually conduct household surveys to determine what urban and rural households actually eat and spend money on. Their results offer a detailed picture of the rise in urban meat consumption in Tibet. Meat consumption is forecast to rise dramatically as the Chinese settlers become more wealthy. China's statistics show that in rural Sichuan, next to Tibet, meat consumption in rural areas is three times higher than in the "TAR" (Wang, Zhou and Cox 2004: Table 3). The average Chinese meat consumption of 37.7 kilograms per person per year in 2000 is forecast to rise to 56 to 60 kilograms, an increase of 60 to 70 per cent, by 2010 (Wang, Zhou and Cox 2004: Table 14).

This increase in consumption is accompanied by the intensification and industrialisation of meat production, slaughtering, butchering, processing, freezing, transportation, distribution and marketing of carcasses in an organised way. Lhasa TV reporters routinely screen segments that proudly show such production lines, for example in Nagchu, that bring frozen carcasses from nomadic areas into Lhasa. This is what drives the new productivist interventions in the countryside that seek to settle the nomads and intensify output. Urban households in the "TAR" ate 45.9 kilograms of meat per person in 2005, according to household surveys conducted by the China Statistical Bureau (TSB 2006: TSY, table 8–8). However, urban meat consumption in 1990 was only 25.3 kgs, which means that over 15 years there was an 80 per cent rise per person. The biggest rise was found in urban consumption of yak and yak crossbred cattle meat, which tripled from 5.4 kgs per person in 1990 to 15.4 kgs in 2005.

His Holiness the XIVth Dalai Lama, well-known for his advocacy of Tibetan wildlife, is equally forthright in his defence of domestic animals:

> In the old days, Tibet had an abundance of wildlife. Over the decades, many of these animals have been hunted. As a result, some of them have now become extinct. Trading in meat has also rapidly increased in Tibet, especially in nomadic areas. Animals like blue sheep (Tib: *naa*), yaks (Tib: *punag*), sheep and goats are being traded in markets. It is our ignorance, greed and lack of compassion, which leads to the slaughter of such large numbers of animals (HH Dalai Lama 2007).

When it comes to the issue of this industrialised and commercialised intensification of meat production in Tibet, the Chinese version of sustainable development and the Tibetan tradition of wealth on the hoof directly contradict each other. The question of whether animals are for meat is the root of these different approaches to sustainability.

Meanwhile in rural "TAR", where most Tibetans live and raise animals, meat consumption per person per year was only 11 kgs between 1995 and 2004, jumping suddenly, in a single year, to 23.6 kgs in 2005 (TSB 2006: TSY, table 8–18). even if this figure is accurate, it is still only around half of the urban consumption level.

The growing urban population in Tibet is consuming ever more meat. The biggest rise was found in urban consumption of yak and yak crossbred cattle meat, which tripled from 5.4 kgs per person in 1990 to 15.4 kgs in 2005.

It is unfortunate that the reach of the state is extending further into the lives of the nomads, who are already struggling to keep their traditional, community-based organizations that skilfully pool the herds and labour of several households together, without the need for fencing. Chapter one (Nomads and Grasslands) describes this arrangement in more detail, and how the state largely withdrew from the grasslands in the 1980s once it became obvious that their state-imposed communes were failing. Gradually the state also allocated land leases to nomadic households. Nomads were given the opportunity to restore the customary mode of production. Anthropological fieldwork in several locations shows that, in the 1980s and 1990s, the nomads did return to their mobile, extensive, sustainable land use wherever it was permitted (Goldstein 1996; Zhou, Daming 1996; Manderscheid 2002). Tibetan anthropologists, such as Gelek, also showed how China's decision to turn individual households into lease holders, instead of the customary grouping of several households, put pressure on the children not to split up as they reached adulthood and got married themselves. As a result, extended families became more common (Gelek 2002).

A new, interventionist phase has now begun on the grasslands. This could be beneficial if it were based on an understanding of the nomads' needs and knowledge of their own pastures. It could be beneficial if the state were to finance the resowing of indigenous grasses in the many areas of rangeland degradation that resulted from the communes of the 1960s, when the nomads were powerless. However, the statist, top-down interventions that are intended to reduce, rather than enhance, mobility will only worsen the degradation of the grasslands. The exclusion of nomads from their grazing land is increasing, and their livelihoods are lost in the name of protecting China's water sources. This exclusionist approach assumes that watershed protection and grazing are incompatible, though they co-existed for countless centuries until China located and mapped the river sources in Tibet (see chapter five, Damming Tibetan Waters).

China's current grassland policies appear to conflict with each other. On the one hand, the emphasis in many areas is placed on increasing meat production, persuading Tibetans to raise animals solely for slaughter, and accelerating the slaughter rates. On the other hand, current state interventions on large areas of the Tibetan Plateau exclude nomads from pastures, as a new form of "green governmentality" that is intended to protect China's watersheds.

Is this apparent conflict a sign of transition, away from a single-minded focus on productivism, and towards conservation? What seems contradictory actually follows a consistent logic. Both policies are based on material outputs: meat in some areas, water in others. Both are based on the assumption that the nomads are mere tools of the state who can be moved about at will, and many Chinese authorities still perceive them as backward, irrational, mobile and rootless labourers. Both policies also assume that the traditional role of the nomads, raising and caring for mobile wealth on the hoof, is nothing more than a marginal and barely productive activity that is merely the first stage in rearing animals for slaughter.

Even in the areas of the plateau that are currently zoned for intensive meat production, the bulk of the profits will not stay there – the intensification, value adding and profit will happen on the urban fringes, in fattening feedlots that are run by Chinese entrepreneurs and not Tibetans. In the areas of the plateau that are increasingly

zoned to exclude nomads, the purpose is to produce water for China. Both zones – the meat zone and the water zone – are designated for productivist purposes. The production of water and meat is being prioritised at the expense of the nomads, who are being marginalised and excluded, instead of being involved in a co-operative approach that can be seen in the co-management of natural resources worldwide.

SECTION TWO: THREE VISIONS FOR THE FUTURE OF SUSTAINABLE DEVELOPMENT IN TIBET

This section examines three visions of sustainability for Tibet in the coming years. First, it reviews the central government's 11th Five-Year Plan, which is due for completion in 2010, and the detailed list of projects that it announced in 2007 for the "Tibet Autonomous Region" ("TAR"). Second, to enable comparison, this section also outlines China's 2005 National Human Development Report. This alternative vision, prepared by a team of eminent Chinese economists and commissioned by the United Nations Development Programme (UNDP), is far bolder than the official Five-Year Plan in proposing specific ways to actually implement policies of sustainability and social justice. Third, this section introduces some specifically Tibetan Guidelines for sustainable development.

First vision for the future: China's 11th Five-Year Plan (2006–2010)

In October 2005, the Party Central Committee issued its blueprint for China's development during the period of 2006–2010. This is the first Five-Year Plan, since they began in 1953, to use the language of sustainable development. While this is encouraging, it contains few actual programmes of implementation. Indeed, the plan manages to equate sustainable development with maximum growth, and suggests that it is this growth that will finance the extra spending required for sustainability.

China's top leaders are now publicly committed to sustainable development, and beginning to recognise that there is more to life, livelihoods and human well-being than productivism and materialism.

Until recently, China was so focused on primitive accumulation that very little attention was ever paid to sustainability. In leading circles, the focus has long been on uninterrupted growth, and this attitude persists even today, now that the causes and conditions for wealth creation are more favourable than they have been for decades. In fact, current conditions are better than they been for the past two centuries.

But China's top leaders are increasingly acknowledging the many problems, dislocations, distortions and inequalities caused by this narrow focus. They are now publicly committed to sustainable development, and in the 11th Five-Year Plan they propose a strategy for achieving it.

How did this come about? China's rapid economic growth resulted in problems such as widening economic inequality and unemployment (Wang Jianhua 2005). The blind pursuit of economic growth has led to blind investment, environmental damage and false statistics. These problems have led Chinese leaders to rethink their policies. Official media has reported that top leaders are now beginning to recognise that there is more to life, livelihoods and human well-being than productivism and materialism:

> Top leaders have criticised old concepts of economic growth many times, saying that 'economic development at the center' does not mean 'with speed at the center.' The new five-year plan will bolster social services to deal with the imbalances in economic and social development, said analysts. China's top leaders stressed that it has become urgent to solve the problem of strong economic growth accompanied by weak social development. The problem of social security is particularly serious in the countryside, where the medical care system and welfare are extremely weak. 'The poor and the weak will get more protection and have greater access to social welfare,' said Ding Yuanzhu, a researcher at the economic and social development research institute under the National Development and Reform Commission (Wang Jianhua 11 October, 2005).

But what does China mean by sustainable development? Professor Barry Naughton, an economist familiar with China's current leaders, describes the core strategies of the 11th Five-Year Plan:

> Since it is accepted that China's economic growth is predominantly market driven, in which directions should the Chinese government be deflecting market-determined growth? In examining this question, the Plan refers repeatedly to the need to adopt a scientific view of the development process (*kexue fazhan guan*), that is, to adopt a worldview that can be more appropriately rendered as a 'scientific developmentalist viewpoint.' This term encapsulates the entire Hu-Wen development policy, and implies a broad, human capabilities-based perspective on growth. This viewpoint leads planners to ask two key

questions: 'What should government do to insure that long-term economic growth is sustainable?' and 'What should government do to help insure that the fruits of growth are spread broadly, in order to create a 'harmonious society?'

Nothing in this document is intended to slow down development, when that term is properly understood. The first of six 'must dos' in the Plan is that China must 'sustain high-speed stable development.' Premier Wen Jiabao in his discussion of the plan, actually says, 'the key to resolving all of our problems is development'. But development is not identical to GDP growth: development requires the strengthening of human resources, putting people first (*yiren weiben*), and diversifying capabilities; and development must be sustainable, consistent with the long run carrying capacity of the natural environment and human society (Naughton 2005).

Although sustainability is a real aspiration, fast economic growth is still China's engine and primary goal. The 11th Five-Year Plan strategy is to achieve many objectives all at once, each of them dependent on maintaining high-speed growth. This growth is the source of funding for all the other targets, including increased government expenditure on poverty alleviation, education, environmental protection and long-term sustainability.

Sustainability, in the eyes of China's planners, also means the transformation of China from a mainly rural country to a primarily urban one. China's vigorous effort to urbanise Tibet can be seen in more detail in chapter four (Urbanisation and Inequality). This approach is echoed by the influential economist Jikun Huang:

> All modern nations in the world – in Europe, North America and Asia – are urban, with robust industrial and service economies. There are no high-income countries in the world that have more than seven per cent of their populations reliant on agriculture, or have more than 10 per cent of their people living in rural areas. None of these nations, however, started out with this structure. At some time in the past they were all similar to China's society in the early 1980s, when most of the population was living in rural areas and engaged in farming. From international experience, one of the most defining characteristics of successful development is the transformation from rural to urban societies based on industry rather than agriculture. The development of labour markets and access to off-farm jobs is the conduit through which the shift of population from rural to urban, and agriculture to industry occurs (Sonntag, Huang et al. 2005: 232).

To accomplish this plan for the urbanization of China, many more hundreds of millions of people must be forced to abandon their land. This enormous, historic undertaking requires massive social engineering if it is to be achieved without marring today's top official slogan of a "harmonious society".

There is a growing convergence within China's intellectual elite on the need for a more mature approach to growth – one that invests in education, training, environmental protection and sustainability. The Party is starting to listen when economists report that peasants who leave their farms for city factory work must already have completed primary and junior middle school, so that they are literate, disciplined and skilled enough to obtain urban production line jobs. These issues are not raised on the basis of justice or human rights, as is often the case in other countries. In China, these issues are only raised because it makes economic sense to train tomorrow's work force, and prevent further damage to the environment, rather than to await catastrophic failures that are extremely costly to repair.

Although sustainability is a real aspiration, fast economic growth is still China's engine and primary goal. Sustainability, in the eyes of China's planners, means the transformation of China from a mainly rural country to a primarily urban one.

The 11th Five-Year Plan targets are proving difficult to attain. They commit the central government to greater spending on long-term objectives, such as poverty alleviation, social welfare and environmental remediation. However, at the same time the government is also reducing its taxes on peasant farmers, which further reduces its central revenue base. The ability of the government to fairly distribute wealth and provide equitable access to services has been weakened by the government's diminishing of its own power, having long decentralised control of the economy to provinces and corporations.

The rich provinces are a law unto themselves, and recent reforms that were intended to recentralise fiscal power have, if anything, further empowered the provinces. One analyst notes:

> The institutional cleavages and fragmentation that so often give rise to corruption and other pathologies of the state appear to have shifted from horizontal, geographic lines to vertical, functional ones. Moreover, the principal beneficiaries of this shift to centralised management are the provinces, not Beijing, as the institutional mechanisms of personnel and budgetary resource allocations are concentrated at the provincial level. Although this has

curbed localism to a degree by transferring power from local governments to the newly centralised bureaucracies, it has also contributed to a situation in which newly strengthened provinces may play a key role in the emergence of a sort of perverse federalism.

As far as the 'losers' are concerned, those who have suffered the most appear to be the sub-provincial governments, who lose direct control over these bureaucracies and find it more difficult to manipulate provincial level directives. Beijing is also on the losing end, even if the policy is deemed successful. The directors at the apex – most notably at the provincial level – of the centralized bureaucracies have a tremendous amount of power, specifically (but not exclusively) over cadre appointments and finance. Without supervisory checks and balances from the local governments, corruption from *within* the centralized system is difficult to avoid. If the first 20 years of economic reform in China can be defined by the degree of decentralization that unfolded, we are entering a brand new phase of economic management, regulation and control. These adjustments signal a dramatic change by bumping up the locus of management to a smaller number of provincial-level offices for these bureaucracies, concentrating power at the provincial level and within these discrete bureaucracies, and insulating them from interference.

Local government powers have certainly been deflated. Moreover, insofar as these bureaucracies are crucial to the management of local economic development and commercial activity, the authority of sub-provincial governments over the economy within their jurisdictions has eroded (Mertha 2005:791–810).

The rich provinces of China are a law unto themselves, and recent reforms that were intended to recentralise fiscal power have, if anything, further empowered the provinces.

In addition, China's new rich, who are currently accumulating private wealth as fast as possible, have little interest in policies that might redistribute their rapidly accumulating wealth. The 11th Five-Year Plan, despite its rhetoric of sustainable development, has modest intentions with no desire for a major change of direction. In reality, the implementation plans do not live up to the rhetoric.

As a result, today's central planners have very few tools at their disposal, other than general indicators and targets. China's macroeconomic policy is focused on inflation control and exchange rates, rather than on transferring payments to the poor. This explains why China has been reluctant to allocate funds to income support and poverty alleviation for families and villages that are known to be poor. Instead, China sees growth as the answer to all of its problems, and sustainability as an optional investment.

If this continues, China' commitment to sustainability will fade away, as was the case with the Great Western Development Program announced by Jiang Zemin in 1999, shortly before his formal retirement. That campaign, an old fashioned allocation of central funding to large-scale, expensive projects, such as an uneconomic railway to Lhasa, began with much publicity and pledges that these arduous projects would enable China's western two thirds to catch up with the prosperous east. However, it fizzled out after just two years and was then revived in 2007, along with a long list of productivist investments to be concentrated in the "Tibet Autonomous Region" ("TAR").

What prompted the Great Western Development Program – *xibu da kaifa (*literally translated as *'open up the great west')* – was, as many Chinese economists confess privately, a fear among central leaders that western China could become another Kosovo or Chechnya. Chen Dongsheng, an architect of *xibu da kaifa*, said its purpose was "to smash our enemies who want to use the poverty and the contradictions between races to create a Kosovo-style crisis in Asia" (Dawa Norbu 2006: 158–9). It was fear of regime instability that caused central leaders to heed the complaints of western provincial Party leaders that they were missing out on prosperity and deserved more. But the massive effort involved in building this infrastructure, across an area more than twice the size of western Europe, was never adequately financed, and even the rhetoric of *xibu da kaifa* has now largely disappeared (Holbig 2004; Goodman 2004).

China's entire strategy is based on using growth to finance the shift towards sustainability, rather than seeking contributions from those who are fast accumulating private wealth. Development is fundamentally defined as growth. The difference now is that growth is being defined in a somewhat more inclusive way, and no longer excludes environmental impacts, social exclusion and poverty. The 11th Five-Year Plan identifies many of China's difficulties in reconciling fast accumulation with sustainable development, and proposes several ways of improving the situation, but offers limited funding to implement these promises of social and environmental justice.

If China's commitment to sustainability is motivated by little more than a fear of social unrest, it will fail to achieve much.

Second vision for the future: UNDP China Human Development Report 2005

The 11th Five-Year Plan is not China's only set of policy proposals for sustainable development. As mentioned previously, a team of eminent Chinese economists were commissioned by the United Nations Development Programme (UNDP) in 2005 to write a China Human Development Report (CHDR) that would detail China's shortcomings in addressing sustainable development and propose a robust set of goals and policies for tackling the key problems. The ten policy recommendations that came out of the 2005 CHDR are a bold alternative vision for what can be done to ensure sustainable growth in China. They are a serious, specific and thorough blueprint for a sustainable and humane society.

The authors of the 2005 CHDR sought to address the rapid increase of inequality in China, which is manifested by the growing gap between the rich east and the poor west, coast and inland, lowland and upland, and urban and rural areas. For example, while the 11th Five-Year Plan proposes cautious increases in government spending on rural health and education, and some reduction in the peasant burden of taxes and charges, the CHDR economists have gone much further, issuing a humane blueprint for sustainable livelihoods, under the banner of the United Nations Development Programme.

The policy recommendations of the UNDP team of Chinese economists are in many ways radical, and propose a bold prescription for social justice, inclusiveness, human development and well-being, well worth quoting at length. The full report can be found online at: www.undp.org.cn/nhdr/. The 10 recommendation headings below are taken directly from the CHDR report.

(1) Allocating public resources to promote human development

The report proposes three key considerations for the formulation of new policies:

> In light of China's level of economic development and limited fiscal capacity, the design of public programmes should be guided by certain principles. (1) Promoting social equity requires that the adverse effects of the market system be curbed, while at the same time the system's fundamental workings not be obstructed; (2) Promoting social equity requires that public expenditure be increased substantially from their current levels. Increases in public spending on education, public health, social security and poverty alleviation are essential. Yet the standard of social welfare cannot be set unrealistically high; and (3) Promoting social equity should start with human development.
>
> Human development can lead economic development. Convergence in human development is possible to achieve given the deficiencies in health and education that plague China's inland provinces and especially its inland rural areas. Success requires only that public services be improved, inputs to basic education and public health be increased, and measures aimed at improving the basic rights, capabilities and security of people in backward areas be implemented.

(2) Unifying labour markets and promoting informal sector development

The authors identify three main principles for improving the labour market: (1) "the principle of employment first, should guide industrial policy, macroeconomic policy and regulatory policy"; (2) "the labour market should function as an integrated whole between urban and rural areas"; and (3) China should "encourage small business and informal employment".

(3) Improving rural infrastructure and living environments

"Improving rural infrastructure and living environments in rural areas can not only boost farmers' purchase of durable consumption goods, but can play an important role in reducing social inequality." The CHDR authors suggest China do more to alleviate poverty and that poverty alleviation be specifically targeted not only at counties, as at present, but at specific villages, and allow villagers to have a democratic say in decision-making.

(4) Investing in public education and promoting people's capabilities for development

The CHDR propose recommendations with respect to education in three areas: "decreasing inequality in opportunities, focusing on primary education and migrant children, and reforming the educational content". The CHDR team criticises China's tendency to favour higher education and study abroad at the expense of adequately financing primary schooling for all: "Public education resources are currently allocated improperly among all levels of education. The percentage of government investment in China's primary and middle school education is lower than in the United States, Japan and Korea. To change China's comparatively low investment in basic education, the country must make basic education a priority, devoting the bulk of any new funding to it".

(5) Strengthening public health and improving medicare

The CHDR team identifies "defects in the public health care system, disparities in health levels between different

population groups, and inequality in the allocation and utilization of health care resources between rural and urban areas and among different regions".

The team states: "To reduce the inequity in healthcare services, it is necessary to give priority to the development of public healthcare services in rural areas and less-developed regions, and for disadvantaged groups. Public health services, composed of planned immunization, infectious disease control, mother and child health care, occupational health, environmental sanitation, and health education, should be provided free of charge to all members of society by the government. Basic medical services mainly funded by the government and targeting most common diseases, should provide the necessary medicines, diagnosis and treatment to all people so as to meet universal basic health demands. Increasing input in public health and basic medical treatment: The central and local governments should substantially increase input in the health care sector and actively improve rural and urban social medical insurance and assistance systems. Priority should be given to improving the use of public health care resources.

In 2005, a team of eminent Chinese economists were commissioned by the United Nations Development Programme to produce a bold, alternative vision – a serious, specific and thorough blueprint for a sustainable and humane society.

"The government should reinforce the construction of rural medical treatment and health care infrastructure and strengthen rural health team building. More than half of China's urban residents and more than 85 per cent of its rural residents still have not bought any medical insurance. It is therefore necessary to establish a sound medical security system and medical assistance system. This can be done by enlarging coverage of basic medical insurance for urban employees while gradually establishing a rural medical insurance system to cover all rural residents and guaranteeing that all rural and urban residents have access to equal basic medical services."

(6) Improving the social security system

"The target for establishing a new social insurance system is to create a unified compulsory social insurance system characterized by wide coverage and low standards. 'Unified' means that there should not be any discrimination based on social status. The insurance system should cover all citizens, regardless of regions and industries." The authors then provide suggestions for "improving pension schemes", as well as "building a social security system for vulnerable social groups".

(7) Eliminating social discriminative barriers and promoting social harmony and mutual assistance

The report recommends measures to "eliminate discriminative barriers", "encourage mutual aid" and "promote participation in public affairs".

"To overcome institutional barriers, it is necessary to eliminate administrative systems that prompt rural-urban segregation, and to allow free movement of population to ensure that citizens enjoy equitable rights to employment, education, healthcare, and social security under the law. [...] Individuals and enterprises should be encouraged to participate in charitable activities and to take on more social responsibility.

"Participation in public affairs helps the poor improve their situation. Employment and income assistance must be combined with access to proper channels through which they can express their opinions. Local governments should encourage the effective implementation of the Electoral Law of Village Committees. The government should also protect villagers' right to participate, enhance the transparency of village affairs, and promote democratic elections, decision-making, management, and supervision.

"Public participation may also increase the efficiency of poverty alleviation programmes. A major problem is that the arrangement of pro-poor programmes and the use and distribution of pro-poor funds are conducted on the basis of decisions and opinions by local government departments and officials who do not consult the poor groups themselves. As a result, some regions experience problems such as misuse, appropriation, ineffective use, and unequal distribution of funds. This is a kind of supervision of the government as well as a means by which people participate in social assistance activities, thus ensuring efficiency and equality."

(8) Improving the rule of law and transparency

The CHDR proposes measures for improving the rule of law by "creating a favorable legal environment", "enhancing transparency" and "curbing corruption".

(9) Reforming the taxation system and fiscal system for equitable distribution

"The equity of tax burdens should also be embodied in the progressive taxes: High-income groups should pay taxes at high rates and low-income groups at low rates. Poor groups should not only be exempt from taxes, but should also receive transfer payments."

(10) Promoting government reform and improving governing capacity

"Reforming public finance system: The system of public finance should focus increasingly on public security, public health, public education, vocational training, public relief systems and infrastructure, etc. The goal of a public fiscal transfer system should be for the government to invest in rural social infrastructure. This will lessen social conflict, maintain stability, and guarantee equity in provision of basic public services nationwide.

"The central Government takes the responsibility for redistributing the income and wealth of the entire society, and encouraging each region to undertake income and wealth distribution within their areas. China should further increase transfer payments to central and western provinces and reinforce support to agriculture, rural areas and farmers.

"Centralization of responsibility in providing certain public services and raising funds is essential. For instance, transferring responsibility of governments at the village, township, and county levels in rural basic education to upper level governments could improve efficiency as well as equity. Finally, the highlight of a public fiscal transfer system is to provide basic public services for the rural population, such as basic education, public healthcare, basic medical services, cure of epidemics and endemic diseases, supply of clean water, provision of birth control services, supply of agricultural scientific knowledge, and skill training. The government should invest in rural infrastructure and in rural production and living, thereby creating more employment opportunities in rural areas.

"The government is required to protect society's interests and provide it with basic public products and services. Government should also correct any negative effects engendered by the market economy and solve inequity problems with long-term consequences. The key point of reform should be making the transition from economic management to management based on public service. Not only should the government provide a good market environment for economic development, but also, and more importantly, should guarantee effective and equitable basic public products and services for the harmonious development of the economy and society.

"To build a service-based government, it is necessary to make innovations in the management style of the government, thereby providing better services for the enterprises and people. The power of the government is finite. Its public power is instituted by the people and must be strictly limited within the scope of serving the people. The government should be transparent. Government affairs should be disclosed to the public, so as to avoid black casework. Government should also actively accept supervision by the people.

"Local governments, especially those at grass-roots levels, do not always satisfy people's expectations in providing public services. This may be because they carry too many administrative tasks with very limited human and finance resources.

"Government should strengthen internal management and supervision to avoid the possibility that some departments may be 'captured' by social groups with strong influence, thereby becoming the spokesman for these interests. The government should take into account social equity, the long-term development of society, and the interest of vulnerable groups in designing, implementing, and monitoring social and economic policies. In providing public services, government should not discriminate against vulnerable groups but should instead favour public services toward these groups."

Through these 10 recommendations, the 2005 CHDR demonstrates that, with humane intentions, much can be done at a macro-economic level to address the pressing social issues facing China, and indeed the world, today. Unfortunately, there is little sign that China's top leaders are willing to implement this vision of a government that cares compassionately for the well-being of all its citizens.

Third vision for the future: Guidelines for sustainable development in Tibet

In 2004, the authentically Tibetan *Guidelines for International Development Projects and Sustainable Development in Tibet* were published by the Central Tibetan Administration. These guidelines provided a coherent and thoughtful response to the challenge of sustainable development for the whole of the Tibetan Plateau, and outlined many ways to enhance sustainable livelihoods. They offer a vision of the future that can be constructively compared to the 11th Five-Year Plan and the 2005 China Human Development Report. The guidelines are provided in full at the end of this chapter.

SECTION THREE: SUSTAINABLE DEVELOPMENT IN PRACTICE: LEARNING FROM COMPARABLE STORIES AROUND THE WORLD

Sustainable development is a positive process that delivers whatever ordinary people need in order to make their livelihoods viable in the long-term, without having to sacrifice their traditional culture, homes, livelihoods and natural environment.

In this section, various case studies are presented that show how development can indeed deliver what ordinary people, villagers and nomads need to make their lives more secure. These stories illustrate how much can be achieved, often with modest amounts of money, when development agencies listen carefully to the people and together identify what is practical and necessary. Skilful interventions can make a big difference in the lives of people who are isolated from metropolitan markets and information centres, and whose livelihoods may be risky for reasons that can easily be remedied.

In many areas of the world, plans for sustainable development conserve the environment, repair damaged landscapes, respect local knowledge and traditions, strengthen customary institutions, enhance community-based organisations and generate income for the poor in empowering ways, from the bottom-up rather than on command from above. Information on how sustainable livelihoods can be encouraged is available online, in English and Chinese, from the UN International Fund for Agricultural development at: http://www.ifad.org/sla/background/index.htm.

Skilful interventions begins with listening, working together, sharing experiences and experimenting with different approaches to find out which is most suitable. This is what China's developmentalist state fails to do.

It all begins with listening, working together, sharing experiences and experimenting with different approaches to find out which is most suitable. This is what the Chinese developmentalist state fails to do. The central authorities have their own agendas, primarily concerned with nation-building, national security and stability, as well as promoting their national image abroad as a fast growing power that can "civilise" backward minorities. Although central leaders claim credit for poverty alleviation, very little is done on the ground to identify and work with poor households, train them to enter the modern economy, or provide them with income support. The interventions of the developmentalist state may slightly raise incomes among the poor, but this is incidental to its primary goal, which is to use infrastructure investment to build state capacity and reach. Hydropower dams, power transmission grids, railways, highways, mines, ore concentrators and smelters that are constructed in Tibet employ a limited number of local people, and usually only in the construction period when unskilled labourers are required.

At best, such central projects are an indirect way of alleviating poverty and meeting the needs of people. Could there be more direct methods, that are better suited to the realities of Tibet? If the central leaders sincerely wanted to improve human security and development in the Tibetan people, what could they actually do? These case studies are practical examples of possible actions, which have been designed and delivered by combining the talents of communities and outside advisors. They also demonstrate how the aforementioned guidelines, provided at the end of this report, can be put into practice.

The following nine case studies show that the rigid exclusion of Tibetan civil society is not the only way forward. Some of the good news even comes from China, and shows that Chinese development planners are rapidly adopting world best practice standards of encouraging the participation and meaningful involvement of local communities in the design of development projects.

1. Successful Sustainable Development In Practice In Rural Panam County, Tibet

Examples of integrated, sustainable development plans that have actually been put into practice in Tibet are hard to find. There are many institutional obstacles to an integrated approach, which requires several official agencies to co-ordinate their work in order to meet the needs of the rural poor. The usual top-down, productivist development approach is initiated by specific Chinese ministries and focuses narrowly on specified roles. These ministries are especially unwilling to share expenses, or allow their budget to be used for purposes beyond the standard functions of the lead agency.

If we are to find successful examples of practical sustainable development, we need to look at the international donors and NGOs who are working in Tibet, and have persuaded Chinese implementing agencies to work together in order to change the lives of ordinary Tibetans in a positive way. One example is the Panam Integrated Rural Development Project (PIRDP), financed by the European Union (EU) and China, which is located in Panam county between Lhasa and Shigatse, one of the best-endowed areas for production of grain and other foods.

In 1991, when China and the EU first proposed the project, it was narrowly designed for the purpose of intensifying crop production by building dams and irrigation channels. Tibetans protested vigorously that

such a plan would not benefit the community. As a result, the project was implemented a decade later after much delay, by which time the EU and China had completely redesigned it as a comprehensive, integrated, sustainable development project, in which increased grain production was only one of many aims. Actual implementation of the project was the responsibility of two international NGOs – Save the Children U.K. and the Italian A.S.I.A.(Association for International Solidarity in Asia). Over the years, the project involved lengthy negotiations with competing official agencies to ensure that they all co-operated and considered the welfare of the recipient villagers as the key criterion of success. Since it was implemented, the PIRDP has proved very successful.

The EU, in summarizing what was achieved by this project, stated as follows:

> At Final Project Steering Committee Meeting held December 2005 in Lhasa and Shigatse all government officials and stakeholders agreed that the project had made significant contributions towards reducing poverty, and capacity building and had achieved to a very high degree all their objectives; the main achievements are as follows:
>
> Irrigation: completed the relining of 32.7 km secondary canals, and established with the Chu Sun Water User Association (CSWUA) the first Water User Association in TAR according to the Chinese Water Law. Agriculture: numerous new food and forage crops and varieties were tested, the best performing varieties met great demand by farmers and some varieties area already multiplied within the TAR agriculture network. Livestock: started crossbreeding Jersey cattle with local cattle with the aim to increase milk production; Lhasa White chicken were imported for higher egg production and Cashmere goats for wool production. Fodder production, feeding, housing and management were improved through demonstrations and strengthened extension.
>
> Community Development: trained a core staff of around 60 government officials in participatory integrated village planning according to the County Poverty Alleviation Planning Methodology. In 12 Pilot Villages villagers and government officials jointly prepared Village Action Plans (VAP) and Village Development Plans (VDP). The VAPs and VDPs included the energy issue and the integrated crops-livestock-forestry model, and provided solar stoves, pressure cookers and thermos flasks at 50% of the costs; and planted and raised tree seedlings. Rural Water Supply: provided clean drinking water to a total of 70 of villages in 10 out of 11 townships: in total, 21,703 persons equivalent to about 54% of Panam County's total population are benefiting from clean drinking water. In 58 villages, Village Water and Sanitation Committees (VWSC) were established and trained in the basics of hygiene, sanitation and nutrition.
>
> Education: PIRDP trained 184 of 220 primary school teachers in Child Friendly Teaching methods, established the Vocational Training Centre and 6 vocational training courses at the Panam County Middle School, and improved significantly the teaching and boarding facilities of primary schools.
>
> Health: 5 new township clinics were built, 2 old township clinics were rehabilitated, and infrastructure of the Panam County Hospital (new and old) was improved. The most needed equipment and materials were provided, and knowledge and skills of all health personnel in Panam County were upgraded, particularly with regard to improving the health of mothers and children. A hygiene, sanitation and nutrition education campaign was carried out jointly with Rural Water Supply and Education in 58 villages and 5 primary schools, having trained a total of 9,261 villagers and 843 students (European Union 2005).

All of this was achieved without the need to spend an exorbitant amount of money. The total funding for the PIRDP was 7.6 million euros (US $10 mn), contributed by the EU, and 2.23 million euros (US $2.94 mn), contributed by several Chinese government departments who, in the end, delayed and spent only two thirds of what was promised.

The PIRDP produced sustainable results and achievements in improving education, health and nutrition, as well as encouraging farmers and herders to use new breeds, varieties, crops and seeds. Crucially, it also engaged and involved Tibetan villagers in all aspects of the project, encouraging and training them to establish their own community-based village water user associations. These types of associations were envisaged but never implemented under China's water law. The associations give villagers a voice in the policy-making process, as well as a legitimate channel for expressing their concerns. As a result, these farmers are once again active agents, as they were before 1950, when irrigation and maintaining water flow was left entirely in the hands of Tibetan farmers and their traditional community-based organizations.

The Europeans paid careful attention not only to school enrolment rates but also to actual classroom attendance. Their report confirms what is presented in chapter two (Education):

> While the enrolment rates are with more than 95 per cent very high, the regular attendance rate is often considerably

less. Many parents give as main reasons why their children do not regularly attend schools the lack of family labour and the need of children to help in farm work, as well as the little relevance of many subjects children are taught for their future life as peasants or herders. In addition, the squalid boarding conditions at primary school and the rather traditional and authoritarian teaching style of most teachers gave parents little incentive to let their children stay at primary school (European Union 2005).

If we are to find successful examples of practical sustainable development, we need to look at the international donors and NGOs, who are changing the lives of ordinary Tibetans in a positive way.

Faced with such a systemic neglect of education, the EU and its NGO project implementation agencies knew that they had to do much more than just give money. Tibetan children had to be placed at the centre of an education system that had thus far been uncaring for their welfare or their educational formation. The EU stated:

> The core of PIRDP's Education component was from the beginning of its interventions the training of primary school teachers in *Child Friendly Teaching Methods* (CFTM). This core element was supplemented by setting up vocational training courses for grades 7–9 primary school students at the Panam County Middle School (PCMS); and improving the teaching and boarding facilities of Panam County's primary schools. During the whole duration of the project, the Education component held a total of 14 training courses on *Child Friendly Teaching Methods*. The teachers were trained further in adult learning and education, participatory training methods, presentation skills, planning, organising and running of workshops and follow up school visits, and giving training in their own schools. This core group of key trainers is the key to the sustainability of the whole interventions in the education sector. Already by project's end they have been training and coaching their fellow teachers In *Child Friendly Teaching Methods*, including the making of simple teaching aids using locally available materials (European Union 2005).

The EU report describes how the irrelevant primary school curriculum was in part remedied by improving vocational education, and teaching practical skills to Tibetan children:

> Recruiting the right teachers was always a key issue, though difficult. On the one side, formally qualified teachers for vocational training might have had not the right craft skills, while good craftsmen lacked the formal qualification and training as teachers and therefore, could not be recruited into the government education system. PIRDP Education component followed a pragmatic approach by hiring experienced local craftsmen as technical teachers who would train the students in practical skills under the supervision of qualified teachers. Simultaneously, the qualified teachers were teaching the core subjects of Chinese, Tibetan and mathematics. The European side paid until August 2005 the salaries of the technical teachers and Chinese Matching Funds paid these teachers from September to December 2005. By mid 2005 PIRDP had reached an agreement with the Panam County Bureau and the Shigatse Prefecture Education Bureau that starting in January 2006 the salaries of these technical teachers will be paid from government funds (European Union 2005).

The experienced EU development specialists kept the project on track with a mix of flexibility and firmness. Flexibility is needed in Tibet because resources and facilities are so scarce. A project must make skilful use of whatever is available, devising solutions as it goes along, or – to use a Chinese saying – crossing the stream by feeling for the stones, one by one. Equally, in order to ensure long-term sustainability beyond the formal ending of the project and foreign funding, firmness is required to ensure that the relevant departments are committed to their responsibilities.

Achieving such worthwhile, ongoing results was not easy, as the EU reported:

> The lack of experience and mutual trust impaired the effectiveness of cooperation and implementation during the first 20 months. Since 2003 Project Management put more emphasis on close integration and cooperation with TAR government institutions at county, prefecture and TAR level. This close cooperation and growing mutual trust increased the effectiveness of the spent project funds and increased substantially the chances of continuing and replicating PIRDP's experiences outside Panam County. During this time the European side succeeded in demonstrating that spending funds on training and soft skill development pays off better in the long-term than investing in hardware.
>
> Most of the funds which the Chinese side had allocated until end of 2002 were not utilised in due time. According to standard Chinese budget rules these funds are foregone and can not be retrieved at a later stage. As such, with approximately 1.5 million euros expenditures made until December 2005 at most two thirds of the budgeted 2.23 million euros Chinese Matching Funds were spent (European Union 2005).

Many foreign-financed projects in China have failed because, once the external funding runs out, the official Chinese partners lose interest in project maintenance, even if the local communities are keen.

The PIRDP is a useful model and benchmark for sustainable development in Tibet. The EU learned many useful lessons through this project. Development goals should be defined broadly, and include human well-being, instead of just increased grain production. Nonetheless, the attainment of those goals should be defined precisely, so that it is possible to measure whether or not they have been fulfilled. This combination of breadth and precision in the PIRDP ensured that all the competing Chinese ministries lived up to their agreed responsibilities, and worked for the welfare of the Tibetan farmers, not just for themselves. The 2006 EU report on this project explains the key learning points and is available online at: www.pirdp.org

2. Downstream users pay upstream providers for environmental services

As discussed in chapter five (Damming Tibetan Waters), payment for environmental services (PES) is becoming a widespread policy for linking communities across great distances, and for transcending political borders. It is a system that should be adopted in Tibet. The system is based on the reality that downstream users of the world's great rivers benefit greatly if those upstream, in the source region, refrain from damming, impounding, polluting or compromising the quality, quantity and regularity of stream flow (EEPSEA 2006; Pagiola et al. 2005; Echevarria et al. 2004).

A PES system would enable Tibetan communities to enhance their livelihoods without any need to exploit or compromise their local rivers. These rivers are the primary source of water for all of Asia – from Pakistan in the west, through India, Bangladesh and Southeast Asia, all the way to northern China. Such environmental service payments will enable downstream users to become stakeholders in the well-being of upstream human livelihoods.

Payments made through this new approach could help Tibetans to finance labour that can stop the loss of soil and grassland, which are currently being washed away into Tibetan rivers. Since China invests hardly anything in halting rangeland degradation, other sources of finance are needed if the free services provided by the land and people of Tibet are to continue. For example, the copper mine at Shetongmon and the chromite mine at Norbusa are both very close to the Yarlung Tsangpo (Brahmaputra River), which is in much need of protection from the toxic waste that seeps into the river. An advocate of PES, Sven Wunder, explains:

> As wilderness and natural habitats shrink, environmental services previously provided free by Mother Nature are becoming increasingly threatened. The core idea of PES is that external environmental services beneficiaries make direct, contractual and conditional payments to local landholders and users in return for adopting practices that secure ecosystem conservation and restoration. This approach explicitly recognises hard trade-offs in landscapes with mounting land-use pressures, and seeks to reconcile conflicting interests through compensation.
>
> Payments for environmental services (PES) are part of a new and more direct conservation paradigm, explicitly seeking to bridge the interests of landowners and outsiders. Service users will continue to drive PES, but their willingness to pay will only rise if trust-building processes with service providers are sustained. People facing credible but medium-sized environmental degradation are more likely to become PES recipients than those living in relative harmony with nature (Wunder 2005).

3. Ensuring hundred per cent literacy for nomads

Mongolia's success in providing education to its nomads can serve as a model for the nomads of the Tibetan Plateau. A study commissioned by the World Bank shows how Mongolia successfully adapted modern education to the needs of the nomads and, by comparison, how Tibet has lost at least two generations to illiteracy, quite unnecessarily (Kratli 2001). Kratli, the author of the study, reported as follows:

> Mongolia was chosen because of its unique success in providing education to its largely nomadic population, moving from nearly zero to almost 100 per cent enrollment between 1950 and 1990. At the very root of Mongolia's success with education provision to nomads one finds a non-antagonistic culture towards nomadism, both at the national level and within the school system, with a deep respect for herders. Mongolians had to fight to maintain this attitude. Their Russian advisers clearly thought nomadism was backward and primitive and where state power was strong enough –as in the Soviet Union, especially Siberia and Kazakhstan- they ruthlessly eliminated it.
>
> Today the impression received when talking to teachers and school heads in rural areas is that nomadism is seen as a perfectly normal way of life. As one can be a teacher or a driver, one can be a herder, and consequently a nomad.

> Even more interesting is the continuum between nomadism and sedentary life, a continuum within which a nomad can choose to study and go to university just as a teacher can decide that for the time being it is more convenient to be a herder and become a nomad. Asked whether they had ever heard of children who, born and educated in town, decided to move to the countryside and become nomads, none of the interviewed teachers and parents showed surprise or amusement. On the contrary, they seemed to find the question perfectly legitimate and usually said that such cases were quite common. It is undeniable that virtually all present nomads above the age of 25 in Mongolia have had between 4 and 10 years of schooling (Kratli 2001).

During his fieldwork in Mongolia, Kratli identified specific ways in which the modern production and education system had adapted to the realities of nomadic life, especially the chronic labour shortage in summer.:

> In 1990, before liberalisation, Mongolia's expenditures for education were 11.3 per cent of GDP. The exceptionally high investment made by the state in order to ensure free, good quality primary and secondary education for all, also represented a public tribute to all those involved in the education system and an acknowledgement of the value attributed to their work. School staff, especially in rural areas, enjoyed good salaries, a high social status, and working conditions that enabled them to perform at their best. School holidays, one month in January-February and three in the summer, match pastoral household peaks of labour demand. Starting school at eight years old allows the children three crucial years to socialise within the pastoral context and to acquire basic pastoral skills (Kratli 2001).

Mongolia's economy experienced an acute crisis in the 1990s, yet managed to sustain its literacy rate. It has good reason to be proud of attaining the key Millennium Development Goal for universal primary education, which stipulates the need for nine years of schooling. As the United Nations Development Programme stated: "This achievement is indeed remarkable, given the extremely low density of population, and the predominant nomadic lifestyle in rural areas. Total expenditure on education went up from 4.6 per cent of GDP in 1995 to 8.8 per cent in 2001. The Law on Education mandates that an expenditure level on education sector should not be not less than 20 per cent of the budget expenditure" (Government of Mongolia 2003: 10). Notably, in comparison, China has spent no more than 3.2 per cent of GDP on education in recent years, as discussed in chapter two (Education).

These successes in Mongolia serve as lessons for the future development of Tibet. In Tibet, China persistently depicts pastoralists as backward and even primitive. Teachers in Tibet are poorly paid and have a low status among officials. In Amdo (Ch: Qinghai), the school holidays were recently extended in winter, even though the summer period is when families really need the extra hands their children provide. However, because the education funding is so inadequate, the schools lack indoor canteens and heating and so, in winter, the children shiver all day and the only solution is to send them home.

4. Reforestation practice in China: Learning from mistakes

Sustainable development is not only an outcome but also a process. Sustainability is measured by a variety of factors – not only in monetary terms, or output, but also in less readily measured ways, such as the sense of ownership and involvement of the local community. Sustainability means meaningful local participation at all stages of the development project cycle, from initial identification through to final evaluation after project completion (Choudhury and Springer-Heinze 2004).

Until the late 1990s, official Chinese policy, driven by memories of famine, was "putting grain first". The insistence that grain should be grown wherever possible, and that each province had to be as self-sufficient in grain as possible, resulted in vast marginal land being ploughed for dry land crops, including steeply sloping land that is vulnerable to erosion. These areas were seldom irrigated, being well above the nearest rivers or streams, and usually only produced enough for the subsistence of the farmers. There were many poor farmers throughout China whose entire livelihood relied on those marginal farms, with no other prospects.

The new land conversion policy that began in the 1990s, called "grain-to-green", focused on reforestation, and involved the conversion of sloping marginal farmland back to forest. In areas where the natural vegetation is grassland, this requires the sowing of grass seeds for pasture. In China, this policy is also referred to as "mountain closure", since reforestation often means fencing off the slopes, and forbidding villagers and nomads to graze their livestock amid the tree seedlings.

This policy has been implemented in a completely top-down approach, with orders conveyed down the long hierarchy of command – from national to provincial to prefectural to county to township to actual villages, where the farmers are forced to comply. Not surprisingly, this policy has encountered a great deal of resistance, since farmers face a partial or even total loss of livelihood if the

central plan decrees that their entire farm is on too steep a slope. The central authorities had planned to compensate farmers by providing sufficient grain for survival, as well as limited cash compensation, for a few years. However, the displaced farmers and nomads are well aware that these types of central subsidies must first filter through many levels of bureaucracy, and seldom reach those for whom they are intended on time, if at all.

China's reforestation plan had only one goal, and that was the restoration of water catchments, and consequently the species of tree seedlings to be planted were listed centrally, and supplied centrally by state tree nurseries. The species were chosen solely for their ecological utility in restoring steady water flow and halting erosion, rather than for their usefulness or suitability as tree crops. The entire programme has been run by China's State Forestry Administration (SFA), which had previously been responsible for logging the forests and, ironically, was now in charge of the reforestation. Neither the logging nor reforestation projects involved the input or participation of the local Tibetan communities, which stands in contrast to the situation in many other countries, where the concept of community forestry has become increasingly popular. The SFA was first focused on maximising extraction, and then on rapid reforestation. In neither phase was attention paid to generating local employment, or involving the local communities in the ownership and care of the seedlings.

Not surprisingly the SFA "grain-to-green" programme has enjoyed limited success, and been widely resisted and subverted, often with the assistance of local governments who are sympathetic to the crisis faced by many farmers. The difficulties experienced in the implementation of "grain-to-green" were thoroughly documented by teams of Chinese scientists who were sent to many provinces in order to investigate what implementation of the policy involved in practice. These reports are available through the website of the China Council for International Cooperation in Environment and Development (CCICED), which was formerly chaired by Wen Jiabao, the Premier of China.

The detailed findings of these teams show that the compulsory conversion of land, under the "grain-to-green" programme, ran into many difficulties, even in the early stages. In some counties, the local cadres collaborated with the poor farmers, and planted economic crop tree species instead of the species selected solely for their ecological function. In one county, inventive local leaders simply reclassified a traditional local crop as a tree, enabling the farmers to carry on ploughing and cultivating. But in the Tibetan case study of the CCICED, the local cadres were not of the same ethnicity as the nomads of Darlag in Amdo Golog, whose degraded pasture was to be re-sown with grass seed, and so were less sympathetic. Rather than employing the herders to do the re-seeding, the local leaders contracted a lowland wool processing factory, with whom they had business relations, to do the harrowing and seeding, even though such work was entirely unfamiliar to the factory. A case study on re-sowing the pasture in Darlag can be found following chapter one (Nomads and Grasslands).

These are just a few of the innumerable case studies available. They exemplify the cost of centralised, top-down, one-size-fits-all control, specifically in the case of China's purported "sustainable" development policies. Controlling a country of 1.2 billion people through top-down rule will inevitably mean that the local conditions are unknown and not taken into consideration. Policies are implemented narrowly, and achieve, at best, a single objective, while other objectives, such as farmer livelihoods, are treated as incidental. The flow of information is in one direction only. Each official level is expected to pass central directives down the line, until they reach the level where they are put into practice. Very little information filters back up. The only way that local communities can modify these central directives is by quietly subverting their implementation. This is possible only when the local leaders are sympathetic to those who are worst affected by the central decrees.

China's "grain-to-green" policy has encountered a great deal of resistance, since farmers face a partial or even total loss of livelihood if the central plan decrees that their farm is on too steep a slope.

There is an alternative. Fortunately, the widespread unpopularity of the SFA's "grain-to-green" programme has led to a radical rethink of policy. The result is a grass roots sustainable development plan that achieves not only China's objective of water catchment protection, but also actively involves the local communities in the ownership and care of the reforested areas. This approach enhances farmer livelihoods instead of destroying them.

The active involvement of local communities has transformed a single purpose, single-minded official project into a process that achieves several things at once – it supports the farmers and forests, and fulfils the objectives of the state.

For example, participatory community forestry has been successfully implemented in many areas of China. Chinese professional foresters have learned to actually serve

the people while simultaneously implementing the will of the state. Two foresters explain what they learned through their work in the hills of eastern Sichuan:

> The traditional practice in China is that forestry sector makes the policies, including guiding ideology, basic principles, objectives and planned tasks, then province and county-level forestry sectors elaborate the planning for these projects, and finally the farmers plant trees. Within the method of 'top-down', rural communities and farmers have almost no rights to take part in afforestation planning, and they are just told what to do, when to do and where to do. Since the farmers have no ideas about the ownership of the trees they will plant, or do not like the tree species the forestry department has ordered them to plant, they are not active in planting and tending, do not take planting and tending as their own affairs; consequently, the passive participation of the farmers leads inevitably to low survival rate of the planted trees and poor management after planting.
>
> Farmers should be allowed to participate in the whole process of community forestry activities, including field investigation for community forestry plan, project planning, tree species selection, and decision –making related to planting method, tending, protection, harvesting, sale and profit distribution, project evaluation and they should also be allowed to obtain the final benefit. If the participatory approach of community forestry is widely applied in the governmental forestry projects and activities, the enthusiasm of rural communities and farmers to plant and to protect forest will be inspired.
>
> The participatory planning method takes the theory of participatory approach as its guidance, the farmers as the principal part, the traditional knowledge of farmers as the basis, and participatory method as the means. It lays a sound foundation for obtaining the goal that 'the cultivated land can be converted irreversibly and the farmers can become rich.' The leaders at the levels of township and village should be trained with the concepts and basic methods of participatory approach. Only those who understand the bottom-up method can respect the wishes, benefits and demands when they really mobilise the farmers, and ensure a smooth implementation of the programme. As for the government departments, they shouldn't judge the performance result from the planted area the farmers have finished, in implementing the programme; they should combine the programme with farmers' long term livelihood, and help them find a way to increase their income. It is not a good way that the governments have, to organise the superfluous manpower to do off-farm work in cities (Li and Deng 2004).

This is sustainable development in practice, not only because it delivers results in the form of improved tree survival rates and quicker reforestation, but also because it builds human capabilities, creates links of trust between locals and leaders, and may even succeed in raising farmer incomes instead of threatening their survival.

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This participatory community forest programme benefited the local population as well as the officials who managed the programme's implementation. It taught officials to listen and consider the actual complexity of social situations, rather than simply imposing a single policy and ignoring the consequences on the ground. The process also taught farmers and other active participants how to consider not only short-term problems but also the long-term consequences of their choices. The negotiations surrounding this programme even resulted in the community acceptance of certain national goals, such as flood prevention far downstream, and the official acceptance that communities can creatively contribute solutions to major policy and governance problems. Ordinary people were mobilised. Their voluntarily contribution to a successful collective enterprise transformed them from passive, disempowered objects of official policy into active citizens.

5. Appropriate policies for preserving the culture and wisdom of mountain communities

Tibet is known as the land of snows, surrounded by the highest peaks in the world, and its special mountain communities require special policies. Mountain research and development specialists have suggested several thoughtful policies for communities such as those found in Tibet.

These specialists of Himalayan communities point out that, the relative isolation of many mountain communities has allowed them to retain traditional cultures, and ways of life that have often been abandoned in the more accessible lowlands (Messerli and Bernbaum 2002). The diversity of the mountain terrain and climate provides a niche for a great variety of mountain cultures that are based on different ways of life, with many of them existing

in close proximity to each other. Nomads who graze herds on the Tibetan Plateau, for example, exchange their milk and meat for the barley that is grown by farmers in more sheltered valleys. The inevitable role of mountain ranges as borders between nations and cultures also adds to the rich cultural diversity of the mountainous regions. It contributes, in particular, to the great number of languages and dialects that can be found in the mountains.

Messerli and Bernbaum emphasise that mountain cultures have an intimate knowledge of their own local environments that has been culled over many generations. They know which plants are good for eating and which for healing. They know the habits of the wildlife, and where to find reliable sources of water and nourishment for their livestock. This traditional knowledge has many valuable uses, both for the local communities and for the outside world. Much of this knowledge has never been researched or recorded by scientists, and is in danger of being lost as the generations of nomads who have been entrusted with it slowly die out.

For centuries, mountain cultures have used their traditional knowledge and practices to protect the environment in a variety of ways. Messerli and Bernbaum report that traditional designations of sacred "lama forests", and the local institution of village forest wardens, have done a better job of protecting the forests of the Khumbu region in Nepal, close to Chomolangma (Mount Everest), than the more recent measures, which were instituted by the central government and Sagarmatha National Park.

Local communities need to find ways to strengthen these traditional beliefs and practices, and learn how to adapt them to changing circumstances and outside influences. Government agencies, NGOs and other organisations have a key role to play in this process. As a first step, any programme of sustainable mountain development should involve representatives from the local communities, and any other groups for whom the site under consideration has cultural significance. These stakeholders need to be involved from the beginning as full participants in the process. Their needs and priorities should be at the forefront of all planning and implementation considerations.

NGOs and government agencies can also help by recognising the knowledge and authority of the traditional community leaders and experts when it comes to maintaining cultural traditions and protecting the environment. Educational programmes on the scientific and practical value of the ecological and medicinal knowledge that is possessed by elders and healers can strengthen mountain cultures. These elders and healers can even be enlisted as teachers. They can incorporate traditional ways of passing on knowledge and culture, which often happens informally through work and apprenticeship rather than classroom teaching, into the modern curriculum. This is particularly important for nomadic and pastoral societies, where forcing children to stay in one place for schooling actually disrupts the families and their traditional ways of life.

6. Nomadic poverty alleviation project

The pastoral nomads of Tibet do not have access to most modern services. Many children of nomadic families do not attend school, and the authorities do not try to make them attend so long as they are officially enrolled, and therefore appear in China's statistics. If these children do go to school, they must board at the school and their family rarely sees them, even when the children are needed to help with work at home. The result is a cycle of poverty, from generation to generation, as the degradation of the pastures continues unchecked, and life on the plain gets harder. China has continually failed to make the investments that are essential in order to overcome rural poverty, and achieving the Millennium Development Goals in Tibet (IFAD 2005).

Local communities need to find ways to strengthen their traditional beliefs and practices, and learn how to adapt them to changing circumstances and outside influences.

Mongolia, like Tibet, is a vast, cold land that is best suited to extensive land use by mobile pastoralists who move seasonally over large areas of rangeland. There has been much poverty among the Mongolian nomads, especially since 1990, after the collapse of the *negdel* herder collectives that used to provide veterinary care, organised marketing and many other services.

In Mongolia, the major focus has been on the redistribution of livestock. A similar redistribution occurred in Tibet a little earlier, known as the Household Responsibility System, and is described in chapter one (Nomads and Grasslands**)**. The livestock sector is key to reducing rural poverty in Mongolia because the ownership of livestock is widespread among poor, rural households.

In 2003, the UN International Fund for Agricultural Development launched a project that was designed to reduce rural poverty in Mongolia by distributing livestock – yaks, camels, goats, sheep and horses – to very poor

herder households, and by introducing vegetable production and other income-generating activities (IFAD Arhangai 2003). Within a few years of the Mongolian economy's rapid privatisation in the 1990s, including the livestock sector, many unfortunate households lacked enough animals to maintain an adequate livelihood. The UN project was designed to redress this inequality through a livestock redistribution programme that provided additional animals to poor herding households as loans-in-kind.

Livestock distribution strengthens pastoral households. Livestock productivity should be achieved through a holistic approach, including nutrition, health care, management and breeding.

The project also provided credit to poor households in order to cover the cost of the seeds, tools and fencing necessary for vegetable production and other income-generating activities. The poorest households also received demonstration plots that aimed to improve the likelihood that others would follow suit.

As a result of the programme, herd sizes among beneficiary households have more than doubled and, on average, milk and wool production have increased three to fourfold. For the average beneficiary household, this means that enough milk is now available for home consumption during the summer, and some surplus is available to make butter and cheese for consumption during the winter and spring. However, the livestock distribution scheme has not yet reached the poorest segments of the population, and households with smaller herds do not qualify for participation. Nonetheless, the project is extremely encouraging.

The vegetable loan scheme originally progressed in accordance with the proposed targets – it contributed significantly to home consumption, reduced expenditure and provided income from sales. But some beneficiaries could not repay the loans from what their crop yielded, and instead consumed the harvest, and even the seeds, themselves. The yields were simply too low and barely exceeded the total loan amount with interest. To address this situation, the monitoring of vegetable production activities is being intensified. This involves ensuring high-quality performance, and providing high quality inputs and technical training to the borrowers.

From the project in Mongolia, the UN IFAD has learned that livestock distribution is the basis for strengthening pastoral households, such as those found in Tibet. Redistribution of livestock increases the number of herders with viable herd sizes. Projects should increase the income-generating capacity of herds, focus on increased sales and establish efficient marketing systems. Livestock productivity should be achieved through a holistic approach, including nutrition, health care, management and breeding.

IFAD learned many lessons from this experience, which could be usefully applied to Tibet. Future nomadic poverty alleviation projects need to address the vulnerability of poor households to natural and economic risks. Risk management programmes should include livestock insurance, fodder production, improved animal health services and marketing training. In any future restocking programme, care must be taken to avoid introducing herding to an unsustainable number of households, in order to prevent further rangeland degradation. In the Mongolian programme, the nomads who received animals had to agree to take the stock far away from district centres and choose a more remote pasture that was not in danger of degradation. However, further incentives, such as mobile services, may be required. A rangeland monitoring system should be installed and maintained in order to guarantee the future status quo, and the local herders should be involved in the implementation and management of such a system.

7. Reducing risks and enhancing mobility for nomads

Pastoral nomadism is risky, especially in the heart of continental Eurasia, where the climate is both extreme and unpredictable. In both Mongolia and Tibet, the livestock herds struggle to survive the long, bitterly cold winters. The greatest dangers are unpredictable blizzards. An autumn snowstorm that strikes, while animals are pasturing in the mountains can make it impossible, to get the herd across a snowed-in pass and safely down to lower pastures. An unseasonably late winter blizzard can leave snow on the ground in the spring, which delays the re-growth of grasses at a time when the animals are at their weakest.

Tibetan and Mongolian nomads have many traditional ways of assessing and managing risk. One method is to maintain, on the hoof, as large a herd as possible, so that they can guarantee a quick recovery from disaster. But at a time when rangeland quality is degrading, grasses are dying, and bare rock replaces what had once been living turf, this traditional method is no longer a suitable

primary insurance against disaster. Are there alternative ways of spreading and sharing the inherent risks of the nomadic way of life? Are there any skilful ways of persuading nomads that their herds can be smaller, without increasing their risk?

These were some of the problems faced by the World Bank team who designed a skilful and modestly funded assistance programme for the nomads of Mongolia in the 1990s (Skees and Enkh-Amalgan 2002). Their intention was to reduce the riskiness of nomadic pastoralism, and to encourage the nomads to reduce their herd size, safe in the knowledge that their livelihoods would be secure, even in the event of disaster. What the World Bank learned in Mongolia could be applied to Tibet and serve as a positive alternative to the present policy, which advocates the exclusion of animals and even nomads from the grasslands as the sole way to rectify rangeland degradation.

Herders in Mongolia have suffered tremendous losses in recent winter disasters, with mortality rates of over 50 per cent in the livestock of some areas. Mongolia is a vast territory in which herders tend over 30 million animals, which is comparable to the 24 million animals herded in the "TAR" and the 22 million herded in Qinghai (TSB 2006: TSY, table 9–25; QSB 2006: Qinghai Statistical Yearbook, table 11–17). Is it feasible to offer insurance to compensate for livestock deaths?

Any intervention must be skilfully planned. The World Bank animal husbandry specialists discovered that such a scheme must be designed with great care, and avoid many potential dangers. The key issue is how to provide support when disaster strikes without unintentionally causing complacency among the nomads, who may come to think that, even if they are careless, they will still be compensated. Equally, the system must guard against false claims from nomads, as well as strike a balance that rewards the prudent husbandry of herds, while providing an essential safety net for when climatic disasters inevitably occur. Finally, the scheme needs to provide help when it is needed, yet not be too costly for the government of a poor country. All of these issues and more were dealt with by this intelligent project.

The project concluded that the traditional insurance approaches, which insure individual animals, are simply not applicable. The opportunities for fraud and abuse are too prevalent. If the nomads can claim an insurance payout too often, it becomes very costly, and reduces their incentive to use all of their skills in preventing possible disasters. Nomads will be tempted to make exaggerated claims. The monitoring costs required to reduce this behaviour would be very high. Too many people would have to be employed to check the veracity of the insurance claims. Individual insurance can discourage the skilful efforts of nomads to manage a risky environment carefully. Individual insurance may, in fact, diminish these efforts. Herders may ask: "Why should I work so hard to save my animals if I will be compensated anyway for those that are lost?" A middle way has to be found between the extremes of too much and too little compensation.

An alternative approach, as proposed by the World Bank, is to use the local average livestock mortality rate as the basis for indemnifying herders. Under this system, an index is created for use in each area. The system codifies which instances of herd loss are within a normal range, and which are so abnormal that they entitle a nomadic family to assistance from the insurance fund. This type of index insurance is being increasingly adopted around the world – although, to date, no country has implemented this type of insurance programme for livestock deaths.

The World Bank's intention was to reduce the riskiness of nomadic pastoralism, and to encourage the nomads to reduce their herd size, safe in the knowledge that their livelihoods would be secure, even in the event of disaster.

However, this is not surprising, as very few countries can rival the amount and regularity of the localised animal deaths found in Mongolia and Tibet. Therefore, this system may be precisely what is needed to start a successful social livestock insurance programme in Tibet.

The index insurance system avoids some of the major problems associated with the traditional nomadic insurance programmes. Index insurance collectively pays all herders in the same region at the same rate whenever disasters occur. As a result, the incentives for nomads to work hard and reduce livestock losses remain strong. No one would be tempted to reduce his or her efforts to save an animal's life just to collect on insurance. Those who increase their efforts during a severe winter or unexpected blizzard could even be compensated for this effort, even though they may not lose livestock. In some cases, nomads could reasonably expect to receive payments that would compensate for the added effort or the added cost of trying to save their livestock.

In 2005, after careful investigation, the Mongolian government and the World Bank agreed to go ahead with

this insurance scheme in three provinces, at a total cost of almost US $10 million between 2006 and 2010 (World Bank 2005). The insurance scheme has two components which are based on an analysis of official records of livestock mortality, due to disastrous weather, over the past 33 years. Firstly, the nomads can buy an insurance policy from a commercial insurance company, which will compensate them if disastrous weather (*dzud* in Mongolian) causes the death of more than eight or nine per cent of their livestock. Secondly, if the *dzud* is so extreme that more than 25 to 30 per cent of the herd in a county dies, then the government will step in with a disaster response product that enables the hardest-hit nomads to begin restocking.

The World Bank explains that this plan is intended not only to assist the nomads, but also to play a key part in Mongolia's national poverty and rural economic growth strategies. Prior to this intervention, according to the World Bank, when Mongolia is struck by a *dzud*:

> Herders have to rely upon traditional informal coping mechanisms and ad hoc and unpredictable support from government and international agencies. The main longer-term support has been through restocking programmes. Evaluation has shown that these programmes can be expensive, poorly targeted and relatively inefficient. Furthermore, restocking can be counterproductive, as it provides little incentive for herders to improve their herd and pasture management to reduce mortality.
>
> The development of new and strengthened systems of risk management is required to create a lower risk environment for sustained rural economic growth. A major thrust of government and donor intervention is to respond to the risks inherent in livestock husbandry by supporting improved pastoral risk management (PRM) and this approach is a key element of the Poverty Reduction Strategy Paper (World Bank 2005).

This collaboration on risk management between the government of Mongolia and the World Bank is promising. A similar programme could benefit the Tibetan nomads. This is a skilful way of maintaining nomadic livelihoods, mobility, extensive land use and incomes, as well as encouraging nomads to reduce their herd size and thus ease pressure on overgrazed pastures. Maintaining mobility is the key. Around the world, wherever pastoral nomadism is the customary way of making extensive use of dry lands, research shows that sustainability is best maintained by supporting, not restricting, the nomads (Niamir-Fuller 1999).

Even in Kazakhstan, where pastoral nomadism was violently ended in the 1930s under command from Moscow, the government is now actively considering the re-introduction of mobile grazing as a productive and flexible response to overgrazing and rangeland degradation. A 2004 report by the Kazakhstan government and World Bank outlines possible actions:

> Suggested pilot activities: Re-establish the migratory grazing system where appropriate and reduce over-grazing around rural settlements. Restoring the transhumance grazing system could alleviate the overgrazing problem and use under-utilised grazing areas. Define stock tracking routes, along which animals can be moved at low cost from the settlements to summer pasture and back (Government of Kazakhstan 2004: 26, 70–71).

The Kazakh plan includes the introduction of solar-powered, mobile milk-cooling tanks that would enable milk to be collected from the herd, safely stored and then brought to urban markets, while the animals remain in their distant summer pastures.

China has made very few investments in improving the viability of the pastoral, nomadic lifestyle. The current worldwide trend is to recognise pastoral nomadism as a productive, skilful and sustainable way of using the rangelands. This means that state policy should support nomadic mobility rather than hinder it, exclude nomads or impose sedentarisation. In this respect, China lags far behind advanced world standards.

8. Compensating local forest communities for the ecological benefit they provide by conserving forests

Many of the great forests of Tibet have been felled in recent decades, but still vast forest land remains, especially in remote areas. These could become ecological forests if they were maintained as mature forests for conservation, rather than short-term human exploitation. The remote forests, rivers, glaciers and wetlands of Tibet ensure that lowland Asia has plentiful clean air and water.

The benefits that ecological forests provide, generated throughout their lifespan, are numerous. They include air purification, water conservation, control of soil erosion, sand and desertification prevention, wind protection and biodiversity conservation. But the Tibetan people, as upland stewards of the forests, receive no compensation for the ecological benefit they bestow on everyone by sustaining the forests. However, if these ecological benefits did not exist, then replicating them would require extensive investment, not only financial. A system of financial compensation for rural Tibetan communities would enable them to contribute more actively to reforestation.

In international practice, there are two main types of compensation arrangements – public fiscal payment and market-based instruments. In China, there are some publicly funded, official schemes that attempt to finance forest conservation and reforestation by taxing the wider community that benefit from the forests (Sun and Chen 2002). However, some Chinese forestry experts have suggested that reliance on market mechanisms is more suitable, and not just because central leaders are not interested in financing public fiscal payments. China's foresters claim that fiscal payments from government budgets are prone to a number of shortcomings, such as high transaction cost, low efficiency in fund use, and ambiguity in target beneficiaries. In everyday terms, this means that a lot of money is wasted on the salaries of unproductive administrators, and barely any of the funding actually achieves its intended purpose. Part of the Introduction section of this report, entitled 'Pouring Money Into Administrative Supervision, Not Grass Roots', explains how these errors can happen.

The new approach involves the establishment of a Forest Ecological Benefit Compensation Fund (FEBCF) and is already in place in some areas of China. Ecological degradation has become a major obstacle to the socio-economic development of China, and the government knows that the loss of forests is closely linked to ecological degradation. Consequently, forest conservation has gained an increasing amount of attention among policy makers.

The FEBCF has its underpinnings in China's theories of Specialized Forest Management and legislative frameworks, which provide compensation for the provision of public goods. The FEBCF was a result of revisions to China's Forest Law, and was rhetorically approved by the National People's Congress in 1998. Eventually, in July 2000, the State Forests Administration (SFA) once again proposed to the Ministry of Finance that an FEBCF be established. The proposal identified a source of funding from the central budget for this programme. The first pilot sites were identified by the SFA and the Ministry of Finance. A total of 200 million mu (13.3 million hectares) of protection and special-use forests were selected across 11 provinces – none are in Tibet.

One such programme was implemented in the Xinjiang Autonomous Region, Tibet's northern neighbour. Xinjiang has a fragile, arid ecological environment with a forest coverage rate of only 1.9 per cent. In 1997, a provincial FEBCF was established in Xinjiang. Funds for the programme were collected from the monthly salaries of employees in government departments, institutions and enterprises. In the 300–700 yuan per month salary category, one yuan per month was collected. The rate jumped to 40 yuan when the monthly salary exceeded 4,000 yuan. Additional funds were collected from crude oil enterprises, non-ferrous minerals producers, scenic zones and forest parks with admission charges.

The local farmers have benefited from the programme. As much as 50 per cent of the funds were distributed directly to farmers or their collectives. This is an important element of the system, because in today's China the entire fiscal and tax system is heavily skewed against the rural sector and farmers. Given the programme's success, it seems logical to conclude that rural Tibetans would also benefit from the establishment of FEBCFs on the Tibetan Plateau. Both the Tibetan people and the Chinese government could benefit from the introduction of this programme.

9. How to enhance livelihoods, reduce risks and alleviate poverty in Tibetan farming villages

To date, China's approach to poverty alleviation has been to promote general economic growth in those counties that have been officially designated as poor, in the hope that the wealth generated by a new industry would trickle down to the poor communities. This is an indirect approach, and not at all targeted to meet the specific and often urgent needs of the poor. Since most of China's counties have populations of hundreds of thousands, or even over a million, this is not an effective way of reaching the poor communities, who are likely to find it difficult to obtain regular employment in a new industry, except as unskilled labourers during construction phases.

A system of financial compensation for rural Tibetan communities would enable them to contribute more actively to reforestation.

Moreover, because the poor people in Tibet are usually secluded in remote, upland regions, they have little opportunity to earn income from any new industry that is located at a lower altitude, unless they migrate to the industrial, urban fringe. If they do choose to migrate, it is usually the strongest young adults who do so, which deprives the rural village of its best labourers and exerts extra pressure on the children and elderly to continue the seasonal cycle of farming and nomadic pastoralism. Even for those who do migrate, the new industries are often established by county officials who only employ their own

friends and family. This seldom includes the remote upland poor, especially if the county officials are of a different ethnicity to the Tibetans.

In spite of these drawbacks, economic growth is still at the heart of China's poverty alleviation programme. Is income generation the answer to poverty, or is there an alternative way?

Villagers collect *yartsa gumbu* caterpillar fungus from the alpine meadow, which are flown to Japan, where they fetch high prices. The villagers are manipulated by greedy middlemen, who have greater knowledge of the markets than the isolated villagers do.

Recent aid projects and small-scale studies that have focused on Tibetan villages can offer some alternatives. One answer may be to reduce the risks of existing income-generating activities, rather than create distant, new industries. Many alternative methods are based on understanding the traditional worldviews of the villagers and building on their intimate knowledge of the land. This is what the Yunnan Centre for Biodiversity and Indigenous Knowledge (CBIK) has done in certain communities in China. The CBIK has sponsored research which shows that the ethnic minorities themselves are best placed to conserve their lands and generate sustainable development. One such report (Wilkes 2005) noted as follows:

> Rather than focus on cash income generation, in marginal areas a more desirable focus of development interventions might include: reducing livelihood risks for households, enhancing households' capacities to cope with risks, supporting households and communities to enhance their core asset bases, and reducing the risks created by the implementation of external policies (Wilkes 2005).

The CBIK fieldwork reports can offer us a picture of village livelihoods at risk. For example, Yunnan Nujiang Doyon village is located on the warmest and wettest edge of the Tibetan Plateau. The Tibetan and Lisu ethnicity villagers of Doyon support themselves in many ways, but each way is risky. Some risks are natural and some are man-made. Diseases, sometimes epidemic, often strike pigs, cattle, chickens and other animals. Basic veterinary care is distant and expensive. The corn crop can be affected by pests, frost, or eaten by wildlife. The villagers are also manipulated by greedy middlemen, who have greater knowledge of the markets than the isolated villagers do. Villagers collect *yartsa gumbu* caterpillar fungus (*cordyceps sinensis*) from the alpine meadow, and many varieties of mushroom and other medicinal plants from the slopes. These are often flown to Japan, where they fetch high prices. But the prices that the villagers receive for their prized medicinal ingredients fluctuate greatly and are manipulated by the traders who attend the weekly village market. They know the villagers have no choice but to sell these highly perishable mushrooms quickly to whoever will buy them. The main market is hundreds of kilometres away in Xiaguan, in Sichuan province, and the buyers keep abreast of price fluctuations at Xiaguan using mobile phones. The villagers lack the connections and transport facilities to go directly to the main market and are often paid unfairly low prices for their products.

Above the village is the alpine pasture where the cattle are taken during summer. Around the village are the hillsides where corn, the staple crop, is grown, and many valuable wild plants, of medicinal value, are collected or cultivated. Beyond the village are income-earning opportunities, such as road-building and timber cutting. Even these opportunities are risky, according to the researchers, because the bosses often cheat the young villagers of their wages.

In the face of all of these risks, the Yunnan CBIK instituted a simple strategy that has made a significant contribution to food security and sustainable livelihoods. The CBIK addressed a core risk that was faced by the villagers in their traditional livelihoods: animals falling sick. The strategy includes the provision of basic veterinary care to the animals of the village. This gives villagers greater confidence that they do not need to pursue cash incomes in the modern economy, thereby exposing themselves to manipulation and wage theft, as much as they thought.

The Yunnan Centre for Biodiversity and Indigenous Knowledge researchers conclude the following:

> Rather than focus on cash income generation, in marginal areas a more desirable focus of development interventions might include: reducing livelihood risks for households, enhancing households' capacities to cope with risks, supporting households and communities to enhance their core asset bases, and reducing the risks created by the implementation of external policies (Wilkes 2005).

This is just one example of a worldwide movement to respect the traditional knowledge of local communities, and to incorporate this knowledge into development planning and sustainable livelihood strategies. In China, the CBIK has sponsored a great deal of culturally sensitive research that demonstrates how minority ethnicities are invaluable in conserving rural land and ensuring sustainable development.

CONCLUSION

The visions for the future and case studies that have been presented above are designed to offer alternative approaches to sustainable development in Tibet. These approaches will be able to benefit both the environment and the people of Tibet.

In order to promote the implementation of these sustainable policies, a set of guidelines has been drawn up for individuals and organisations who wish to undertake projects in Tibet. All organisations, whether NGOs, development banks, government agencies or corporate investors, are strongly encouraged to base their interventions in Tibet on these guidelines.

Despite China's previous environmental policy errors, it is still possible to restore sustainability to the landscape of Tibet and dignity to its rural population.

GUIDELINES FOR INTERNATIONAL DEVELOPMENT PROJECTS AND SUSTAINABLE DEVELOPMENT IN TIBET

I. OVERVIEW

These guidelines are addressed to donors, lenders and investors who are working in Tibet or might consider becoming involved in Tibet in the future. Whether the motive for working in Tibetan areas is to make grants, lend capital or invest in commercially profitable enterprises, all international interventions come under the scope of these guidelines.

The guidelines articulate the needs of the Tibetan people for a future in which they can maintain their culture and spiritual traditions; fulfil basic human needs with access to services that facilitate a healthy and contented human life; and actively participate in the wider world. These guidelines are intended to ensure that investing agencies and corporations do not further harm the interests of Tibetans and can empower them.

The current resumption of direct contact between the representatives of His Holiness the Dalai Lama and the People's Republic of China (PRC) is encouraging, and it is hoped that this will lead to negotiations in order to resolve the question of Tibet in the best interests of the Tibetans and Chinese. In the meantime, the Central Tibetan Administration believes that it is vitally important for development agencies, NGOs and corporations that intend to become involved in Tibet to understand how their activities may bring benefit or harm to Tibetans in today's complex situation. The purpose of these guidelines is to ensure informed decision-making.

Development in Tibet is welcome and much-needed; and Tibet should not be off-limits or beyond the reach of the global community of development and environment organisations. However, development is only productive if it benefits Tibetans themselves. Projects will be opposed by Tibetans if, in their opinion, such undertakings would harm Tibetans, their land or their best interests. We firmly oppose any development projects or activities that promote or result in:

- Violence
- Environmental destruction
- Social exclusion and economic marginalisation of Tibetans
- Direct or indirect population transfer of non-Tibetans to Tibet
- Violations of basic human rights, including involuntary displacement, confinement and eviction
- These guidelines apply equally to development projects in Tibetan communities in India, where they can be, and are, put into practice. They are already a basis for practical action

These guidelines apply to the whole of Tibet, which can be taken geographically as the entire plateau area, or administratively as all townships, counties, prefectures and regions designated by the PRC as belonging to the Tibetan nationality.

II. RATIONALE

Based on all available facts, including the official Chinese statistics, UNDP, Asian Development Bank and World Bank reports, findings of non-governmental organisations working inside Tibet, Chinese economists and other researchers, it is evident that there is an acute need for a shift in the basic approach towards the development of Tibet. Beijing's approach has led to chronic dependence on subsidies, referred to as "blood transfusion economy" by some Chinese economists. Its focus on urbanisation and infrastructure, plus skills transfer through settling the Tibetan Plateau with skilled immigrant personnel, has not really helped to improve the life of the majority of Tibetans but has increased their marginalisation. Nor has there been a transfer of skills to Tibetans; Tibet still continues to rely on outside aid – both capital and labour.

In the words of a development professional who has worked in the Tibetan region for the past two decades:

> Tibet's rapid employment and income growth has been primarily in the modern urban sector, and has been driven by a dynamic, even cut throat private sector in which Han and Hui Muslim populations have been dominant. This urban-oriented growth has contributed to rapidly increasing income disparity between urban and rural areas, and between Han and Tibetan populations (Arthur Holcombe, Testimony to the US Congressional-Executive Commission on China, 10 June 2002).

We propose the replacement of the single development framework of the past 50 years, which has relied on the industrialisation of Tibet to create general economic growth.

Half a century of imposed industrialisation and urbanisation has not been an effective solution to all the human needs in Tibet. The assumption that industrialisation generates economic growth and benefits everyone, including the poor and excluded, has proven factually wrong. Even where this policy has worked in mainland China, it has failed in Tibet. Senior Chinese economists now frankly acknowledge this. Present realities in Tibet – inequality, marginalisation, deprivation, exclusion and low human development – cannot be blamed on the Tibetans themselves, as if they are inherently ignorant and backward.

More than five decades of attempted industrialisation has made materialism an end in itself. His Holiness the Dalai Lama has pointed out the limitations of this approach:

> It has been my firm belief that in order to solve human problems in all their dimensions we must be able to combine and harmonise external material progress with inner mental development. Material progress is certainly highly necessary and is a good thing, as it is of benefit to mankind. I see nothing wrong with material progress provided man takes precedence over progress. Man must be placed above materialism, and we must realise the true value of human beings. Materialism should serve man and not man serve material progress (14th Dalai Lama, *Spirit of Tibet: Vision for Human Liberation*, p123).

The Tibetan Plateau is a huge land mass, equivalent in area to Western Europe. A single, top-down strategy allocated by central planners can never substitute the intimate knowledge that Tibetans have of their land and how to render it habitable in sustainable and productive ways. Tibetans traditionally made use of the entire plateau, even the most arid regions, not just clinging to river valleys and towns. This unique pattern of extensive land use should become the basis for all development work, strengthening the existing knowledge base of social capital that has been accumulated by Tibetans over many centuries of sustainable land use.

It is time for a new approach that is based directly on human needs. The human needs approach is direct, observable, locally-based and not reliant on mammoth investment, grandiose visions or ideological convictions. Furthermore, this approach is sensitive to actual circumstances and has its roots in reality. It is driven by community needs and expectations, offering maximum participation at all stages of development project work.

Development agencies have the opportunity to play a positive and proactive role in facilitating the Tibetans' move towards a decent human life. By fostering local Tibetan initiatives and enterprises, international agencies can help Tibetan communities to become more self-reliant and better able to finance their own growth, as well as build their own schools and health clinics. In this way, the implementation of these guidelines would empower Tibetan people locally, and contribute on a local level to the overall goal of achieving genuine autonomy.

III. FUTURE TIBET – A VISION

As neighbours, the Tibetan and Chinese peoples have interacted, traded and influenced each other for centuries. Relations were sometimes good, sometimes conflictual. Good relations between the two peoples are necessary and can be mutually beneficial. In reality, for the major part of our long history we have been mutually supportive. In the future also, if they achieve genuine self-rule or autonomy, the Tibetans will nurture cordial relations with the Chinese so that the two peoples can co-exist in a spirit of mutual support and fraternity. This is the vision of His Holiness the XIVth Dalai Lama's Middle Way policy – a very humane concept that transcends political considerations.

In the Five Point Peace Plan, His Holiness has proposed Tibet as a Zone of Ahimsa (a Hindi term meaning peace and non-violence), where the entire Tibetan Plateau would be demilitarised and transformed into the world's largest natural park or biosphere. His Holiness has stressed the adoption of a policy of sustainable development whereby natural resources would be directed towards the active promotion of peace and environmental protection. Organisations dedicated to the furtherance of peace and the protection of all forms of life would find a hospitable home in Tibet.

The following two quotes by His Holiness would sum up the broad vision for a Future Tibet:

> Today, more than ever before, life must be characterised by a sense of universal responsibility, not only nation to nation and human to human, but also human to other forms of life.
>
> ...The success or failure of humanity in the future depends primarily upon the will and determination of the present generation. If we ourselves do not utilise our faculties of will and human intelligence, no one else can guarantee our future and that of the next generation...

Hence, we believe in the vision of Tibet as:

> A zone of peace, based on the principles of non violence, compassion and protection of the natural environment, deriving its inspiration from the Buddhist principles of compassion, justice and equality, where Tibetans, especially those living in Tibet, bear the main responsibility in shaping Tibet's future. Future Tibet will strive for balance and harmony-both a balance between human and human, and between human and the environment-realising the fact that everything is interconnected. This vision incorporates an attitude of sharing, harmony and co-operation between the people, instead of competition (HH Dalai Lama).

In regard to development in Future Tibet, we would avoid the two extremes of capitalism and socialism. Since both systems are equally unsuitable for the well-being of human society in general, and for the betterment of Tibetan society in particular, Tibet will formulate a unique economic system to suit its own needs. Although there is no appropriate existing model of an economic system which could be adopted by Tibet in the future, the nearest existing model is the "Gross National Happiness" concept already in practice in Bhutan.

Impermanence and the innate worthlessness of wealth – the fact that wealth and material progress are for the people and not vice-versa – coupled with "needs" being distinguished from "wants", will form the central point of the future economy of Tibet. Hence, Tibet's future economic system will be based on the values that are outlined in the following section, which presents the underlying principles of the guidelines.

IV. UNDERLYING PRINCIPLES

These Guidelines for Development Inside Tibet are based on the following principles and values, which are grounded in a worldview that has been developed in Tibet over the thousands of years of human use of the Tibetan Plateau and coexistence with all nature. His Holiness the Dalai Lama's statement on universal responsibility is a fundamental principle that underlies the guidelines.

> There are two types of happiness and suffering, mental and physical, and of the two, I believe that mental suffering and happiness are the more acute. Hence, I stress the training of the mind to endure suffering and attain a more lasting state of happiness. However, I also have a more concrete idea of happiness: a combination of inner peace, economic development, and, above all, world peace. To achieve such goals I feel it is necessary to develop a sense of universal responsibility, a deep concern for all, irrespective of creed, colour, sex or nationality (14th Dalai Lama, *Spirit of Tibet: Universal Heritage*, p259).

A. Non-violence

By 'an act of violence', we mean offending any living being, including oneself, directly or indirectly, due to hatred, greed or ignorance. No form of violence is justified for any purpose whether in defence of nation, institutions, belief or self. Non-violence is the essential means of understanding truth. It is not a passive state of harmlessness, cowardice or absence of violence but rather an active restraint of violence and an expression of love, wisdom and compassion, of doing good even to the enemy or evil doer, where inculcation of compassion is key to non-violent actions.

To Tibetans, non-violence is the basic tenet to be practised in all its forms in order to promote peace and harmony within and without. Tibetan culture has an especially positive role to play in determining the future development of Tibet. Age-old local knowledge and skills provide a formidable foundation for rural development.

B. Environmental safeguards

It is a moral requirement and a practical necessity for us to re-learn how to live sustainably as a part of nature, rather than acting as consumers and destroyers of nature. Materialism does not have self-limits, and natural resources are finite. The tolerance margins or limits of nature must therefore be respected and conserved at all costs, with at least the same vigilance that we would use to guard our own personal resources. In that sense, this principle is based on frugality rather than efficiency, as it not only induces efficiency but also highlights the limits of the efficiency policy. In the past 50 years, growth-oriented development activities have exposed the environment to unnatural degradation which has impacted all forms of life on the plateau. This principle also insists on

harmonious co-existence with nature, in which we humans play a healthy and supportive role in restoring imbalances.

Any forms of activity that are environmentally unsafe or have the potential to harm the biosphere are not to be encouraged under any programmes. Rather, projects should help to restore the degraded environment, so that it gets as close to its original pristine condition as possible. In doing so, we can ensure that the future will be as healthy as possible in terms of access to Tibet's natural capital and the benefits we can accrue from it.

C. Sustainability

The principle of sustainability is a vehicle for asserting our deep concern over the encroaching consumerist behaviour of our lives, which we will not be able to sustain in the future. On the contrary, we are aware that we must contribute towards the conservation of finite resources so that future generations may also have equal access to these valuable assets. For this to be realised, it is imperative that the concurrent developmental activities are sustainable. Therefore, the principle of sustainability takes both long-term intergenerational justice and short-term activity levels into consideration.

The current consumerist trend increases our dependence on external factors over which we have very little control. In practice, we would like to see development that draws largely on Tibetan resources and knowledge to fulfil the basic needs of the people to live a contented life. Only development of this nature can be sustainable and long-lasting. Hence, at the macro level, the principle of sustainability calls for frugality in the use of the nation's natural resources. This frugality must sustain the non-declining utility of the biophysical ecosystem for generations to come, as we may need to rely on the renewable part of the resources in the future.

The principal criterion for measuring the sustainability of any project is its ability to benefit the impoverished and marginalised sections of society (poverty factor). In doing so, it should also take into account the benefits and participation of the majority in its design (scale factor). In order to have real benefit from and ownership of the projects, it is important that they are simple and manageable at the grassroots level. The project design should therefore be based on local and traditional knowledge (appropriate technology factor).

D. Participatory and needs-based development

The usurpation and co-option of public powers by groups or individuals inevitably becomes the self-development of vested interests, rather than addressing the true interests of the people. To ensure that development projects are sensitive and accountable to the needs of the people, empowerment of the grassroots level populace through genuine participation is essential. Participatory development would naturally safeguard the needs of the local people.

Given the present circumstances, we do understand that it is difficult to undertake needs assessments and impact studies with the open and honest involvement of the local Tibetans. So, when designing projects, it is crucial that the development agencies find skilful and innovative ways to assess the needs and involve the local populace, and at the same time avoid the clear danger of putting people at risk of admonishment by the local authorities. The institutionalisation of procedures and democratic governance at the grassroots level are both essential steps toward genuine self-governance.

V. CROSSCUTTING PRINCIPLES

All development projects in Tibet should incorporate the following crosscutting guidelines:

a. Involve beneficiaries, from the identification of a project to formulation through the implementation cycle, by applying participatory tools and techniques such as participatory assessment (PRA) to ensure accountability and ownership.

b. Always insist on small-scale interventions that suit the regions and populace rather than capital intensive ones.

c. Foster self-reliance, and build local project management teams centred on community-based organisations (CBOs), through local capacity building.

d. Conduct a feasibility study and environmental impact assessment;

e. Rely on traditional local knowledge and wisdom, including resource management and survival techniques.

f. Respect and promote the Tibetans' culture, traditions, knowledge and wisdom about their own landscape and risk management.

g. Be subject to ongoing on-site monitoring by the development agencies to ensure that the intended target group actually benefits, and that those in power do not usurp the benefits meant for the poor and disadvantaged.

h. Use Tibetan as the working language of the project.

i. Neither provide incentives nor in any way facilitate direct or indirect migration and settlement of non-Tibetans in Tibetan regions.

j. Neither provide incentives nor help facilitate the transfer of land and natural resources to non-Tibetans.

These guidelines are, by their nature, a checklist to enable development agencies to test the suitability of their plans for working in Tibetan communities on Tibetan territory. But checklists also compartmentalise the issues into neat categories; the reality may involve an interdependence of many factors. The Tibetan worldview and modern synthesis of appropriate development practices encourages a respectful, thoughtful approach to development that embraces many factors, rather than a narrow, technical compliance with shallow and literal considerations.

VI. PRIORITIES

A. Poverty alleviation

1. Poverty alleviation is a top priority in Tibet. Any project addressing this must look at the multi-dimensional nature of poverty – including health, education status, and forms of exclusion by gender and ethnicity – as well as monetary indicators. Vulnerable groups include those stricken by poverty due to gender, age, geographic isolation, exclusion and disability. They might need specific interventions, particularly in the form of direct transfers based on a policy of guaranteed minimum income support.

2. On the whole, poverty alleviation projects should shift away from charity and emergency relief, and move towards the entitlement to income support for the destitute and absolutely poor. In order that guaranteed income support does not lead to chronic dependence, it should be limited to the destitute. Development agencies can implement pilot projects to demonstrate the feasibility of this approach.

3. Development projects should benefit the poorest, most deprived and excluded citizens who,in Tibet, are overwhelmingly rural. Projects should directly identify and reach this segment of the population, rather than relying on general growth in the hope of also lifting the incomes and opportunities of the poor.

4. Social capital, traditional knowledge, customary practices of sustainable organic agriculture, and sustainable and productive rangeland management should all be studied, identified, acknowledged and incorporated into development project designs. These are examples of traditional Tibetan solutions to utilising the plateau productively that can serve as the basis for development work.

5. Projects based on the exploitation of Tibetan resources for the benefit of distant, heavy industry cannot be realistically presented as poverty alleviation for Tibetans, or environmental remediation, even if such projects generate local employment and invest in repairing damage caused by the project in minor ways.

B. Stimulating rural economy and off-farm employment

1. Tibetan carpets, handicrafts, traditional medicines and other Tibetan products – apart from having considerable demand worldwide – have great potential for redressing current inequalities, because they are largely rural-based. To realise this potential, the traditional products need to be enhanced by transferring modern skills in design, packaging, protection of intellectual property, marketing and financing to the Tibetans. This requires considerable investment in training.

2. A real opportunity for redressing the urban-rural divide is to promote the processing of raw, rural commodities by the producers themselves, thereby adding value and increasing their profits. This may involve training farmers and nomads in technologies that are compatible with their way of life, and in the establishment and operation of co-operatives, micro-finance pooling, and planning and operating enterprises.

3. In the long-term, it may be productive to identify the comparative advantages that Tibet has in producing goods that can find distant and highly profitable markets. Comparative advantage has potential in the longer term to

create national and international markets for what Tibet does best, especially in the non-violent production of wool and dairy products. Yoghurt, cheese and wool are in high demand among urban consumers in China's major cities. It may be that products made in Tibet can find a market in the cities, but if Tibetans are to benefit, great care will be needed to train producers in quality control, certification, supply chain logistics, marketing and business planning.

C. Rural infrastructure

1. Infrastructure development must incorporate appropriate technologies based on local needs.
2. Priority areas of infrastructure development in rural Tibet include local market access roads, clean domestic water supply, irrigation, electricity and communication.
3. Infrastructure development should promote food security, including land improvement projects to enhance food production (such as terracing, shelterbelt tree planting, irrigation canals and grain storage facilities) and access to markets.
4. Rural infrastructure projects need to be small in scale and low in cost, using paid local labour and simple technologies that facilitate easy repair and maintenance; for example, wells and rain storage tanks, small reservoirs or cisterns, terracing and drainage works. Reaching the rural population through small-scale projects is the priority, and such projects, based on diverting water from mountain streams or pumping it from underground sources, can be linked to individual households at a low cost per household. The development projects should also be sensitive to the seasonal nature of farmwork in order to determine when labour contributions should be asked of rural people.
5. Lower grade feeder roads to villages can quickly create significant income improvements for farmers. This overcomes the present reliance of producers on middlemen who dictate the price for products. Village access roads are generally low-cost, narrow gravel roads that are connected to main roads. They are inexpensive to install and often have multiple benefits: increased access to markets, health centres and schools; reduced marketing costs; lower costs in obtaining agricultural inputs; easier transport of heavy materials; and facilitated installation of valuable infrastructure, such as grid electricity and telephone lines.
6. Decisions on infrastructure projects should include active inputs from the local Tibetans themselves. The poor tend to have least say in any decisions about the type or location of infrastructure. However, they are usually the best placed to know what project would be of greatest immediate benefit. Through involvement in decision-making, and a sense of local ownership, they will be keener to contribute labour and local materials to the project, and more likely to maintain it in the future.

D. Agriculture and natural resources

1. Agricultural projects should consider not only the intended outcomes, such as intensification of production and higher yields, but also long-term soil quality, erosion control, downstream discharge of pollutants released by applying chemical fertilisers, and opportunities for integrated pest management based on time-tested Tibetan organic farming methods.
2. Grassland projects should not focus narrowly on a single development aspect, such as increasing production, invasive pest control, or introduction of exotic grasses. Projects on the rangelands should adopt a more holistic approach in line with the New Resource Management Policy embraced by most development agencies, in which nomadic mobility, under current circumstances, has the best long-term guarantee of biodiversity conservation, sustainability and productivity.
3. We do not encourage the sedentarisation of nomads, since it results in further rangeland degradation, overstocking, inflexibility and poverty among the former nomads. International development agencies have an opportunity to transfer the lessons that have been learned worldwide from the many failed sedentarisation projects of earlier years, and to explain the danger of damaging the viability of nomadic production through sidelining land and water sources for irrigation, farming and industrial uses.

4. Projects should adopt technologies that strengthen mobility, such as portable solar power. These are preferable to technologies that require settling year-round in one place, such as being connected to an electricity power grid.

5. Setting aside large areas as nature reserves can benefit Tibetans if there training is offered among local communities in skills such as becoming park rangers, tour guides, biodiversity protectors and enforcers of anti-poaching regulations. The establishment of protected areas not only conserves biodiversity and guarantees downstream water purity, it can also contribute directly to development, employment and human capital formation in the protected area. UNESCO is encouraged to investigate suitable areas to be declared as World Heritage Sites or Biosphere Reserves.

6. New hybrid seeds of Tibetan crops and breeds for herds can be introduced through effective agricultural extensions in which farmers and pastoralists are treated as the equal partners of scientists and officials. The higher yields from new seeds and breeds should not require higher inputs of capital, fuel, pesticides or chemical fertilisers.

7. Beijing's reforestation, mountain closure, and grain-to-green programmes, which aim to restore marginal farmland to grassland and forest, must try to benefit local Tibetan communities – this can be achieved through employment and involvement in the care of seedlings, sowing of appropriate grasses and repair of degraded rangeland. Social forestry and local ownership of projects are better models than exclusion, exclosure and subsidies that are directed only to state enterprises, which are staffed by immigrants who were once responsible for felling the same forests. The successful rehabilitation of degraded grassland and reforestation will fulfil the PRC's national goal of safeguarding the water supply, as well as the global challenge of greenhouse gases by acting as a sink for those emissions. This will require considerable training and skills transfer.

8. Even though we oppose any projects that displace or move Tibetan farmers and nomads, in extreme cases, where viability of life is not possible and Tibetans voluntarily accept moving out of ecologically sensitive zones, the projects should take special measures to ensure that the displaced Tibetans are not denied their basic right to a decent and sustainable livelihood. These projects should ensure that Tibetan farmers and herders who are displaced from their land get adequate and timely training, compensation and support, and effective ownership of renewed grasslands and forest. Only then can they recover their forfeited income, and become willing and active partners in the restoration of the degraded Tibetan lands.

E. Micro-financing

Micro-finance has been conspicuously absent from Tibet, despite its many successes internationally. Those who have helped the Tibetans to access micro-finance, such as the Tibet Poverty Alleviation Fund, use faults in existing Chinese policies as their starting point:

> [These policies]... have made it more difficult for traditional Tibetan urban enterprises to compete with better funded, more experienced and lower cost Han managed enterprises in urban areas. There is growing evidence of Han enterprises, which now constitute about 70 per cent of all enterprises in Lhasa Municipality, squeezing out Tibetan enterprises even in traditional Tibetan product areas such as Tibetan clothing, furniture, painting, restaurants and dry goods and food retailing (Arthur Holcombe, Testimony to US Congressional-Executive Commission on China, 10 June 2002).

Experience around the world shows that micro-finance succeeds in directly providing poor households with affordable credit, thereby encouraging their self-organisation. Micro-finance has become a widely favoured method of poverty reduction, both with governments and among donor organisations.

1. Micro-finance projects should encourage the direct participation of the poor, both in allowing recipients of loans to choose their own investments and in encouraging them to form their own village-level organisations.

2. An integrated approach is needed that combines access to credit with the provision of additional services and training, including marketing advice and technical support for production activities.

3. The micro-finance system should be a tool for the poor to gain control over assets and become economically self-sufficient. Micro-finance

lenders need not subsidise interest rates. The willingness of lenders to spend as well as lend is better directed at subsidising the administrative costs. The very poorest should be designated credit-worthy and eligible for loans. In the present Catch 22 situation, they do not own their land under Chinese law and consequently the Chinese banks will not lend them money, because they technically lack collateral as a guarantee for repayment of loans.

4. In delivering micro-finance services, the involvement of organisations of poor people, such as farmers' associations, rural cooperatives or local self-help groups, either independently or in cooperation with formal financial institutions, are the key to enhancing outreach, effectiveness and sustainability of micro-finance operations. This requires the active encouragement of traditional community-based organisations, which in turn will strengthen their voice and capacities.

F. Education

According to PRC statistics, the average adult Tibetan has had less than three years of schooling. The PRC's spending on education in Tibet is very low – only 310 yuan (US $37) per capita per year, including fees and contributions by parents – while per capita spending on education in the municipality of Beijing is six times greater, at 1,810 yuan (US $219) (National Bureau of Statistics, *China Statistical Yearbook 2002*, Table 20-35).

1. The development focus in education should ensure greater access, and the equalisation and distribution of resources across regions in order to compensate for present inequalities. To address specific local circumstances and needs, including nomadism, more flexible forms of education should be explored.

2. The primary goal should be the practical elimination of rural illiteracy for the younger generation, with the achievement of this target serving as the principal measure of effectiveness. An exceptional percentage of Tibet's population today is very young. Their education needs cannot be met by poor counties and communities alone, as is currently the case. Responsibility for financing education has been downshifted to those least able to pay. The need for external assistance is real and urgent.

3. Culturally appropriate education is a high priority. This requires considerable investment in teacher training, curriculum reform, textbook writing, bilingual education programmes, repair of decrepit physical infrastructure, and adequate salaries for the continued employment of teachers. Since the responsibility to finance local schools has been downshifted to local communities, development projects that effectively reduce illiteracy and improve retention rates can have a high level of local community involvement. Tibetan children not only need a curriculum and medium of instruction that is culturally appropriate to their actual needs and circumstances, but also to prepare themselves to successfully access the modern world.

4. On the rangelands, this means taking education to the children, rather than marshalling the children into centralised boarding schools. It might seem that this is ambitious, yet the example of Mongolia proves that it can be done. Mongolia and Tibet are alike, not only in their religion and culture, but also in being vast, semi-arid lands that are well suited to extensive nomadic pastoralism. The Mongolian education system delivers high levels of literacy to its widely scattered nomads. In a survey for the World Bank, which compiled lessons to be learned from nomadic education around the world, Saverio Kratli concluded that global experience insists on the importance of not separating support for education from support for pastoral livelihood and economy. Development agencies who specialise in education or pastoral production should respect this linkage.

5. In Tibet, development agencies involved in education must find innovative ways to tackle the challenges of training and retaining competent teachers to teach in mostly rural areas. Relocation incentives and the possibility for career advancement, based on performance and long-term commitment, could be ways of attracting quality teachers to rural schools.

6. Vocational training is a major necessity among adults and younger Tibetans if they are to access wider markets, opportunities, jobs and economic niches. The PRC's Constitution (article 122) claims that: "The state helps the

national autonomous areas train large numbers of cadres at various levels and specialised personnel and skilled workers of various professions and trades, from among the minority nationality or nationalities in those areas". In practice, the PRC needs help in implementing this Constitutional clause.

7. Adult vocational training should include not only production but also the distribution and marketing of new products and services. This will ensure a maximum benefit to those who have missed out on an adequate education in recent decades. A generation of Tibetans has reached adulthood without attaining literacy. Vocational education is the best way forward to help them adapt to a market economy. At present, it is largely restricted to the laid-off workers of downsizing state enterprises. This is too narrow a focus.

8. Community-based and financed local schools (*minban* in Chinese), currently under-resourced and receiving little state support, can benefit greatly from international partnerships. This may make it possible to achieve the PRC's goal that all children shall receive nine years of schooling. Schooling, wherever possible, should be available in a way that does not break up families, and which respects the seasonal cycle and need for all family members to contribute labour at peak times. Adopting worldwide best practice models of successful bilingual education will help to reduce the dropout rates, and enable a significant proportion of Tibetans to enter senior middle school and receive post-secondary training.

9. The number of school places available for Tibetan children who complete year nine is extremely limited. The shortage of senior middle schools is a major bottleneck thwarting the advancement of Tibetans. International partners can do much to raise the availability and appropriateness of upper secondary and tertiary education for Tibetans, including the acquisition of functional literacy in a global language other than Mandarin Chinese.

10. Curriculum design should assist Beijing in implementing its policy that minority nationality students should receive education, at least in the primary years, in their mother tongue, in this case Tibetan, while also attaining literacy in world languages. Curricula should also be expanded to include not only the responsibilities of citizens, but also their rights, now that the rule of law is strengthening across China.

11. Very few Tibetans are currently deemed eligible for international study programmes, on the grounds that their Chinese or English is inadequate. This greatly restricts their opportunities to learn from worldwide experience and discover best practices in a wide range of disciplines. International education programmes can help greatly by providing not only scholarships, but also a bridging-year or foundation-year programme to bring the Tibetans' language skills up to tertiary standard.

12. Tibetan language publishing, arts productions, cultural events, film and television need subsidising in order to restore Tibetan idioms to public life. At present, Tibetan writers and artists struggle for lack of finance, distribution and support-to reach audiences keen to encounter new Tibetan artistic output. International cultural development organisations can do much to conserve the threatened and deteriorating Tibetan architectural heritage.

13. Employment opportunities for Tibetans in modern secondary and tertiary sectors will increase with training programmes based on identified needs. The employment of Tibetans, especially in cities, is at present limited to salaried government office work and unskilled work, such as labouring on construction sites. The problem is not that Tibetans cannot be educated, but that, on graduation, there is no career track available. Tibetans who have settled elsewhere in the world have shown themselves capable of quickly learning modern skills, therefore capacity building programmes in Tibet have excellent prospects of success.

14. Scholarships and grants to enable Tibetan students to pursue technical and professional studies, both in mainland China and abroad, would help to increase the general pool of talent and skills in the Tibetan region.

G. Skills and capacity development

1. Development should maximise the transfer of the required training, knowledge, skills and

technologies to Tibetan communities so that they can own, operate and maintain projects successfully, and adapt them to their own purposes. The transfer of non-Tibetan experts to live in Tibet and take charge of development projects should not be necessary, except for short periods in exceptional circumstances.

2. Tibetan communities can become effective partners of international organisations if the traditional community-based organisations (CBOs) of Tibet are recognised and encouraged to articulate what the Tibetans need. There are now many NGOs in China, especially in the environment field. Tibetans need both opportunity and encouragement to establish their own NGOs. An interim step is to help the existing CBOs to attain official recognition. This includes traditional herd management CBOs, such as the *rukor* "tent-circle" and the clan-based *tshowa*. Community enterprises did, and can in future, have positive roles in post-harvest crop buffer stock protection, seed bank genetic diversity maintenance, social welfare, disaster relief and community banking.

3. Economically and ecologically, the Tibetan Plateau is a unit. The whole plateau could benefit from projects which use the Tibetans' skills and comparative advantage.

H. Health

At present, the quickest way for a Tibetan to become destitute in Tibet is to fall ill. There is a desperate need for affordable collective health insurance schemes that include subsidies for the poorest of the poor, who at present are quite unable to meet the high user-pays charges of the current system. Leaving the financing of health to the lowest levels of government, and to local communities and individual families, is sure to perpetuate poverty. Health should be the responsibility of higher levels of government, as it was in China until 25 years ago. A good start would be a state guarantee of free health for all who fall below the poverty line. Development agencies have the opportunity to demonstrate, through pilot projects in specific areas, the feasibility of medical insurance for the most impoverished communities.

1. Traditional Tibetan medicine (*sowa rigpa*) is widely trusted, especially by rural Tibetans. It has proved effective, with thousands of years of experience in the delivery of health services. It is cost-effective, making use of locally-available ingredients, rather than relying on transnational pharmaceutical corporations to whom all users must pay royalties. A plateau-wide expansion of traditional Tibetan medical college education could enable the delivery of a decentralised healthcare system to remote areas. The current health system is urban-biased. The widespread provision of *emchis*-traditional doctors would be an effective way of ensuring that the scattered populace finally gets access to healthcare.

2. Prevention of disease has been much neglected in Tibet, in favour of expensive "modern" cures. Investment in health must focus on essential generic drugs and low-cost interventions. Examples include hepatitis B immunisation, oral rehydration, immunisation of expectant mothers, and the promotion of iodised salt, vitamin A and iron supplements. China's prevention system – known as epidemic prevention stations – needs fresh finance and revitalisation.

3. Malnutrition is currently common in Tibet, as is the stunting of child growth, according to international experts. Nutrition education, primary healthcare, and maternal and child health services are high priorities. The government should be encouraged to change the hospital subsidy to a scheme whereby the healthcare costs of the poor are directly subsidised.

4. A supply of safe drinking water brings large-scale, immediate benefits that are directly related to people's health and productivity. A lack of potable water is associated with intestinal and many other illnesses, as well as with certain deformities or disabilities in areas where available water sources have high natural mineral toxicity.

5. There is a crucial need for outside help in researching and combating the diseases that are endemic or specific to certain locales of Tibet – including Kashin-Beck Disease (otherwise known as big bone disease), plague and tuberculosis.

6. An HIV/AIDS awareness and prevention programme needs to be initiated. Sexually transmitted diseases like HIV have become a increasing threat in Tibet since the arrival of the thriving sex industries in the towns and

cities – an impact of urbanisation and the migration of a large, single-male population from China.

7. Delivery of health services should be decentralised as much as possible. This is a basic right, as well as a question of access and equity. Decentralisation need not be expensive, if *sowa rigpa* traditional Tibetan healing is promoted as an integral part of the total healthcare system.

8. Sterilisation, birth control and contraception programmes must pay special attention to informed consent and ensure that anyone who undergoes such treatment does so voluntarily and in full knowledge of the consequences. Coercion, fines and social pressure should not be permitted to force women into an irreversible loss of reproductive capacity.

9. There is need for better supervision mechanisms for village and township biomedicine health clinics in order to eliminate the prescription of unnecessary and expensive drugs. Better training and adequate remuneration for health and social workers is critical to achieving this.

I. Urban Tibet

Urban poverty is now growing rapidly in major Tibetan towns, due to the urbanisation of farmlands in and around former towns, the migration of rural poor to the urban areas and their consequent social exclusion – especially in the labour market, where there is a lack of education and skills. Further discrimination occurs because the rural dwellers are not permitted to transfer their household registration to urban areas, which makes their status semi-legal, and thus vulnerable to exploitation.

Until now, urban slums have not developed in Tibet to the scale that is common in developing countries, but such slums could soon occur if there is no concerted effort to make rural life more rewarding.

A primary cause of urban poverty is that employment opportunities for Tibetans are available only to a limited number of salaried government employees, or to casual unskilled labourers. Tibetans face constant discrimination, as the non-Tibetans are systematically favoured by the Chinese administration. As Tibet becomes a market economy, such discrimination is sometimes excused, under current Chinese policies, as the natural workings of the market. This is not true – Tibetans are enterprising people.

Available statistics show that a remarkably high proportion of the Tibetan population is very young. Despite the strong emphasis in these guidelines on restoring the viability of rural life, not all young adults will be able to find sustainable livelihoods in rural areas. This is especially true of areas of serious rangeland degradation and sedentarisation, and where communities have been restricted to fixed quotas of grazing land that does not grow as the families grow. Therefore:

1. Vocational training in service sector industries can help Tibetans overcome discrimination. Start-up capital and training in business planning and management can help Tibetans enter market niches, which are increasingly monopolised by better-connected immigrants. A little positive discrimination could do much to prevent unemployed Tibetan youths, unable to make a living in the countryside, from drifting into social vices in towns and cities.

2. Reform of the restrictive household registration system (known in Chinese as *hukou*) could help to grant rural Tibetans legal status in towns, and a chance to dispel discrimination. Such status is readily available to non-Tibetan immigrants from distant provinces, which gives them immediate advantages over the indigenous Tibetan population.

J. Tourism

We firmly oppose the current mass-packaged tourism industry in Tibet, which is controlled by a small number of state-owned enterprises. Tourism in Tibet today is largely based on the economic exploitation of Tibetan culture – this largely excludes Tibetans, who are best able to explain and interpret their own culture, especially as tour guides.

Tourism could be beneficial to Tibetan communities if the Tibetans are given a say in the running of the tourism industry. Throughout these guidelines, there is an emphasis on the appropriateness of positive discrimination towards the most deprived, neglected and excluded ethnicities in Tibet. Such positive discrimination is especially appropriate in tourism, because the destination is Tibet itself and the product is Tibetan culture, which only the Tibetan people are uniquely qualified to represent.

However, for those who want to get involved in eco-tourism, adventure tours and pilgrimage tours in Tibet, we expect investors to encourage reform of the present state-owned and controlled industry. Instead, new projects

must demonstrate much higher levels of client satisfaction with smaller scale, locally-controlled operations that enable visitors to fulfil their desire for genuine encounters with Tibetan people, land and culture.

To realise this potential, the tourism industry should be structured to create tour circuits that are designed to promote eco-tourism, adventure tourism and pilgrimage tourism in a sustainable manner by respecting the local culture, tradition and landscape. Tourism in Tibet can employ Tibetans not merely as cooks, room attendants, drivers and waiters, as at present. The potential for local involvement is great if Tibetan culture, landscapes and sacred sites are recognised as being the core of what attracts the visitors in the first place. Tibetans are uniquely able to interpret and present Tibet, not as a superficial, exotic spectacle, but as a rich, cultural encounter that meets the desire that visitors have for a unique and authentic experience.

K. Investment in commercial projects and current infrastructure

These guidelines express Tibetan values by opposing unsustainable large-scale infrastructure and industrial projects. This section of the guidelines should not be taken as providing exceptions to this approach. In a region which successfully maintained sustainability by low population densities and extensive land use for centuries, all current large-scale projects threaten this sustainability by concentrating capital, technology and population in a small area, while other areas remain deprived. This inevitably results in widening inequality.

We oppose large-scale projects that are concentrated in small areas since they are not appropriate for Tibet. Large hydro dams, railways, highways, cities, mines, oil and gas pipelines, and heavy manufacturing industries are not what Tibet needs, under the current circumstances. Such projects transfer outputs of Tibetan resources to distant consumers. Tibet gains little revenue, while the local Tibetans, even those forcibly displaced by development, are not compensated, paid royalties or trained in the modern skills suited to such projects. Instead, immigrant settlers flood in. It is hard to see how such projects, which usually originate in the Five-Year Plans of Beijing's central officials, can benefit Tibetans by being financed internationally. Such projects only worsen existing inequalities and rob the land of its natural resources.

The following guidelines apply to a situation in which the central authorities persist in devising major projects, some of them involving international partners. Given this possibility, it is practical to question what protections could improve the impact of such projects.

1. Investors are well-placed to ensure that the International Labour Organisation guidelines are implemented, and that the Tibetans who are employed in joint ventures receive adequate training in modern skills. Partners can establish standards that include compensation, resource rental taxes and royalties for local communities whose land or resources are taken over for project construction. Where local communities are displaced by development and forced to resettle, international partners have a special responsibility to ensure that adequate land, of sufficient quality, is provided to ensure that the resettlers are not made destitute.
2. International investors have a special responsibility to introduce standards of community participation, environmental impact assessment and gender impact assessment. They must also ensure that an adequate cultural diversity of employment opportunities is generated by major projects. This can set new standards for centrally planned state projects. Such partnerships provide an opportunity to introduce minimum standards of gender and ethnicity employment in such ventures.

L. Introducing worldwide best practices to the PRC

Donors, lenders and investors can all contribute to policy formulation. The PRC wants to learn from the best practice standards used around the world. The international community brings to Tibet not only capital, but also much expertise that has been accumulated from practical experiences of development around the world. Aspects of state policy that could benefit from the collective wisdom and experience of international partners include:

- Defining a coherent population policy for the whole of the Tibetan Plateau and implementing Article 43 of the Law of the People's Republic of China on Regional Autonomy, which gives autonomous areas the right to control the transient population
- Promoting the environmental economic inclusion of free public commodities – such as the clean and abundant water and air of Tibet – to downstream and lowland users

- Promoting linkages between the upland poor and the downstream concentrations of wealthy urban users, in order to raise awareness of the dependence of the rich on the natural resources supplied to them by rural Tibet
- Improving agricultural extension services so that farmers and pastoralists can become equal partners with scientists and laboratory technicians in a joint community-owned effort to increase productivity
- Encouraging relevant provincial and regional Peoples' Congresses to promote training and employment opportunities for Tibetans, and to restrict the entry of floating unemployed immigrants to Tibet – as enforced in the Hong Kong Special Autonomous Region – unless the immigrants have specific skills that match an identified need and are willing to transfer those skills to the local communities
- Encouraging central planners to build on what already exists, using the pre-existing base of a subsistence economy that could benefit from comparative advantage – especially if linkages were created to other regions where there is a demand for what Tibet is best able to produce.

VII. POSTSCRIPT

Ideally, all development in Tibet should ensure that:

- NOT a single person remains hungry on the soil of Tibet
- NOT a single person lacks the basic human needs of medicine, clothing and shelter
- NOT a single school-age child is denied the opportunity of attending school.

We do not support any development that comes at the cost of:

- Loss of inner consciousness or soul
- Destruction of the environment
- Consumption and use of resources that will deprive future generations of Tibetans.

■

GLOSSARY

***Amdo*:** Tib: one of the three provinces of Tibet, the size of France, in the northeast of the Tibetan Plateau, separated from central Tibet by semi-desert. Today, Amdo is largely the Chinese province of Qinghai, plus the Kanlho (Ch: Gannan) prefecture of Gansu province, and the Ngaba (Ch: Aba) prefecture of Sichuan.

Artificial grassland: Literal translation of a common Chinese term (also "artificial pasture") for sown pasture, also for improved pasture sown with hybrid seed varieties.

Communes: Compulsory collectivisation of production, confiscation of personal possessions, and labour for rations distributed according to work points, under the direction of Party cadres. In Tibet communes were coercively imposed in 1959, and were not disbanded until the late 1970s. As administrative units, communes live on as today's **townships.** On the Tibetan grasslands a "township" may have no town at all, or only an administrative compound, in charge of a large rangeland of dispersed nomads. Townships remain the lowest level of government, responsible for transmitting and implementing central policies, to be financed locally.

Degradation: Grassland degradation is the continuous deterioration in pasture quality. This includes the death of grasses, exposing soil to the erosive forces of gales, blizzards, hail and snow. Degradation includes the invasion of plant species toxic to animals, and plagues of burrowing animals once soil is exposed. Because of Tibet's extreme climate, the vast grassland is vulnerable to degradation. Both degradation and desertification are widespread in Tibet. Once degradation starts it is hard to stop without considerable investment in resowing pasture with grasses indigenous to the area. The last stage of degradation is desertification.

Developmentalist state: A nation-state in which development is permanent top priority, to be achieved by close partnership between centralised state authority and major corporations, which may be state-owned or private, but dependent on official contracts, permission and state orchestration of a nationbuilding development policy.

Drogpa: Tib: pastoral nomads of the open rangelands, caring for herds of yak, horses, sheep and goats through sustainable techniques of mobile transhumance. See pastoral nomadism.

Ecological emigration: China's term for a policy of excluding nomads from their traditional pastures by revoking leases granted to them in the 1990s, which were meant to be for at least 50 years. "Ecological emigration" is involuntary resettlement, requiring nomads to cease their animal-centred way of life altogether, living in rows of housing, receiving subsistence compensation, little vocational training, and with little to do. The policy is to promote regrowth of grassland or forest for the purpose of watershed protection, on the assumption that human use, traditional grazing pressure and habitat protection are incompatible. See *tuimu huancao*.

Extensive: The pattern of land use that made human life on the Tibetan Plateau possible, by spreading population extensively over the entire plateau, rather than concentrating it in towns and favoured locations. Extensive land use is dispersed, mobile, flexible, respectful of natural limits, has a light footprint, and is sustainable. **Intensive** land use is the modern productivist practice of concentrating investment, resources and people in small areas to maximise production, but with much greater impact or footprint.

Footprint: A metaphor for summing up all the impacts of human use of land and resources, enabling comparisons between countries and groups. The heavier the footprint the greater the impact, endangering sustainability.

Gormo to Lhasa railway: A rail line connecting Lhasa to the entire Chinese rail network opened in 2006. The extension of the railway from Gormo was the last step in linking central Tibet to the Chinese economy. Gormo (Ch: Golmud) is a highly industrialised city in the Tsaidam Basin of Amdo, where China extracts oil, gas and salts for the manufacture of fuels, plastics, petrochemicals and fertilisers.

Household responsibility system: China's term for the 1980s policy of restoring land, animals, farming

implements and personal property confiscated during the revolution. On the Tibetan grasslands, restoration of herds occurred in the 1980s, but allocation of certificates guaranteeing long term leasehold rights to grazing land took much longer. The allocation of leases is often, but inaccurately, referred to as **privatisation**.

Human development: A way of measuring human well-being by using measurable indicators such as how many years of schooling a population has, the level of illiteracy, access to health care, maternal mortality rate, infant mortality, access to clean water, female participation in education and employment, income, etc. Human development is widely used by the United Nations Development Programme and other international institutions as a more inclusive measure of well-being than money, measured only by GDP, or Gross Domestic Product per person.

Infrastructure: A modern economy requires electricity, fuels, highways, railways, mines, factories, cities and a wide range of urban services; all of which require major investment. These are the prerequisites of intensified, productivist and profitable settlement of large populations concentrated in places where infrastructure is built. In addition to the "hard" infrastructure above, successful development also requires investment in the "soft" infrastructure of education and vocational training, to enable local populations to participate in new economic sectors.

Jhangthang: Tib: literally, northern plain. The vast alpine desert of western, or upper Tibet. The least populated part of Tibet, home to a widely dispersed number of *drogpa* nomads and their yak herds, as explained in a case study following the Nomads and Grasslands chapter. Home to remaining herds of *chiru*, the Tibetan antelope, wild yaks and other endangered species which need large territories for seasonal migration. Declared a protected area in the 1990s, but with few resources to ensure protection. The railway to Lhasa cuts through the eastern edge of Jhangthang. Usually spelled Chang Tang in English.

Kham: Tib: one of the three provinces of Tibet, in the rugged and well-watered east of the Tibetan Plateau. Today, Kham is fractured administratively into four Chinese provinces- the Kandze (Ch: Ganzi) prefecture of Sichuan, the Chamdo prefecture of "Tibet Autonomous Region", the Dechen (Ch: Shangri-la) prefecture of Yunnan, and the Jyekundo (Ch:Yushu) prefecture of Qinghai.

Pastoral nomadism: Mobile seasonal care of herds of yaks, horses, sheep and goats. Mobility ensures both productivity and sustainability by taking herds to pasture as it becomes seasonally available, withdrawing herds well before the hardy grasses, forbs and sedges of the great grasslands reach the end of the short growing season and remain barely alive, their biomass largely below the surface, during the long hard Tibetan winters. Pastoral nomadism, sometimes also called transhumance, is a skilful adaptation to the vastness of the grassland, and its fragility due to the extreme climate.

Payment for Environmental Services: Certain areas provide environmental services to others, who may be far distant, by maintaining a clean environment, pure and steady water supply, carbon capture and weather cycles essential to agriculture. These services are disrupted by development, especially by productivist intensification. The entire Tibetan Plateau provides a wide range of environmental services to most of Asia, including Asia's major rivers and the Asian monsoon, which is drawn inland by the plateau. Payment for Environmental Services (PES) provides a mechanism linking downstream beneficiaries with upstream providers, compensating Tibetans for the opportunity cost of foregoing development, for the sake of others.

Primary, secondary, tertiary sectors: Division of economic activity into three groups. Primary industry is agriculture and some basic processing of rural products e.g. hand spinning of wool. Secondary industry is mining, manufacturing and the transformation of primary products into finished goods. Tertiary sector is the wide range of services, including banking, health and education, human services, wholesale and retail trading, real estate, and administration.

Productivism: An ideology which seeks ever-increasing material production from both land and people. Productivism defines human happiness narrowly as material production, using resources intensively with little concern for long term environmental or social consequences.

Rukor **or** ***repkor***: Tib: literally tent-circle. The customary community-based organisation of drogpa nomads, to manage herds together, by pooling several households and their animals. The *rukor* is a decision-making body to manage risks, minimise labour needed in the busy growing season, and accept responsibility for sustaining pasture over the

long term. *Repkor* is Amdowa pronunciation, *rukor* the pronunciation of central Tibet.

Shingpa: Tib: Tibetan farmers, concentrated in valleys below the upland meadows, growing barley and other crops, often for exchange with the animal products of the drogpa.

Shoutian or Shuotian: A new Chinese word for a massive system of dams and canals capturing all the major rivers of Tibet, for diversion to the Yellow River, in such quantities that water from Tibet would reach Tianjin, the port city beyond Beijing. *Shou* is the first dam, intercepting the Yarlung Tsangpo river, at Shoumatan, and *tian* is for Tianjin. China's central leaders are considering whether to finance this project.

"Tibet Autonomous Region" or TAR: China's translation of *Xizang zizhiqu*. TAR is largely the same area as U-Tsang, one of the three provinces of Tibet. The term is used in parentheses because it is only half the area and less than half the population of Tibet, and is not genuinely autonomous. Outside of TAR China classifies around 75 counties as Tibetan areas of "autonomous" governance, usually in Tibetan "Autonomous" Prefectures, or *Zangzu zizhizhou.*

Tuimu huancao: Ch: literally "retiring pasture to restore grassland." A current Chinese policy of compulsory grazing bans, destocking and exclusion of nomads from lands leased to them.

U-Tsang: Tib: One of the three provinces of Tibet, in the south of the Tibetan Plateau, which today comprises most of the "Tibet Autonomous Region." The western or upper part is alpine desert, too cold and dry to sustain much life, but historically upper Tibet and its Jhangthang are where Tibetan civilisation originated in times of more benign climate. Central U-Tsang is the grainbelt of Tibet, with Lhasa at its centre.

Work Forum: A high level meeting convened by the Chinese Communist Party of all relevant Party offices, ministries and departments involved in a specific issue, to make a co-ordinated policy so as to strongly advance the achievement of official goals.

Xibu da kaifa: Ch: literally "Open up the Great West" or "Exploit the Great West". More often translated into English as "Great Western Development" or "Go West". A Chinese policy announced in 1999 to accelerate development in the western half of China, in an attempt to narrow widening inequality, and alleviate widespread poverty.

“The world grows smaller and smaller, more and more interdependent.....today more than ever before life must be characterized by a sense of Universal Responsibility, not only nation to nation and human to human, but also human to other forms of life.”

His Holiness the XIVth Dalai Lama

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