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Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the Tibet Autonomous Region

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July 26-30, 2004
Lhasa, TAR, P.R.China

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Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the Tibet Autonomous Region

Proceedings of the International Conference held from July 26-30, 2004, in Lhasa, TAR, P.R. China

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International Centre for Integrated Mountain Development
Tibetan Academy of Agricultural and Animal Husbandry Sciences
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Foreword

Tibet is no longer inaccessible to the outside world and has seen rapid socioeconomic development in the last two decades along with the other regions of the People's Republic of China. This has been, to a great extent, the result of the current quasi-market system called the 'responsibility system' ushered in by the government in the early 1980s to replace the communal system. However, Tibet still remains one of the poorest regions in China due to the harsh natural conditions as well as poor social and economic capital. Malnutrition among children, high maternal mortality, low income levels, and poor housing conditions are some of the common manifestations of poverty that prevail in rural areas. Lack of adequate access to basic needs, such as food, drinking water, and clothing, as well as to social services like health and education, is considered to be the main cause of poverty.

With the rapid growth of China's economy as a whole and its entry into the WTO in 2002, there has been salient interest and commitment from the Government of China to the development of the poorer southwestern provinces, including the Tibet Autonomous Region(TAR). The substantial investment that flowed to the region from both internal and external sources to develop Tibet into a market economy brought with it significant improvements in its economy as well as new challenges to its people and environment. Lhasa, the capital, has become a modern city, with all the trappings of an open-market economy, and it boasts a vibrant tourism industry. However, the economic benefits have been, by and large, confined to urban areas with most of the economic enterprises owned and operated by non-Tibetans. As a result, there is disparity between urban and rural areas, resulting in rural to urban migration, increasing unemployment among youth, and other social problems like drug abuse and crimes.

The aim of this conference was to review the progress made by Tibet in pursuing socioeconomic development in its rural mountain areas and to share experiences from other similar regions in order to identify suitable policies and strategies for pursuing sustainable development. It was held two years after the conference in Chengdu, which focused on poverty alleviation in mountain areas of China, wherein a specific recommendation was adopted to give priority to the TAR in this current conference. The Conference is also part of an ongoing effort by InWEnt, Capacity Building International, Germany, and the International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal, and of EU-China Panam Integrated Rural Development Project, TAR, P. R.

China, to raise awareness about poverty issues in mountain areas of Asia in collaboration with national agencies. For this conference, the Tibetan Academy of Agricultural and Animal Husbandry Sciences (TAAAS) played the lead role in organising the conference on behalf of the Government of the TAR. The EU-assisted EU-China Panam Integrated Rural Development Project was a key strategic partner whose contributions included building the framework for the contents of the conference, contributing the diverse results and experience gained through their multifocal project, and providing substantial financial support.

It is hoped that the conference has contributed significantly to the understanding of Tibet's uniqueness and, along with it, the development needs and aspirations of rural Tibetans. The experiences drawn from both within and outside the TAR from a wide range of participants with varied professional and academic backgrounds will no doubt be an important source of inspiration for the people and Government of the TAR in their efforts to achieve balanced development in rural mountain areas. We are confident that, with the immense goodwill available at home and abroad, the TAR will rapidly achieve its aspirations for a peaceful and prosperous region.

We wish the Government and people of the TAR all success!

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Preface

The International Conference on 'Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the Tibet Autonomous Region' was hosted by the Tibetan Academy of Agricultural and Animal Husbandry Sciences (TAAAS) and organised jointly by InWEnt Capacity Building International, Germany; the European Union supported Panam Integrated Rural Development Project (PIRDP) and the International Centre for Integrated Mountain Development (ICIMOD). It was held from 26 to 30 July, 2004, at the Himalaya Hotel, Lhasa, in the Tibet Autonomous Region of China (TAR). The Conference was attended by delegates from the counties and prefectures of TAR, representatives from the various agencies of the TAR government, invitees from other regions of China and neighbouring countries, and experts and representatives from international and national development agencies as well as non-government organisations.

The overall objective of the conference was to contribute to a process of agriculturally related, sustainable rural development in mountainous regions of the Tibet Autonomous Region (TAR). Specifically it aimed to share key experiences of integrated rural development in mountainous regions with a focus on the TAR; to identify key challenges and opportunities for the development of and poverty reduction in rural areas; and to provide recommendations for market-oriented and sustainable agricultural and rural development strategies.

This conference emerged as a logical progression from previous ones sponsored by InWEnt and ICIMOD, and on each occasion with other local and international sponsors such as the International Fund for Agricultural Development (IFAD) and the Institute for Mountain Hazards and Environment (Chengdu, 2002). The first critical examination of poverty alleviation in mountain areas undertaken was in 1992 when experts came together to discuss 'Anti-poverty Experiences in China's Himalayan Region'. A similar grouping met in Kathmandu in 2000 (January 31st-February 4th) to discuss 'Growth, Poverty Alleviation and Sustainable Resource Management in the Mountain Areas of South Asia.' Hence the Lhasa conference has a history, a history of examining poverty in mountain areas in a critical manner and, more important, measures to overcome it. It was, however, the Chengdu conference in 2002 that recognised the Tibet Autonomous Region as the mountain area of China that should draw most concern, and hence the ground was prepared for the 2004 conference in Lhasa.

The papers bring out many pertinent points. The TAR is known for its unique environment characterised by harsh climatic conditions, fragile

landscape, clean water, and fresh air. It is also recognised for its unique culture and traditions. Yet, it is weaker socioeconomically than other provinces of China and, while much progress has been made through the support of the central and provincial governments as well as donor agencies and NGOs, there is still much that needs to be done to alleviate poverty and improve the general living standards of TAR's farmers and herders.

The challenges are many, but so are the opportunities. Coping strategies leading to sustainable development entail a balanced and integrated approach to address the challenges and realise the niche opportunities, not currently being exploited – as income-earning opportunities appear to be poor and nutrition was a concern of many of the participants at the conference. Many authors focused on safe drinking water and a constant supply of energy and improvements in education and health and called for a renewed impetus in providing social and economic support services and infrastructure.

Although the conference identified a number of desirable improvements, it is clear from the papers in this book that substantial investments have been made in infrastructural development by the central and provincial governments and that the living conditions are generally much better than 20 years ago. What the paper writers call for is better targeting of investments to have a more concerted impact on the quality of life in rural areas.

The papers are interesting in that they cover a wide range of topics. They do not approach the topic from a single entry point of doom and gloom, but examine specific issues such as significant disparities between counties and prefectures in living standards, income levels, and access to goods and services, and examine what might be the reasons for them. This approach is very valid when examining the economic, social, and cultural gaps between urban and rural areas. Other weaknesses in poverty alleviation measures according to the participants were coordination and cooperation among and between various government agencies, donors, INGOs, NGOs, and local institutions. Forward-looking measures such as Village Level Development Plans, adopted under the County Poverty Alleviation Planning Methodology using participatory approaches, introduced by the government would obviously go a long way to solving problems of poverty with all-round coordination and cooperation.

Some participants discussed their concerns about globalisation and the free market; although these had opened up new income-generating opportunities, the challenges were a very real concern. It was proposed that a mix of comparative advantages offered by the pristine environment

and unique culture and traditions of the people of the TAR could be exploited to capture niche markets for products and services such as organic food products and eco-tourism. The new railway was seen as a possible gateway to the rest of China and beyond. The main constraints to taking advantage of the market economy were not ignored; and these were seen to be the lack of economy of scale, poor quality of goods, inaccessibility to markets and market information, lack of enabling environment, inadequate investment in processing facilities, and weaknesses in marketing skills and entrepreneurial spirit.

Many ideas came out of this conference: from the suggestion that a systematic poverty assessment exercise be carried out based on existing data to improve delivery of services to poor and marginalised households, through suggestions that the TAR government should strengthen and accelerate the adoption of participatory planning and implementation of rural development programmes by improving the capacity of government officials in participatory planning and management approaches through a focused training programme, to ideas about integration of organic food production into the pastoral and farming production system.

The results of the conference discussions were put into immediate and direct use. The national participants took part in a three-day, focused study tour to the EU-China Panam Project in TAR and discussed improvements that could be considered based on the results of the conference. A presentation was also made to the TAR Government so that it could immediately benefit from the knowledge generated.

We, the editors, hope that this document will give you a broad insight into the problems of poverty amongst farmers and herders in the Tibet Autonomous Region. It does not claim to have all the answers, or indeed to have an in-depth analysis of all the problems facing the rural poor on the roof of the world. Time and again, however, authors referred to the strong support given by the central and provincial governments to poverty alleviating initiatives; and this is heartening to hear.

We realise that there are gaps in our knowledge and understanding and that there is a long way to go before we can see an end to poverty not only in the TAR but elsewhere in Asia's mountain regions. Nevertheless, we sincerely believe that this conference and its proceedings have given us a tremendous start and provided us with a significant stepping stone into a better future for the rural poor of the TAR.

Pema Gyamtsho
Nyima Tashi
Karl Kaiser
Jürgen Richter

Acronyms and Abbreviations

ABC	Agricultural Bank of China
ACAP	Annapurna Conservation Area Project
ACIAR	Australian Council for Agricultural Research
AEZ	agro-ecological zone
AHF	American Heritage Foundation
AHT	Agrar and Hydrotechnik (German consulting company)
AI	artificial insemination
AKDN	Aga Khan Development Network
AKF	Aga Khan Foundation
AKRSP	Aga Khan Rural Support Programme
ASIA	Association for International Solidarity in Asia
BAEES	Baxue Agricultural Experiment and Extension Station
CAMCs	Conservation Area Management Committees
CAMR	Conservation Area Management Regulation
CAS	Chinese Academy of Sciences
CBO	community-based organisation
CBS	Central Bureau of Statistics
CCPC	Central Committee of the Communist Party of China
CEU	Commission of the European Union
CIAD	Centre for Integrated Agricultural Development
CIS	Commonwealth of Independent States
CPC	Communist Party of China
CRAC	Community Resource Action Committee
CRAJSC	Community Resource Action Joint Sub Committee
CTF	Community Trust Fund
DDC	District Development Committee
DNPWC	Department of National Parks and Wildlife Conservation
DOFCOM	Department of Commerce
DSE	Deutsche Stiftung für Internationale Entwicklung (German Foundation for International Development)
EC	European Commission
ERR	economic rate of return
EU	European Union
FA	financing agreement
FAO	Food and Agriculture Organization of the United Nations

FTIG	Farmer Technical Interest Group
GATS	General Agreement on Trade and Services
GATT	General Agreement on Trade and Tariffs
GDP	gross domestic product
GEF	Global Environment Facility
GIS	geographical information system
GMP	good manufacturing practice
GPL	gravity-fed pipeline water supply system
GTZ	German Agency for Technical Cooperation
ha	hectare
HACC	hazard analysis central control point
HDPE	high density polyethylene pipes
HKH	Hindu Kush-Himalayas
HMGN	His Majesty's Government of Nepal
HP	hand pump
HSPC	Hygiene and Sanitation Promotion Campaign
ICIMOD	International Centre for Integrated Mountain Development
ICLFM	integrated crop-livestock-forestry model
ICLP	integrated crop and livestock production
IMF	International Monetary Fund
InWEnt gGmbH	Internationale Weiterbildung und Entwicklung gGmbH (Capacity Building International, Germany)
IPR	intellectual property rights
IPS	integrated primary school (grades 1-6)
IUCN	The World Conservation Union (International Union for Conservation of Nature)
KMTNC	King Mahendra Trust for Nature Conservation
LDC	least developed countries
LFA	logical framework analysis
Log Frame	logical framework
masl	metres above sea level
MFA	Ministry of Food and Agriculture
MFN	Mongol farmer newspaper
MOAC	Ministry of Agriculture and Cooperatives
MOFCOM	Ministry of Commerce
NGO	non-government organisation
NRM	natural resource management
NSOM	National Statistics' Office of Mongolia
NTFP	non-timber forest products

OECD	Organisation for Economic Cooperation and Development
OVI	objectively verifiable indicator
PRC	People's Republic of China
PC	Panam County
PCBAL	Panam County Bureau of Agriculture and Livestock
PCEB	Panam County Education Bureau
PCHB	Panam County Health Bureau
PCMS	Panam County Middle School
PCWRB	Panam County Water Resources' Bureau
PEPC	Prefecture Epidemic Prevention Centre
PIRDP	EU-China Panam Integrated Rural Development Project
PMO	project management office
PRA	participatory rural appraisal
PRC	People's Republic of China
PRSP	Poverty Reduction Strategy Paper
R&D	research and development
RDI	regional development indicator
RMB	Ren Min Bi (Chinese currency)*
RSPN	Rural Support Programmes' Network
RSPs	rural support programmes
RWSS	rural water supply and sanitation
SARS	severe acute respiratory syndrome
SFL	sustainable livelihood framework
SU	sheep unit
TAAAS	Tibetan Academy of Agricultural and Animal Husbandry Sciences
TACIS	Technical Assistance for the Community of Independent States
TAR	Tibet Autonomous Region
TBA	traditional birth attendants
Tgs	Tugrugs
TRIPS	Trade Related Aspects of Intellectual Property Rights
TVO	traditional village organisation
UB	Ulaan Baatar city
UMBCP	Upper Mustang Biodiversity Conservation Project
UNDP	United Nations Development Programme
USA	United States of America
VAP	village action plan

VCMT	village coordination and monitoring team
VCT	village crop technician
VDP	village development plan
VCT	village crop technician
VDC	village development committee
VO	village organisation, Sindh Graduates' Association
VVT	village veterinary technician
VWST	village water and sanitation committee
Watsan	water and sanitation
WUE	water use efficiency
WB	World Bank
WFP	World Food Programme of the United Nations
WO	women's organisation
WTO	World Trade Organisation

* 1 US$ = 8.28 Chinese Yuan (July 2004)

Glossary

1 ha = 15 mŭ
1 mu = 667m²

Tibetan

ani	nun
Changthang	northern land of Tibet
dri	female yak
gelong	monk
gompa	monastery
gang	glacier
gang ri	mountain
Kham	eastern province of TAR
la	pass
lam	path
lhakhang	chapel
momo	steamed dumpling
nay	barley
ne	place of pilgrimage
phu	the upper part of a valley (rangelands)
rongpa	farmer, valley dweller
drogpa	herder, pastoralist
shingba	farmer, cropping farmer
thang	plains
tsampa	roasted barley flour which is the staple for Tibetans
tshokchen	great assembly hall
tsho	lake
zo	male crossbreed of yak and cattle
zom	female crossbreed of yak and cattle

Chinese

can ting	big restaurant
chaoshi	supermarket
cun	village
Cun Zhang	village headman
fanguan	small restaurant
gaodu/changdu danwei	measurement of height/length (m or cm)
hu	household
huiyi	conference
jiachu	livestock
jiedao	street

jiuba	bar
luyou	tourism
mu	measurement of area (15 Mu = 1 ha)
pinkun	poverty
quan qiu hua	globalisation
sheng	province
Sheng Zhang	provincial governor
shichang	market
shimao zuzhi	WTO
Shizong	mayor
tiji danwei	measurement of volume (litre)
xian	county; administrative centre
Xianzhang	county governor
Xizan	Tibet
Yuan	Chinese currency
zhen	town
zhengce	policy
zhongling danwei	measurement of weight (kg)
zhou	prefecture
zuowu	crop
Zhouzhang	prefecture governor

Mongolian

Aimag	region
Hot Ail	informal group of herder households living close together and sharing labour etc.
Bag	community
Soum	district

Fact File: Tibet Autonomous Region

Location
South-Western China between 26°50' to 36°53'N (2000 km) and 78°25' to 99 °06'E (1000 km)

Altitude
Average of 4000 masl

Mean annual temperature
-4 to 12°C

Mean rainfall
100 mm in the driest to 2500 mm in the wettest zones

Capital
Lhasa

Prefectures
Shigatse, Shannan, Nagu, Chamdo, Ali, and Linzhi

Counties
71

Townships
534

Towns
140

Villages
5956

Population (2002)
Total: 2.66 million, rural population: 2.14 million, male population: 1.35 million, female population: 1.31 million

GDP
Total: 16100 million yuan (2002) From agriculture: 5585 million yuan

Total area

1.2 million sq.km., arable land area:0.49 million ha, rangeland: 61.6 million ha, forest land: 13.9 million ha, barren land: 44. 3 million ha

Annual crop production

barley (129,600 ha); wheat (44,770 ha), areas (2002) rape seed (20,390 ha), vegetables (9,740 ha), peas (11,050 ha)

Livestock population (2002)

24 million head yak and cattle - 58 million; horses - 0.4 million; donkeys - 0.13 million, sheep and goats -178.2 million

Livestock production (2002)

meat: 172,000 MT, milk: 243,000 MT, wool: 9,400 MT, cashmere: 640 MT

Tourists

total: 206,600 in 1995 and 867,300 in 2002
domestic: 138,780 in 1995 and 725,040 in 2002
overseas: 67,800 in 1995 and 142,300 in 2002

Source: Statistical Yearbook of the Tibet Autonomous Region 2003

Table of Contents

Note: The papers in this volume have been edited into the current form, in some cases without further review by the authors. Some were translated from papers presented in Chinese.

Chapter 1

Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the Tibet Autonomous Region - An Overview of the Conference's Objectives and Outcomes

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Introduction

This chapter describes the background and objectives of the conference, its structure, and major outcomes and recommendations. It is not intended to be a conventional report of the proceedings of the conference by providing a session-wise record of discussions but rather reflects the spirit of the conference and a summary account of how it went and what it achieved.

Background and Objectives

The Tibet Autonomous Region

The Tibet Autonomous Region of China (TAR) covers 1.2 million square kilometres and is located in the south-western part of China between 26°50'N and 36°53'N latitude and 78°25' E to 99°06'E longitude. It borders the other Chinese provinces of Qinghai and Xinjiang to the north, Sichuan and Yunnan to the southeast, and the South Asian countries of India, Nepal, and Bhutan to the southwest and south. With an average altitude of more than 4,000 masl and characterised by harsh climatic

conditions and fragile geological features, it is one of the least developed regions of China.

The TAR has a population of over 2.5 million people (Tashi et al. 2002), and the main source of livelihood continues to be pastoral production. Crop production is restricted to the central valleys and is dominated by barley, the staple food of Tibetans. Administratively, the TAR is divided into seven prefectures: Shigatse, Shannan, Naqu, Chamdo, Ali, Linzhi and the capital city of Lhasa. The prefectures are further sub-divided into 71 administrative counties, two city counties (downtown Lhasa and Shigatse), and one special administrative office (Shuanghu). The seven prefectures have nearly 900 townships and more than 7,000 villages.

The total area of useable land in the TAR is reported to be about 76.03 million ha, which is about 63% of the entire territory (Tibetan Bureau of Land Planning 1992). However, the bulk of this land consists of rangelands—at 61.6 million ha or 80% of all useable land. Forest cover represents a mere 13.9 million ha or just 11.5% of the total area. A significant portion of the territory is covered by barren and wastelands—at 44.3 million ha, about 37% of the total land resources.

In 2002, the TAR had an estimated livestock population of about 63.3 million yaks and cattle, 0.56 million horses and donkeys, and 178 million sheep and goats (Tashi and Partap 2004, this volume). The annual production of meat from yaks and sheep stands at around 0.17million tons, wool at 9,940 tons, and milk products at 0.243 million tons

Barley is the most important crop, and the annual total cultivated area is about 127,100 ha of land. The average barley consumption in rural Tibet is reported be around 155 kg per capita. Wheat is the second most important crop with an annual coverage of 55,040 ha. Other crops include rapeseed for oil production, potatoes, and vegetables. In recent years, vegetable production in greenhouses has increased rapidly to reach around 7,500 ha. There has been also a significant increase in the area of land used for growing forage crops in prefectures like Chamdo.

Besides pastoral and agricultural production, tourism is a fast-growing economic sector. The rich cultural heritage of the Tibetan people and the scenic landscape of the region are highly attractive to tourists from both mainland China and the outside world. However, this is still largely undeveloped and limited to accessible areas.

Conference background

This conference is the third in a series of conferences organised jointly by the German Foundation for International Development (InWEnt), Germany, and the International Centre for Integrated Mountain Development (ICIMOD), Nepal, focusing on poverty in mountain regions. The first one, held in Kathmandu, Nepal, in 2000, (Banskota et al.2000) focused on poverty in the Hindu Kush-Himalayan (HKH) region as a whole. The second one, which was held in Chengdu, Sichuan province, China, in 2002, (Jodha et al.2004) focused on poverty in the mountain areas of China. The focus of this current conference is specifically on the Tibet Autonomous Region (TAR) as it was identified at the Chengdu workshop as the least developed of the mountain regions in China. The overall objective of the conference was to contribute to a process of agriculturally-related, sustainable rural development in mountainous regions of the Tibet Autonomous Region (TAR). Specifically, its aim was to share key experiences of integrated rural development in mountainous regions with a focus on the TAR; to identify key challenges and opportunities for the development of rural areas of the TAR and reduction of poverty in them; and to provide recommendations for market-oriented and sustainable agricultural and rural development strategies (see also Tashi et al. 2002).

The conference was organised by the Tibetan Academy of Agricultural and Animal Husbandry Sciences (TAAAS) with support from InWEnt, Germany; ICIMOD, Nepal; and the EU-China Panam Integrated Rural Development Project (PIRDP) Office. A Steering Committee comprised of representatives from these agencies provided oversight of the arrangements. The conference consisted of a pre-conference workshop, held on July 23, 2004, to enable Chinese participants to review the issues and discuss them among themselves, to discuss progress made towards poverty alleviation, to draw lessons from experiences, and to identify issues for presentation at the main conference. For the international participants, a field trip was organised to the European Union (EU)-supported Panam Integrated Rural Development Project from 21 July to 23 July, 2004, to familarise them with field conditions in Tibet and to observe agricultural and rural development activities in the field. The main conference took place from 24-28 July, 2005, in Lhasa. The main conference included an opening session, four plenary sessions, four group work sessions, and a round table meeting of development agencies and non-government organisations (NGOs) active in the TAR. Both the opening and closing sessions were attended by high-level representatives of the TAR government.

Pre-Conference Field Trip

The Pre-conference Field Trip to the Panam Integrated Rural Development Project funded by the EU provided international participants with an opportunity to observe agricultural and rural development activities in the villages. The three-day trip included visits to project villages and the project research station as well as interaction with local government officials and beneficiaries. The participants also had the opportunity to visit cultural heritage sites at Shigatse and to experience local customs and traditions. Innovations from the project included rehabilitation of degraded rangelands through reseeding and plantation and introduction of improved barley, wheat, potato, and fodder species. The project's support for introduction of solar heating and lighting systems, piped water supplies, and market access roads was reported by the villagers to be highly beneficial. The participants observed that the standards of living in the villages they visited were much lower than in and around Lhasa.

Pre-Conference Workshop

The Pre-Conference Workshop was aimed at providing local participants with an opportunity to interact among themselves in Chinese, as many of them did not speak English and might have found it difficult to participate in the main conference. The idea was to enable them to have an opportunity for free and frank discussions of their respective experiences in implementing poverty alleviation schemes and their assessment of the benefits of various schemes operational in the TAR, so that they could bring the lessons and issues requiring further discussion to the main conference. The proceedings from this workshop were published as a separate volume containing all the papers that were written in Chinese, as these are a valuable source of information and reference for Chinese speakers.

Main Conference

Session 1: Defining and assessing poverty in remote and mountainous regions

There was general consensus among the participants that the definition of poverty was much more complex than the lack of resources to live productive lives. Poverty had to be perceived not only in economic terms but also in social, cultural, and ecological terms. Therefore, identifying the poor was, in itself, a complex task as those who were rich economically might be socially and culturally or ecologically poor, thus requiring a different strategy. However, if income and living conditions were considered, it could be accepted that the herders and farmers in TAR were relatively poor. Besides low income and poor housing, malnutrition and poor health were identified as important manifestations of poverty among the rural people.

The paper by Nyima Tashi and Tej Partap (2004, this volume) highlighted the advances made by the TAR in the past decade and the challenges ahead for increasing prosperity. The food security index they used to measure poverty showed that significant strides had been made in improving the availability as well as the quality and variety of food. The experience from Panam Integrated Rural Development Project substantiated the above assessment and provided practical lessons from the field to illustrate the types of poverty in rural areas and their indicators (Kaiser and Zhan 2004, this volume). Following the papers and the group discussions, poverty was described in different categories.

Poverty due to low income and economic assets

The participants deliberated on the dimensions of poverty of income and agreed that the main factors responsible for low incomes were:

a) lack of access to resources like land and livestock;
b) lack of investment capital;
c) lack of access to proper education; and
d) lack of infrastructure, including lack of access to markets.

In terms of agricultural production, it was mentioned that the landholdings of the farmers were generally too small and insufficient to produce enough food for the family let alone for the markets. Development workers frequently mentioned that the local farmers practice 'primitive methods' of production and that they needed to 'change their mind-sets' towards adopting more enterprising and 'modern methods.' It was also noted that a lot needed to be done for farmers to adopt commercial practices such as investment credits, input subsidies, and price guarantees. Access to information and new technologies was also not readily available to remote farmers.

Poverty due to poor education and lack of knowledge

The majority of local participants felt that poor education and low qualifications of the rural people were indicative of their poverty in comparison to urban areas. Poor education had led to limited social and technical skills in terms of managing their lives; for example, family health and nutrition needs; or in terms of engaging in more productive enterprises to improve their livelihoods. They found it difficult to present their views and development needs to higher-level decision-makers.

Although local administrations provide free education (up to 9th Grade) and strongly encourage farmers to send their children to school, lower enrolment and higher drop-out rates in comparison to expectations were typical features of rural education in the TAR. This could well be because of shortage of labour, lack of financial resources, and lack of competitiveness in examinations for further education.

Poverty due to poor infrastructure and physical assets

Participants stated that most rural settlements were characterised by poor housing conditions with no proper sanitation, ventilation, or insulation facilities. As a result, respiratory and diarrhoeal diseases were rampant. State-supported facilities for health care, water supply, and electricity had not yet reached many of the rural areas. In many places, there were no roads, access to them, or economic support structures like manufacturing and marketing companies. Even where some basic public services were available, the local people were not well organised or equipped to maintain these services.

Poverty due to lack of natural resources

Participants generally believed that poverty was also a manifestation of the harsh natural conditions in remote mountain areas. Mountain areas were generally inaccessible and isolated from the economic centres (county, prefecture seats, and so on). Because of the harsh climate, the resource base, such as arable land and forests, was low and the potential for increasing its productivity limited by the short growing season. Most rural households did not have access to resources for their basic needs and, even for those who had, landholdings were usually small and marginal. As a result, the carrying capacity of local resources was stretched by an increasing population, particularly in Tibet where the family planning policy was not the same as in inner China. Resource degradation, particularly of pastures, was reported to be taking place rapidly and effective means to restore such degraded pastures were not available.

There were only a few community-based organisations to manage resources like pastures and few opportunities for poor households to participate in decision-making on natural resource use and management. Wherever mineral resources were available, the benefits from mining did not accrue to the local people as they were owned by private companies from outside the region. Rural people also did not have funds to invest in intensive farming and industrialisation of agriculture, nor in off-farm enterprises such as tourism.

Indicators of poverty

The conference participants debated about the indicators that best served to measure the level of poverty in remote mountain areas of Tibet. While there was general consensus that conventional indicators such as per capita income, literacy rates, food sufficiency, and clothing and housing status should continue to be used, other indicators, such as the levels of social harmony and cultural and ecological integrity, needed to be included. In this respect, mention was made of the Gross National Happiness indicators used by Bhutan as an index of development encompassing both quantitative indicators of income as well as qualitative indicators such as cultural identity, ecological health, and good governance.

Poverty trends in the TAR

There was general acknowledgement that significant progress had been made in alleviating poverty and improving the livelihoods of people in the TAR, although the pace of development was rather slow. However, regional disparities were noticeable between rural and urban areas with remote rural areas still having no access to basic facilities like clean drinking water, electricity, and facilities for education and health. There were also marked differences in living standards between communities living along the highways and near road-heads and those that were not connected by roads. Overall, there was little improvement in the health of the people as medical expenses had increased in previous years due to a shift in government policy towards privatisation in health services. (It should be noted here that farmers were still given cards for free health care. Only if the quota was used up were they expected to pay themselves.)

It was recognised by participants that the consequences of urbanisation and its impact on poverty were unclear, controversial, and not studied and analysed. For some rural communities, urbanisation had led to the loss of land for infrastructural development without adequate compensation mechanisms being in place.

Session II: Approaches and Experiences

During this session, poverty alleviation approaches and experiences from other regions of China and from Bhutan, Nepal, and Pakistan were shared. The session also included a 'Round Table Discussion' on approaches and experiences in rural development by international agencies and non-government organisations (NGO) working in Tibet, and this was facilitated by TAAAS. A report on this meeting has been included as a separate chapter in this book.

The case studies from within mountainous areas of China provided good examples of successful resource use and conservation measures. The paper by Wang Deziang and Yang Gaihe (this volume) provided a comprehensive overview of the measures taken to protect the fragile headwater areas of major waterways like the Yangtze, Langtang, and Yellow rivers. Likewise, Zhang Yang Ze and Pubu Danba (this volume) gave a good account of the ecological conservation measures adopted through the establishment of a network of protected areas representing the major ecosystems in Tibet.

From Nepal (Banskota and Sharma, this volume), the experience of promoting eco-tourism as a vehicle for income generation and poverty alleviation in the trans-Himalayan district of Mustang was shared. It was noted that eco-tourism could play an important role in developing the economy of remote, mountain areas provided it was integrated with traditional sources of livelihood such as yak rearing and crop production. Currently most benefits have accrued to the government and tour operators and very little tourist income has trickled down to the local population. Therefore, it was suggested that the development of the tourism sector should take place through active participation of local communities from the planning stage and that roles, responsibilities, and mechanisms for engagement and sharing benefits should be articulated and respected.

The paper by Abdul Malik (this volume) from Pakistan related the experience of the Aga Khan Rural Support Programme (AKRSP) in the northern areas and Chitral. The AKRSP approached local development by looking at three constraints: a) lack of organisation; b) lack of skills (technical, organisational, and management); and c) dearth of capital. The basic assumption behind this was that if people are organised and given the skills and the resources, they can take on the development challenges and face them effectively. Over a period of 10 years between 1991 and 2001, the per capita income of the people was reported to have nearly doubled from a mere US$ 131 to US$ 241. Of particular interest was the AKRSP's experience that people who were members of village organisations were observed to have incomes that were 15-20% higher than those of non-members. The paper also highlighted the importance of both mainstream rural development interventions that were not target specific, such as improvement in physical structures like roads and agricultural extension services, as well as targeted schemes, such as group credit and savings, aimed at benefiting the chronically poor and women's groups.

Bhutan's experience in taking up an integrated approach to natural resource management was also shared during the plenary and group discussions. The positive benefits of integrating agriculture, forestry, and livestock research and development activities as a steady and sustainable means of improving rural livelihoods were highlighted. The approach allowed professionals who were otherwise oriented towards their own sectors to discuss regularly and engage in a holistic development approach encompassing economic as well as social and environmental concerns.

Session III: Challenges

In this session, key challenges were identified by conference participants. These are outlined in the following passages.

Understanding and mapping poverty

The nature and extent of poverty in the TAR was still not very well understood or documented. There was a paucity of data and information that could be used for mapping poverty. Definitions of poverty and its indicators were still not adequately articulated in government documents and this gave rise to difficulties in identifying the poor and target groups for poverty alleviation projects.

Poverty alleviation approaches

Poverty alleviation efforts were poorly coordinated and spread across vast areas and did not adequately reflect local conditions and needs in the mountain region. Adopting an area-based approach taking into consideration the specific natural environment, physical conditions, and the priorities and aspirations of local communities posed a serious challenge to planners and development agencies; and, in this respect, although the government was moving towards a more integrated approach to rural development, more needed to be done to scale up the process. The conflicts of interest among the various actors involved in rural development also hampered progress in the field and there needed to be a mechanism for dialogue and resolution of such conflicts.

Decentralisation and participation

Although there was serious commitment on the part of the government to decentralising authority to local bodies and adopting participatory approaches to planning and implementation of development programmes, there was still poor understanding of the mechanisms of doing so. The capacity of government officials and local leaders to engage in participatory decision-making needed to be improved and

their understanding and attitude towards decentralisation reoriented. The participants were of the opinion that local people should not be regarded as backward and their way of life 'primitive' and that their views should be taken seriously.

Environmental degradation

Over dependence on natural resources such as pastures and crop lands and the lack of alternative sources of livelihood for rural herders and farmers were leading to degradation of the environment through overgrazing and intensification of cropping by using chemical fertilizers and pesticides. This not only resulted in physical degradation of resources but also in loss of biological diversity through the introduction of new commercial varieties. Therefore, balancing livelihood improvement through commercialisation and ecological protection posed a major challenge.

Institutional support

A major challenge to the TAR government was going to be to strengthen cooperation and coordination among the various institutions engaged in rural development. Lack of coordination among stakeholders, particularly the line agencies involved in delivering rural services, was referred to as a major constraint in making meaningful progress towards poverty alleviation. There was a deficit of experienced personnel as well as a lack of mechanisms for fostering cooperation among the various stakeholders; and these were considered to be important factors hindering development. Frequent transfer of trained personnel with local knowledge and experience was also cited as an important reason contributing to this situation.

Harsh natural conditions

The TAR is characterised by high altitude, and it has a cold arid ecosystem that has natural limitations for economic development. The shallow and fragile soils and cold dry climate limited agricultural intensification, and remote and inaccessible settlements made it difficult to develop social and industrial infrastructures. With the increase in population and expansion of infrastructure on to usable land, the size of landholdings had decreased (see Goldstein, this volume), affecting the economic viability of farming. The Tibetan natural environment is not conducive to intensive livestock farming. The change from nomadic pastoralism to settled livestock farming had increased the vulnerability of herders to inclement weather conditions, since their traditional means of absorbing such risks through temporal and spatial movement of livestock had been discouraged.

Coping with globalisation and commercialisation

The conference acknowledged that globalisation was inevitable and would bring both positive benefits as well as negative impacts to rural areas of Tibet as was the case with anywhere else in the world. Steps should be taken to manage the pace of globalisation if the benefits were to be harnessed and the negative impacts minimised. With China's entry into the WTO and an aggressive market economy emerging throughout the country, Tibet had become vulnerable to being overwhelmed by the forces of globalisation before it could prepare itself adequately. It was discussed that TAR had many unique opportunities and comparative advantages such as cultivation of medicinal herbs, organic meat and crops, and cultural and eco-tourism that must be carefully studied and launched as globally competitive goods and services. On the other hand, rapid and unchecked commercialisation would lead to the breakdown of the existing social safety networks and to increased vulnerability to external market forces, loss of cultural identity, and accelerated ecological degradation through increased demands on the natural resources and pressure on the fragile landscape.

The major constraints to benefiting from the market economy were identified as the poor quality of local products as well as the lack of adequate quantities to meet market demands. Tibetan herders and farmers were small, marginal operators who could not attain the minimum scale of production that warranted market exploration and investment in marketing infrastructure. Hence organising small producers into cooperatives and associations would be a pre-requisite for embarking on commercial enterprise. Likewise to address the quality requirements of the market and comply with the various standards set by the WTO for launching products in the international market, the capacity and mechanisms for quality control should be put in place.

Organisational and institutional reforms

While there was considerable commitment and goodwill from both central and provincial governments towards developing the rural areas of Tibet, further adjustments were needed to establish an effective administrative and technical support system that would translate this commitment and goodwill into tangible benefits for rural people. The challenge, as in many developing countries, was how the bureaucrats and technocrats could be transformed from managers and instructors into facilitators and moderators of development programmes. Rationalisation of government organisations and service agencies through careful analysis of their functions and capacities needed to be carried out in order to institutionalise a more effective and coordinated delivery mechanism, as

there was currently little cooperation between government agencies, or between them and other actors like international development partners and NGOs even when they were working in the same areas. Therefore, strengthening cooperation among these organisations by instituting appropriate mechanisms for dialogue and collective and transparent decision-making would be a major challenge.

Increasing disparity between rural and urban areas

There was general acknowledgement that the gaps in living standards and income between rural and urban areas were widening. The average per capita income in rural areas was only one-fifth that of urban areas (Lu et al., this volume). With poor access to social services, such as health and education, the prevalence of health problems and unemployment were much higher in rural areas. Lack of education and skills and limited labour productivity due to poor health were considered to be the key factors disabling Tibetans from competing with outsiders for non-farm employment and hence their low levels of income and living standards. Improving access to basic social services, creating non-farm employment, and building the capacity of local youths to take up non-farm employment were important challenges that needed to be addressed.

Development policies and their implementation

One of the reasons cited for the continuing poverty in rural areas was ineffective implementation of policies. While the policies were generally aimed at increasing income levels through economic development, they did not take into account considerations of social acceptability and ecological sustainability. Even when there were good policies, they were not effectively implemented on the ground by line agencies. Participants also recognised that there was a lack of fit between the national policy to adopt a free market economy and traditional products which were geared towards meeting the sustenance and social needs of rural households. The constraints faced in implementing policies, such as the privatisation of pastureland, were not fed back to policy-makers. Overall, appropriate policies for common resources like pastures, water, and forests that would encapsulate local people's needs and priorities as well as the larger national interests of economic development needed to be formulated. Policies should also be framed keeping in mind the environmental services that upstream communities provide to downstream areas through protection of river catchments and reducing floods and sedimentation.

Session IV: Strategies and policies

This session was devoted to discussions to identify appropriate policies and strategies for pursuing sustainable rural development in Tibet. Based on the papers and group work several options emerged, many of which were specific to rural areas of Tibet.

Shift in development philosophy

The participants felt that pursuing purely economic development did not meet the needs of traditional societies like the Tibetan one. A more holistic goal for development encompassing social, cultural, and environmental aspects, in addition to economic improvement, should be pursued. Development programmes should move away from providing free goods and services to facilitating self-help systems and capacity building of local people to implement their own choice of activities. Development officials must move away from the conventional role of benefactors to being partners in development with local communities.

Participatory planning and implementation

Institutional reforms to enable increased participation of local people in planning and implementing their own development programmes were considered necessary. This would entail creating awareness and building the capacities of all stakeholders, from government officials and NGOs to community members and leaders, to understand and adopt participatory approaches to planning and implementation. A concerted effort to identify ways and means to involve traditional communities and institutions in the development process must be adopted as an integral strategy of new development projects.

Area-specific policies and programmes

It was pointed out that one of the major constraints hindering rural development was the adoption of blanket policies and approaches that did not take local socioeconomic and geophysical specificities into account. In the process, many well-intentioned programmes had limited reach and impact in the target areas, as they were either socially and culturally incompatible or technically and environmentally unsuited to the locality. Large programmes should, therefore, ensure that enough flexibility is maintained in their implementation mechanisms to allow for the adjustments needed to meet local specificities and priorities. A conscious effort should be made to ensure development programmes will be spread equally among regions to avoid regional disparities and movement of populations from one area to another. To this end, development of regional centres for providing advanced social and

economic services was an important goal if mass out-migration to Lhasa was to be avoided.

Formation of groups and cooperatives

For rural herders and farmers to participate effectively in their own development and engage in income-generating activities, the participants felt it imperative that government and development partners should actively support the formation of target groups such as women's credit and savings' group or herders' cooperatives. The formation of target groups would allow for faster reach of programmes, such as control of health problems related to malnutrition or iodine deficiency through targeting mothers and educating them on food habits and nutrition. Unless cooperatives were formed, individual herders and farmers would not have the capacity to attain sufficient economy of scale in production nor the capacity to invest in processing and marketing their products.

An integrated and multi-sectoral approach

It was reported that currently there was little coordination or cooperation among the various government sectors engaged in rural development. Even closely-related sectors like agriculture and animal husbandry were not working together in a team, resulting in a diffused set of activities in the field with little potential for impact (see Kaiser and Zhan, this volume). Rural development could be accelerated by adopting an integrated approach consisting of infrastructural development (roads, schools, health clinics), economic development (agriculture, livestock, secondary industries for product processing), social services (education, health, communication, and so on) and institutional and capacity building (cooperatives, vocational training, and so on) components. For economic development, both farm-based and non-farm avenues, such as tourism and construction industries, had to be pursued. Mechanisms for enabling such an integrated and holistic development approach needed to be created at all levels, from local village to provincial government.

Capitalising on Tibet's niches and comparative advantages

Tibet's comparative advantages lie in its unique tradition and culture, its pristine plateau environment, and rich pastoral and water resources. Socioeconomic development must take into account these advantages and identify niche products and services that enable Tibetans to compete with other provinces of China or with other countries. Development of the tourism sector by investing in special packages, such as eco-tours, cultural tours, and adventure tours, held great promise in terms of bringing employment and income to rural Tibet. Likewise, Tibet could specialise in

organic livestock products and medicinal herbs by using its vast pastoral areas which are rich in medicinal plants. There was no advantage for Tibet in competing with other regions of China or other industrialised countries in producing meat through intensive farming involving artificial pastures and industrial feeds. Although Tibet is located in the headwaters of the major river systems of Asia, and could become a major player in the water sector in a continent facing increasing shortages of water and energy, as yet the vast potential for harnessing water resources for economic development has not been not tapped. Tibet could potentially exploit this advantage through formulating agreements with areas downstream for payment for water conservation services.

Capacity building

Capacity building of institutions and individuals at all levels was considered by the participants to be a key strategy for achieving sustainable development. Government institutions needed to be exposed to ideas and experiences from other regions of China as well as from other countries with similar features. In particular, the capacity of line agencies to undertake participatory planning and implementation of development programmes was identified to be of high priority, in addition to the enhancement of knowledge and skills of their staff in their professional fields. Attention should also be given to building the capacity of local institutions in skills in communication and negotiation in order to enable them to lead development effectively in their own areas according to their own priorities and local specificities.

The lack of competitiveness of local people in the job markets was considered a key factor contributing to high unemployment rates. Vocational training to develop the skills of Tibetan youths in emerging job markets like tourism, construction, communication, and energy, was considered to be a vital strategy for generating off-farm employment for them. It was suggested that this should be supported by special concessions from the government through a policy of preferential employment of those who undertook training through such schemes as 'set-aside' projects for Tibetans (see Goldstein, this volume).

Environmental protection

The central government as well the provincial government of the TAR had given high priority in recent years to the protection of the environment and the conservation of biological resources. Tibet's economic development could not be realised without preserving the integrity of its environment, which is fragile and vulnerable to rapid degradation. Continued efforts needed to be given to the ongoing schemes of protecting various

ecosystems, rehabilitating degraded forests and grasslands, and conserving the soil and water in the headwaters of the rivers. In addition, protection of Tibet's unique floral and faunal diversity, having evolved in extreme geo-climatic conditions, was considered to be of utmost importance as it might render potential cures for many human ailments.

Cultural preservation

The conference noted the rich cultural heritage of Tibet and emphasised the need to enhance its preservation. The Tibetan lifestyle, language, traditional arts and crafts, historical monuments, and cultural sites should not be seen only as assets for tourism development but also for their roles in preserving the cultural identity of the Tibetan minority and for their roles in inspiring future generations. Therefore, development programmes should recognise local culture as one of the principal guiding tenets in their planning and implementation.

Orientation towards a market economy

While China had become a member of the World Trade Organisation (WTO) and, therefore, a major player in the free market, rural Tibet was far from understanding the rules of the game, let alone benefiting from this phenomenon. As already mentioned by participants, the TAR had niche areas, such as tourism and organic products, offering the potential to compete in the open market. However, this could only be realised if the necessary conditions were created. These would include developing the entrepreneurial skills of Tibetans and backing these up with enabling investment and preferential trading policies and the development of market infrastructure such as transport and communication facilities. The TAR Government as well as the Central Government could actively facilitate this process by encouraging the private sector to set up product processing and marketing enterprises in rural areas and through appropriate regulations to ensure fair play for the primary producers, i.e., herders and farmers.

Session V: Recommendations

The conference deliberated on the outputs from the previous thematic sessions and adopted specific recommendations, presenting them at the closing session. It was also agreed that the representatives of the Organising Committee would brief the TAR Government authorities immediately after the conference.

Poverty alleviation and rural development

1. A systematic poverty assessment exercise based on existing data and further surveys should be carried out to better target poor and marginalised households, communities, counties, and prefectures using a participatory development planning approach.
2. Based on the results of the poverty assessment, poverty alleviation plans (PAP) should be formulated for different economic and ecological regions of the TAR, and these integrated into the TAR Social and Economic Development Plan.
3. The PAP should focus on improving social infrastructure and the livelihoods of the rural poor and aim at providing better social services such as education, drinking water supplies, health clinics, and agricultural and livestock production services.
4. Poverty alleviation projects should focus on providing access to nutritious foods, education, safe drinking water, and iodised salt to improve physical and mental health.
5. Emphasis should be given to the promotion of alternative sources of energy, communication, and transportation facilities.
6. Productivity of livestock should be improved through the restoration and improvement of rangeland management and increased fodder production.
7. Poor nutrient recycling on rangelands should be addressed through provision of alternative sources of renewable energy and crop fertilization.
8. Productivity of crops should be increased through the introduction of improved varieties of crops and production technologies.
9. The adoption of participatory planning and implementation of rural development programmes should be strengthened and accelerated by scaling up the county poverty alleviation planning methodology through building the capacity of government officials in participatory planning and management approaches in a focused training programme.
10. An integrated approach to rural development planning and implementation through the involvement of all stakeholders, including government agencies and local institutions, and by improving cross-sectoral cooperation and coordination should be adopted.
11. Support to physical infrastructure in rural areas and in rural townships should be continued.
12. Rural migrants' access to social services through respective legislation policies should be improved.
13. The comprehensive multi-sectoral strategy for poverty alleviation and rural development should be fine-tuned.

Income generation

14. Niche opportunities and comparative advantages of different areas for income generation from both farm and non-farm sources where there is a potential to compete in the open market (for example, integration of organic food production into the pastoral and farming production system) should be assessed and promoted.
15. The vision of a market economy should be articulated and promoted purposefully through different channels, including capacity building of government officials and private sector representatives.
16. Increase the proportion of marketable products through formation of cooperative organisations with the assistance of government and or private sector companies and add value through establishment of processing facilities for identified niches.
17. Improve the quality of products through the introduction of minimum quality standards catering to the demands of both domestic and international markets.
18. Provide an enabling policy environment for private sector involvement through reduced procedural bottlenecks in production and marketing and engage in active facilitation to promote trade and commerce through creating an improved investment climate.
19. Improve and increase access to micro-credit financing systems for rural households.
20. Establish mechanisms to support the rural poor and disadvantaged and help reduce disparities between rich and poor.
21. Strengthen the capacity of producers, research and extension support services, marketing agencies, and government officials to adopt a market-oriented approach, advanced production and processing technologies, quality control and regulations, business acumen, and marketing skills.
22. Increase facilities for vocational training in various fields, from traditional to modern sectors, to create employment opportunities and non-farm income-generating opportunities and adjust the curriculum to market demands.
23. Give preference to local people in infrastructure and other development programmes to provide employment.
24. Provide a programme of free adult education in functional literacy.

Coping with globalisation and integrating into a market economy

25. Develop a coping strategy for poor and marginalised farmers and those affected negatively by the market economy through selective safeguard measures and compensation mechanisms.

26. Focus on high-value niche products that do not compete with food crops and threaten the food security of isolated communities.
27. Diversify the economic base through promotion of goods and services based on the comparative advantages of specific areas.
28. Survey and identify cultural and ecological assets for conservation and promotion of alternative enterprises, such as cultural and eco-tourism, to generate income and employment for rural people.
29. Carry out environmental and sociocultural impact assessments before the development/establishment of commercial enterprises.
30. Study and develop a comprehensive strategy to harness the opportunities of and mitigate the negative impacts of globalisation.
31. Carry out studies on regional economic and trade cooperation in the Hindu Kush-Himalayan region as well as the impact of WTO membership on rural livelihoods in cooperation with international and regional research institutions.

Narrowing urban-rural disparities

32. Facilitate rural labour migration to urban areas and non-agricultural and pastoral sectors.
33. Improve the transportation and market connection between urban and rural areas to provide a favourable marketing environment for agro products.
34. Further reform the governmental public investment policy shift from pro-urban to pro-rural investment patterns for improving social infrastructure in remote communities.
35. Carry out development planning that systematically integrates urban and rural potentials in terms of resources, markets, human resources, information, and technology.
36. Implement a rural urbanisation strategy: small town construction to provide better social services by linking the herder/farmer resettlement programme with the poverty alleviation scheme.

Strengthening institutional capacities for implementing sustainable development strategies

37. Strengthen the capacity of organisations involved in decision-making and policy formulation in order to provide a favourable policy framework for implementing sustainable development strategies in the TAR.
38. Improve the capacity for policy implementation of local government organisations by providing relevant training.
39. Establish a policy consultation committee to support the policy-making process at the level of the autonomous region.
40. Create a transparent and effective development planning mechanism that combines bottom-up participatory planning and conventional top-down approaches through cooperation with national and international agencies.

41. Introduce a Training of Trainers' (TOT) system to improve the qualifications of government officials at various levels.
42. Develop an effective monitoring system comprised of relevant indicators for measuring poverty and for measuring the development process.

Beyond the Conference

The conference proved to be timely and was much appreciated by the TAR Government. It provided a platform for taking stock of the progress made in socioeconomic development of the region, to share valuable experiences from within China and among neighbouring countries, and to assess the current trends and emerging challenges posed by globalisation of trade and climate change to its economy and its environment. The participants from the TAR and other parts of China showed high levels of commitment to alleviating poverty and conserving the nature and culture of this unique region. There were serious concerns expressed about the region's culture, economy, and environment, but these were far outweighed by the messages of hope, aspiration, and potential for a bright future. The development agencies and NGOs working in the region pledged their commitment to strengthening their efforts to bring peace, prosperity, and happiness to the people of the TAR. The representatives of the organising agencies, TAAAS, TAR; InWEnt, Germany; ICIMOD, Nepal; and EU, Beijing, reiterated their agenda to take forward the recommendations from the conference and proposed the establishment of a Mountain Development Partnership for this purpose.

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Chapter 2

Perception, Assessment and Indicators of Poverty and Food Security from the Perspective of the Panam Integrated Rural Development Project

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Introduction

This paper commences with basic information about Panam County, Shigatse Prefecture, Tibet Autonomous Region, and goes on to discuss the poverty in Panam County and outlines the major poverty-alleviating policies of the government. The paper then presents the Panam Integrated Rural Development Project (PIRDP), its background, concept, and the current status of the project's implementation. It provides a summary of PIRDP's major contributions towards poverty alleviation and outlines how the momentum could be maintained after the termination of the project in December 2005. Finally, it proposes future options for poverty alleviation and improving standards of living in Panam County.

Basic information on Panam County

Panam County is located in the south-central part of Shigatse Prefectureof the Tibet Autonomous Region (TAR). Panam County, extending 121 km from north to south and 20 km from east to west, covers a total area of 2,759sq.km. and is one of the smallest of the 18 counties of Shigatse Prefecture. The exact geographical location is north latitude 28° 17'-29° 19' and east longitude 88° 15'-89° 27'. The average altitude of Panam County is above 4,000 m, increases towards the south, and reaches its highest elevation on the south-western border with Sajia county, Sang Qi Ri Mountain at 6,131 masl. Panam County is dissected by numerous valleys and rivers, of which the Nyachu, Dongxi, and Chu Sun rivers are the most important ones. Lying along the road to

Yadong and India, Panam town is easily accessible. Being 49 and 43 km, respectively from Shigatse and Gyantse, Panam is in between these two most important places of Shigatse Prefecture.

With about 95% of Panam County's area comprising of mountains and only five per cent fertile valleys, Panam County is clearly a mountainous county. The arable area of Panam County is 12,230 ha, with a total cropped area of 8,493 ha[1]. The average farm is in the range of one to two hectares. Panam County has 149,560 ha of pastures, of which 102,920 ha are used. The county has also considerable mineral deposits, in particular copper, phosphate, lead, zinc, and chromium, as well as geothermal energy.

Panam County's semi-arid climate is characterised by strong solar radiation and approximately 3,200 hours of annual sunshine, an average annual temperature of 5.9°C, 120-140 frost-free days, four distinct seasons, and an average annual precipitation of 412 mm falling mainly from the end of May to the end of September[2].

Administratively, Panam County has two towns (Luojiang and Jiaodong) nine townships (Dongxi, Zhexia, Gapu, Wangdan, Ma, Qumu, Duqiong, Qiangdui, and Baza), and 114 administrative villages, of which 13 are pure nomadic villages. At the end of 2003, Panam County had a total of 6,060 households and a population of 42,559; of these roughly 90% depended for their livelihood on agriculture, about nine per cent were livestock herders, and less than one per cent were earning their living from non-agricultural activities.

Literacy and school enrollment

The illiteracy rate, especially among the older people, is high. The official school enrollment rate is 90%, and the average drop-out rate for the whole county is 11.3%.

The health situation in Panam County is improving, however, in villages of remote townships there is a general lack of health services and poor hygienic standards.

[1] The total arable and cropped area cover 4.4 and 3.1% of Panam County's total area, with an average of 0.20 ha area cropped per person; however, the total cropped area of Panam County consists of 10.5% of the total cropland area of 80,580 ha of Shigatse Prefecture.

[2] The annual precipitation ranges from 200 to 700 mm and the average air humidity is 41%; the global radiation ranges from 7 -9 KW per m2 on days with sunshine, and the average wind speeds of 158 km for Shigatse and Gyantse.

Profile of poverty in Panam County

Major causes of poverty in Panam County

The extreme geographic and climatic conditions of Panam result in only four to five months' growing conditions and highly vulnerable ecosystems, thus limiting the productivity of production factors in comparison to other lower lying areas of China. Low levels of education and investment in infrastructure; poor accessibility; limited local products of market value; poor nutritional, health and hygiene standards; a relatively fast-growing population; and a high level of risk aversion towards innovation and change are the major social and economic factors contributing to the current levels of poverty in Panam County.

The extent of poverty is a result of insignificant levels of grain production, particularly in the predominantly herder townships of Dongxi, Gapu, and Zhexia; while the townships of Baza, Jiadong, and Luojiang located in the Nyachu Valley, where the farmland is very fertile and irrigated, are the richest townships in Panam County. In comparative terms, given that its irrigated cropping area is large and fertile, Panam County is one of the richest counties in both Shigatse Prefecture and in the TAR; in 2003, the average cash income per person was 1,980 RMB.

Changes in poverty levels from 1994 to 1998

According to government statistics, at the end of 1994[3], Panam County had 996 poor households with a population of 6,106, equivalent to 19.2% of the total households and 15.4% of the total population. Annual cash income and average grain production from all the poor households averaged 386 RMB and 258 kg (516 jin) per person.

As a result of the government interventions taken between 1994 and 1998; e.g., poverty alleviation programmes ameliorating existing and opening up new agricultural land of 820 ha (12,309 mu) and improving the housing conditions of farmers and herders[4], the average income rose to 729 RMB by 1998 and average grain production increased to 380 kg (760 jin/capita) per person, an increase of 343 RMB and 122 kg (244 jin) per capita over 1994. During the same period, average livestock

[3] In 1994, the poverty line was based mainly on the cash income and grain production required for meeting a minimum daily nutritional intake. The actual benchmarks defining the poverty line increased over the years from about 200 kg of grain to now 400 kg of grain per person and from cash income as low as RMB 300 to RMB 1,000 around 1998.

[4] According to government information, 293 standard living rooms were rebuilt for farming and herding households.

holdings per person increased slightly by 0.04 to 8.04 sheep units[3]; average farmland area could be expanded to two mu per person (an increase of 0.48 mu as compared to 1994); and the average floor space per person had reached 15 m² (increased by 5.42 m²). According to the statistics, by the end of 1998, all 996 households and 6,106 people had moved above the poverty line as determined at that time.

Current levels of poverty in Panam County

Panam County set the new poverty line at 1,300 RMB in cash income and 400 kg of grain produced per person and year. At the end of 2002, and based on cash income, a total of 3,882 households and 25,469 people living in 71 villages fell below the poverty line of 1,300 RMB (Table 1). Expressed differently, 62.3% of all villages, 78.5% of all households, and 67% of the total population of Panam County had an annual cash income lower than 1,300 RMB by the end of 2002.

The eight indicators are: (1) average cash income per person per year, (2) average grain production per person per year, (3) percentage of households living in poor housing (meaning non-brick), (4) percentage of households with access to potable water within 1 km or 1 hour, (5) percentage of households with access to reliable electricity, (6) percentage of natural villages with no access to an all weather road, (7) percentage of children dropping out of primary and middle school, (8) percentage of women with a health problem.

These indicators can be grouped into three categories of livelihood (indicators 1 to 3), infrastructure (4 to 6), and human resources (7 and 8) and were chosen from a potential list of forty-one possibilities during field testing of the methodology. A perceived advantage of the final list of indicators is that all six new factors (that is, the latter two categories) are expressed as a simple proportion of households in a given village, and are thus easy to assess and review.

[3] One Sheep Unit (SU) is a simple method for calculating a comparative figure for the different forms of livestock and the carrying capacity of grassland. The SU is based on the amount of forage/grass different forms of livestock need per annum. The SU may differ from place to place. Generally, 1 sheep/goat equals 1 SU, 1 pig equals 2.5 SU, 1 big animal (including horses, yaks, cattle, cows, donkeys and mules) equals 5 SU.

Table 1: Total population of Panam County below the poverty line based on cash income (end of 2002)

Annual Cash Income/Capita (RMB):	Households		Population	
	Number	Percent	Number	Percent
300 – 700 RMB	398	7.3	2,536	6.1
701 – 1,300 RMB	3,882	71.2	25,469	60.9
- Annual cash income below 1,300 RMB:	4,280	78.5	28,005	67.0
- Annual cash income 1,301 RMB and above	1,174	21.5	13,793	33.0

Note: Data are derived from the 'Eleventh Five-year Poverty Reduction Plan of Panam County', issued by the Panam County government on 2004 April 1.

Policies and programmes aimed at reducing poverty in Panam County

Major government programmes

In 2001, the government adopted the 'China Rural Poverty Reduction and Development Programme 2001 – 2010', in which a total of 592 counties out of 2,200 counties in the whole of China were included and 74 counties of the TAR have been added as 'Key Poverty Alleviation Counties'. About 85% of the counties selected for the programme are mountainous counties, clearly indicating that poverty is highly correlated with mountainous topography. In early 2003, the Chinese government adopted the new County Poverty Alleviation Planning Methodology (CPAPM), which replaced the previous two poverty indictors and replaced them with a set of eight poverty indicators to factor in human development and social-environmental considerations.

One of the future government plans is to develop Panam and Gyantse counties and Shigatse city as models for modernising agriculture in Tibet. Government measures aim to develop agriculture and livestock based on market needs with farmers and herders as the main beneficiaries. Macro interventions in infrastructure, e.g., road building and provision of electricity and drinking water, are combined with micro measures aimed at benefiting selected individual households directly. Poverty alleviation measures are to contribute towards capacity building and the improved and sustainable use of natural resources. The government's focal areas of poverty alleviation measures are, in particular, expanding the irrigated areas and increasing the efficiency of water use in existing irrigation schemes; developing crop production; building up capacities of the main beneficiaries participating in and contributing to the development process at all levels; and developing the locations identified for future development activities.

Since 1994, as part of the 'National 8.7 Poverty Reduction Plan'[4], Panam County government has pursued major poverty alleviation measures/strategies including: (i) identification of the causes of poverty; (ii) development of poverty alleviation strategies; (iii) establishment of Poverty Alleviation Leading Groups and development of implementation plans, (iv) implementation of a system of personal and direct responsibility; (v) promotion of education, health, and technology; and (vi) strengthening of capacities to alleviate poverty at the grass roots' level.

According to the Panam County government, resettling poor households to areas with better potential for economic development is an important policy for directly reducing cases of extreme poverty in extremely vulnerable areas. In general, these households live in the herder areas of Dongxi, Zhexia, and Gapu townships and are relocated to lower-lying and, if possible, irrigated farmland within the same township; and, in extreme cases, to villages in the Nyachu Valley. This policy started in 1994. In 2003, 25 households were resettled to nearby villages, while in 2004 some 80-90 households are to be relocated to newly-developed areas.

Currently the Panam County government is preparing the following three poverty alleviation projects for implementation: 'infrastructure development for planting and irrigating pasture areas in Dongxi River Valley'; extending the irrigation capacity in Shangba village, Wangdan Township; and promoting greenhouse production of vegetables in Wangdan and Ma townships.

The major poverty alleviating measures planned for the five-year Plan 2006–2010[5] may include some of the measures being planned by the TAR government as part of the development of Panam and Gyantse counties and Shigatse city–the model for modernising agriculture in the TAR.

To improve the effectiveness of poverty-alleviating projects and measures, Panam County government has assigned the direct responsibility for reducing poverty in a given township and/or village to selected government bureaux and civil servants[6]. The beneficiaries at township and

[4] From 1994 to 2000, the Chinese government implemented the 'National 8.7 Poverty Reduction Plan'; due to scarce data, information on poverty reduction measures is for the time being given only for the period 1994 to 1998.

[5] This information is not available for Panam County's current 5-year plan 2001 to 2005.

[6] In 2004, these responsibilities were assigned to the following officials: Dongxi township: Mr. Zhandu, Director of the People's Congress of PC; Zhexia township: Mr. Luo Dan, Vice Director of the People's Congress; Gapu: Wangdan township: Mr. Fubu, Vice Governor PC; Mr. Ren Jifan, Vice Governor PC; and Mr. Suolang Jianzhen, Director of the People's Court; Ma township: Mr. Pengchu, Vice Governor Panam County; Mr. Qumu- Duojang township: Mr. Tong Dawa, Vice Governor PC; Qiangdui township: Mr. Tsering Ouchu, Vice Governor PC; Luojiang township: Mr. Sunba, Vice Party Secretary PC; Bizza township: Mr. Zhang, Vice Party Secretary PC; Jiadong: Mr. Zhawang, Vice Governor PC.

village level are cooperating with the various government bureaux and officials through the local cadres on the township and village committees and mass organisations such as the women's federation. Grass-roots' organisations do not exist in Tibet.

The funds needed are provided directly by the central and TAR government, and also through partnership arrangements with rich eastern provinces, prefectures, and counties. Since 1998, Shandong province has had a twin arrangement with Panam County. Jinan city in Shandong province is providing funds and technical expertise to improve the infrastructure and capacities of Panam town and county. One programme in particular is the support Shandong province is giving to expand vegetable production by funding the construction of 450 mu (30 ha) of greenhouses.

Panam Integrated Rural Development Project (PIRDP)

Project genesis and start-up

Planning of the EU-China Panam Integrated Rural Development Project (PIRDP) began in 1992, largely as a result of political considerations, and stretched over a period of nearly nine years. Initially, PIRDP was conceived as an irrigation project with the immediate objective of improving the efficiency of usage of the Chu Sun Irrigation system, and thus contributing towards improving the income and livelihoods of the people within the irrigation perimeter. In consecutive years and planning steps, components were added, in particular, agriculture, livestock, and forestry and rural water supply and sanitation, education, health, and finally rural credit and capacity building. The Chinese side began constructing the Chu Sun dam and irrigation canals in 1997. By 1999, the Chinese government had completed the dam and eight secondary earthen canals plus basic irrigation works over a total length of 42 km for a total investment of around 14.2 million US$.

The Financing Agreement (FA) of PIRDP was signed in 1998, covering the five-year period from January 1998 to 31st December 2002. PIRDP's total European and Chinese budgets are € 7,600,000 and € 2,231,390, respectively[7].

Joint project implementation started in June 2001 with the arrival of European technical assistance. In the second half of 2001, the project team drafted the Inception Report with the Overall Work Plan and Budget. As the Work Plan and Budget 2002 was approved only in June 2002;

[7] The exchange rate € : CNY used in budgetary calculations is 1 : 7.28, i.e., the exchange rate of December 2002, the time of signing Addendum No. 1 to the Financing Agreement.

and with restricted tendering due to the limited time period of the FA, the implementation of most project activities was considerably delayed. In early 2003, the severe acute respiratory syndrome (SARS) crisis delayed further project implementation, more particularly in health as a result of the delayed arrival of the health advisory team. In general, strict EU standard tendering procedures and regulations resulted in delaying the procurement of all major equipment and services considerably.

By the end of 2002, only 19.4% of the CEU funds had been spent, while, in 2003, a further 37.2% of the funds were spent, bringing the total spending to 56.6% of the total CEU budget. Until the end of 2003, the Chinese side had spent 16.2% of its total budget. In 2002, the FA was extended until 2005 December 31, when the project will end after less than four years of implementation.

Objectives and areas of intervention

A project planning workshop was held in July 2003 in which the major stakeholders of the project formulated the objectives of PIRDP as contained in its current logframe. The overall goal, project purpose, and major results are as follow.

The Overall Objective is stated as: *"The quality of human development and living standards of the Tibetan people of Shigatse Prefecture are improved in a sustainable and replicable way"*, while the Project Purpose is formulated as *"A sustainable and replicable model for improving the quality of human development of the people of Panam County is developed"*. To stress the importance of integration, only one main result was formulated under the components related to farming systems, i.e., irrigation, agriculture/crops, livestock, and extension cum rural credit and for the components related to social services , i.e., rural water supply and sanitation, education, and health.

The *Main Result 1* for the farming systems' components is *"Through capacity building and the introduction of new crops, breeds, technologies and infrastructure on a pilot basis, the major farming systems of Panam County will have become more sustainable, productive and profitable, and will continue to do[be] so"*. The *Main Result 2* for the social services' components is *"Through capacity building and the provision of basic social services, the human capacities and capabilities and future prospects of rural Tibetans of Panam County [will] have improved"*.

The TAR government has selected Panam and Gyantse counties and Shigatse City as the three model areas for modernising agriculture in

Tibet. As such, PIRDP is strategically in a most relevant position for the models derived from its work to be replicated not only in other counties of Shigatse Prefecture but also in other prefectures of the TAR.

Project area

The project area includes all townships of Panam County the social service components: education, health, and, to a lesser extent, rural water supply and sanitation (RWSS). Irrigation, agriculture, livestock, and extension concentrate their activities on the townships of Wangdan, Mo, Qumu, DuQiong, Luojiang, Baza, and Jiadong. Two of the three pilot villages are located in Mo township (Tugu and Puxi), and one pilot village is located in Jiadong township (Baixue).

Beneficiaries

The direct beneficiaries of PIRDP are the rural Tibetan households of Panam County, while the indirect beneficiaries are the staff members of the implementing line agencies PIRDP is cooperating with[10].

As with the target area, the direct beneficiaries differ among the project components. Education concentrates its activities directly in improving the teaching methods of 150 of a total of 250 teachers at the 12 Integrated Primary Schools (IPS), and around 3,400 (65%) of the total of 5,300 pupils are benefiting.

Health aims at improving the health of mothers and infants, and on improving hygienic and sanitary conditions in clinics, schools, and selected villages: the potential number of beneficiaries is close to the total population of Panam County. Rural Water Supply and Sanitation (RWSS) provides clean drinking water through gravity pipeline water systems (GPL) and through hand pumps in 25 selected villages and in another 40 villages, including some 20 schools and 15 clinics in these villages; in 11 townships a total of approximately 24,000 people (56% of the total population of Panam County) are benefiting from clean drinking water. In comparison, the number of direct beneficiaries from irrigation, agriculture, and livestock are smaller. The relined canals will serve an irrigated area of 1,177 ha benefiting 660 households and 4,786 persons in 15 villages of four townships[11]. Agriculture and Livestock deal with some 50 village crop technicians and 30 village veterinary technicians and reach directly a total of around 500 and 300 selected farm households in the townships mentioned above.

[10] See paragraph that follows and para under 'Implementing agencies'.
[11] The gross area within the Chu Sun irrigation perimeter is about 3,200 ha.

Implementing agencies

The Ministry of Commerce (MOFCOM) at the national level and the Department of Commerce (DOFCOM) at the regional/TAR and prefecture levels are the main counterparts. At county level, the following line agencies implement the different project components: the Panam County Water Resources Bureau (PCWRB), for irrigation and rural water supply, the Panam County Bureau of Agriculture and Livestock (PCBAL), agriculture, livestock, and extension components, the Panam County Education Bureau (PCEB) and the Panam County Health Bureau (PCHB). On behalf of the European Commission, the German consulting company Agrar and Hydrotechnik (AHT) Group, the London-based Save the Children(SC)-UK, and the Rome based INGO Association for International Solidarity in Asia (ASIA) have been contracted to implement the components in irrigation, agriculture, livestock, extension, and rural credit plus overall project management, education, and health.

Current status and potential impact on reducing poverty

Project concept: Since 2003, the project stakeholders have gradually recognised the lack of readily available energy, resulting in the burning of cow dung as a major cause for land degradation, low or declining productivity, and ultimately as one of the main causes of poverty and poor living conditions in Panam County. It was decided that the remaining project duration would be best used by starting to develop an integrated crop, livestock, and forestry model (ICLFM) for sustainable and productive use of Panam County's natural resources; and at the same time continuing to improve the health and education of the people of Panam. To succeed in developing and adopting the ICLFM, the following major conditions had to be met: economic and affordable alternative fuel source(s) must exist and must be made available; farmers must have sufficient economic incentives for substituting barley with forage production[12]; and the institutions involved must have a long-term commitment towards strengthening the research and extension system and upgrading and training the extension staff. To make ICLFM effective and sustainable, major efforts are being undertaken to carry out activities in a participatory manner and coordinate crop and livestock-related extension activities and integrate them into the Panam County Bureau of Agriculture and Livestock through joint planning, training, and implementation and follow-up activities. The extension staff at county level and the staff seconded from the TAAAS work with farmers were organised into Farmer Technical Interest Groups (FTIG). To this end, the

[12] Intensifying dairy production is considered to be the most promising option for earning additional cash income from intensifying livestock production.

Project Management Office (PMO), Panam county government, and TAAAS are working towards establishing close and long-term cooperation between the main stakeholders and integrating project activities into the government programmes of Panam County and the Tibetan Academy of Agricultural and Animal Husbandry Sciences (TAAAS). Furthermore, PIRDP recognised the need for piloting the integration of activities and services of the different government institutions in selected villages and townships. Through geographical integration in the three pilot villages, the stakeholders of the different project components cooperate and contribute towards formulating, implementing and monitoring the village action plan (VAP) and the village development plan (VDP) at pilot village level. As such, institutional and geographical integration supplement each other. The social project components Rural Water Supply, Education and Health pursue a similar integrated institutional approach to improve the basic health and sanitary conditions.

Extension

The extension system, which is still in the process of being set up, consists of: the Tibetan Academy of Agricultural and Animal Husbandry Sciences (TAAAS) which will generate and provide the technical information and training; the extension staff of the Panam County Bureau of Agriculture and Livestock (PCBAL); the Village Crop Technicians (VCT) and Village Veterinary Technicians (VVT) as village-level extension agents; and the farmers organised into Farmers' Technical Interest Groups (FTIG). To increase efficiency in water use, farmers will also be organised at village level into Water User Groups. After the termination of PIRDP, the extension staff of PCBAL will have acquired sufficient knowledge and skills to plan and implement extension work successfully, mainly based on group extension.

To continue the activities initiated by PIRDP after 2005, close cooperation and a close working relationship are being established with the agricultural research and extension system of TAR, in particular with TAAAS. TAAAS is seconding five of its staff members in agriculture, horticulture, and livestock to the Baxue Agricultural Experiment and Extension Station (BAEES) to work permanently with the technical assistant (TA) in agriculture and train the staff of the PCBAL. The Baxue Agricultural Experiment and Extension Station will become the research and testing site for TAAAS in Shigatse Prefecture. In future, more attention must be paid to the economics and the marketing of different crop varieties and management techniques.

Due to lack of staff capacity, little progress has been made so far with regard to integrating the Agricultural Bank of China (ABC) into the

extension system to enable the ABC to provide tailor-made production loans for profitable farm enterprises and activities.

Pilot villages: In the second half of 2003 the project team selected three representative pilot villages within the project area; Tugu and Puxi in Ma Township and Baxue in Jiadong Township. The major objectives are to support the government in its poverty alleviation and development efforts by demonstrating capacity building at village and institutional level and participatory integrated village development for future replication at county and prefecture level.

In November 2003 and under the guidance of a team of three experts from the Centre for Integrated Agricultural Development (CIAD) in Beijing, staff from PIRDP and from all cooperating Panam County bureaux carried out participatory rural appraisal(PRA) jointly with villagers in three pilot villages and developed annual village action plans (VAP) and medium-term village development plans (VDP) for 2004[13] As part of the village planning, villagers identified and prioritised areas of development in the fields of infrastructure, agriculture, livestock, forestry, health, education and income-generating activities, named the main activities, assigned responsibilities, and estimated the material inputs and funds required[14].

In early 2004, the three villages established an organisational structure for implementing the VAP and VDP by establishing Village Coordination and Monitoring Teams (VCMT) and Farmers' Technical Interest groups. The membership of the VCMT is comprised of the Village Leader and the Party Secretary plus the leaders of all FTIGs. Decision-making is by consensus. The VCMT meets regularly on a fortnightly basis or as need arises.

By July 2004, FTIGs had been set up for different purposes in all three pilot villages.

In setting up the organisational structure and in implementing the VAP, the members of the VCMT and the FTIGs are supported by the Project Coordinator based at Panam, while FTIGs are regularly visited by crop, livestock, and forestry extension staff from the PCBAL, and by members from the project's Rural Water Supply and Health teams. All three pilot villages have already completed or are in the process of setting up small village centres for holding meetings; one room of the village centre serves as a village clinic.

[13] The methodology followed the County Poverty Alleviation Planning Methodology for the most part.

[14] The budgets calculated for implementing the VAP are as follows: Tugu RMB 390,000; Puxi RMB 235,000; and Baxue RMB 200,000.

Until July 2004, the main activities have consisted of planting and managing tree seedlings and of new varieties of food and forage crops; the provision of solar stoves at 50% of cost; and the use of agricultural machinery for land preparation. To make better use of the solar stoves, provision of more thermos flasks and pressure cookers is planned at subsidised cost. Storing larger quantities of hot water will help improve hygiene, while pressure cookers will allow the efficient preparation of new food and dishes and save on fuel. Promotion of hygiene and sanitation started in early 2004 as a continuous activity.

Agriculture and crop extension: The immediate objectives of the agricultural component are the testing, selection, and introduction of new crops and varieties with higher yields and better nutritional values for both humans and livestock (e.g., wheat, triticale, rye, potatoes, oats, beets, alfalfa) (Table 2) in order to improve, directly and indirectly, the nutrition and health of the rural population in and outside of Panam County. Together with new crops and varieties, improved agronomic cultivation and management techniques are also being tested and introduced (Table 3). As such, the agricultural component addresses directly the still widespread and high levels of malnutrition and under nutrition, particularly in children living in remote areas.

Since autumn 2001, testing of new varieties and crops has mainly been carried out on-station at the Baxue Agricultural Experiment and Extension Station (BAEES) under the leadership of the TA of agriculture. New winter wheat, barley, and rape seed varieties, as well as potatoes, sugar and fodder beets, and a multitude of different forage crops of various origins (e.g., maize, alfalfa) have been tested for yield and nutritional contents. Due to the high solar radiation and the low night temperatures, the results (yield, starch, sugar, and oil contents) of most crops tested are very encouraging. For example, the best varieties of winter wheat, winter triticale, and winter rye reach yields of up to 10 t/ha, spring triticale up to 8 t/ha, fodder beets up to 100 t ,and sugar beets up to 70 t/ha.

In 2003, the most promising crops and varieties were tested on-farm for the first time in Duqiong, Qumu, Jiadong,and Luojiang townships. In 2004, the agricultural component and the Crop Extension Section of PCBAL expanded on-farm testing by involving farmers and Village Crop Technicians and by setting up FTIGs for testing the different crops. By July 2004, 263 farmer households in 72 villages of 11 townships had been carrying out on-farm testing of 12.2t planting materials (mainly potatoes, rapeseed, sugar and fodder beets, oats, and a mixture of different forage crops of grasses and legumes) directly on 62ha (930mu). Forage seeds

and planting materials have been given preferentially to member farmers of FTIGs who are cross-breeding Jersey with local cattle. These farmers receive formal training at BAEES at the beginning of the growing season, at mid-season, and before harvest. Between these training courses, the agricultural team follows up and assists farmers and compiles the most essential data.

Potential food and forage crops and agronomic practices as a result of PIRDP's work and recommended for further research and extension beyond 2005

Table 2: Food and forage crops

Crop	Justification and impact	Potential yield/ha	HC, LS*
Various winter and spring wheat varieties	Higher yield and improved baking quality	8t/6t	HC
Various winter and spring triticale varieties	Suitable for human consumption, has high, -amylase content	9t/7t	HC, LS
Oats	Primary fodder grain and for forage as hay or silage	30t fresh leaf weight	LS
Various winter and spring rye varieties	excellent environmental adaptation to high altitude; high grain and fodder yield (green fodder and hay)	40t fresh leaf weight	LS
Maize	For making silage from the whole plant	40-50t fresh weight	LS
Alfalfa	High protein content; plant nitrogen fixing and improving soil	60t fresh weight	LS
Sugar/fodder beets	Feeding livestock; high yields and nutritional contents	70/100 t beets 30/40t leaves	LS, HC
Potatoes	High and most balanced nutrient contents (starch, nitrogen compounds, organic acids, minerals and enzymes); ideal for human consumption	40t	HC, LS
Rape seed	Main source of edible oil in Tibet; new varieties higher yielding and without erucic acid	2.5 t when planted as single crop	HC

*: HC = Human Consumption; LS = Livestock Feeding

To address the lack of forage, particularly in winter, in 2004 the agricultural team started two development activities which, if successful, could have a significant impact on livestock raising and on the livelihood of farmers and herders. As part of the development activities in three pilot villages, a mixture of different forage crops has been planted on 16.7 ha (250 mu) of colluvial wasteland[1]; and, in the herder township of Dongxi, winter

[1] The forage mixture planted per ha is comprised of the following species: Onobrychis vicunifolia (25 kg), Medicago sativa/alfalfa (8 kg), Melilotus albus/white sweet clover (6 kg), and Lolium perenne/perennial rye grass (6 kg).

Table 3: Improved Agronomic Methods and Practices

Methods and practices*	Justification and impact	Expected effect on yield
Cultivating single rows of potatoes on ridges	Planting potatoes 25-30 cm apart on single ridges with 60 cm spacing, yield may increase up to threefold over traditional planting method. Traditionally, farmers in PC grow potatoes on wide ridges (80cm wide x 50cm high) with seed potatoes planted randomly and very narrowly, resulting in small tubers and low yield (while labour input for weeding is reduced and potatoes are less affected by drought).	Up to threefold increase in yield
Rape seed	Grow rape as a single crop, with 40cm between and 15-20cm in the row; and apply 7kg N/ha; prior to sowing, harrow field 3-4 times. Traditionally, farmers in PC crop rape with barley with very low yield, partly because of asynchronous ripening leading to shattering and large losses of rape seed; this practice contaminates the fields and for many years rape becomes a weed.	Up to threefold increase in yield
Beets	Successful cultivation of beets need special crop management: directly before sowing irrigate field; soak seeds; cover soil with plastic mulch; every 15 cm, make holes into the plastic mulch and plant at 1-2cm depth 3-4 pre-soaked seed kernels per hole; at the 3-4 leaves' stage, select the strongest plantlet and to prevent weeds from growing, cover the mulch with soil. Apply NP fertilizer twice(150kg N and x kg P_2O_5, equal to 10 kg N and y kg P_2O_5 per mu).	Beets can be grown success-fully only under (plastic) mulch
Maize and sunflowers	Cover soil with plastic mulch; every 20 cm, make holes in the plastic mulch and plant at 1-2cm depth 3-4 seed kernels per hole; when plants are 15-20cm tall, select the strongest 2-3 plantlets; to prevent weeds from growing, cover the mulch with soil.	Maize and sunflowers can be grown most success-fully under (plastic) mulch

spring rye, oats, and spring triticale have been planted for harvesting at milking stage and have been made either into hay and/or silage.

Livestock extension: The livestock activities focus on increasing the productivity of major livestock such as cattle, goats, and chickens, the income from livestock keeping, and the nutritional status and health of farmers and herders. The major activities which the livestock component started in 2002 were the cross-breeding, through artificial insemination with Jersey semen of local cattle from Guangdong Province; improving the management and feeding of calves; the introduction of a new breed of chicken (Lhasa White) for egg production as an income-generating activity; and the introduction of male Cashmere goats, initially for cross-breeding with local goats, in one herder township (Dongxi) and, if successful, of breeding pure Cashmere goats (Table 4).

As of now, 11 FTIGs with a total of about 180, mainly better-off, farmer households in four townships and seven villages are participating and directly benefiting from the Jersey cross-breeding programme. Specific objectives of this cross-breeding programme are to increase the production of milk and butter, in particular, and to reduce problems, encountered when large exotic breeds such as Black and White and Simmental are introduced, through artificial insemination (AI). Fifteen village veterinarians have been trained in AI; this training benefits their work in the AI programmes with Black and White and Simmental.

To produce the larger quantities of feed and forage the cross-breeds need, and to practise the integration of livestock into crop production, in 2004 the members of the FTIGs breeding Jerseys received oat and forage seeds (mixtures of alfalfa with other legumes and grasses) and sugar and fodder beets. Follow-up is jointly carried out between crop and livestock extension.

Improved livestock husbandry methods and practices recommended for further research and extension beyond 2005

Table 4: Livestock Improvement Activities

Methods and practices	Justification and expected impact
Cross breeding Jersey with local cattle	Jersey cows are similar in size to local cows and cross-breeding does not cause complications, especially at birth; the female-male ratio of calves is higher than for all other cattle breeds in Panam County; the fat content of milk is expected to be very high; very suitable for selling milk
Promoting Lhasa Whites for egg production	Laying of 200-220 eggs per hen and cycle; improves protein supply, nutritional status, and health of the people
Forage production	Directly, forage production will improve nutritional status and growth of livestock and, hence, the production of milk and meat; indirectly, the nutritional status and health as well as the income and livelihood of the people will improve.

The objectives of the Cashmere cross-breeding programme are to improve the quality of the wool of the off-spring from male Cashmere and local female goats; to increase the price the farmer/herder gets for the wool; and, by this, to increase the income and improve the livelihood of herders. Introducing Cashmere goats to Dongxi Township benefits equally all households in this township. If the initial experience gained this year is sufficiently positive, the purchase of female Cashmere goats in Naqu County and their introduction to Dongxi Township and possibly Zhexia Township are planned for 2005.

The objectives of promoting Lhasa Whites are to provide additional protein and to improve the nutritional status and the income of families through egg production. In addition, promoting Lhasa Whites serves as an ideal object for promoting group extension and receiving measurable results already during the lifetime of the project. In 2003, the purchase of chicks was constrained by SARS; yet the results obtained in 2003 are very encouraging. In 2004, four FTIGs in Ma Township, the majority of members being female, are raising some 900 chickens.

Irrigation: Irrigation is comprised of the two sub-components of construction and water user groups, with the objectives of rehabilitating 32 km earthen irrigation canals with stone masonry; and strengthening the capacity of the major stakeholders, PCWRB, township leaders, and villagers in managing the allocation and use of irrigation water more efficiently.

After a slow start in 2003, the contractor already started on April 1 2004 to line canals number 5 to 8. By the end of July, all but about 300 m of the 32 km canals and some minor structures had already been completed. Due to the heavy rains and flooding expected during the wet season, in July the contractor will concentrate on completing minor tasks, e.g., small bridges, tertiary outlets, and some drainage bridges. Contractually, all work should be finished by the middle of August 2004; more likely, however, it will be finished by the middle of October.

Work aimed at increasing water management and efficiency of water usage started during the second half of 2004. Together with the major stakeholders, Panam County Water Resources' Bureau (PCWRB), township, and village leaders and farmers, their current and future roles and responsibilities will be assessed and defined. As a result of this work, the mode of communication between the stakeholders and the rules and regulations will be clarified and agreed upon, thus contributing to a more efficient regime of allocating and using the scarce water resources of the Chu Sun dam.

Rural Water Supply and Sanitation: In 2001 and 2002, a survey of the water supply situation in all 114 villages of Panam County was carried out and a Master Plan developed. Based on this Master Plan, 25 villages were selected to be provided with clean drinking water through gravity pipeline systems (GPL) and 40 villages through hand pumps (HP). To address the poor sanitary conditions, a sanitation sub-component was added in 2003 and is being jointly implemented by the Rural Water Supply and Health and Education components.

To create ownership and to increase the sustainability and effectiveness of the installed water supply systems, villagers are consulted and trained, and Village Water and Sanitation Committees (VWSC) are formed prior to developing hardware such as intakes, reservoirs, and tap stands, and laying pipes. The VWSCs are the conduit for carrying out the Hygiene and Sanitation Promotion Campaign (HSPC) and follow-up measures. As of July 2004, VWSC are operational in 16 administrative villages and are in the process of being established in a further six administrative villages.

In 2003, GPL were provided to eight villages and 16 new locally-made hand pumps were installed (nine HP in three villages; three HP in three health centres; and four HP in two primary schools); and four existing handpumps were repaired(three HP in three health centres; and one HP in one primary school).

In 2004, it is planned to install GPL systems in 14 administrative villages/18 natural villages; 150 hand pumps in 32 administrative villages; and improved latrines in 17 primary schools and one clinic. By mid July 2004, the following achievements can be claimed: GPL have been installed and are functioning in eight administrative and 10 natural villages; 85 hand pumps have been installed in 16 administrative villages and three primary schools; and latrines have been installed in eight primary schools and one clinic. The remaining targets can most likely be achieved before mid October. For 2003 and 2004 combined, a total of 57 villages and 18,596 persons have benefited from the RWSS activities.

The project is also equipping the Prefecture Epidemic Prevention Station (PEPS) with the equipment and materials needed for the analysis of water samples. Furthermore, PIRDP is training the staff of the PEPS in the proper use of equipment and materials so as to generate reliable water testing results.

From clean drinking water provided in 2003 and 2004, 2,422 and 16,174 (total for 2003 and 2004: 18,596) villagers are directly benefiting in 57 villages and nine townships[14]. By the end of the programme, an estimated 24,000 villagers in 60 villages will be benefiting from the water and sanitation activities of PIRDP.

[14] In 2003 and 2004, RWSS was operating in all townships except Dongxi and Gaqu; in 2005, RWSS will also operate in the townships of Dongxi and Gaqu.

Delays in procuring materials, in particular high-pressure, high-density polyethylene pipes (HDP) pipes, and lack of counterpart staff available from the PEWRB are the main constraints the RWSS component has experienced so far.

Education: The major areas of intervention are training primary school teachers in and giving follow-up support to institutionalise child-friendly teaching methods and strengthening the planning and management capacities of the Panam County Education Bureau. By 2005, trainers who will be capable of continuing the training activities and replicating them in other counties of Shigatse Prefecture are expected to have been trained. To date two cycles of teachers' training courses have been held, covering six townships. The total number of training courses held until July 2004 are as follows: four teachers' workshops with 75 teachers; three trainers' workshops with nine teachers participating; and two key teachers' workshops with 15 teachers participating who will provide the required in-school support. In addition to the training courses, training materials relevant to the Tibetan context have been developed for the teachers' training workshops and for trainers in participatory training approaches. Furthermore, three Agriculture Field Days were held for 27 teachers, three study tours to the Tibet Basic Education Project in Metroghongkar and Lhendrup for teachers and PCEB personnel, and one study tour to the Yunnan Minority Basic Education Project in which 15 and 12 trainers, head teachers and staff from the Shigatse Prefecture and Panam County Education Bureaux, participated.

The education component is also supporting the setting up of two-year vocational training courses at the Panam Middle school, with the objectives of providing children with more options for future work in the community and of developing more advanced skills and new knowledge in farming and livestock-raising techniques. In 2003, PIRDP supported the Panam County Education Bureau (PCEB) and the Panam County Middle School (PCMS) in setting up vocational training courses by assisting in selecting and planning different vocational training courses in agriculture and horticulture, livestock raising, traditional art/painting, and in tailoring; and in renovating the building of the Vocational Centre within the compound of the PCMS at a cost of approximately € 25,000. As of July 2004, the traditional arts' course is on-going and teaching of agriculture and horticulture is soon to begin.

In conjunction with the training activities, PIRDP has, in close consultation with the PCEB, provided substantial hardware to schools as well as boarding facilities, e.g., 2,700 mattresses, desks, and chairs; solar

panels to provide light for dormitories; cleaning and washing materials, to improve the general hygiene; as well as hand pumps and improved latrines. All project schools involved in the training activities have also received boxes with basic materials in them which will allow teachers to produce simple teaching aids by themselves. Health education materials developed mainly by NGOs in Tibet, have been procured and given to schools, as will be basic books in Tibetan and Chinese as stock for small school libraries.

In 2005, the education component will extend the primary school training activities to the remaining five townships. In vocational training, the curricula for the different vocational training courses and the teaching skills of the vocational trainers will be developed and improved.

Health: The health component aims to improve the health of rural Tibetans in Panam County, particularly by reducing the mortality of mothers and infants through training of Traditional Birth Attendants(TBA) and by improving the health services in Panam County.

The training of health personnel is one of the main strategies of the project for improving the quality of health services. In 2002, more than 150 health personnel were trained, particularly through six training courses for TBAs, two training courses for midwives and hospital doctors, and one training course for township clinic (TC) doctors.

In 2003, the health personnel of Panam County were trained through the following training courses: retraining of 122 TBAs; training of 60 village doctors, 20 township clinic doctors, and 20 Panam County Hospital doctors. In addition, the leaders of the Panam County Health Bureau (PCHB) participated in a study tour to Jinan, Shandong Province, with the main objective of preparing PCHB doctors for the currently on-going six-month training courses in Jinan.

Based on previous field work and research, the hygiene and sanitation promotion campaign (HSPC) was included in the Work Plan 2003. The HSPC has the objectives of increasing awareness and knowledge about hygiene and sanitary practices—mainly related to water and sanitation—and to stimulate behavioural changes and promote active participation of the community in improving village hygiene conditions.

From August to mid October 2003, the first pilot HSPC was carried out in two townships and four villages, including an initial evaluation of the methodology. After completion of the first four pilot campaigns, the

trained local health promotion personnel continued with the health and hygiene promotion campaign in six other villages until the end of 2003; in three villages the HSPC was jointly implemented by the staff of the RWSS component.

Duly acknowledging the difficulties posed by the EU procurement regulations and procedures, in a meeting held in October 2003 the members of the Steering Committee endorsed a decision to shift the European funds allocated for construction of three township clinics to expanding the HSPC to all the villages covered by the Rural Water Supply programme. Based on the initial results, the Health Component prepared a 'Proposal for the Extension of the Hygiene and Sanitation Campaign' in 2004. Due to difficulties experienced in recruiting a new hygiene promotion expert for implementation in 2004, the HSPC is still pending.

The major constraints experienced by the health component relate to procurement of equipment and materials and to the mobilisation and recruitment of qualified health personnel. In 2003, SARS delayed the arrival of the foreign health team by two months, while, by the end of July 2004, the recruitment of both the health coordinator and the hygiene promotion expert is expected to have been completed. In 2005, the main focus of the health component will be on implementing the HSPC.

Capacity building: Through close cooperation and coordination with partner institutions, mainly at Panam County level, planning and management capacities will be improved. With the recruitment of highly qualified national staff in early 2004, the activities of all project components have become better integrated and are now clearly focused on capacity building at county level.

Major lessons learned

After an unusually long gestation period, a slow start and constraints experienced, PIRDP has now become fully operational. All its components and activities are supporting and complementing major government policies. PIRDP has made and is making particular contributions towards the development and reduction of poverty in Panam County, mainly through capacity building and the introduction of new concepts, ideas, and approaches to government staff and villagers, and less through the provision of hardware. Of these, the most important ones are the following.

- Participatory village planning and integrated community development

- Participatory extension methods
- Addressing the issues of poverty alleviation and long-term livelihood improvement; and from the sustainable resource management point of view, in particular from the energy point of view by—taking up the initiative of developing the ICLFM, including the planting of trees on a communal and private basis and the provision of solar stoves, thermos flasks, and pressure cookers to substitute cow dung with bio and solar energy,
- Testing, selecting and introducing new crops, varieties, and crop management techniqués aimed at increasing yield, income, and the nutritional status and health of the people
- Introducing new livestock breeds to increase the production and income from livestock products; and also for improving the nutritional status and health of the people
- Institutional integration, particularly in addressing the key issues of developing the tCLFM by establishing close tripartite cooperation between TAAAS, PCBAL, and PIRDP
- Introducing child-friendly teaching methods through the training of all primary school teachers
- Assisting the PCEB in introducing vocational training courses
- Assisting the PCHB in improving mother and child health, the hygiene and sanitation, and the equipment and materials at village and township clinics and the county hospital

Major recommendations

To achieve full potential and sustainable impact of PIRDP's capacity building efforts in the Tibetan context, the time frame of less than five years is too short, and another five-year period is considered necessary. However, the Country Strategy 2002-2006 of the Commission of the European Union for China is focused on areas other than rural development, and a further extension of PIRDP has been excluded.

For the last year of PIRDP, efforts will be made to summarise the experiences since 2001, formulate models replicable for other counties, and share the experiences with other counties; as well as to assist both TAAAS and the PCBAL in strengthening their cooperation and strengthen the water management capacities at PCWRB, at the township and village level. To maintain the momentum gained, institutional integration is vital for the impact and sustainability, time, and material investment under PIRDP.

For future government poverty alleviation programmes, the following recommendations are made based on PIRDP's experiences.

- Intensification of the use of participatory approaches in identifying and prioritising needs of villagers and in planning poverty alleviation and community development activities

- Intensification of integration between different government bureaux in planning and implementing poverty alleviation and livelihood improvement programmes; this applies particularly to the emerging tripartite cooperation between TAAAS, Panam County Bureau of Agriculture and Livestock, and PIRDP
- Focus of poverty alleviation and livelihood improvement programmes increasingly on provision of alternative and renewable forms of energy. To maintain the momentum gained it is proposed to formulate a future project proposal which addresses the current lack of available energy in rural areas as its core problem, by testing, and introducing energy types on a pilot basis, and harnessing of renewable forms of energy, in particular, bio-, solar-, and wind energy.

Chapter 3

Sustainable Rural Development in Tibet: from Poverty to Prosperity

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Background

In May 2001, China convened the third 'Central Conference on Poverty Reduction and Development', which announced the implementation of the 'China Rural Poverty Reduction and Development Programme 2001-2010'. With this announcement, China's initiatives on poverty alleviation entered a new phase. The programme has several key features such as poverty reduction in previously neglected areas, poverty reduction in areas inhabited by ethnic minorities, new poverty reduction policies for investments and interventions, and a specific focus on mountain areas in the western region (Hongmin 2002). Therefore, it is logical that the mountain areas and people living in them have currently taken the centre stage of the development agenda in China.

In order to design strategies for development in Tibet, which is one of the poorest mountain provinces in China, the 'First Central Government Symposium on Development' was held in Tibet in 1980. It set the tone for policy reforms and restructuring and included ensuring land tenure for longer periods than hitherto (30 years) to increase production and improve the standards of living of the highlanders. The 'Second Central Government Symposium on the Development Process in Tibet' was held in 1984, and, as a consequence, more reforms were proposed and implemented. A 'Third Central Government Symposium' was held in 1994. This symposium was important in that it proposed a new model for the development strategy in Tibet, whereby developed provinces of China were to adopt prefectures for development support, investment, and expert human resource services, in addition to central government investments. This development philosophy continues to date, and it may be time to assess the performance of this approach. In addition, new challenges and opportunities have emerged for Tibet during the past few years.

This paper tries to set the tone for discussion. It starts by explaining poverty dimensions and why mountains are home to the poor. The

second section describes development approaches and stories of success in economic and social development. Following this, it analyses the situation of agriculture and livelihoods in Tibet, suggesting ways through which the poor highlanders of Tibet can become prosperous.

Marking the poor in Tibet

The rural poor in Asia are characterised by a number of common economic, demographic, and social features, but the most common feature is landlessness or limited access to land. Poor rural households tend to have larger families, with high dependency ratios, lower educational attainment, and high underemployment (Thapa 2002). The poor lack many of the facilities and opportunities necessary for living a decent life; such as the basic amenities of piped water supplies, sanitation, and electricity; and other amenities lacking include access to credit, inputs and technology, information about markets, and business experience (IFAD 2001).

The poor are farmers, forest dwellers, highlanders, and indigenous people (tribal communities). In China, almost all of the 65 million officially recognised income-poor live in remote and mountainous rural areas (UNDP 1997; Thapa 2002). The sparse and scattered settlements in these high mountain areas have poor transport and little infrastructure and poverty is mainly caused by the high costs of transportation and service delivery. Most of the pastoralists and tribals are found in high mountain areas living in harsh climatic conditions.

The categories of poor identified by IFAD include the landless along with marginal farmers and tenants, indigenous people (called scheduled tribes in India and minority nationalities in China) and scheduled castes, and upland mountain farmers and highland pastoralists (Thapa 2002) The incidence of poverty is very high among indigenous people who constitute the core of the poor in the mountains of the Hindu Kush-Himalayan (HKH) region as well as the Asian uplands. These people are known by different names: hill tribes, highland communities, ethnic minorities, minority nationalities, scheduled tribes, cultural communities, and so on. They have strong clan structures and ethnic bonds, a firm sense of identity, and accord high status to women. They also have a high prevalence of hunger and malnutrition and lack basic amenities and education.

The incidence of landlessness is high in South Asian countries such as India, Bangladesh, and Nepal. Most of the landless people work as agricultural labourers. Marginal farmers (owning less than 0.4 ha of crop land) are found everywhere in the region, but they are predominant in India, Nepal, and Bangladesh. Farmers in China also fall into this category.

The highlands as home to chronic poverty

Poverty has different meanings for mountain people. Even if they have food to eat, a house to live in, and warm clothing, they may still be living in perpetual poverty. Mountain conditions, characterised by difficult terrain and cold climate, make it absolutely necessary that people have a higher minimum energy and caloric intake, and that they have warm clothing and housing to protect them from the extremes of weather and climate.

Besides food, clothing, and housing, among the other visible manifestations of poverty in mountain areas are the strain and drudgery that people have to undergo to eke out a living. For example, there is the constant strain resulting from the difficulty of accessing such basic needs as water and fuel and basic inputs like fodder for livestock which need to be fetched from far distances in a difficult terrain. The weak purchasing and investment capacities of mountain people, because of the unfavourable terms of trade caused by vertical transport and trade channels, make them even more vulnerable to externalities beyond their control.

Various facets of poverty in mountain areas suggest that the nature and pattern of livelihoods are primarily shaped by physical characteristics, which also dictate the socioeconomic situation of the people living in these areas (Papola 2002). Inaccessibility, fragility, and marginality lead not only to a limited base for sustaining livelihoods, but also, more importantly, result in a high degree of vulnerability, risk, and uncertainty (Jodha et al. 2002). Papola (2002) identified the following key factors that make mountain people poor: i) a limited resource base, notably severe scarcity of crop land resulting in large numbers of small and marginal farmers; ii) restricted access to natural resources such as forests, minerals, and water – they are there but not to be used by mountain people for improving their standards of living; iii) lack of access to markets, technologies, and inputs; iv) unequal exchange – for example, most purchases are at higher prices and they are compelled to sell their produce at lower prices; v) weak institutions; and vi) the neglect of mountain specificities in development policies.

One important deprivation suffered by mountain people is inequality of opportunity. Inequality of opportunity can be particularly illuminating in

the context of mountain development. In any society, most opportunities are enjoyed by some people, but not by others. The limitations of mountain people, e.g., Tibetans, would contrast with what others (mainstream Chinese society) can do without any difficulty whatsoever. Enabling constrained society involves countering this division between haves and have-nots. The goal of reducing inequalities within a nation state, thus, fits in well with that of eradicating the deprivation of those bereft of basic opportunities and aspiring to establish a good society offering opportunities to every one equally so that they can enjoy peaceful and prosperous lives.

Among the 634 million rural poor, about 375 million are in Asia and they live on marginal and degraded lands, usually comprised of uplands, mountains, and highlands (Nelson et al. 1997). Large numbers of Asia's poor are concentrated in the hills and mountain regions of China, India, Nepal, Bhutan, Pakistan, Myanmar, Indonesia, Thailand, Laos, Cambodia, Vietnam, and The Philippines. Nearly one fourth of Asia's absolute poor (250 million people) eke out a meagre existence in these areas.

A World Bank study identified another cause of poverty among people in the Asian uplands; a situation that prevails even while overall agricultural growth and progress has been significant within these countries. The study proposes that it is because of the failure of development interventions to extend the benefits of the green revolution to rainfed and marginal upland and highland areas that people living there have not enjoyed the same agricultural growth benefits as others within their respective countries (World Bank 1992; Thapa 2002). Because the means to reduce poverty among these small and marginalised mountain farmers through agricultural growth and rural enterprise development were limited in these areas, poverty continued to persist.

In contrast, growth in smallholder agriculture in the plains was a major factor in rural poverty reduction in Indonesia and Malaysia in the 1980s and in Japan, South Korea, and Taiwan in the 1950s and 1960s. The decline in rural poverty in the plains of India, as in China and other South Asian countries, was mainly due to the employment spin-offs of the green revolution. In China and Indonesia, a labour-intensive green revolution was followed by growth in labour-intensive manufacturing and services, and this helped improve rural incomes and reduce the poverty gap between rural and urban areas tremendously.

Thapa (2002) revealed that there are large disparities in rural poverty incidence between mountain areas and the rest of the people in many Asian countries. In India, several Eastern Himalayan states have a higher incidence of poverty than areas in the adjoining plains. Parts of these areas have suffered from political unrest; others contain a large number of ethnic minorities and most are dependent on rainfed agriculture. In China, poverty is far greater in the resource-constrained, remote upland areas where land is so unproductive that it is not possible for farmers to achieve subsistence levels of crop production. Similarly, the poorest of the poor in the respective countries also live in the uplands of Bangladesh, Vietnam, Myanmar, Laos, and Cambodia. In fact, with few exceptions, the poorest regions in Asia are upland, mountain, and highland areas.

The majority of China's poor are concentrated in 18 mountain areas, including Tibet. In 1986, 331 mountainous counties were identified, but in a fresh assessment of poor areas in 2001, under the National Poverty Alleviation Project, 592 mountain counties were identified as having 85% of their people living below the poverty line (Hongmin 2002).

Addressing mountain poverty requires integration of approaches

Approaches, strategies, and interventions for poverty alleviation in mountain areas have mostly been replications of those developed for mainstream flatland areas. Papola (2002) identified these as sectoral approaches, relying on a lead sector not identified by using the mountain perspectives of niches and comparative advantages. Not many of these strategies recognised the specific forms and sources of poverty of mountain areas targeted, and hence the interventions had little impact. Papola advised the use of a combination of various approaches, each of which could be relevant but effective only in suitable conjunction with others. The basic elements of the integrated approach outlined by Papola (2002) include i) recognition of mountain specificities as a basic prerequisite; ii) improving access, i.e., physical and social infrastructure; iii) helping identify and access resource bases offering comparative advantages; iv) giving space to collective institutions of mountain people; v) applying an area-based approach, and, above all, vi) an enhanced role of the state as facilitator as opposed to the domination of market forces.

Enhancing access to social opportunities for poverty alleviation

As a matter of fact, prosperity should be more linked to the opportunities people have to improve the quality of their lives. Enhancing social

Box-1: *China's Success Story in development of non-farm sector and rural enterprises as an approach to poverty alleviation*

Many examples of mountain areas within the HKH region are available to show that through definite improvements in the farm economy, using agricultural diversification to cash crops as a vehicle, it is possible to reduce poverty and the numbers of absolute poor. In fact, in many of these areas many of the poor population were able to achieve food and economic security. However, using agriculture as an option to help people overcome hunger and poverty may have limitations, especially where population pressure is high or going to be high, and access to land will be a critical factor. Can the rural non-farm economy play a significant role in providing employment and income for the poor in rural areas? As population pressure grows in the already land-scarce countries of Asia, already indicated by the growing numbers of small and marginal farmers—especially in mountain areas, agricultural development alone can not provide food and economic security to so many people (IFPRI 2001;Thapa 2002). This leaves the rural non-farm sector to absorb those released from agriculture but not absorbed into urban industries. The world should be looking for a success story in which non-farm income and employment have been made very important sources of income and employment, and, therefore, means to alleviate rural poverty.

Thapa (2002) in his Asia Pacific region study, reported that China was an excellent example of how a rural development strategy focusing on the non-farm sector can bring about a significant change in the structure of the national economy. This initiative of China was to boost the rural economy by increasing farm incomes wherever possible, contributing to poverty alleviation (Huang and Rozelle 1999). The effect of developing rural enterprises reveals the importance of expanding non-agricultural sectors in the rural areas to employ the increasing supply of surplus labour. These efforts played a vital role in shaping China's economic growth and economic structure and are regarded as the major successes of the country's reforming economy. Today, agriculture no longer plays its former dominant role in the rural economy in terms of output value and as the only means to poverty alleviation in rural areas. China's experience demonstrates the importance of institutional reform, pricing and market reform, rural institutionalisation, and other policies that diversify the agricultural sector and rural economy as ways to promote growth in farmers' income.

opportunity, as an approach to attaining prosperity, is a useful reminder of why individuals and their opportunities should not be viewed in isolation. The options that a person has depend greatly on what the state and other institutions do, and these are strongly influenced by social circumstances and public policies such as those relating to education, health, nutrition, social equity, civil liberties, and other basic aspects of the quality of life. The elimination of illiteracy, malnutrition or ill health, and other deprivations of mountain people are valuable for their own sake, and such elimination should not be seen only in the context of building human capital (Dreze and Sen 2002). Social opportunities are complementary to economic arrangements. Basic education, good health, and other human attainments are not only directly valuable as constituent elements of the quality of life, these abilities can also help to generate economic success of more standard kinds, which in turn can contribute in other ways to the development process and well-being of society. The strong complementarity between economic opportunities and social conditions is reflected by the effectiveness of opening up new economic opportunities and expanding the productive uses of labour and skills that depend on basic educational facilities and related circumstances.

Box-2: *Success story of enhanced prosperity led by social opportunities and farming diversification in Himachal Pradesh*

Attempts to explain Himachal Pradesh's success story of radical transformation for the better are indicated by well-known features, such as its fairly prosperous rural economy: a success in agricultural diversification that resulted in flourishing fruit farms (Partap and Sharma 2002), a high level of per capita government expenditure, and a significant proportion of persons employed in the public sector. Even though these features are pertinent for explaining why living conditions in Himachal have improved, there is, however, much more than this to Himachal's story—it has done really well in creating and providing social opportunities for its people (Dreze and Sen 2002). To add to that, all sections of society in Himachal have responded by participating actively and using the opportunities offered.

Himachal benefited from strong state commitment to development, particularly focused on social infrastructure such as roads and schools, in rural areas; enormous progress has been made in the provision of basic amenities at the village level. Electricity, telephones, piped water, functioning village roads with bus facilities, schools within each village to a maximum of one km distance, and health facilities are the kind of facilities available to its citizens. Agricultural diversification is supported

by the government through R&D services and by creating regulated marketing facilities where farmers can sell any quantity of their produce, and providing them regionwise. It has created conditions for the rural population to prefer staying in rural areas, saving its towns from unnecessary population pressure. A recently noted indicator of well-being in Himachal society is the number of vehicles owned by the people.

Himachal Pradesh should be cited for another unique achievement, i.e., gradual reduction of regional inequalities. The remote tribal areas of Himachal have benefited from considerable support, making it possible for these regions to participate more fully in the state's broader experience of agricultural diversification, infrastructural expansion, and educational progress. State action focused on designing and implementing appropriate development strategies which helped create a range of opportunities, both social and economic, for people living in remote high mountain areas. The concept of harnessing comparative advantages for agricultural diversification was promoted much earlier here than elsewhere. As a result high mountain people across the TAR border enjoy an improved farm economy and decent quality of life.

Other enabling factors include genesis of measures to limit gender inequality in Himachal, local democracy, and cooperation, and it is the state that has the lowest incidence of landlessness among similar regions because of land reforms implemented with honesty in the 1960s and 1970s. There is a low proportion of agricultural labourers, and common property resources-forests, rangelands, wastelands-play crucial role in rural economy, further enhancing the comparative equity of access to productive resources. Himachal has a rich tradition of lively collective village institutions, geared for protection and use of common access resources.

Aside from the individual significance of these enabling factors, the complementarities between them have played a major role in Himachal Pradesh's success. Himachal's straightforward progress and advancement are thus attributed to social preparedness, supportive public intervention, and social cooperation.

In contrast to China and other parts of the world, where there are high incidences of poverty and deprivation in mountain areas, an interesting feature of development experiences in mountain areas of India is that large parts of these areas are doing quite well in many respects. Even more than that, Himachal Pradesh (HP), one of the adjoining Indian

mountain provinces to the TAR, provides us with a remarkable illustration of this phenomenon of development in the Himalayan region. HP has many features in common with the TAR, such as remote highland areas inhabited by the poorest of poor, and in the 1950s and 1960s it was one of the most underdeveloped and backward areas of the country; and it was extremely poor and conservative in outlook. Highland farming communities adjoining Tibet had a similar lifestyle to communities in Tibet and similar constraints to better livelihoods.

Way of Life in Rural Tibet

Diversity of pastures, livestock, and crop-based farming cultures and livelihoods

The TAR covers an area of 1.2 million sq. km., located at an average altitude of 4000 masl. It has a small population of just over 2.42 million people spread across nearly 7000 villages and 600 townships. Administratively, it is organised into 73 counties and 7 prefectures. The Tibetan Plateau is associated with vast pasturelands grazed by thousands of yaks; valley floors dotted with fields of naked barley; and harsh environmental conditions. The 61.6 million ha of pasturelands, 13.9 million ha of forests, and 230,000 ha of crop land support the livelihoods of about 2.2 million highland farmers—the 'shingba', 'drogba', and 'samadrog', who own about 58 million yaks and cattle, 0.4 million horses, 0.13 million donkeys, and 178.2 million sheep and goats.

Even though the available resources seem impressive vis-a-vis the low population density, a considerable proportion of the farmers and herders faces the problem of food insecurity, malnutrition, and poverty. According to official figures, however, the number of registered poor dropped from 480,000 in 1995 to 21,000 in 2003. Most of these people are in remote pasturelands in the northern and western regions where climatic conditions are harsh and there is little access to food and income-generating sources.

The four highland production systems

The rural population's food security and socioeconomic development are linked to farming crops and livestock. The production system is determined by the availability of natural resources and environmental conditions. There are four major production systems.

The crop-dominated production system

This system, combining crop and livestock production, is prevalent in 18 counties of central Tibet. It is practised in the river valleys of the Lhasa

and Nyachu streams and in the middle reaches of The Yalongzangpo River. Lhasa, Shigatse, and Shanan prefectures are major areas where this system is predominant. It covers 180,000 ha of productive crop land, i.e., 50% of all the arable land in Tibet. Farmers grow wheat, peas, potatoes, and rape seed, which account for 73% of the agricultural production. Crops also support livestock rearing which contributes the remaining 26% of the agricultural production.

Farmers in this zone are now adopting vegetable farming in greenhouses, largely because 50% of the urban population lives in this zone, and farmers have access to urban markets. Presently, the local supply meets only 50% of the demand for vegetables and there is considerable scope for expansion. In recent years, market demand has led to an increase in pig and poultry farming. Farmers from the zone produce surplus food grains, oil seeds, and vegetables, but have not met the demands for meat and milk. Thus, about 76% of the meat and milk comes from outside the zone. Farmers living in this zone are food secure and are in a transition stage to being in the well-off category. The areas practising this production system have the potential to become the food bowls of Tibet. The farmers also have relatively better access to social services and economic opportunities in the farm sector, and through these they can increase their incomes and improve their living standards.

The agro-pastoral production system

This production system is found in 27 counties of central, southwest, and northeast Tibet. It covers the semi-arid cold upstream valleys of the Yalongzangpo River (altitude>4000m) and parts of the Chamdo, Shigatse, and Shanan prefectures. Accounting for about 23% of the area of Tibet, it has 55% rangelands, 0.03% cropland, and about 17% barren land. Farming is carried out in river valleys where farmers also raise apple and peach orchards on a small scale. Barley, rapeseed, and peas are the main crops contributing to food self-sufficiency among the rural folks in these areas. Barley is the main crop and is cultivated on 65% of the cropland. Even though the zone has rich fish reserves, the local culture prohibits fishing. Animal products are exchanged to meet occasional shortfalls in food grains (barley). People here are basically engaged in subsistence activities and lack access to social opportunities.

The pastoral production system

This system is predominant in 17 counties of northern Tibet which cover the vast open meadows and steppes, almost 60% of Tibet, and comprised of the Naqu and Ali prefectures and Dangxiong county of Lhasa. It is

the land of the nomads, and 95% of agricultural production is livestock-based. Along the river valleys there has been limited cultivation of naked barley, buckwheat, and rapeseed since the 1960s. The average annual temperature remains low, from 0° to -3° or -4°C, and windstorms, hail, and frost occur frequently. Even though the population of yaks is 40% of the herd strength, the rest being sheep and goats, the yaks provide 80% of the meat and meet 70% of farmers' incomes. However, heavy snow can sometimes result in the death of animals on a large scale, with an ensuing total breakdown of food security. Consequently, many better-off farmers sink into food insecurity and poverty from time to time.

This is also a zone where salt lakes are found and in the past farmers were engaged in barter trading of salt for food items. This zone is also an important area for medicinal herbs and aromatic plants, and the collection of herbs is becoming an important source of cash income for households. Farmers in this zone trade meat, milk, sheep wool, and leather in return for food products.

Unless technological support makes it possible, this zone has no comparative advantage in agriculture (food crops) and is home to poor herders. Experience shows that very slow decomposition of organic matter was a serious problem for farmlands. Consequently, large areas of farmland were abandoned. The farmers face food insecurity in some areas. They face resource scarcity because of harsh climatic conditions and limited utilisation capacity. The counties in the zone have limited institutional capabilities. County institutions find maintaining effective supplies of food, meat, and milk for the people a challenging task. Intermittently, people here face natural disasters in winter when the survival of livestock is endangered. Such calamities have made them most vulnerable to hunger and poverty.

The agro-pastoral-forestry production system

This mixed farming culture is prevalent in the relatively warmer region of south-east Tibet, which includes the middle valleys of the Byiyang, Nujiang, and Lancangjiang rivers. Covering an area of 142,000 sq km. (12% of Tibet), it has 10 counties, including the entire prefecture of Linzhie, Mangkang, as well as the Zuogong counties of Chamdo prefecture.

Here cropping, livestock, and forestry support livelihoods @ 42, 36, and 19% respectively. It is a warmer zone of Tibet, with an average temperature of 8°C. Crop land, rangeland, and forest resources (10, 5, and 55%) determine the opportunities available for farmers. This zone is particularly suited to fruit farming, and a substantial area can be used

to produce fruit such as, apples, peaches, and plums. Farmers in this zone enjoy food security, have sufficient food grain, and enough livestock products and are economically relatively better off than those inhabiting the other three zones.

From poverty alleviation to prosperity in Tibet: issues and options

A vision of a prosperous Tibet is to provide all the highlanders with convenient access to both economic and social opportunities; to achieve food security and economic well-being; and to enable them to enjoy a comfortable, peaceful, and reasonably prosperous life. To fulfil this aim, it may be necessary to employ a combination of various approaches, each of which may be relevant but effective only in suitable conjunction with others, as advocated in an earlier section. The basic elements of the integrated approach outlined for Tibet should include the following: identifying the specificities of the TAR as basic prerequisites for designing approaches; improving access to both physical and social infrastructure and removing regional inequalities caused by inaccessibility; helping identify resource bases offering comparative advantages and ways to access them for the economic well-being of rural people; giving space to the traditional institutions of the highlanders wherever they exist; and, above all, focusing on the development of an area-based agricultural development strategy that captures the niches and comparative advantages of the four agricultural production domains of Tibet.

It must be acknowledged that efforts have been made since the 1960s, to improve the agriculture and livelihoods of people in Tibet. As has happened elsewhere, not everything went in the desired direction: certain efforts were successful while others failed. The current development scenario in Tibet seems quite mixed—one finds situations ranging from poor malnourished, food insecure areas and households to food secure, well-off areas and households. On the one hand, urban areas exhibit quite a bit of prosperity, and a good number of Tibetans live there and live reasonably good lives both in economic terms and from the angle of social opportunities. In sum , Tibet still is the poorest province in China and, for that reason, it is given top priority in the poverty alleviation agenda of China.

Indications of emerging prosperity are there and one would hope all Tibetans have similar access to resources and opportunities. Tibet is currently grappling with food insecurity. The large rural population is in transition from the poverty to the food self-sufficiency stage. Certain farmers are already well-off economically. Available figures indicate that

the number of actual poor is shrinking and that 90% of the population is able to earn enough to feed and clothe themselves. About 50% are well off by highland standards. There are, however, still those 4.6% who remain hungry and malnourished (Tashi et al. 2002). Reports also indicate that social and economic development processes in Tibet are about 50 years behind China as a whole, the employment structure 20 years behind national standards, and socioeconomic development 30 years behind (Tashi et al.2002).

The task of eliminating basic deprivation in Tibet remains largely unaccomplished (Tashi et al. 2002). This is not to deny that progress has been made in some fields. One example is the over all progress in food production in Tibet by developing new 'Food Bowls' of the TAR. There are also other achievements to which one can point. However, the TAR's overall success in promoting social opportunities during the past several decades has been quite limited. Certainly, the intensities of basic deprivation have been considerably reduced, but there is nevertheless a long way to go in ensuring anything like acceptable conditions for all sections of Tibetan society, spread from urban, peri urban, to remote highland areas.

The potential of the crop-based production system to become the food bowl of Tibet

For various reasons, discussed elsewhere, achieving food self-sufficiency to the extent possible may be necessary for the TAR, if its remoteness continues to make food expensive and inaccessible. It has land resources, the right ecological environment, and relative accessibility to markets. To achieve this broad goal, integration of several other strategies will need to be considered, e.g., research and extension support services to provide technological back-up, new seeds, mechanisation of farming to improve the quality of food grain in existing crops, and making farmers opt for diversification to vegetable farming through wider use of greenhouses. In the mountains, post-harvest losses of farm produce between the field and market are very high, therefore, besides focusing on enhancing yields, controlling the losses becomes an equally important part of saving incomes. Agribusiness and enterprise development for generating off-farm employment opportunities should be integrated with agricultural development. The development of farming will also create employment opportunities to accommodate skilled and non-skilled rural labour. Since there is already a demand for milk and meat, livestock development should also become part of the integrated approach. Climate change may also open up opportunities for more crops to be grown in Tibet in the coming decade.

As a whole, Tibet as a region has the comparative advantage of a vast area of crop land, i.e., 360,533 ha for a small number of people, i.e., low population density. The available arable land per capita is much higher in Tibet than in China as a whole. Each farmer in Tibet possesses around 0.3 ha of farmland, and even more in some areas. By these parameters, if technological solutions to low yields can be found, Tibet may be a candidate in waiting to be one of the food supply areas for China.

The determinants to the development goals of agro-pastoral areas are rangelands, crop and fruit farming in river valleys, and low population density where people are engaged in subsistence farming. Creating economic growth opportunities for the people in this zone will be necessary. Equally important is enabling societies in the area to participate in benefiting from the opportunities, and, for that purpose, the levels of social opportunities available to them make a difference. Pervasive passive attitudes to opportunities, as a result of hidden hunger and malnutrition, will make it much harder to encourage active participation.

The pastoral production system as a potential for livestock-based livelihoods (yaks and sheep), supplemented by herb collection or farming

Pastoral farming has two underlying factors: herders who are the poorest among the poor in the TAR and vast rangelands with associated resources-yaks, herbs, and biodiversity. Development strategies can focus on yaks and pasturelands. Yaks could become a resource to create sustainable economic opportunities for herders. In doing so, improving the productivity of rangelands and their management in ways that ensure sustainable use will be absolutely necessary.

Tibetan rangelands also have gene pools of valuable herbs. Some incomes may already be coming from herbal collection today. However, making herbal collection, management, and farming an alternative option and more promising will need a combination of initiatives. Policy reforms protecting locals from trade exploitation, R&D support services to develop herbal farming options for the zone, and building farmers' skills in herbal farming and conservation management will be essential. It is even possible for China to adopt a Swiss style policy of compensation for local communities to support their livelihoods in turn for implementing strict conservation management regulations. This has been elaborated upon elsewhere.

The serious concerns of unsustainable livelihoods and a degraded rangeland ecology

Animal numbers in the pastoral zone have created land degradation problems, and the system is moving towards unsustainable pastoral farming and poverty for pastoralists, so better management approaches are needed. Therefore, to improve the economic value of livestock in the pastoral zone and control land degradation, the off-take rate of livestock needs to be increased every year. The average off-take rates of yaks, sheep, and pigs is 10, 20, and 50% respectively. As an example, in 1996, the off-take numbers for large animals were 620,000 out of 3.8 million and for sheep and goats 3.8 out of 17 million. Low off-take rates of yaks and cattle constitute the main factor behind low meat production by the pastoral system. Increases in off- take will certainly help, but factors constraining farmers to carry this out will need to be understood and handled.

In the pastoral production system, efforts are needed to manage rangelands better to improve their productivity: irrigation, reseeding with productive grasses, and so on may help. More rangelands that are fenced, irrigated, and have better forage may become the need of the future for pastoral farming. Increasing natural disasters in some parts, seven million livestock and people face water shortages every year, and it seems that Tibetans are not yet prepared to manage drought conditions. It is ironical that there is a shortage of water in the water tower of the world. This shortage is largely an issue of organisation and lack of participatory management approaches.

Pastureland herbs and a Swiss-style compensation approach for pastoralists

Nomads in the pastoral production system may be in for more trouble. There is a serious problem of biological and physical degradation of pasturelands causing problems in maintaining sustained production. In fact, pasturelands have never been improved - they are as they were, lands with marginal production and now with increasing overstocking problems. What alternative ways can be found to give nomads a pathway to prosperity?

Pasturelands are home to 1,000 herbs of the highlands which are collected for Tibetan medicine. Collection of herbs is a big business these days in China, and the country is taking a lead in herb exports. There are opportunities for harnessing herbal biodiversity through gathering or by developing farming practices for high-value medicinal plants. Some of

these plants, such as saffron, 'aweto', lotus flower, and *Rhodiola*, already collected from the wild, hold great potential as highland high-value crops. Collection of herbs as a principal income-generating strategy is already increasing among the nomads. However, privatisation and commercialisation of herb collection by private companies may harm the interests of the local people, the *de facto* custodians of this biodiversity. Therefore, the state has a responsibility to evolve regulatory systems to protect the economic interests of local people.

The area has a small population and, because of strategic national interests in the conservation of biodiversity in these areas, a Swiss style environmental compensation package can be proposed to the highlanders as an optional state role in managing food security and livelihoods in the most harsh but biologically valuable environments.

Prosperity of people living in the crop-livestock-forestry production System based on developing this zone into the horticultural basket of Tibet

This warmer zone has scope for the promotion of mixed farming and could play an important role in promoting food and nutritional security. Counties falling in this zone could have areas where fruit, mushroom farming, dairy farming, flowers, high-value aromatic, and medicinal plants are farmed. Smaller niches of each of these options will need to be identified. This is easier said than done, because diversification of subsistence agriculture into cash crops needs much research and technological support along with good extension and marketing services—a great state role to be played indeed! Developing the skills of farmers and providing them with safety from risks of market failure, at least initially, is the key to the success of this strategy.

Unusually high costs of food and nutrition security in the TAR making prosperity expensive to attain

Per capita food production and food trading in rural areas are low, food production not only varies greatly from region to region, but there is also year to year instability. For the TAR as a province, self sufficiency in cereals and other food items is needed if Tibetan farmers and herders are to avoid spending the bulk of their meagre incomes on food. It is imperative not only to increase income levels but also to find measures to control overspending on food. As an example, the average price of commodities in Lhasa is 60% higher than in Chengdu and 40% higher than in Beijing. The price of food items is 70 and 45% higher than in Chengdu and Beijing, respectively. Costs become still higher further inside rural Tibet;

therefore, the proportion of income spent on food by the common man in Tibet ranges from 60-70%. Tashi et al. (2002) reported that expenditure on food on an average is 57% of the earnings of urban households, 64% of the earnings of farmers, and 90% of the earnings of the poor (20% of the total). For a great number of rural inhabitants , limited food production on farmlands, lower incomes, and the high cost of food mean dependence on tsampa and dried meat, fewer calories, and malnutrition. There is a lack of energy and motivation to work among the poor farming class. People prefer rest or light work and avoid the intensive labour on farming activities so necessary for increasing agricultural production. Thus a vicious cycle of hidden hunger and poverty is created.

Changes in agricultural structure and the need for new approaches

Crop and livestock dominate agricultural production (50 & 48% respectively) and are fundamental to agricultural development, food security, and for bringing prosperity to rural Tibet. However, significant changes in agricultural structure have been seen: the production value of crops increased from 32>45% and of forestry from 0.5>2%, while the contribution of livestock has declined 64<50% in the pastureland areas during the past few decades. The expansion in the area of cropland may have reached its limits for the present, but restructuring of the cropping system is a necessary step. It is estimated that the goal of self-sufficiency in production of cereals may not be attained unless effective steps are taken to increase per unit crop yields, but that will happen only if the production system becomes more efficient. As an option, increasing the use of agro machinery for ploughing and irrigation, so that winter wheat can be sown in time, a great limitation of Tibetan farmers, should be introduced.

Strategic focus on R&D for production of good quality food to achieve regional food self-sufficiency and economic opportunities

Tibet has unique problems, and there is an obvious gap between food demand in urban areas and food production in rural areas. Presently Tibet produces 200,000t of surplus food grain, wheat, and barley every year. However, much wheat, rice, vegetables, and fruit is imported from mainland China. For half a million of the urban population and a large number of temporary dwellers, about 70% of the food needs are met through imports from other parts of China. The marketing of food produced in Tibet is, therefore, not easy for Tibetan farmers because the food grain produced by Tibetan farmers is not suited to the demands

of the urban population. For example, wheat is of poor quality and can not be used for making noodles. Also, many other ethnic groups do not eat barley 'tsampa'. Barley has a value as a high mountain health food, because it contains beta-glucan that reduces the risk of heart disease from foods high in fat content. However, this aspect has not been projected to procure a better market for barley products.

Further, even though 'tsampa' has been predominant in the diet of Tibetans, and presently is the staple diet of 85% of all farmers, Tashi et al. (2002) estimated that 20% of Tibetans would have changed their food habits to rice and wheat by 2005 and, as incomes rise, the trend will continue so that by 2010 over 30% of Tibetans will have replaced barley 'tsampa' and 'chhang' with Chinese food habits and have a diet consisting of rice, wheat, vegetables, eggs, and chicken.

By 2005 it was expected that urban population levels would increase to 700,000 and with that the population of consumers in Tibet would be over three million. If this trend continues it will reach four million by 2010. The food demands of this increasing population all over Tibet could be used as an opportunity to make agriculture a profitable enterprise for Tibetan farmers.

In a nutshell, to make efforts towards prosperity, Tibetan farmers will need to improve the quality of agricultural produce, restructure food production according to urban demands, and adopt specialisation and commercialisation such as vegetable farming, mushroom farming, and other high-value cash crops to generate cash incomes. Agricultural science and technological support are much needed to cope up with a number of new high-value cash crops for Tibetan highlanders.

Diversification to vegetable farming to improve farm economies in selected areas and make Tibet self-sufficient in vegetable production. Indications that cereals are in surplus and there are reserves for coming years mean that some rethinking on the policy of food self-sufficiency is needed. Farmers should be encouraged to diversify into vegetable farming. Since there is already 50% shortage of vegetables, which is met through imports from outside the TAR, there is tremendous scope for vegetable farming in rural and peri-urban areas and this can be taken up by the small and marginalised farmers in at least two of the agricultural systems: the crop-dominated system and the agro-forestry–livestock system. Presently, only 200ha of greenhouses have been established in and around Lhasa, Shigatse, and a few other townships. Thus, Tibetan farmers have a great opportunity to adopt vegetable farming in greenhouses in peri-urban and other areas relatively accessible to markets. Himachal offers

a good example of an area where vegetable farming has become the best option for small and marginalised farmers who make use of their family labour more productively (Partap and Sharma 2002). Himachal farmers across the borders of Tibet grow apples and are also engaged in off-season vegetable production for the Delhi market which is about 16 hours' drive away. Because of state intervention facilitating unhindered transport, vegetables from remote high mountain areas reach the market within one day. An off-season produce, irrigated by the clean cold waters of the mountains and grown in a clean environment, these vegetables fetch premium prices in urban markets. Vegetable farming has, in fact, transformed the farm economy of these areas over the past decade.

Similarly, to help add vegetables to the diets of rural Tibetans, it is important that interventions with appropriate extension strategies be designed to make as many counties as possible self-sufficient in vegetables. Promoting farmer-friendly, affordable greenhouses and other relevant technologies for crop husbandry and post-harvest processing of vegetables, such as preservation, can be helpful. This may be easier said than done, because strong extension support will be needed to train farmers in vegetable farming. Tashi et al. (2002) state that underdeveloped and low capacity markets are an obstacle to diversification of farming and could cause failure of the aforesaid strategy on vegetable farming. Therefore, building marketing capacity within Tibet will be as important as making vegetable farming itself succeed.

Area-based development with a combination of approaches

From a broader perspective, the standards of living and poverty of rural Tibetans are inherently linked to the farming culture and the environment of which they are a part. However, in the past, public interventions in the form of state policies and support services providing social opportunities and developing and regulating resource use have made a definite impact on the livelihoods of people.

There is a renewed focus of the central and provincial governments on poverty alleviation and on bringing Tibetans on to the road to prosperity. We are also aware that, today, adequate knowledge and experience are available, nationally and internationally, about the range of strategic options for resource management, economic growth, and social opportunities. Tibet can benefit from this national investment attention by putting itself on the road to sustainable rural development. As discussed earlier, integrating several development options into an area-based development strategy may prove effective in Tibet.

What could be the approach to delineating the areas? Where development will be dominated by the focus on agriculture, it is logical that production systems be taken as units. In the context of Tibet, as described earlier, much of the scenario in farming and levels of poverty centre around the four production systems. The four production systems represent the production niches of Tibet and, to build agriculture-based livelihoods in these four zones, different combinations of effort will be needed. Within each production system, fine tuning of the combination of development options can be carried out at county level. It is more practical to combine development planning with administrative structures.

Strengthening the agricultural research and extension system to support the transformation of highland production systems in the TAR

In order to achieve the above goals of agricultural development under different production systems, the state will have to play a crucial role. Besides the right strategic planning, setting a conducive policy environment, providing strong R&D support services, and establishing a good extension network that creates an environment for people's participation are necessary. Since the poor households have no risk-bearing capacity, safety nets should be designed for the vulnerable to encourage people to participate in the various options provided in an area.

Strategies for meeting energy and fuelwood needs in the highlands: challenge of providing alternatives to use of dung as fuel

Integration of energy needs with agricultural development in each production system should be a necessary ingredient. Energy for cooking and heating is a great need and it infringes upon the composting inputs to farmlands if alternatives are not available. Technological options for harnessing sunshine and agro-forestry are well known, and it is a matter of integrating this component within the broad area-based strategy.

Weak institutional capacity of the agricultural research and extension system

The R&D system is unable to help transform traditional farming systems into commercialised production systems. Development of human resources through education, training, and so on to strengthen people's ability for self-development and harness the comparative advantages of the area-based approach is a definite need.

In addition, focus should be placed on the following emerging issues: interregional variations in poverty and prosperity, increasing rural-urban divide in prosperity, lack of non-farm employment opportunities, and the poor social welfare system.

Last Words on Ensuring Success in Tibet

National attention to eradicating poverty from the western region of China has offered the TAR and its people a great opportunity to emerge from food insecurity and poverty and lay the groundwork for prosperity in each household and village within each county. The mountain specificities teach us that the situation in each village, each county, and even in each household will be so different that successful packages of approaches, of options, and of opportunities for each village, town, county, and household can only be designed through the active participation of the local people themselves; and this is because they have a better understanding of their own constraints and opportunities, and it is they who ultimately will be at stake in the case of failure or success.

Experience tells us that people only in those mountain areas where local communities and institutions were enabled, empowered, and actively involved in designing and implementing opportunities for their own welfare have achieved a satisfactory level of well-being and development. National and international support and development advice from outside experts in no way substitute for this. It is difficult to say where the priority focus should be—on economic growth or on creating social opportunities. We believe, at this stage in the TAR, that both can go hand in hand. With reasonable progress already made in both areas, the need now is to identify the gaps and restructure development strategies wherever necessary. Similarly, debating whether the priority focus should be on the farm or non-farm sector, this can also be determined after examining the available constraints and opportunities in each village or county. There are a goodly number of examples of remote mountain areas where village by village micro-development approaches, even with smaller budgets, were more effective in performance and impact than broader public interventions. Meetings like this one, in fact, should be devoting more time to discussing the variety of challenges and possible solutions, alongside deliberating on recipes for technological options.

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Chapter 4

Promotion of Tibetan Agricultural and Livestock Products in National and International Markets through Improved Trading Practices and External Relations

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Introduction

The improvement of the export of Tibet's agriculture and livestock products has profound historical significance in relation to the reformation and opening up of Tibet. Export promotion is an effective way of increasing income from agricultural and livestock products and harnessing the natural resources of the region. Based on an analysis of the potential and constraints for developing the export market for Tibetan products, this paper tries to propose measures that need to be addressed to realise the potential.

Crop farming and animal husbandry are the basis of the Tibetan economy. Farmers in Tibet involved in cropping and animal husbandry constitute more than 80% of its total population. Therefore, increasing the income of farmers and herdsmen in Tibet is the most important task in Tibet's economic affairs and requires attention from all circles. Agricultural and livestock production in Tibet has already changed from the past subsistence type of simply having adequate food and clothing to the present semi-subsistence surplus type. However, at present, the poor market system provides farmers with few opportunities to use their products as commodities. Moreover, excessive domestic production from other parts of the country has led to low prices and limited domestic demand for Tibetan products, thus hampering the development of Tibetan agriculture and animal husbandry and negatively influencing the incomes of farmers and herdsman. Therefore, to solve the problem of impeded circulation of Tibetan agricultural and animal products and to look for new demands to increase Tibetan farmers' and herdsmen's incomes, the key lies in participation in domestic and international

markets, turning products into commodities and expanding the range of demand. Obviously, we should seize the opportunity of China's accession to the WTO and Development of Western China and facilitate the use of the Tibetan economy, using domestic and international resources in line with the trends of supply and demand in the home and overseas' markets, by establishing conditions favourable for enhancing export trade in agricultural and animal products.

Function of sustainable economic development of export trade in Tibetan agricultural and animal products

Promoting the export of Tibetan agricultural and animal products has significant implications for the structural adjustment of crop farming and animal husbandry in terms of improving the region's economy, increasing employment opportunities for farmers and herdsmen and increasing their incomes, maintaining social stability, and realising the objective of building a well-to-do society before 2020. These function as outlined n the following paragraphs.

- Through export trade in agricultural and livestock products, the effects of the market chain from producers to exporters can drive the development of relevant economic departments, increase employment and income-generating opportunities for farmers and herdsmen, produce remarkable multiplier benefits, and offer a powerful social economic guarantee for socially and economically sustainable, rapid, and sound development of Tibet.

- We need to improve production and marketing methods in line with international market demands. This will reduce the transaction costs of export trade in agricultural and animal products, increase the profit margin and incomes of producers, and thereby help reduce poverty in rural Tibet.

- Levying tariffs and taxes in line with the provisions of international legislation and agreements can increase Tibet's fiscal revenue and accumulate capital funds for investment in increased production and improvement in the quality of products.

- Through export trade in agricultural and animal products, Tibetan producers and exporters will be exposed to the world market, and this will not only expand their vision but give them exposure to better practices. It will also provide opportunities for the Tibetan people to exchange friendly visits with people from other countries and strengthen international economic cooperation and exchange of technology, creating a positive environment for development of the national economy of Tibet.

- Export of agricultural and animal products enables us to import products that Tibet lacks or cannot produce, improve cropping and animal husbandry and working conditions of farmers and herdsmen, and meet the increasing material and cultural needs of the Tibetan people. This would improve the living standards of the Tibetan people in general and contribute towards long-term political and economic stability in the region.

- Through export trade in agricultural and animal products, we should study the developed countries in order to formulate relevant regulations and policies adapted to the market law of the country, and then gradually establish a macro-regulation system for a socialist market economy with Tibetan characteristics. We should also study the western developed countries to understand how to use economic levers, such as price, credit, tax revenue, and so on, and adopt the essential administrative means to manage a market economy, thus accelerating the pace of integration of Tibet's economy with the international economy.

- Through export of agricultural and animal products, we can obtain the latest information on international markets in a timely manner, and this will enable us to adjust the structure of agricultural and animal production in Tibet according to the demands of the international market. This would entail substantial improvements in the processing and packaging of products to meet the standards of international markets.

Current situation of development in the export of Tibet's agricultural and animal products

Since implementing the policy for reform and opening-up,, there has been a progressive change in the production and marketing of agricultural and animal products in Tibet. Significant progress has been made in terms of increase in the quantity as well as improvement in the quality of exports, as can be seen from the following passages.

Export Trends

The total exports of agricultural and livestock products showed a fluctuating trend (Table 1). The total value increased from 11,660,000 US dollars in 1990 to 26,760,000 US dollars in 2000. During this period, as a result of the Asian financial crisis and the international

economic depression in 1997, there were major impacts on the export of agricultural and livestock products from Tibet. In 2000, after two years of rapid increase, the value of exports from Tibet of agricultural and livestock products reached over US$ 26 million: double the value of 1999 exports. However, with rapid growth of the Tibetan economy and upgrading of industrial and export mechanisms, agricultural and livestock product exports demonstrated a downward trend in the share of the total foreign exports. The share dropped from 84% in 1990 to 3.2% in 2002, by 80.8 percentage points.

Table 1: Import of Tibetan agricultural and livestock products

Year	Total exports in Tibet's foreign trade (in US$ 10,000)	Amount of agricultural and livestock products exported (in US$ 10,000)	Proportion of agricultural and livestock products exported in the total foreign exports (%)
1990	1394	1166	84
1996	4542	1989	44
1997	5010	755	15
1998	7358	569	8
1999	8605	1323	15
2000	11333	2676	23
2001	8244	265	3.2
2002	8110	261	3.2

Source: *Tibet Statistical Yearbook, The Statistics (2002)*

Categories of agricultural and livestock products exported

The categories of export commodities changed from single-type to the present multi-type. That means Tibet only exported wool in the past, but now many products, ranging from fine yak hair, carpets, cattle and sheep skin, leather and fur products, highland barley, garlic, raw silk, rape seed, and so on, are being exported.

Among these products, export of locally produced competitive products and processed agricultural and livestock items both make outstanding contributions. According to the commercial bureau of the autonomous region, Tibet's own competitive products constituted the largest classification of goods in terms of export increase in the first quarter of 2004. Chinese-Tibet news net reported on May 13, 2004, about Tibet that 'liangemu-ciba' and 'luodan-ciba' received state-certified food labels for the first time in Tibet, and 10 tons were successfully exported.

On April 25 of the same year, rapeseed from Rikaze was certified with the food label of the 'State Bureau of Quality Testing' again and awarded a certificate for launching exports.

The export markets

Tibet's export of agricultural and animal products expanded in terms of target area from a few neighbouring countries (regions) to 46 countries (regions). At present, Tibet's agricultural and livestock products are exported to market centres in Asia (15 countries), Europe (18 countries), Africa (4 countries), America (8 countries), and Oceania (one country). So far, the Tibet Autonomous Region has exploited 28 markets of all kinds for border trade, of which border trade with the Kingdom of Nepal is the most important. It connects China's inland provinces with South Asia.

Operation and management ability of the export enterprises

In the first quarter of 2004, there were 30 profitable enterprises in Tibet, including three enterprises with a total export value above US$ 100 million, eight enterprises totalling US$ 50-100 million, and 11 enterprises of more than US$ 50 million. The export volume of these enterprises amounts to US$ 2281 million, and they account for 89.31% of Tibet's total exports.

Trade reforms

The foreign trade system has already evolved from the past single channel system in which the government took the lead role and management under the specialised foreign-trade corporation, to the present multi-level and multi-channel system, involving the central and local authorities, state-run and private enterprises, joint ventures, and corporations. With the promotion of China's external trade system reform, the Tibet Autonomous Region has already set up a foreign trade operating mechanism adapted to international economic norms.

Problems in exporting agricultural and livestock products

The export structure is yet to become effective. Firstly, reforms in production would require a change from the present labour-intensive system with low added value of products. Secondly, the market structure is out-of-balance. Export products are aimed at markets in Asian countries, especially those of neighbouring countries, and this causes excessive centralisation in terms of export areas. Statistics from the commercial bureau of the Tibet Autonomous Region show that Tibet exported to 46

countries and regions in the first quarter of 2004, and 67.5% of the total export was to Nepal.

Export-oriented enterprises manufacturing agricultural and livestock products in Tibet generally lack the capacity to be internationally competitive and resilient to market risks, since they are small in scale, have insufficient capital, poor techniques, and simple management.

It is difficult to spread modern marketing means because of the limited ability of producers and exporters to adapt to the prevailing free market economic climate. Thus, the traditional marketing system results in a limited share of the international market .

An ineffective information network makes it difficult for farmers and businessmen to capture international markets through accurate and timely quotations, and this results in blind and spontaneous production and deals that accentuate vulnerability to market risks.

The management system in the agricultural and livestock export sector is not smooth. Policies and services to promote and manage exports are not yet in place.

The advantage of and restrictions to exporting agricultural and livestock products

Advantages

Domestic advantages

Natural resources: It is said that there are more than 14 million yaks all over the world. China, with more than 12 million, has the most yaks in the world. Tibet may be the first area in the world to have raised and trained yaks. At present, the number of yaks in Tibet is over four million, accounting for one third of the country total. Besides milk and meat, yaks produce 1,600 tons of coarse hair and 2,000 tons of fine hair annually. Tibetan yak meat has high protein and low fat content, making it popular among international consumers.

According to experts, the markets in Hong Kong and Macao refer to yak meat as 'the head of the beef' and it is extremely popular. The protein content in yak milk is generally higher than that of cattle (10 kg of cattle milk produces only one kilogramme of cheese, whereas the same quantity of yak milk can produce 1.5 kg of cheese). It is a popular belief that cashmere wool produced from Tibetan goats is of superior quality and is comparable to the wool produced in Ladakh, India. After

the ban on hunting 'chirus', cashmere production has become an ideal substitute. As for agricultural products, highland barley is a unique cereal crop characterised by its wide adaptability, high yields, and number of varieties. Because of its ability to thrive in the extreme conditions of Tibet, highland barley is considered to contain medicinal properties. In recent years, the health benefits of highland barley have been acknowledged both at home and abroad.

Preferential policies: The third and fourth working forums on Tibet and the implementation of 'the develop-the-west strategy policy' by the central government offers Tibet preferential policies on finance and banking as well as price guarantees for export of agricultural and animal products.

Environmental conditions: The trend in consumer preference strongly favours ecological products. Therefore, given the pristine environment of Tibet, it has comparative advantages for promoting organic agricultural and animal products. According to estimates by experts, in the following ten years green products will lead the world market. Because of its unique environment and position, Tibet is globally one of the least populated areas and has thus the potential to increase organic agriculture extensively by harnessing the advantages offered by its clean air, abundant water, and vast open areas. It would be an ideal strategy to offset the low production and high costs associated with farming by capturing the market based on a Tibetan 'cachet' or niche.

Existing trade routes: Tibet is located in the southwest border area of China and is adjacent to five countries in South Asia (India , Bhutan , Burma , Nepal , and Sikkim). The boundary line is about 4,000 km long and covers 21 counties, 203 towns, and 770 villages of five prefectures on the Tibetan side (Rikaze , Sannan, Ali , Linzhi , and Chamdo). There are 312 cross-over routes of which 44 are permanent and 268 are seasonal. There are five highways crossing over to the border areas of neighbouring countries, 28 border trade markets, and 87 enterprises on border trade. Trade is facilitated by dry ports, one of which is at Dram on the border with Nepal and is in the Class I category. Four others in the Class II category are at Riwu, Yadong, Jilong, and Pulan. Yadong is about 300 km from Thimphu, capital of Bhutan, 100 km from Gangtok the capital of Sikkim, 740 km from Calcutta, and 460 km from Lhasa. Therefore, the connectivity is already there for facilitating trade. This unique regional advantage offers favourable conditions for border trade in Tibet. With improvement in the relations between China and India, Tibet could potentially become the 'trade corridor' of China to South Asia. The opening of such a trade corridor to South Asia, in addition to

accession to the WTO and the application of the free principle in transit would give great impetus to the export of agricultural and livestock products from Tibet.

External advantages

Advantage of accession to the WTO: Using WTO's clauses on preferential treatment in the transition period in China and principles of encouragement, greater effort is needed to develop export commodities. WTO membership could help open up overseas' markets to agricultural and livestock products and increase the volume of trade in them; help farmers and herders to use foreign capital investment, introduce modern technology, and accelerate transformation of traditional production methods into more efficient ones.

Consumers' choice: With the growing affluence and health consciousness of consumers worldwide, there is an ever-increasing demand for green products or organic produce. Tibet is a stretch of pristine highland with little or no chemical pollution of land and water. Hence the production base for livestock and crops is still natural and organic. In recent years, with the spread of deadly animal diseases such as Mad Cow and Bird Flu, the demand for organic products has increased on the international market along with soaring prices. In the second half of 2003, the deficit in supply of organic beef and mutton on the international market was about 150,000 tons. The enormous demand for green agricultural and livestock products in the international market offers a tremendous opportunity for the export of agricultural and livestock products from Tibet.

Constraining factors

Domestic restrictions

The restriction of infrastructure and information: Until the end of 2002, the total district traffic mileage was around 355.4 million kilometres, of which only 2,000 km were topped with asphalt and just over 18,000km were suitable for traffic in rainy conditions. More than 20% of villages and towns still do not have a phone, and telephone coverage in farming and pastoral areas is only 0.43%. There are 5,865 Internet users, which only accounts for three per cent of the total number of telephones. Only 70% of villages and towns, 41% of administrative villages, and 61% of the households engaged in agricultural and livestock activities in the province have access to electricity. The infrastructure is generally poor and access to information is infrequent, contributing to a substantial increase in the cost of production and export.

Imposition of WTO's provisions: After China's accession to the WTO, the central government began fulfilling its commitments, viz. cutting down on subsidies for export of agricultural products, relinquishing the right to support agriculture, defined as an aggregate measurement of support (AMS)[1], improving animal and plant sanitation measures and technical standards, and reduction of the average tariff on agricultural products . This means that Tibet will have to remove the trade protection—labelled the Berlin Wall—set up under the previous economic system and allow free market forces to operate .

Poor entrepreneurial skills: Lack of adequate education and limited access to information have meant that farmers and herders have little knowledge of the market economy and generally suffer from poor commercial consciousness. They are not disposed to accept new ideas and market demands in addition to restrictions imposed by social norms such as culling of animals. In addition, among foreign trade employees an attitude of "wait for and rely on the other's demand" needs to change if exports are to be actively promoted.

Difficulty in meeting quality standards: Tibetan agricultural and livestock products are just entering the standardisation stage through national standard authentication, and international standard authentication has not yet started. Obviously, there is a long way to go before these products meet the required standards for international markets and national permits for export.

The technical barriers to trade (TBT)

In the name of protecting the environment, developed countries protect their interests through levying mandatory technical standards that are aimed at restricting imports from developing countries. These standards are all made in line with the production and technological standards of developed countries, so that products from developing countries are unable to comply. For instance, the import regulations of the European Union not only require the determination of chemical residues in products but also the sanitary conditions of the production process and facility. In addition, there are also strict regulations concerning the temperature of the work space, meat products' prescription, and container types and packing requirements. In recent years, while customs' tariffs have dropped substantially and non-tariff barriers have also been reduced to a great extent, the technical barriers to trade have become the main mechanisms through which developed countries protect their domestic markets. As

[1] AMS: An index that measures the monetary value of the extent of government support to a sector

the production system in Tibet still uses traditional methods and very few scientific methods, the technical barriers to trade will become the most difficult barriers to break.

The debate on trade protection with developed countries has not progressed much. The Fifth Ministerial Meeting of the WTO held in Cancun, Mexico, did not achieve any substantial results and has only added to the uncertainty of future negotiations. There is an apparent risk that the trade policy of each country will become even more conservative under the pressure of large profit-driven groups. Several WTO members take such measures as anti-dumping to protect their own countries' interests conforming to the WTO principles. Even if China has become a member of the WTO, it is still a developing country with many technical barriers facing its exports. Moreover, because of the large amount of exports from China, its trade transactions will receive much more attention than those of others, making it liable to disputes with other countries.

Recommendations

From the above analysis, in order to increase exports of agriculture and livestock products from Tibet, the following practical propositions are made.

- Removing technical barriers to trade and improving the competitiveness of agricultural and livestock products

  In consultation with experts, the government must establish a standardisation system for products and production technologies. This system must be in line with the international criterion in order to regularise and standardise production and operation on the farms, so that they can meet the requirements of the international market. Farming enterprises need to strive towards achieving the ISO9000 and ISO14000 standards of international certification and to actively apply them in licensing exports that meet the conditions of the importing country.

  An effective inspection system needs to be established to monitor compliance with the requirements of the Farming Ministry's regulations as laid out in the ' quality inspection system planning of national farming products.' The inspection system should be focused on improvement of production standards and quality of those goods that have comparative advantages in the world market. In particular, attention needs to be given to the improvement of animal health and sanitation facilities in the manufacturing units.

  It is also necessary to institute an efficient system of approving qualification and branding of types of products for which Tibet has comparative advantages. The process of approval under non-harmful food, green food, organic food categories and inspection of the places where they are produced within the framework of the Hazard Analysis Critical Control Point (HACCP) and Good Manufacturing Practice Regulations (GMP)[1] regulations need to be improved by engaging professional workers.

- Product development and publicity

  Emphasis on scientific research to develop new products and improve production is needed. The promotion of trade and technological development should go hand in hand in order to facilitate commercialisation and industrialisation of products. With the overall advantage that China has in the world in terms of labour and resources, there is potential to bring out new value-added products.

  Capacity building of institutions and individuals involved in production and marketing is crucial if Tibetan goods are to be competitive in the international market. Training is required in various fields, so that a pool of talented personnel becomes available. Included should be training in foreign languages, political systems, and conditions of trade and commerce besides technical training in production and management skills.

- Establish and strengthen an organisation for promoting the exports

  Apart from understanding the situations of target countries through foreign diplomacy and economic and commercial delegates oversees, some special bureaux need to be set up to promote export and provide support services in the main trading countries. Such bureaux should also be charged with the responsibilities of conducting research, coordination, negotiation, and transactions. They should lead the enactment of industrial codes and technological criteria and coordinate export enterprises, monitor market trends, and provide market information.

- Make full use of the regional advantage and develop its border trade actively

  Border trade is an important and indispensable part of Tibet's economic activities. Border trade should be enhanced by

[1] HACC: Hazard Analysis Critical Control Point
GMP: Good Manufacturing Practice Regulations
www.dsm.com/en_US/html/sustainability/glossary.htm

expanding operational channels and diversifying goods, on the basis of mutual agreements and through joint ventures. The larger companies should be encouraged to set up branches or factories in neighbouring countries, either as private enterprises, share-holders, and corporations, or through sub-contracting of product processing and packaging. For example, it would be viable to establish a meat factory as a joint venture in Kathmandu where the processing and packaging of mutton could be carried out from sheep and goats exported from Tibet. Strategic trading facilities should be created to administer and facilitate border trade that optimises the regional advantage that Tibet has by sharing borders with several countries.

- Establish a market information system for farm products

  A comprehensive market information system for both domestic and international markets in agricultural and livestock products should be developed. This information system should cover the whole chain from production to marketing and consumption. Focus should be placed on gathering intelligence on market policies, consumption trends, pricing, and demand and supply trends in the intended markets.

- Diversification of the export market and varieties

  Tibet needs to expand the market for its farm products beyond Nepal to her neighbouring countries and to the larger Asia-Pacific Region and diversify its range of export products. This would not only increase the volume of exports but would also offer a range of choices for the importing countries and thereby reduce potential conflicts and disputes and lower the possibility that China may suffer technical barriers to trade from the importing countries.

- Support the building of a production base and export processing area, adjust the industrial structure, and improve the added value of the farm and livestock products. Research and development support should be extended to the production of goods with comparative advantages in different locations so that they can meet international standards. Special funds should be provided to subsidise the construction or rectification of production facilities to bring them up to modern standards. In addition favourable lending schemes should be available for products such as the pine products from Linzhi prefecture, minor forest products from Chamdo prefecture, rapeseed from Shannan and Rikaze prefectures, fine yak hair from Naqu prefecture, and cashmere from Ali prefecture. Flagship enterprises should be established for these products and they should be given preferential treatment in the form of tax exemptions, loans, and support for construction of infrastructure. The government should encourage the development of ecological agriculture to produce organic farm products and provide preferential import and export rights to those who have met the conditions for running such production enterprises.

- Reduced taxation

  The levy of heavy taxes is one of the important factors discouraging producers and preventing them from improving their capacities. Keeping in mind the socioeconomic conditions of Tibet, the government should make adjustments in taxation policies such as tax reimbursement rates and modalities for exports and increasing tax return rates on value-added goods. The customs' and tax administration agencies should adopt a unified commodity coding system, remove duties on processing equipment, and provide free inspection and certification of specified farm products.

- Shift the functions of the government and optimise the soft environment

  After becoming a member of the WTO, China has become obliged to comply to its requirements and shift its management system accordingly to fit a market economy. The government should change from traditionally centralised planning and control and simplify the procedures for inspection, approval, and supervision of production of goods and exports so as to cut down on costs and become more efficient. It should play an advisory, facilitating, and monitoring role and support producers and exporters by providing market information and by promoting their products in international trade fairs and expos.

Conclusions

Although Tibet has a lot of potential to enhance its revenue and improve the living standards of farmers and herders through participation in the globalised economy, it has a long way to go before it can realise this potential. Much needs to be done, from reorientation of the production base to focusing on those products with comparative advantages to establishment of efficient marketing channels and support structures. The external and internal barriers and constraints described in this paper will need to be removed and advantages opportunistically exploited. With the active support and commitment of the central and provincial governments and increased exposure to global market forces, it is hoped that Tibetan agricultural and livestock products will be able to compete

effectively in both regional and global markets in the near future and contribute towards a prosperous society.

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Chapter 5

Improving the Livelihoods of Herders through Promoting an Improved Pastoral Ecosystem in Tibet

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Introduction

This paper analyses the status of pastoral animal husbandry in the high and cold regions of Tibet. Guided by the objective of pursuing scientific development and by consideration of the development trends in international and national grassland and anima husbandry sciences, the paper proposes to establish a new grassland ecosystem in the high and cold region in order to improve production and thereby the living conditions of Tibetan herdsmen.

The status of Tibetan grasslands and animal husbandry

Grassland animal husbandry is the basis and pillar industry of Tibet. Natural pastures and yaks, Tibetan sheep, goats, hogs, and poultry have always been the material bases of survival for Tibetan herdsmen.

Since the establishment of China's reform and open policy, particularly since the Third Symposium held by the Central Committee of the Communist Party of China on the Work of Tibet, grassland animal husbandry has made significant progress. According to statistics, the number of livestock reached 22,660,000 in 2003 (whereas it was 9,740,000 in 1951). In the decades since 1951, the production value of grassland animal husbandry has amounted to 60% of the total agricultural production value in Tibet and to about 50% of the total industrial and agricultural production value. Grassland animal husbandry accounts for the largest proportion in agriculture, if compared with other provinces and regions in the country.

One of China's five major pastoral zones and one of the four major pastoral areas, Tibet is rich in pastoral resources. According to a survey carried out in 1987, Tibet has 17 types of natural pastures, covering an area of 82,070,000 ha, of which an area of 55,000,000 ha is usable

with an enclosed area of 1,100,000 ha (excluding the pastures in the Menyu area and the pastures that are difficult to use). Pastures in Tibet account for 20% of the total natural pastoral area in China, and it is unparalleled among the provinces and regions in the size of pastoral area. However, problems such as livestock overstocking have led to the desertification and degradation of natural pastures, livestock and poultry breed degeneration, unbalanced herd and species' structure, and reduction in pastoral productivity. All these pose an obstacle to the development of animal husbandry. According to relevant surveys in counties that are fully or partially dependent on animal husbandry, the annual average pasture stocking rate during cold seasons is around 40% and, in a few counties wholly dependent on animal husbandry, the rate is 20%. In the Tibetan pastoral area, the degraded pasture area amounts to 50% of the total pastoral area of the region, and the desertified pastoral area to around 17%. Grass-covered areas amount to 20-70% of the degraded pastoral area. The height of pasture plants has decreased by 20-60% and plant productivity by 20-50%. Pasture degradation can be attributed to damage by rodents, insect pests, diseases, and human activities. In northern Tibet, large areas are infested by rodents and their nesting holes and broken grass sods can be found everywhere. Plateau rodents such as conies and marmots are very active, well-fed, and bold. Damage done by human beings make up a very long list.

The consequence of quantity decrease and quality degradation in grassland resources and the sluggishness of development of grassland animal husbandry will eventually lead to a situation in which the production and living conditions of Tibetan herdsmen cannot be improved. Quite a number of herdsmen are still living a nomadic lifestyle, moving from place to place in search of water and grass. Secondly, the living conditions are basic, with poor housing and sanitary conditions. Thirdly, the diet is monotonous and nutritional levels relatively low. Fourthly, it is difficult to provide education for the children of the herdsmen and thus there is a low literacy rate. Finally, medical care is poor and shortages of medicine and doctors are common. The average life expectancy in Tibet is lower than the national average. Measures have been taken by the government to improve the situation, but improvement is slow.

The importance of Tibetan natural pasture to the plateau ecosystem and agricultural and animal husbandry production

Natural pasture is one of the major ecosystems of the earth, covering one quarter of the globe. The role of such a huge ecosystem in the

biosphere of planet earth is invaluable. The modern pastoral industry mainly relies on pastures to exist and develop. Pastoral resources are essential for economic development, ecological conservation, and cultural transmission in Tibet and will be more and more important in terms of socioeconomic progress and environmental conservation. The pastureland of the high and cold plateau of Tibet is particularly unique and plays a regulatory role in the global environment, particularly the Asian ecological environment. This vast pasture is not only an essential part of the ecologic system, but also the main natural resource for the development of pastoral animal husbandry.

Like other provinces and regions in China, the fact that the natural pastures of the Tibetan Plateau are seriously degraded is undisputable, and this not only handicaps the development of animal husbandry but also affects the welfare of farmers and herdsmen and threatens national ecological security. This situation can be attributed firstly to the fact that pastures have long been considered a 'natural object' and excluded from the agricultural ecosystem. Thus, since time immemorial in China, good pasturelands have been converted into agricultural farmlands. This was the case in Tibet during the 'Cultural Revolution' and for a period thereafter. Secondly, misled by the notion of equating wealth with the number of animals, the number of livestock in the animal husbandry area has drastically increased. Heavy grazing has led to the deterioration of pastoral resources and 90% of the pastures have been affected to different extents. Thirdly, mismanagement and lack of regulation and use of land for construction have also led to the drastic decrease in pastoral areas, increasing desertification and a gradual reduction in productivity. Therefore, the ecological balance is upset and wind, snow, and hailstorms occur frequently.

Confronted with this serious situation, the National People's Congress issued a Grassland Law in 1985, and this has played an unprecedented positive role in protecting pastureland. However, for various reasons, the natural pastures in Tibet being a vulnerable ecological environment, old problems persisted and new problems continuously arose. The revised grassland law issued on March 1st 2003, with a new understanding of the function of pastureland, stresses the idea of a pastoral agricultural ecosystem. Particularly worth mentioning is the inclusion of artificial pastures in the law. In Section II of Chapter I of the Law, it is explicitly stipulated that "the pasture referred to herein means both natural pasture and artificial pasture." This will be a link connecting the traditional farming area and animal husbandry area. It will be a breakthrough of the barriers between the two areas. It will also be a guarantee for a

new pastoral agricultural system, namely, an agricultural system with animal husbandry as a component. It is foreseen that the impact of the grassland law will go beyond pasture itself. Its importance will be shown in the readjustment of the agricultural structure. Only when crop farming and animal husbandry are properly combined can people be free from natural restrictions in livestock keeping and grass production. This should be the fundamental approach to the healthy development of a pastoral ecosystem.

To improve the ecological environment of the Tibetan Plateau in the shortest time possible is of utmost importance for a number of reasons. It will help maintain the beneficial cycle of the pastoral ecology and maintain the country's ecological security. It will provide the means of realising coordinated development between the economy, society, and ecologic environment, and thereby contribute towards promoting national unity, maintaining frontiers, and ensuring social stability in the region. To implement the grassland law and to establish a new grassland farming system in this high and cold region to improve production and the living conditions of Tibetan herdsmen are tasks for both the government and the academic circle.

Actions to be taken

The International Symposium on 'Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the Tibet Autonomous Region' held in Lhasa provides us with an opportunity to discuss some of the issues and to recommend actions for improvement of the pastoral industry in Tibet. Based on the above analysis, the following action points can be suggested.

Establish a grassland conservation system

While Tibet has an expanse of natural pastures, the natural conditions are severe. The pure pastoral zones, in particular, are high and cold and lack oxygen. The population is sparsely scattered and transportation is difficult. Over many years, measures have been taken by the government to counteract the situation, but with little success. Under 'The Grassland Law', a basic grassland conservation system should first be established. Natural pastures, improved pastures, major pastoral lands, artificial grassland, and nature reserves should be designated as basic pastures to be closely protected. Secondly, a system with a balanced pasture-livestock ratio should be implemented. This can only be achieved by regulating the amount of livestock on hand in an area according to the pasture's production capacity within a particular period of time. Finally, a system of

rotational grazing based on division of areas and prohibition of grazing in some areas should be pursued.

Stabilise and raise pastoral productivity

On the basis of general experience, construction of the pastoral infrastructure should be strengthened, emphasising enclosure and conservation of water. Desertified land should be dealt with on a priority basis. Sticking to the policy of prevention first and prevention-treatment to be combined, work should be carried out to prevent and mitigate natural disasters on pasturelands and to raise the ability of herders to counter disasters.

Return farming land to pasture

In 2004, the project for returning farming land and grazing land to natural pasture is to be comprehensively executed in some prefectures and counties of the region. The scope and major areas of the project are to be designated first. In executing the project, 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.

Transform grassland agriculture

Pen-feeding or semi-pen-feeding with concentrated feed as supplementary feeding, wherever possible, is to be encouraged. The government will provide feed and cash subsidies. According to the principle of adjusting measures to local conditions and making full use of comparative advantages, the animal husbandry sector will be reformed and optimised, particularly in terms of herd and species' structure. 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 together with schemes for pastoral improvement and improvement of animal breeding. Meanwhile 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. Retired government officials and workers will be prohibited from raising livestock.

Promote the idea of scientific development, promote pastoral protection and advance science and technology

Animal husbandry and grassland research units will make particular efforts to study basic issues such as the mechanism of grassland degradation and the pattern of ecological evolution. Research and development in critical technologies, such as macroscopic regulation in grassland recovery and reconstruction and selective breeding of drought and cold-resistant pastoral plants, should be strengthened. New grassland management technology and new breeds of pastoral plants will be introduced with greater speed. Practical applicable technologies will be promoted through increased efforts. It is proposed that a grassland research institute for the region be established.

Put greater efforts into grassland conservation and construction

In consideration of the vast area of grassland in Tibet, a scientific protection and construction plan should be formulated and strictly executed. Funds can be collected through various channels, but should be used reasonably on major projects to attain good investment results.

Strengthen supervision, monitoring and forecasting

Presently, the region is weak in the areas of supervision, monitoring,and forecasting natural disasters. For instance, the locust plague in Aligar county in 2003 had taken place on a large scale a few years before. As a result of the lack of supervision, monitoring, and warning systems, the locust pest spread without the knowledge of the government. With the participation of the media, it was acted upon and controlled. Therefore, grassland supervision and management work should be strengthened and a complete supervision and management system should be set up to coordinate governments at different levels.The monitoring and forecasting work for grassland ecology should be conducted conscientiously with an emphasis on monitoring the grassland area, its productivity, the state of the ecological environment, grassland biological pests, and grassland conservation and construction effects.

Strengthen the administration of grassland conservation and construction

According to the actual conditions of the region, the people's government of the autonomous region should take overall responsibility for grassland conservation and construction, and the Ministry of Agriculture in the region should make plans for macro and micro projects. The responsibility

system for municipal and county governments should be implemented. It is suggested that grassland management bureaux be established in pure pastoral zones. According to the principle of long-term household operation, the household contracted responsibility system should be further pursued to clarify the rights and obligations in production, conservation, and construction and to provide farmers and herdsmen with encouragement in the conservation and construction of grasslands.

Continue to promote projects on ecological migration, herdsmen's settlement and drinking water

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. The social, ecological, and economic effects and benefits of these projects are significant and applauded by farmers and herdsmen. More efforts need to be put into such projects.

Conclusions

To be out of the plight of poverty and be affluent is the dream of human beings and the ongoing practice for pursuing justice and equality. Fighting poverty is the common duty of all countries in the international community. Today's symposium is focusing on the elimination of poverty among Tibetan farmers and herdsmen and on leading them to affluence. The significance of this conference will not be confined to Tibet but will extend to regions similar to Tibet all over the world.

Chapter 6

Rural Livelihoods in Nepal: A Case of Mustang District

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Introduction

This paper examines livelihood diversification as a survival strategy for rural households in one of the remotest districts of Nepal. The paper first provides a brief exposition of the livelihood approach. Second it examines livelihood assets and livelihood diversification as a survival strategy for people residing in an economically deprived area. In so doing, it brings to the fore the importance of untapped tourism potential in the area as a vehicle for mountain development. The paper concludes that mountain farming on its own is unable to provide a sufficient means of survival unless critical livelihood options based on comparative advantages of an area are not placed at the centre of development. Finally, it provides policy options for addressing diverse rural livelihoods essential for transition from diversification to specialisation.

Mustang District

Mustang district lies between 3,300 and 6,480 masl and borders the Tibetan Autonomous Region (TAR) of China to the north. Among the 75 districts of Nepal, Mustang district is among the most inaccessible, least populated, and underdeveloped. It lies north of the Himalayan ranges of Annapurna (8,091m) and Dhaulagiri (8,167m), which overhang on the east and west the Kali Gandaki Gorge, believed to be the deepest in the world. The district, with a total area of 2,300 sq. km., consists of 16 Village Development Committees (VDCs) and can be geographically divided into two parts, namely, Upper and Lower Mustang. Upper Mustang consists of seven VDCs, namely, Chhonhup, Chhosher, Lo Manthang, Surkhang, Charang, Ghami, and Chhusang. Lo Manthang VDC is the traditional hub of Upper Mustang and also the ancient capital of Mustang. It is located 84 km north of Jomsom, the current headquarters of Mustang district. This paper is concerned with Upper Mustang only.

The entire landscape of Upper Mustang is that of a high altitude cold desert, and most of the land surface lacks vegetative cover. Snow, wind, and sun act on the sandy soils to cause erosion. Agricultural activities are limited by land availability and the short growing season. Most of Mustang remains under snow for four to five months a year and rainfall (April and October) is sparse. Due to low rainfall, the natural forest is stunted and much of the vegetation is bushy. The temperature ranges between four degrees below zero to 14 degrees Celsius. Fuelwood is extremely difficult to obtain. People uproot bushes to meet firewood needs and alternative energy sources are unavailable. Many people travel long distances to collect firewood and spend an equal time returning.

The purpose of this paper is to provide a general assessment of the livelihood status of households in Upper Mustang district. Information on Upper Mustang is scant and not easily available, and the paper draws information primarily from the 2001 Population Census of Nepal. Where relevant, information is provided for Upper Mustang, Mustang District, and Nepal in order to compare where Upper Mustang stands in terms of the overall district and national situations. Information from other secondary sources is also used where available. Following the introductory section, the second section describes briefly the Sustainable Livelihood Framework (SLF). In section 3 the different livelihood assets are discussed followed by livelihood diversity in section 4. The last section discusses the implications on sustainable livelihoods in Upper Mustang.

Approach to sustainable livelihoods' analysis

Generally, sustainable livelihood analysis relies on household level socioeconomic and related information. Such information is not available in the context of Upper Mustang, and hence the livelihood analysis has been carried out using the information available at the Village Development Committee (VDC) level. A livelihood is comprised of the capabilities, assets, and activities required for a means of living. Livelihoods are said to be sustainable when people can cope with and recover from stress and shocks and maintain or enhance their capabilities and assets both now and in the future, without undermining environmental resources (Carney 1998;Scoones 1998; Chambers and Conway 1992).

The Sustainable Livelihood Framework (SLF) starts by classifying assets owned, controlled, claimed, or accessed by households, and which the household uses to undertake production, engage in labour markets, and participate in marketing for exchange. Assets are stocks of capital from which households generate the means of survival or to sustain material well-being.

The five types of assets[1] generally discussed in the SLF literature are human capital (education, skills, and health), social capital (social networks, membership of groups, relationships of trust, access to wider institutions), physical capital (infrastructure such as transport, shelter, farm equipment, energy, and communications), financial capital (income, savings, supplies of credit, regular remittances, or pensions) and natural capital (land, water, biological resources).

The SLF is based on six core principles: it focuses on a people-centred approach, is responsive and participatory, builds on people's strengths, is holistic, addresses micro-macro-linkages, and focuses on partnership and sustainability dimensions (economic, institutional, social, and environmental). Both the access to assets and their uses are governed by policy and institutions and by exogenous trends (e.g., economic trends) and shocks (drought, disease, floods, pests). Households adopt or adopt to different livelihood strategies depending upon the status of their assets, social factors, and exogenous trends or shocks. The strategies are composed of activities that generate the means of survival. Rural livelihood diversification is defined as 'the process by which households construct a diverse portfolio of activities and social support capabilities for survival and in order to improve their standard of living' (Ellis 1998). Rural households engage in diverse activities reflecting the reliance on multiple sources of livelihood to minimise risks associated with any one strategy.

Household livelihood assets in Upper Mustang

Human capital

Mustang district is sparsely populated with a density of four persons per sq.km., which is much lower than the national average (157.3). The population of Upper Mustang (5,395) comprised 36 per cent of the district population (14,981) in 2001. The sex ratio (102.4) is in favour of males in Upper Mustang and compares with 120.28 for the whole district[2]. The national average is 99.8. Across the VDCs of Upper Mustang there is considerable variation in the sex ratio (Table 1). The economically active population of Upper Mustang is about 75%. There are more males who are economically active (80%) than females (71%). However, some VDCs have a larger population of economically active women than men (Table 2).

[1] Hereafter, the term asset is interchangeably used unless stated otherwise.

[2] Sex ratio is defined as the number of males per 100 females and Mustang has the highest sex ratio among the 75 districts of Nepal.

Education: The literacy rate for the population aged six years and above is about 33% and is below the national literacy rate of 54.1%. Male and female literacy rates are respectively 43 and 23% , reflecting an almost 50% gender gap in literacy and compares with a 28% gap at the national level. In Upper Mustang, only one third of the population is literate. The literacy rate however varies considerably across the seven VDCs of Upper Mustang, with Chhusang having the highest literacy rate (42%) and Ghami (24%) the lowest (Table 3). The percentage of children above six years who are currently attending school in Upper Mustang is 46% with Charang having the highest attendance rate (64%) and Ghami (34%) the lowest. The percentage of male children (53%) attending school is higher than female children (37%) in Upper Mustang. The attendance rate for males is higher than for females in all VDCs except for Charang, Chusang, and Sukrang where the opposite prevails.

There are 90 schools in the district and, given the sparse population, the district has 5.14 schools per 1000 population and is one of the highest in the country and second only to Manang (6.85). The teacher school ratio in Mustang (4.21) is higher than the national average (3.8). The girls' enrollment rate at all levels of school in Mustang (49.9%) is also higher than the national average (43.33%). In Mustang district as a whole, the population that had completed primary education comprised about 45%, those that had completed lower secondary and secondary about 25%, school and equivalent 9%, certificate and above 7%, and those that had never had schooling about 14%. Such information is not available at the VDC level to assess the situation in Upper Mustang, but the position relative to Nepal as a whole is given in Table 4.

Health: The infant mortality rate is above 88% and 63% of children (under 5 years of age) suffer from chronic malnutrition (stunting) in the district. In Mustang district, about 84% of the households have access to a tap or piped water, while the national average is about 53% Access to toilet facilities is also an indicator of health as it reflects the availability of a first line of defense against certain types of diseases. In Mustang about 59% of the households do not have toilets. There are many other districts in Nepal where the percentage of households not having toilets is even higher. Although access to health facilities as measured by the number of health institutions per 1000 population in Mustang (1.13) is relatively better than that for an average Nepali (0.18), the quality of the health delivery system from the existing government organisations in the district is poor. This is evident from the relatively higher incidence of ARI (238) and diarrhoea (238) per 1000 children below five years in the district over the national average (Table 5).

Social capital

Social capital is the basic building block of all forms of capital. Upper Mustang has its own indigenous forms of social networks and institutions governed by deep-rooted social and cultural norms. Buddhism and Tibetan culture influence the society of Upper Mustang. The social structure consists of social and caste divisions and kinship relations. Gurungs[3] constitute the predominant ethnic group in terms of population, although Bistas are traditionally the ruling class in the area. The major class division is between the aristocrats ('kudhakpa') and the commoners (subjects/'misher-bhija'). 'Kudhakpa' symbolises the king's and other noble families and these are mostly from the Bista caste[4]. The commoners play a key role in the economy—in agriculture, trade, and animal husbandry—and account for more than 80% of the population. The caste system determines rules of marriage and purity and continues to be strong even to the present day. Marriage rules are regulated by kinship and caste. Polyandry is still in practice to avoid the splitting of the family farmland (parental property) (Rai 1987).

Traditional/indigenous organisations: The Lobo political organisation is represented by three institutions; namely, the Raja, the traditional village organisation, and the monastery and lies outside the formal structure of the Nepal government. These three institutions maintain social order among the Lobas and have their own rules, which it is argued are biased against the lower socioeconomic groups (Box 1). Upper Mustang is also rich in cultural assets (Box 2).

Government and other organisations: the Village Development Committee (VDC), agricultural services' centre, livestock services' centre, health posts, Nepal Food Corporation (NFC), post office, telecommunication office, and police post are among the government institutions located in Lo Manthang which provide some level of service to the people.

Indigenous social networks and institutions (social capital) are reinforced by the institutional building component of the Annapurna Conservation Area Project/Upper Mustang Biodiversity Conservation Project (ACAP/UMBCP) being implemented by the King Mahendra Trust for Nature Conservation (KMNTC) in Upper Mustang. The UMBCP has established an eight member Conservation Resource Action Committee (CRAC) under the chairmanship of the Raja of Upper Mustang. The CRAC consists of

[3] The Gurungs of Upper Mustang may also in fact be of Bhotia origin

[4] The aristocrats are divided into three categories namely: Loba royal family, nobles, and quasi nobles. Each individual in the aristocrat group is ranked based on genealogical ties with Tibetan families. See Rai 1987 for more details.

Box-1: *The three institutions in Upper Mustang*

The *local Raja* is still a powerful institution in Upper Mustang. All Loba citizens are expected to abide by the rules and regulations of the palace. The palace owns large tracts of land and also sells land to the local people. The commoners till the palace lands. The palace produces surplus food, which is loaned out at an interest rate to food deficit households. Traditionally, the King can impose a social sanction of 'Chhepa' on anyone who does not abide by his rulings. Over time political changes in Nepal and Tibet have also affected the powers of the Raja.

The *Traditional Village Organisation (TVO)* acts as an intermediary between the people and the palace and in the past has taken a stand against the Raja's decisions. Members representing it are from aristocrat (15 families) and commoner (125 families) families. The headman is selected from the aristocratic families and two spokespersons, an accountant, and four lieutenants, constitute the council. In each village, a 'mukhiya', village chief, is elected normally for one year and is responsible for overall development activities and is highly regarded. The TVO levies fines and penalties for the violation of rules and the money collected is deposited in village funds.

The Monastery exercises jurisdiction over religious affairs. It owns large tracts of agricultural land and produces surplus food. This food is loaned out at interest. It leases out land to families whose sons or daughters are either monks or nuns in the monastery. It is mandatory for all households with more than three sons to send one son to be a monk. Usually the second child is sent. The monks provide spiritual and religious leadership and influence decisions involving moral and ethical codes.

two representatives of the seven from the Upper Mustang Conservation Area Management Committee and nominees appointed by the Raja, a women's representative, the District Development Committee (DDC) chairman, the local development officer, and the national programme manager of the UMBCP. A community resource action joint sub committee (CRAJSC) board has been formed to manage the community trust fund. The board consists of 13 members of which four (chairman, vice chairman, secretary, and treasurer) are selected by mutual consensus of the members and the remaining members are selected based on representation from the women's group, the local intellectual community,

Box-2: *Historical and cultural assets*

Monasteries: The three monasteries of Jhampa Gomba, Thuhchhen, and the Ngonga-Tangchubung Monthang Choedhe inside the walled city are managed by monks and the local community.

Longest Prayer Wheel Wall: Upper Mustang also boasts one of the longest rows of prayer wheels in Nepal, and it is located in Ghami VDC.

Chooser Cave: Among the numerous caves found in this area, one cave is five storeys high and consists of about 85 rooms. It is said that the people of Lo inhabited the caves in ancient times.

Lo Manthang Wall: Built in the 15th century by the Mustang King, Ama-dopal, the wall surrounding the White Fort City, is another cultural heritage of the people of Lo Manthang.

Fort Towers: Built to watch enemy attacks from Tibet, two dilapidated forts stand just north of Lo Manthang from where the Tibetan plateau can be clearly seen.

Yartung: This is a harvest or horse festival that takes place on the 15th of the seventh month of the lunar calendar.

the backward community, and the VDC. There are altogether 31 mothers' groups and 20 savings' and credit groups formed in Upper Mustang. The formation of such local organisations though social mobilisation is believed to provide a common platform for people to discuss and raise their voices and choices.

Financial capital

Financial capital refers in particular to income, savings, supplies of credit, regular remittances, or pensions. Lack of information does not permit assessment of the status of financial assets in Upper Mustang. The UMBCP has the provision for a Community Trust Fund (CFT) to support biodiversity conservation in the region and promote income generation activities. This fund is channelled through the community resource action joint committee to savings' and credit groups, which then disburse the loan to the community group and individuals. The idea is to create a community revolving fund so as to fund a variety of activities. However, the mechanism for the use of this trust fund has not been made clear

(Rayamajhi et.al. 2002). Further, the tourism revenue ploughed back by the government is critical for long-term sustainability of this fund and implementation of the tourism management plan. A final decision on the plough back mechanism has been pending now and the fund committed to savings' and credit groups prior to the formation has not been realised.

Physical capital

Mustang is severely deprived of physical assets and is among the few districts in Nepal that does not have a motorable road. A road is under construction, connecting Lomanthang with Tibet. There are two airports in the district, one in Jomsom and the other in Chhoser. There is a telephone service in the district and the coverage is 2.5 lines per 1000 population, which is much lower than the national average of 12.5 lines per 1000 population (Table 6). Radio sets are owned by 54% of the households. About 53% of the households in the district have access to electricity provided by a micro-hydro power plant (29 kW). Electricity is used mostly for lighting purposes. Local people continue to rely on the little vegetation that is available to meet their firewood needs for cooking and space heating. Firewood is very scarce and people are forced to rely heavily on animal dung. The latest population census data indicate that about 63% of households in Mustang rely on firewood, another 25% on animal dung, and the rest on kerosene for cooking. An average household burns about 40kg of animal dung per day. This diversion of dung from farm to fireplace has implications on soil fertility and agricultural productivity. Through ACAP support, kerosene depots have been established in Upper Mustang. Kerosene is unaffordable for the large majority of the local people due to its price which is three to four times higher than the price in Pokhara, reflecting the exorbitant transportation costs.

Natural capital

Upper Mustang is unique because of its trans-Himalayan setting. The sheer beauty of this cold natural wilderness desert north of the majestic Himalayas is in itself an important tourist asset. Its unique environment has limited substitutes with high option value[5]. Remoteness and the restricted status of the area (to foreigners) until a few years ago are also important factors that attract tourists. Upper Mustang has distinct faunal species; mostly Tibetan species, and some are already listed as either rare or endangered by the Department of National Parks and Wildlife Conservation (DNPWC). Some disturbed wildlife is beginning to reappear

[5] An environment confers benefits on users and those who, while not using it directly, are glad that it is there.

due to conservation efforts. Endangered species, namely, wild yak (Bos grunniens), Tibetan wild ass (Equus hemionus kiang), and the nayan or great Tibetan sheep (Ovis ammon hodgsoni) have also been reported but have not been authenticated. The area around the Damodar Kundo (a pilgrimage site for Hindus) has almost pristine forests and harbours many rare wildlife species. Livestock depredation by wildlife is reported to be high, especially during the summer months when herds are taken to the high altitude meadows for grazing.

Livelihood diversification

Households in Mustang have to rely on limited assets to carve out their subsistence livelihoods. To cope with the harsh weather conditions and limited assets, households in Mustang have, over the centuries, diversified their economic activities. The nature of assets and the harsh climatic conditions constrain many activities to be pursued except as limited activities. Although information is not available on the economic returns to households from the various activities, they are believed to be low. Farming, supplemented by animal husbandry and trade and migration, are the main economic activities of the people of Mustang. These activities follow an annual cyclical pattern dictated by the climate of the area. Labour shortage is reported during the peak agricultural season, especially during harvest time (Ojha 1986). The advent of controlled tourism in Upper Mustang in 1992 complemented these traditional activities. Some families also make an income from tourism (lodges, camping sites, and curio shops). Tourism potentials are high but the present practice does not permit the locals to benefit from it.

Farming

According to the 1991 Agricultural Sample Census, the total area under agriculture in Mustang district was 1,183 ha, and this was distributed over 8,525 parcels. According to the latest census data the size of average landholding in the district is less than 0.5 ha per household and its distribution is highly skewed (0.47 gini coefficient). The total number of landless households account for 26% of the district and marginal households who own less than 0.2 ha (about 20%). The royal family holds the largest proportion of land.

Agricultural activities begin after the snow melts in March-April and all agricultural activities come to a halt in October after the harvest. Most of the people of Upper Mustang generally grow only one cereal crop in a year on a rotational basis. Wheat, naked barley, buckwheat, peas, mustard, and a very limited amount of maize are the major crops. Due

to variations in altitude, crops mature on different dates. Productivity is poor due to a variety of factors, including the poor quality of soil and lack of adequate manure and improved seeds (Table 7). Water for irrigation is not assured and depends on weather conditions. Seeds are broadcast and many do not even germinate. Apples, apricots, radishes, potatoes, and green vegetables have been introduced only recently. Many households are unable to produce adequate food to meet their needs and have therefore been forced to diversify economic activities to cope with the hardship faced. Animal husbandry is another important activity of the households in Mustang.

Animal Husbandry

Animal husbandry is another major source of livelihood for the Upper Mustang people, providing nutritive foods, dung for both agricultural fields and cooking, transport, and cash income. In contrast to the small human population, Mustang has a large livestock population consisting of cattle, sheep, goats, yaks, and pack animals (horses, mules, donkeys, and 'dzopa') (Table 8). Yaks are the most valued livestock, followed by sheep and goats. Animal husbandry is an integral part of agriculture. About 55% of households in Upper Mustang have both land and livestock with considerable variation in the proportion of such households across seven VDCs (Table 9)

Livestock are continuously moved from one pasture to another depending on the availability of grass. Yaks graze on the high altitude pastures. Sheep are grazed only in summer on pastures located in the south. Horses are generally stall fed and taken to pastures occasionally. Over time the size of yak herds has been decreasing and, hence, the income from yaks. In the past pastures in Tibet were the main source of grazing for livestock, but this facility has been significantly curtailed by China in recent years. Local pastures have degraded significantly due to overgrazing by livestock. About 300-600 ha of rangeland are estimated to become depleted annually in Upper Mustang due to poor pasture management (Raut 2001). There is no institutional regulation of public pastures in any of the settlements. However, community ownership of pastures is highly regarded. Without permission, members of one community do not use postures belonging to other communities. Inbreeding is also a serious problem and has caused productivity to fall among many livestock.

Trade and migration

According to the 2001 population census, nearly 75% of the households are engaged in trade/ business (25.3%) and services (59.5%) in Upper

Mustang (Table10). Small-scale non-agricultural economic activities are operated by the households in all the VDCs of Upper Mustang despite some variations across the VDCs. The Kali Gandaki trail served as a major trade route in the past, connecting Tibet with India. Although the north-south trade was an important activity to the people in the past, its importance declined significantly from the late sixties. The Thakalis were the most important traders, but the Upper Mustang people benefited from transporting traded goods. Trade contributed significantly to the growth of Upper Mustang in the past. Trade between this area and Tibet continues even to this day, but its magnitude has declined substantially.

Seasonal migration is an important livelihood strategy for the people of Mustang. During the harsh winters between a half to two-thirds of the people, or on average one member per household of Lo Manthang, migrate down to Pokhara, Kathmandu, or to India for approximately three months. They normally engage themselves in door-to-door trade. Different types of herbs, 'churpi' (dried cheese), and other locally-produced cottage industry products are taken by the migrants to sell in the south. Cash obtained from trade is used to purchase small manufactured items, which are then sold in different villages in the south during the period of migration. Some engage in retail trade as roadside vendors. With the cash earned from trade people return with food grains and other manufactured items, some of which they may sell across the border in Tibet. From Tibet they bring back salt, wool, and other livestock products for home consumption.

Tourism

Mustang is one of the last frontiers of a Himalayan enclave that has changed very little for centuries, and its remoteness, landscape, and sociocultural assets serve as a rich tourism resource. Owing to its unique religion and culture, fragile environment, remoteness, and restricted status until a few years ago, this area has always been veiled by an aura of mystery. The area is equally rich in both cultural and biodiversity assets.

Realising that development in terms of agriculture and other modern sectors in Upper Mustang is limited, the government of Nepal decided to promote controlled and high-paying tourism in the area. Controlled tourism, which began in 1992, is restricted to a maximum of 1,000 visitors per annum who pay US 70 per head per day for a minimum of 10 days; enter the area in a group of at least two persons; are facilitated by an officially registered trekking company; are self-sufficient in terms of food and fuel; and are accompanied by a liaison officer. Although the

government agreed that part of the revenue accruing from tourism would be channelled for development purposes through the King Mahendra Trust for Nature Conservation (KMTNC), in reality this has not materialised as desired. During the past several years, only about three to four per cent of the total revenue (as against the 30-50% committed) collected from tourists has been ploughed back to KMTNC for development work in Upper Mustang (KMTNC 2003). In addition, only group tourists are permitted to visit the area. Group trekkers come on a scheduled trip, which is organised by a travel company. The full services, or inclusive package, include all camp equipment such as sleeping bags, dining and toilet tents, cooking gear, three meals a day, guides, cooks, and porters. Group trekkers, being self sufficient, can travel into wilderness areas and away from villages as long as there is water and a place to pitch tents. However, this type of trekking does not permit local people to benefit from tourism. While there is scope for promoting livelihood opportunities through tourism, both factors—inadequate ploughing back of tourism revenue and group tourism—are severely undermining the scope tourism can play in diversifying and promoting livelihoods in Upper Mustang.

Development Interventions in Mustang

The major development intervention in Upper Mustang is the Upper Mustang Biodiversity Conservation Project (UMBCP). The UMBCP is executed by KMTNC with financial support from the Global Environment Facility (GEF), United Nations Development Programme (UNDP), American Heritage Foundation(AHF), and the International Centre for Integrated Mountain Development (ICIMOD). It is a 5-year project ending in 2005[4] The project covers all seven VDCs of Upper Mustang. The main aim of the project is to restore Upper Mustang's ecology and economy by linking the two major livelihood assets—biodiversity (natural) and cultural heritage (social)—with tourism management. The project aims to achieve its goals by institutional capacity building, biodiversity database development for community-based planning, management, and monitoring and replicable income-generating schemes that contribute to biodiversity conservation.

The mid-term evaluation of this project has pointed out several issues to be addressed to achieve the goal of the project. On gender issues, the policy documents, CAMR 2056 and bye-law 2053, are almost silent about the role and capabilities of women, involvement of marginalised people, and their empowerment. At the project level, women and lower caste (so called) representation in the existing Conservation Area Management

[4] The mid-term review (MTR) recommended that the project be extended until December 2006.

Committees (CAMCs) is very low (only 18 female members and 2 lower caste people). At community level women work longer hours (15 hours) than men (11 hours) and women have greater work loads than men. The polyandry system practised in Upper Mustang gives a central role to the woman in overall household management. The eldest husband is generally counted as the head of the household, implying that women have access to resources but not control of them. Women are not entitled to land ownership. Women's participation in decision-making processes related to traditional, cultural, and political activities is very low. Although women participate in community meetings they rarely make decisions (Gurung 2001).

Key issues and implications for livelihoods

Under the current state of subsistence agriculture and infrastructure, Upper Mustang experiences a growing conflict between short run survival needs for food and energy and long run livelihood and environmental sustainability. This problem stems largely from an overall problem of underdevelopment and lack of appreciation of the environmental resources. Caught between poverty of assets, rural households are forced to diversify their portfolio of activities to sustain their livelihoods in the face of adverse trends or sudden shocks and substitution between opportunities that are in decline and those that are expanding. While the low level of human capabilities limits the scope for substitution between capitals, economic hardship and poverty force many people to adopt both short-term (coping) and long-term (adaptation) survival strategies. Several implications emerge, however, from the foregoing situational analysis of rural livelihoods in Upper Mustang. Highlighted below are some critical issues and options related to tourism, animal husbandry, and trade as the key sources of livelihood diversification.

Tourism as a critical option for livelihood diversification

As Upper Mustang has a comparative advantage in tourism development and the scope for other development activities is fairly limited, tourism development must be the lead sector of development in the area. Since high paying and controlled tourism has already been introduced, the vision should be to establish Upper Mustang as premium destination by providing visitors with a high quality experience while at the same time ensuring that the wider community benefits from tourism directly or indirectly. Unless tourism development in the area can be made a vehicle of overall development, the prime tourism assets will deteriorate and will gradually erode the comparative advantage the area enjoys in terms of tourism (Banskota and Sharma 1998). Tourism itself can have

negative impacts if not properly managed and this can accelerate the asset deterioration process, so critical for any strategy for livelihood diversification[7]. Proper planning and management of tourism in Upper Mustang is therefore essential for both the destination and site levels to maintain their integrity and to ensure that the unique attractions are conserved to provide the visitors and host population with a quality experience and improve the quality of life of the local people.

However, tourism started in Mustang without any proper planning and interrelated development of the supply components of tourism that establish cross-sectoral production linkages with the local economy. Current group tourism practice is not permitting local people to benefit from tourism either directly or indirectly. Since the trekking industry in Kathmandu has monopolised the trade and guides, porters and horsemen are recruited outside the area in Jomsom; and the only immediate returns, and those too are limited to a few local people, are those made from renting out camping sites, some horse driving, and from the sale of a few souvenirs. This has created a situation in which the rising expectations of local people from tourism have remained unfulfilled, leading to disenchantment and frustration.

Under the current restricted group tourism practice, the provision for ploughing back revenue generated from tourism is a major source of income to be made available to support local development and conservation activities. However, the experience with HMGN's funding of Upper Mustang operations up-to-date make it highly unlikely that substantial funding will be made available to allow local institutions (i.e.,CAMCs) to fund development and conservation activities for the benefit of local people. There is also a latent conflict between the DDC and KMTNC over the question of who should be in control of tourist revenue. This is because the Conservation Area Management Regulation (CAMR) 2053 (1996) and the Local Self-Governance Act 2055 (1998) have led to a double governance structure within Conservation Areas—consisting of both local government bodies and conservation area institutions leading to a competition between the DDCs, VDCs, and KMTNC with regard to the sharing of Upper Mustang tourism revenues[8]. Furthermore, the main organisation responsible for coordinating all the development activities

[7] See Bansilata and Sharma (1995) for a detailed discussion of the impacts of mountain tourism.

[8] While the National Parks and Wildlife Conservation Act 2029 (1973) and the Conservation Area Management Regulation 2053 (1996) give the Conservation Area Management authorities the right to use 30-50% for local community development, the Local Self-Governance Act 2055 (1989) gives the District Authorities the right to 30% of all tourism revenues in order to fund local development activities.

within Upper Mustang has not been well defined given the ambiguous mandate between KMTNC and DNPWC[9].

Upper Mustang may be geographically isolated, but its people are not. Many people are forced to diversify their incomes by engagement in trade activities in the winter season in places such as Pokhara, Kathmandu, and India. The implication of such diversification as a survival strategy in the recent globalisation context is clear. Controlled tourism cannot be sustained under the current management practice and poor record of recycling back of tourism-generated income for supporting local development and conservation activities. A rough road that now extends southward (Lo-Manthang) from the Tibetan border at Korolla is rapidly opening up the area and traded goods and livestock from China are being brought in. Considering the growing demand of local people, a joint VDC and DDC initiative should be undertaken for further road construction. The fact that the Chinese have expressed an interest in constructing the Beni-Jomsom section makes road development all the more likely. Despite its positive impact on trade diversification, road development will inevitably lead to de-restriction of the Upper Mustang area. Moreover, the way in which the large sum of tourism revenue is retained by the Central Government will ultimately lead to disenchantment among the local people forcing them to do away with the qualification of Upper Mustang as a Restricted Trekking Area.

To be noted

The implication of de-restriction of Upper Mustang on rural livelihoods suggests allowing local people to make a living from tourism directly rather than depending on the Central Government to provide funding. This implies a significant reduction in permit fees, a change in trekking rules to allow trekkers to purchase local food and lodging, and a gradual increase in the number of trekkers passing through the area. Such a policy will have an impact on the landscape and villages of Upper Mustang, increase the waste problem, and intensify the fuel issue. Realising that the opening up and de-restriction of the area will eventually be inevitable, there is an urgent need to discuss and prepare a long-term management plan though a participatory stakeholder consultation process to address what Upper Mustang should look like in, say, 2012 when KMTNC's mandate expires. Sustainability in the context of Upper Mustang thus

[9] The Department of National Parks and Wildlife Conservation (DNPWC) has full authority within the protected area. In contrast to the Department, KMTNC, being an NGO, is not fully authorised to strictly enforce rules and regulations within the protected area and development projects and licenses are issued by various organs of the Government without the knowledge of KMTNC.

requires that tourism development has to receive more attention than it has currently received, as no other alternatives but tourism appear to hold a key to development of this area.

Pasture management for sustaining animal husbandry

The poor quality of pasturelands and the lack of other sources for fodder do not make livestock raising very viable under the present circumstances. With the closure of the Tibetan border, grazing in upper Mustang has intensified. Grass is becoming more expensive than apples, indicating the growing scarcity of fodder in the area. Pasturelands are mostly degraded and are dominated by shrubs (used as firewood). Already fodder shortages have forced people to reduce their herd sizes. But this has also led to a reduced supply of dung for fuel and hence greater time being spent for gathering alternative fuel sources. The grazing system—both rotational and deferred—is one effective tool for rangeland management and such a practice could bring a positive impact on the rangeland condition in Upper Mustang. Pasture management and grass seed production should be given priority, but in the long run biomass production would become the primary benefit.

Finding a sensible solution to the existing energy crisis

A long-term solution to the energy problem in Upper Mustang remains another challenge for improving rural livelihoods. The severe scarcity of firewood has forced people to rely heavily on animal dung as fuel with grave implications for agricultural productivity. Scope to increase the supply of traditional fuel, i.e., biomass, through plantation and improved management, appears to be limited. Possibilities to develop alternative energy, particularly micro-hydro, are there but its use is likely to be limited to lighting only. Solar energy is being tried out, but it will take some time before this alternative technology can be turned into practice in the area. Improving energy use efficiency through energy efficient technologies should be given prime consideration. Detailed investigation is thus needed to find the viable alternatives and divert the existing energy crisis.

Table 1: Population distribution, household size and sex ratio in Upper Mustang

	Population			Sex ratio (M/F*100)	Household population	Household size
	Male	Female	Total			
Charang	327	334	661	97.9	142	4.65
Chhonhup	536	534	1070	100.4	197	5.43
Chhoser	390	393	783	99.2	174	4.50
Chhusang	332	336	668	98.8	186	3.59
Ghami	424	426	850	99.5	178	4.78
Lo Manthang	480	368	848	130.4	180	4.71
Surkhang	241	274	515	88.0	114	4.52
Upper Mustang	2730	2665	5395	102.4	1171	4.61

Source: CBS 2002

Table 2: Population 10 years and above by usual economic activity in Upper Mustang

	Population 10 years and above			Usually Economically Active			% Usually Economically Active		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Charang	535	278	257	367	199	168	68.60	71.58	65.37
Chhonhup	814	412	402	683	335	348	83.91	81.31	86.57
Chhoser	626	306	320	507	250	257	80.99	81.70	80.31
Chhusang	550	273	277	340	234	106	61.82	85.71	38.27
Ghami	661	325	336	496	273	223	75.04	84.00	66.37
Lo Manthang	710	411	299	538	303	235	75.77	73.72	78.60
Surkhang	390	189	201	311	162	149	79.74	85.71	74.13
Upper Mustang	4286	2194	2092	3242	1756	1486	75.64	80.04	71.03

Source: CBS 2002

Table 3: Literacy of population aged 6 years and above in Upper Mustang

	Literacy rate			% Currently attending school		
	T	M	F	T	M	F
Charang	35.04	41.16	28.87	64.44	68.63	70.09
Chhonhup	31.76	44.74	19.22	38.07	42.19	40.96
Chhoser	38.87	51.47	26.70	56.31	65.47	63.36
Chhusang	42.33	50.00	34.87	53.88	55.17	61.76
Ghami	24.48	35.38	14.09	34.29	37.78	34.88
Lo Manthang	28.72	35.84	19.46	57.73	63.10	55.40
Surkhang	31.10	40.58	22.92	38.95	34.57	46.46
Upper Mustang	32.87	42.50	23.16	46.09	52.54	37.34

Source: CBS 2002

Table 4: Relative position of Mustang in some education related livelihood indicators

Education	Rank	Mustang	Nepal
Primary school net enrollment ratio	1	98.2	81.10%
Ratio of girls to boys in primary education	4	102.8	81.10%
Student teacher ratio in secondary education	1	5.6	23.8
Literacy rate of population 15-24 years	30	74.6	70.1
Ratio of literate females to literate males 15-24 years	17	86.3	74.6

Source: CBS,2003

Table 5: Relative position of Mustang in some health related livelihood indicators

Health	Rank	Mustang	Nepal
Access to improved source of drinking water	28	84.5	82.00%
Access to toilet facility	40	40.8	46.8
Incidence of ARI per 1000 children < 5 years	66	335	229
Incidence of diarrhoea per 1000 children < 5 years	60	238	177
Proportion of malnourished children under 3 years	2	5.7	15.8
Reported deaths per 1,000 population	52	5.575	4.81988

Source: CBS, 2003

Table 6: Relative position of Mustang in some physical infrastructure/ assets

Physical Assets	Rank	Mustang	Nepal
Proportion of households having electricity facility	11	53.3	39.80%
Proportion of households using solid fuels for cooking	33	89	76.90%
Proportion of households having radio facility	38	54	53.10%
Telephone lines per thousand population	31	2.54	12.5
Road density (length/sq. km. Area)	68	0	0.11438

Source: CBS, 2003

Table 7: Relative position of Mustang in yield rate of some crops

	Rank	Mustang	Nepal
Yield of vegetables (kg per ha)	41	9725	10792
Yield of fruits (kg per ha)	55	8878	9514
Yield of cash crops (kg per ha)	37	7442	9465
Yield of cereal crops (kg per ha).	53	1607	2199
Yield of pulses (kg per ha)	59	660	815

Source: CBS, 2003

Table 8: Livestock population by type in Upper Mustang

	Yak	Dzopa	Ox+Cow	Donkey	Mule	Goat	Sheep	Horse	
Chhonhup	671	103	481	9	0	1807	997	411	4479
Chhoser	0	9	389	72	0	5237	2015	254	7976
Chhuksang	0	296	351	0	181	3261	8	151	4248
Ghami	168	262	580	7	17	3004	0	324	4362
Lomanthang	211	8	432	76	3	1477	241	444	2892
Surkhang	233	74	215	0	0	7172	53	151	7898
Tsarang	102	153	493	8	0	2428	1	285	3470
UM Total	1385	905	2941	172	201	24386	3315	2020	35325

Source: KMTNC/ACAP/UMBCP, Livestock Survey 2001

Table 9: Households having agricultural land and livestock in Upper Mustang

	Total HH	Agricultural land only	Livestock only	Land and livestock	None at all
Charang	142	7.75	0.00	66.90	12.68
Chhonhup	197	5.58	1.02	76.65	5.08
Chhoser	174	6.90	1.15	75.86	9.77
Chousing	186	2.69	1.61	9.14	18.28
Ghami	178	2.81	2.25	57.30	12.36
Lo Manthang	180	11.11	6.11	60.56	17.22
Surkhang	114	8.77	0.88	33.33	18.42
Upper Mustang	1171	6.32	1.96	55.00	13.07
Mustang	3242	8.76	1.23	29.09	22.98

Source: CBS, 2002

Table 10: Households operating small-scale economic activities by type

	Total HH	Not having economic activities	Having economic activities	% Operating economic activities	% Manufacturing	% Trade/ Business	% Transport	% Service	% Others
Charang	142	140	2	1.41	0.00	50.00	0.00	0.00	50.00
Chhonhup	197	100	97	49.24	4.12	22.68	0.00	73.20	0.00
Chhoser	174	98	76	43.68	0.00	6.58	0.00	93.42	0.00
Chhusang	186	135	51	27.42	1.96	27.45	29.41	31.37	9.80
Ghami	178	148	30	16.85	3.33	33.33	0.00	46.67	16.67
Lo Manthang	180	148	32	17.78	3.13	53.13	0.00	12.50	31.25
Surkhang	114	101	13	11.40	0.00	53.85	0.00	23.08	23.08
Upper Mustang	1171	870	301	25.70	2.33	25.25	4.98	59.47	7.97
Mustang	3242	2288	955	29.46	4.50	26.39	5.86	55.18	8.06

Source: CBS,2002

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Chapter 7

Village-based Development in the High Mountains of Pakistan: Lessons from the Aga Khan Rural Support Programme(AKRSP)

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Introduction

This case presents an example of village-based participatory rural development, initiated by the Aga Khan Rural Support Programme (AKRSP) in 1982 in the extreme northern parts of Pakistan, that later become the precursor for an active Rural Support Programme movement in Pakistan and elsewhere. Initially started in the five districts of the Northern Areas and Chitral district of the North West Frontier Province of Pakistan, this participatory rural development model has now been widely replicated across Pakistan and in many countries in Africa and Central Asia. The experiences of AKRSP and those of its replicas share important commonalities in terms of both the approach and the ultimate impact upon the communities. This case is however focused on AKRSP and looks at its experiences as a key rural development agency in the remote and mountainous areas of northern Pakistan.

Source of data

Most of the information for this case comes from the proceedings of an international workshop organised by AKRSP in December 2003 to celebrate its twenty years of experience in rural development. About 10 different thematic papers were produced for this conference to capture the lessons in rural development, and this case study has greatly benefited from those papers. In addition, a recent study entitled 'Scaling up Rural Support Programmes(RSPs) in Pakistan'[1] was another important paper that has fed into this study, particularly the sections on the conceptual model and impact on poverty and livelihoods.

[1] This paper, co-authored by this author, was presented at a global conference on scaling up success in reducing poverty and sustaining growth, Shanghai, 25th- 27th May 2004.

Contextual settings

The six districts of northernmost Pakistan that constitute the Programme Area of AKRSP are located in the middle of the four highest mountain ranges in the world at the juncture of China, Afghan Wakhan, and Kashmir. Spread over an area of 87,298 sq. km., the Northern Areas and Chitral (NAC)[1] provide a home to an ethnically diverse population of about 1.2 million. Three decades ago, the area was among the poorest and most geographically isolated parts of Pakistan. Most people were relying on subsistence agriculture for a living and in most cases production was inadequate to fulfil the minimum consumption needs. The problem was further exacerbated by a chronic deficit of basic social, physical, and market infrastructure. Key developments in the 70s and early 80s, such as abolition of princely states, construction of the Karakoram Highway (KKH), and growing attention of the government to the region due to its proximity to flash points like Siachin and the Indian border, were, however, offering a promise for change towards betterment.

The Inception of AKRSP

The launch of AKRSP by the Aga Khan Foundation (AKF) in 1982 was one such landmark event in the history of the NAC. Starting its operations initially in one district, i.e., Gilgit, AKRSP was able to expand quite rapidly to cover almost all of the five districts in the Northern Areas as well as Chitral District, eventually working with a population of about one million people. The primary aim of this programme was to improve the living standards of the people in the NAC. AKRSP started its work as a catalyst for rural development by organising communities, working with them to identify development opportunities, and promoting the provision of services needed to tackle the specific problems of high mountain regions.

AKRSP started out with an approach that looked at three constraints: a) lack of organisation; b) lack of skills (technical, organisational, and management); and c) dearth of capital. The assumption behind focusing on these three elements was that if people are organised and have the needed skills and capital, they can take on larger development challenges by making effective use of their resources and opportunities. Based on this premise, all households, including the poorest ones, were encouraged to come together to form village organisations, including organisations that gave voice to women, and identify projects that would benefit everyone.

[1] The Northern Areas and Chitral fall under separate administrative units of Pakistan. The term NAC is being used as an easy acronym of the programme area of AKRSP and does not represent a formal term.

Members were encouraged to save money and to build their capacity in the skills ranging from credit and accounts' management to pest control for crops. →

The conceptual model

Faith in the ability and willingness of people to improve their lot is the cornerstone of the AKRSP model. What poor communities need is a catalyst that can harness their true potential by motivating them to organise into community-based organisations which can then serve as multi-stakeholder fora for planning and managing development in a participatory manner. This model was based on ideas and practices learned from more than a century of experience, beginning from the cooperative movement in nineteenth century Germany, and continuing on through the work done in Comilla (then East Pakistan, now Bangladesh) in the 1950s and 1960s (Rasmussen et al. 2004).

Based on twenty years' experience, the role of AKRSP can be categorised into three broad categories. First, AKRSP has mobilised and organised communities to stimulate more effective demand for better public goods and services, targeted at both the household and village levels. Second, it has fostered linkages between organised communities and service providers (government, private sector, or others) for the supply of services. Third, it has directly supplied services where there was a dearth of supply or the supply lacked quality (Rasmussen et al. 2004).

The interventions

AKRSP did not go to the communities with a blue print of activities to be carried out. The interventions were, however, broadly defined by AKRSP's overall focus on organising people, improving their skills, and building the capital base. The actual activities carried out under these three broad categories were, in fact, evolved in response to the needs and strengths of the communities—a true reflection of participatory development. Not surprisingly, the greatest demand came for development of infrastructure, e.g., irrigation channels and roads and skill building in farm management, a logical choice made by the communities in view of their dependence on agriculture and their geographic isolation.

The portfolio of activities, therefore, grew and evolved over time in response to the changing needs of the communities that they articulated through their village-based institutions called Village Organisations (VO) and Women's Organisations (WO). In broader terms, the programme components of AKRSP consisted of social organisation, women's development, natural resource management, physical infrastructure

development, human resource development, enterprise promotion, and microfinance. Table 1 gives a brief summary of the interventions made over the last twenty years.

Table 1: Summary of achievements on the input side

Activities	NAC
1. Total number of community organisations formed (No)	4,147
2. % of households covered	78%
3. Community members trained in various skills (No)†	24,230
4. Total number of infrastructure projects completed (No)	2,512
5. Forest trees supplied (million)	25.0
6. Fruit trees planted in partnership with AKRSP (million)	3.92
7. Improved seeds of cereal, fodder, and vegetables (kg)	936,643
8. Improved breeds of livestock (No)	6,410
9. Poultry birds supplied (No)	724,716
8. Entrepreneurial and vocational training (No)	7,192
9. Total savings with VO/WO's (US $ million) ††	7.7
10.Total amount of lending to the communities (US $million)	30.4

† *Around 80% of the training was related to management of natural resources*

†† *1 US $ = Pakistan Rupees 57*

Source: AKRSP Records

Experiences and lessons

The Impact on poverty and livelihoods

Table 2 depicts the economic picture of the Northern Areas and Chitral for the period (1991-2001). It shows that incomes were less than one-third of the national average in 1991, rising to more than half of the national average in 2001. While national economic growth slowed considerably in the 1990s, the NAC economy experienced an impressive growth in per capita income of 84% from 1991 to 2001.

Table 2: Trends in income per capita from 1991-2001

(US$)[1]

	Pakistan	Northern Areas and Chitral	NAC as percentage of Pakistan
1991	424	131	31
1994	440	176	40
1997	487	232	48
2001	415	241	58

Source: Government of Pakistan, Federal Bureau of Statistics; AKRSP, Farm Household Income and Expenditure Surveys

[1] 1 US $ was equivalent to Pak Rupees 23 in 1991, 31 in 94, 38 in 97, and 58 in 2001.

This economic growth has had a direct impact on poverty as well. Table 3 shows that while poverty showed a rising trend in the national economy, it dropped dramatically in the NAC from about two thirds to about one third of the population from 1991 to 2001.

Table 3: Trends in poverty (1991-2001)

Head count index (%)

	Pakistan	Northern Areas & Chitral
1991	26.1	67
1994	28.7	54
1997	29.8	45
2001	32.1	34

Source: Government of Pakistan, Planning Commission; Wood and Malik (2003)

Notwithstanding the usual problems with attribution, the available evidence is strong enough to suggest that the contribution of AKRSP to economic development in the NAC has been substantial. For instance, the incomes of village organisation member households were found to be 15-20% higher than those of non-members. This difference increased with the number of members per household and the length of their membership. The economic rate of return (ERR) on AKRSP investments also points towards the substantial benefits generated by AKRSP. Using conservative assumptions, the calculated ERR for AKRSP's investment falls in the range of from 16 to 24%, well above the usual experience in similar programmes (World Bank 2002).

AKRSP's experience of tackling poverty contains many lessons. The first and foremost lesson is specific to the remote and geographically isolated and landlocked mountainous terrains that often form spatial poverty traps - such as the Northern Areas and Chitral. The experience shows that such areas can and do benefit from non-targeted, mainstream rural development interventions (such as interventions aimed at improving physical infrastructure, agricultural extension services, etc) particularly during the initial phases of intervention. This is true because, in such spatial poverty traps, often the majority falls in the poverty bracket due to physical, human, and natural resource limitations and, hence, there is little need for targeting (Malik and Mujtaba 2003). In the NAC, relatively equal distribution of key natural resources, e.g., land, has been instrumental in making the non-targeted approach work for the majority.

Having advocated the efficacy of a non-targeted approach, it is also important to mention here that some level of targeting is essential to keep the relevance of rural development programmes for those who do not have the capacity to take advantage of such interventions. Such groups

often fall into the category of the chronically poor, excluded groups, and poorest people, and these special forms need to be distinguished from others and should be addressed through a combination of productive and social protection measures (Wood and Malik 2003).

The second lesson is pertaining to the connection between poverty and vulnerability. Vulnerability remains an important challenge for even graduating households in such areas, owing to the fragility of geographic environment, greater dependence on meagre natural resources, heavy dependence on limited human resources, and volatility of the off-farm sector. Explicit attention to inherent risk posed by limited diversification of income sources and limited integration with mainstream markets for goods and services is a prerequisite. Safety nets and continued mainstream packages remain important areas of intervention for such areas (Wood and Malik 2003).

The third, but crucial, lesson is regarding the integration of such remote areas with the mainstream markets. AKRSP's experience shows that the effect of rural development interventions is best felt when there is better macro-economic growth and when the communities are better linked to mainstream markets. This was demonstrated by the growth performance of incomes in northern Pakistan; higher in the first half of the 1990s and much lower in the second half, following broad national trends (Parvez and Rasmussen 2002). Similarly, better integration with the national markets and improved public policies, for example, greater investment by government, clearly increased the effectiveness of AKRSP's interventions. Chitral and Gilgit showed differential gains owing to differential access and public investment in those two districts of the NAC (Malik and Piracha 2003).

Village-based institutions and collective action

Through organising communities into village-based institutions, AKRSP has undoubtedly created a vibrant mechanism at the grass-roots' level that has the ability to deliver development services in an effective and accountable manner by forging partnerships with various service providers including the state, private, and citizen sectors. At the same time, well aware and mobilised communities are now in a better position to articulate their voices to obtain better services from the state and other providers and consume those services in an efficient manner. There are many examples in which the organised communities of the NAC have forged partnerships with other players in the health and education sectors to access social services, thus synergising the interventions of AKRSP with those offered by other agencies.

Seen in the light of AKRSP's experience, social mobilisation models aimed at promoting collective action seem to prove more effective when a) such models are embedded in the local institutional history; b) when such models foster institutions that follow local preferences and needs, instead of relying on fixed and blueprint approaches; and, c) when these institutions are infused with democratic norms, renewed with new organisational knowledge, and backed by broad-based public support (Wood and Shakil 2003).

The pursuit of organising communities into village institutions has generated interesting debate in AKRSP. Collective action is increasingly threatened by the forces of individualisation and the changing socioeconomic needs of the people. As a result, while some old institutions are losing their relevance, a diverse set of new institutions has emerged–largely influenced by the work of AKRSP—to take on new challenges (Wood and Shakil 2003). Thus, there is a need to look at the social organisation as the 'ability to do collective action when need arises' than just looking at it as a 'permanent and fixed' arrangement.

Women's programme and gender

Perhaps, the formation of separate institutions for women—Women's Organisations(WO)—was the most significant step towards encouraging women to play a role in the public sphere. On the surface, it may appear to be an arrangement that segregated women instead of mainstreaming them, but it rather proved to be a strategic step towards allowing women to discuss their problems and take on village-level challenges in the socio-culturally sensitive context of the NAC (Gloekler and Seeley 2003). These institutions provided a unique platform for rural women of the NAC to access various development services, significant among them was the opportunity to save their money with formal systems. In a context in which women have had very little control over resources, e.g., land and household properties, the WO savings proved to be a unique tool for empowerment (AKRSP 2004).

Despite AKRSP's continuous efforts and gains quoted above, women in the NAC still lag behind men in terms of their attainment on the education, health, and employment fronts. Similarly, their role in the public sphere, particularly on the political front, is still marginal. AKRSP has learned that lack of a clear understanding of gender concepts, lack of frequent dialogue between the staff and quarters of stakeholders who resist the greater role of women, e.g., religious groups, and excessive focus on gender sensitisation instead of devising tangible programmes are some of the problems that slow down the pace of gender mainstreaming in development (Gloekler and Seeley 2003).

The promotion of gender equality interests in culturally sensitive areas like the NAC, therefore, requires efforts to improve the clarity of gender concepts among all stakeholders, investment in programmes that directly improve the conditions and position of women, e.g., employment generation, and frequent dialogue with the leaders of religious and cultural opinion with the objective of building pro-equality constituencies (Gloekler and Seeley 2003).

Community-managed infrastructure

AKRSP became involved in the business of developing community infrastructure not because it was a part of some preconceived package, but because communities were prioritising the physical infrastructure, particularly irrigation channels and roads, as their topmost development priority; not surprising, given the heavy dependence of people on agriculture and the lack of mobility which they faced due to lack of feeder roads and bridges. In response to this huge demand, AKRSP invested in physical infrastructure but always looked at grants for infrastructure as investments in the social organisation, in the belief that they provided an incentive to the communities to form village organisations. Interestingly, it is the infrastructure projects that have had the greatest impact on rural livelihoods through increasing the stock of their productive assets, e.g., land, and through increasing the mobility of goods and services to and from the villages (Malik et al. 2003).

Experience shows that infrastructure projects implemented through community institutions are better maintained, i.e., more than 90%, and are cost effective (Rasmussen et al. 2004; Malik et al. 2003). Furthermore, operational insights suggest that not only are the impacts of community infrastructure very visible, but a whole range of process and financial innovation has taken place at each stage of the Project Cycle that provides a sound basis for promoting ownership, transparency, and accountability in community infrastructure. One key process innovation was the introduction of a three-stage dialogue process (Diagnostic Survey) for participatory project identification, preparation, and appraisal. Similarly, 100% responsibility of the community for project maintenance was another procedural innovation that helped to create a better sense of ownership and sustainability in community infrastructure (Malik et al. 2003).

Management of natural resources

Repeated evaluation studies have confirmed the substantial impacts created by AKRSP's interventions in agriculture, livestock, and forestry. In aggregate terms, the natural resource management (NRM) component

of AKRSP was able to generate economic rates of return (ERR) of around 25%. This success was made possible through creating synergies with other programme components of AKRSP, e.g., infrastructure development and social organisation as well as with the interventions of other private and public sector players. One such synergy can be traced in the interplay between infrastructure and management of natural resources. By constructing irrigation channels in partnership with AKRSP, communities were able to increase the stock of land and irrigation water, thus increasing production and productivity in agriculture. Not only did the production increase but the pressure on wild resources, such as wildlife and natural forests, was substantially reduced (Gloekler 2003). Similarly, construction of link roads and bridges resulted in better integration of farms with markets through facilitating the mobility of farm produce and inputs to and from the villages (Malik et al. 2003).

Another important example of synergy was between AKRSP's social organisation and the management of common properties. There are examples of communities forming effective institutions for the management of common property, thus making conservation work for their own benefit. AKRSP has learned that natural resources, particularly those shared by many villages, are better managed through the formation of grass-roots' institutions that forge effective linkages with relevant partners. One such example is the Khunjerab Valley Organisation (KVO) (a cluster of Village Organisations fostered by AKRSP) that is involved in the conservation of Khunjerab National Park in partnership with the government forest department and IUCN (Gloekler 2003).

Enterprise promotion

Increased production of agricultural produce as a result of AKRSP's NRM interventions, coupled with increasing integration of the NAC into local and national markets, motivated AKRSP to apply its collective action model to the marketing domain by introducing collective marketing. The experience of cooperative marketing has, however, shown mixed results with many of the collective marketing institutions dropping out of the market over time. In retrospect, the debate on what works in collective marketing essentially boils down to the importance of business acumen, better understanding of the market, and ability to match the supply (in terms of product quantity and quality). Only those who possessed the right ingredients of the factors quoted above were able to survive and benefit from this approach (Afzal 2003).

Under its enterprise promotion theme, a second set of interventions carried out by AKRSP included supporting individuals and groups of entrepreneurs

in setting up businesses. This experience again showed mixed results where some businesses that were based on a true comparative advantage survived while others suffered (Afzal 2003). Then, AKRSP experimented with setting up wholly-owned enterprises in key sub sectors such as seed production, wool processing, and apricot processing where it learned how non-government organisations (NGOs) often found themselves at a cross roads due to divergent values and bottom lines vis-à-vis businesses, i.e., equitable development versus profits (Afzal and Malik 2004). One realisation that came out of the experience in providing direct services to individual enterprises and setting up wholly-owned businesses was that these two approaches carried a high risk of distorting the market and offered limited outreach. Based on these lessons, AKRSP is now shifting towards a facilitative role.

Microfinance

AKRSP's microfinance programme has been unique in many ways. It started out with a savings' programme for VO and WO members as an integral part of its conceptual model (organisation, skills, and capital). This collective saving served as collateral for accessing bulk credit from the AKRSP credit programme and, later, provided the basis for initiating an internal lending programme by the village and women's organisations themselves.

One of the key features of AKRSP's microfinance programme was lack of attention to the issue of sustainability during the initial years. Since microfinance was developed in response to the needs of the communities, as opposed to a preconceived package, the question of sustainability could not catch attention during the early years. It was only after 1996 that AKRSP started levying market rates to gain the objective of financial sustainability. Greater pressure to attain financial sustainability eventually led AKRSP to experiment with poorly-performing products, and those that were not entirely appropriate to its objectives of social and economic development (Hussain and Plateau 2003).

AKRSP's microfinance programme has had a substantial impact on social organisation. The use of collective savings as collateral for group lending to VOs and WOs proved very damaging in those cases where individual loan defaults were realised from collective savings; an undue burden borne by the savers who were not borrowing. Similarly, the inherent conflict between the twin objectives of VO microfinance, i.e., savers wanted higher returns and borrowers wanted lower interest rates was another source of damage to the collective spirit. Contrary to these fragmenting forces, the WO savings' programme, in particular,

proved to be a cementing force for organising women. The WO savings' programme was an important attraction for women to meet regularly (Hussain and Plateau 2003).

The question of sustainability

The very premise of forming village-based institutions was to develop a self-propelling development mechanism at the grass-roots' level. Community-managed infrastructure projects, sustainable internal lending programmes practised by VOs and WOs, and financially viable agricultural input stores run by groups of AKRSP-trained master trainers are some examples of ensuring sustainability through village institutions. Yet, the greater challenge lies in continuing the institutional support to these village institutions in developing capacities to address emerging challenges posed by increasing socioeconomic differentiation in the NAC. AKRSP as a support institution continues to depend on donor funds for this value-added intermediation. A cautious effort is, however, being taken by AKRSP to develop financially sustainable institutions that offer greater cost recovery prospects. The formation of the First Microfinance Bank by AKRSP in 2002 is one such example of making development services' sustainable.

Painting on a larger canvas: impact on policy

Through demonstrating the effectiveness of the participatory rural development model in the NAC, AKRSP has influenced the thinking of government, donors, and communities to replicate its participatory model in other parts of Pakistan as well as outside Pakistan. So far, nine RSPs have been formed in different parts of Pakistan and most of these RSPs are backed by the government both financially and politically. Similarly, there are eight rural development programmes initiated by the Aga Khan Development Network outside Pakistan, including those in Africa, Central Asia, and the Gulf region.

Besides indirectly influencing the government to initiate RSPs in Pakistan, AKRSP, together with its replicas, has been instrumental in influencing government policies and practices. As a result of the success shown by AKRSP and other RSPs, the word community-driven development, once unknown, now appears in all significant national and provincial development policies and projects, including the recently approved Pakistan poverty reduction strategy paper(PRSP). RSPs have also had significant influence on poverty-reduction strategies, approaches to local governance, and the adoption of micro-finance and community-owned infrastructure as mainstream development strategies (Rasmussen et al. 2004).

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Chapter 8

Protecting and Constructing the Ecological Environment on the Tibetan Plateau

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Introduction

The ecological environment in Tibet is varied and marked by distinctive characteristics and functions. Such diversity plays an extremely important role in maintaining the world's environmental balance. The local authorities in Tibet attach great importance to protecting and constructing the ecological environment, and these efforts have proved to be effective. However, adverse effects such as global warming make the local environment more vulnerable, threatening its ecological security. Therefore efforts must be made to promote the protection of the Tibetan environment and ecology.

Tibet makes up the main body of the Qinghai-Tibet plateau, which is distinguished by a unique geographical and natural environment with rich wildlife and plant diversity, water, and mineral resources. Its environmental quality ranks among the best in the world. It has been known as 'the spine of the world' and 'the third pole of the earth'. It not only serves as 'the headwaters' region' and 'ecological source' of China, South Asia, and Southeast Asia, but also as 'the climate generator and regulator' of China and the eastern hemisphere. In short, it is of strategic global significance in ecological and environmental terms.

The ecological environment in Tibet

Types of ecological environment in Tibet

Tibet autonomous region occupies a vast area of 1,200,000 sq. km. made up of various landforms and complicated topographical features. The climate has distinctive differences at different altitudes, giving rise to a great variety of ecosystems. According to differences in landform and land types, the ecological environment in Tibet falls into the following categories – *i)* mountain, *ii)* lake basin, and *iii)* river valley. The mountain ecological environment can be subdivided into cold desert and lowland

hills .The lake basin ecological environment consists of deserts and swamps; the river valley ecological environment, plains and canyons. Because of the great diversity in ecological conditions, Tibet has all the 15 types of vegetation recorded for the whole of China. Most of this vegetation cover remains in natural condition, which is indicative of the pristine nature of the local environment. According to the classification of vegetation cover, the land area of Tibet can be divided into i) forests, ii) shrubs, iii) grasslands, iv) wetlands, v) deserts, vi) mountain ice barriers, and vii) artificial environments. It can be said that Tibet contains all types of terrestrial ecosystems, except for the oceanic. Among all the ecosystems, grassland, forest, and wetland occupy most of the land in Tibet.

Grassland ecosystem

The grassland ecosystem, especially the high-cold grassland ecosystem, is most distinctive. The area of natural grassland is 82.07 million hectares, which makes up 21% of the natural grasslands of China and 68.11% of the total area of Tibet. The applicable area accounts for 64% of the total. The first nationwide survey of grassland resources in China indicated that Tibet has 17 of the 18 types of grassland identified in the country as a whole. As one of the top five pastoral areas in China, grassland, especially the high-cold grassland ecosystem, is of utmost importance in protecting the ecological environment of Tibet and promoting animal husbandry. Success in maintaining the ecological health of grasslands is the key link in the orderly and intact ecological chain in Tibet.

Forest ecosystem

The forest ecosystem of Tibet is characterised by high productivity and a rich diversity of living things. The area of forest in Tibet is 7,170,000 hectares, with the volume of standing trees at 2.09 million m^3. The forests found in Tibet represent the largest areas of virgin forest in China and range from tropical mountain rain forest to seasonal rain forest at the highest altitude in the northern hemisphere to spruce forest along the Yalongzangbu River Valley. Its forest reserve ranks first in China. Assuming that one cubic metre of forest produces 350 kg of carbon, the total capacity of forest reserve in Tibet stands at a staggering 757,525 million kg. Therefore, it plays a crucial role in easing global warming.

Wetland ecosystem

The Tibet Autonomous Region (TAR) has a total wetland area of 60,000 sq.km., accounting for 4.9% of the total land area. Of this, lakes occupy 2,500 sq.km., the highest lake cover area in China, and,

moreover, they represent some of the highest mountain wetlands in the world. The wetland ecosystem is distributed along lakeshores and in broad valleys and is characterised by very lush meadow vegetation covers. These meadows are the major resources for developing plateau animal husbandry. The wetland in Tibet plays a key role in holding flood waters in the rainy season and in accommodating water from melted ice and snow. The lakes serve as the natural habitats for a multitude of wild animals and aquatic lives. Marked by plateau characteristics and a network of lakes, the wetland ecosystem of Tibet is instrumental in maintaining regional ecological balance by regulating the local climate and improving the ecological environment.

The service function of the ecosystem in Tibet

The unique geographical environment and various types of ecosystem give rise to specific and diversified service functions. These services include biological production, water source maintenance, soil conservation, protection of biological diversity, outdoor recreation, prevention of natural disasters, and climate regulation. Among all the service functions, water source maintenance and protection of biological diversity are the most important ones.

Water resource maintenance

Tibet is known as the headwater area of the rivers in China, South Asia, and Southeast Asia. Some of the largest rivers, such as the Brahmaputra, the Lancang, the Lu, the Jiaqu, the Jiazhatangge, the Shiquan, the Pengqu, and the Xibaxiaqu, originate from Tibet and flow across the Chinese border into neighbouring countries. Among the rivers originating from Tibet, more than 20 have river basin areas of above 10,000 sq.km. The water from melted glaciers is estimated to be 32,500 million m^3, accounting for 85% of the total for China.

Tibet is also rich in underground water resources and therefore has been called the 'water tower of Asia'. All types of ecosystems, especially forest, grassland, and wetland, in Tibet possess the function of conserving water resources for the rivers. Based on observations on the maximum water-holding capacity of the soil with a thickness of 50 cm, in virgin as well as secondary spruce and fir forests located at Hengduan mountain, it is estimated that the maximum capacity of soil water reservation in the Tibetan forest ecosystem can reach 25,100 million m^3, which is equal to the planned flood control capacity of the Three Gorges' project. This suggests that the forest ecosystem in Tibet plays a pivotal role in conserving water resources and hydrographic adjustment. Generally the maximum

water-holding capacity of the soil in the ecosystem, with Yunnan pine as the dominant species, is around 2000 m^3/hm^3, while the maximum water-holding capacity of the soil in virgin sub-alpine coniferous forest is 3000 m^3/hm^3.

Protecting biological diversity

As a distinctive environmental regional unit, Tibet is home to a unique biotic community, which is made up of many rare and valuable wild animals and plants. It is a major location from which emergence and differentiation of world mountain biotic species have taken place. As a result, it has one of the most diversified ranges of biotic species in the world and is recognised globally as one of the top 25 areas in terms of biotic diversity. It has been listed as the resource pool of various biotic species and a protective zone of biotic diversity. Recently, more than 9600 wild plants have been listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Thirty-nine wild plants are listed as rare and endangered plants and placed under special protection status. In addition, Tibet possesses 6,400 advanced plants, 300 of which have special medicinal values. Its faunal diversity includes 798 types of wild vertebrates, 142 wild mammals, 56 reptiles, 45 amphibians, 68 fish, 488 birds, and around 4,000 insects of which 125 have been placed under special national protection, accounting for one-third of those in China as a whole. More than 600 advanced plants and 200 terrestrial vertebrates cannot be found elsewhere except in Tibet. Therefore, protection of the biodiversity in Tibet is of great significance for scientific research and economic development.

Characteristics of the ecosystem in Tibet

In addition to its diversity in types and functions, the Tibetan ecosystem is characterised by distinctive local features, namely, virginity, variety, peculiarity, regional diversity, and harmony between nature and humanity. These features distinguish Tibet from the rest of the world and make Tibet a unique region. However, the ecosystem in Tibet is also affected by its vulnerability, dryness, and instability which limit the development of commercial enterprises such as animal husbandry.

The advantageous characteristics of the Tibetan ecosystem

- High altitude and geological peculiarity: Covering the major part of the Qinghai and Tibet plateau, Tibet is marked by the shortest geological history and highest average altitude. This results in unique ecological environment combinations with highly adaptive ecological resources.

- Virginity: Tibet occupies a vast area, and its population density is low. Human activities have had little impact on its ecological environment. There are still many areas remaining untreated by human beings, thus maintaining their pristine status.
- Variety: The terrain and landform in Tibet indicates an obvious diversity. There are great regional differences in natural conditions, and this explains the diversity of the ecological environment.
- Harmony between nature and humans: The Tibetans have lived in harmony with nature according to the ethos of Buddhism. The combination of mysterious culture and the beautiful landscape and monuments makes Tibet a unique tourist attraction.
- Regional diversity: Complex landform and distinctive geographical differentiation have caused obvious regional diversity in land use. The fertile river valley areas in the southeast are used for cropping, while the expansive grasslands in the north and northwest are used for raising livestock. Forests dominate the east and southeast. Besides the temperature, the efficiency of accumulated temperature and solar radiation are more intense than in other parts of China at the same latitude and altitude. As a result, the biological productivity is higher. The yield of crops can reach 15,000 kg per ha and the average growth of forest is 4.46m^3 per ha. Such productivity can seldom be found elsewhere.

Disadvantages of the Tibetan ecological environment

- Instability: The geological history of Tibet is still relatively short, and hence the formative activity is very intense. Over the past two million years since the fourth season, the Tibetan plateau has risen by 3,500 to 4,000m, and an intense upward thrust of the plateau is taking place. In the mountain areas, especially high mountainous areas and valleys, where the mountain slopes are steep and the soil layers are unstable, loose debris is prone to soil erosion and landslides.
- Vulnerability: The vulnerability of the ecological environment finds expression in a short growth period and a narrow ecological security threshold value of vegetation cover growing in a high-cold environment. Changes in the environment have a serious impact on the growth of vegetation cover. In addition, if the vegetation cover on a slope is damaged, the soil erosion rate on the slope is much more rapid than the rate of soil formation. To re-establish and restore the ecosystem is very difficult. What is worse, the heavy rainfall, strong wind, intense sunlight, and quick evaporation result in poor water retention in the soil surface. Then, if indigenous plants with deep root systems are damaged, restoration of vegetation cover becomes difficult.

- High-cold dryness: Due to the cold climate, frozen land and glaciers cover a large area where frequent freezing and melting of the soil occurs. The high-cold dry climate causes strong physical weathering of surface materials, while soil formation is inefficient. Hence the surface soil is extremely coarse, thin, and barren. Soils with such poor properties are widespread and are unfavourable for vegetation growth.

The adverse ecological environment in Tibet suggests that to realise sustainable development of the Tibetan economy and ecological environment is rather difficult. At the expense of the ecological environment, exploration of natural resources and economic development have resulted in environmental deterioration and destruction.

Achievements in protecting the ecological environment and construction of Tibet

The local authorities of the TAR have attached great importance to protecting the environment and its restoration. Taking sustainable development as a guideline, environmental protection has been recognised as an integral part of the state strategy in planning, implementation, and economic development of urban and rural areas. Efficient protection has been carried out for forests, rivers, lakes, grassland, wetland, glaciers, snow-covered mountains, and wild animals and plants.

Protecting the ecological environment

In Tibet, a succession of 40 natural protected zones of various types has been established, of which seven are at state level, eight at the level of the autonomous region (equal to provincial level), and 25 at the municipal level. The total area of protected zone is 407,300 sq.km., accounting for 33.9% of the total area of Tibet. Except for marine and coastal ecosystems, a network of protected zones representing the various types of ecological distribution has been established. Among them are Mount Qomolangma State Natural Protected Region, with a total area of 298,000 sq.km.; the Yalonzangbu Great Canyon State Natural Protected Region with a total area of 9168 sq.km. (the largest and deepest canyon); and the Lalu Wetland Natural Protected Region with a total area of 6.2 sq.km. In these protected regions, measures have been taken to protect 125 wild animals and 39 wild plants requiring special national protected status and the breeding places and habitats of rare and endangered species–including wetlands for migratory birds, natural scenery, and geological and biological relics of research value.

In order to maintain the flow level and quality of water in the rivers and to promote sustainable development of the local economy, favourable conditions are being created to protect the headwaters of the rivers in Tibet. The local authorities of the TAR have demarcated an area of 2.6 million hectares around the fountainhead of the Brahmaputra River to establish an ecological protection area. For the purpose of improving the ecological environment of the grasslands and promoting the use rate of natural resources, an amount of 29.6 million RMB has been invested to construct a grassland ecological demonstration area at state level in middle Naqu. Simultaneously, the Yigong National Geological Park, the Riduo Hot Spring Geological Park, and state forest parks at Basongcu and Seji have been established successfully.

Constructing the ecological environment in Tibet

Several projects aimed at protecting the fragile environment of the region have been launched. These include natural forest protection projects in three counties in the upper reaches of the Yangtze River, reclaiming forest and grassland from farming land and sand control projects in the middle reaches of the Brahmaputra River. The first, second, and third phases of the Sand Control Project at Alishiquan River have been completed. Since the 90s, reforestation has been widely promoted. The annual reforested area has now reached 13,600 hectares. Other activities, such as determining the stocking rate by grass growth, rotating grazing within defined areas, fencing and controlling the livestock population, planting grass, improving degenerated grassland, irrigation and rodent and pest control, and combating poisonous grasses, have been undertaken since the 70s. Projects aimed at grassland construction, such as anti-crisis reserves and livestock feeding research and demonstration stations, have been launched in the major pastoral areas. During the Fifth Nine-Year Plan, 62,000 hectares of grassland were fenced and another 1.67 million hectares were cleared of the three adverse effects of rats, insects, and poisonous grasses.

In the middle river basins encompassed by the Yangtze, Yellow, and inland rivers, 1,200 million RMB have been invested to implement a comprehensive agricultural exploration project which focuses on environmental protection and ecological construction. Through applying necessary biological and engineering methods, the use rate of local land and coverage of artificial vegetation have witnessed remarkable increases, and land desertification and erosion are under effective control. From the upper reaches to Rikaze and Zedan, artificial forests extend for hundreds of kilometres, and this is conducive to conservation of soil and water along the Brahmaputra River. As a result, the comprehensive quality index

of the regional ecological environment has been upgraded. With support from the central government, Ecological Environment Construction Planning has been formulated and implemented for the TAR. More than 22,000 million RMB will be invested to undertake 160 more ecological environment protection and construction projects, and this will result in the continuous improvement of the ecological environment of Tibet.

Methods of protection and construction of the Tibetan ecological environment

Over the past few years, the ecological environments in some regions have been improved. However, because of high altitude and cold climate, the natural ecological environment of Tibet is vulnerable, unstable, and sensitive. Under the influence of global warming in its unique geological environment and improper exploitation of ecological functions, the ecological environment in Tibet is generally undergoing light and moderate degeneration. In the more densely-populated areas, degeneration is gaining momentum as a result of human activities. In uninhabited mountainous areas, the ecological environment is suffering from light degeneration. Consequently, protecting and constructing the ecological environment in Tibet should be subject to the overall goals of checking ecological deterioration, maintaining ecological functions, safeguarding ecological security, preserving biotic diversity, and improving the living environment. A pilot demonstration site for comprehensive environmental protection is to be established to promote conservation technologies throughout the whole region.

Promoting scientific research and sustainable conservation measures

Firstly, studies on Tibet's ecological security strategies should be carried out and a relevant strategic framework formulated. Priority should be given to dynamic changes, vulnerability of the ecological environment, ecological security, and industry. In addition, studies on restoring and re-establishing the degenerated ecological environment in hypersensitive areas should be given extra attention.

Secondly, through better understanding of the problems, proper goals for ecological protection should be determined and relevant measures taken.

Thirdly, research on practical techniques of ecological protection, for instance restoring vegetation cover, should be carried out to provide necessary technological back-up.

Based on the research findings, an overall plan for protection of the ecological environment of the Tibet Autonomous Region should be formulated as soon as possible. Therefore, all work protecting the ecological environment in Tibet will be consistent and carried out in an orderly and well-organised manner. A monitoring system should be established to track the dynamic changes in the local ecological environment and provide evidence for decision-making. Efforts should be made to promote the enactment of laws for the protection of the ecological environment.

Implementing strategies of environmental protection

Firstly, protection measures should be carried out according to key ecological functions. Various ecological function protection zones should be established in the following areas: i) around headwaters of rivers for water resource conservation; ii) in flood regulating and water reserves; iii) in wind combating and sand-consolidating areas: and iv) in areas of water earmarked for fishing. The degenerated ecological environment in ecologically sensitive areas should be restored. Under the aegis of the Tibet Headwater Areas' Protection Action Plan, rescue efforts should be undertaken to protect the headwaters of the Brahmaputra, the Lancang, the Lu, the Jinsha, and the Shiquan rivers. In addition, protection of wetlands around major cities and towns should be strengthened. With efficient protection measures, wetlands will be able to improve our living environment and attract tourists: their ecological and economic benefits will be fully realised.

Secondly, compulsory protection measures should be implemented in major resource exploration areas. Resource exploration associated with grassland husbandry, forestry, water conservation, tourism, energy industry, transportation, and mineral production should be under close environmental monitoring .The first priority is to protect the environment in mining areas and tourist destinations. Based on the successful regulation of production at gold mines, all the mineral resource exploration in the TAR should be fully regulated and rectified.

Thirdly, areas with a good ecological environment and rich species should be protected. Within the framework of a national ecological park, special protection status should be given to crucial and unique natural ecological environments. The four major approaches to environmental protection, i.e., protection of the natural ecosystem; protection of ecological function; demonstration of ecological protection measures; and beautification of small towns, should be adopted. Concerted efforts must be made to complete the implementation of large environmental protection projects,

including reverting farmland to forest and restoring artificial pastures to natural grasslands.

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Chapter 9

Regional Disparities and the Rural Urban Gap in the Tibet Autonomous Region (TAR)

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Introduction

Tibet Autonomous Region (TAR) is one of the five provincial level, minority autonomous regions and is an economically backwards and marginal area in China. It has special physical conditions which are rather different from the other minority autonomous regions. Table 1 shows the socioeconomic changes that the TAR has undergone over the last few decades.

Table 1. Aggregate socioeconomic indicators for selected years

Indicator	1952	1965	1978	1990	2002
GDP (100 million RMB)	1.32	3.27	6.65	27.70	161.42
Per capita GDP (RMB)	115	241	375	1276	6093
Agri. output (100 million RMB)	-	2.64	3.92	19.50	55.85
Sec. Industry (100 million RMB)	-	0.22	1.84	3.57	22.92
Ter. Industry (100 million RMB)	-	0.73	1.44	10.03	88.81
Revenue (100 million RMB)	-	0.22	-0.16	0.18	8.72
Expenditure (100 million RMB)	-	1.13	4.57	12.92	139.89
Urban income per capita (Yuan)	-	-	565	1613	7762
Rural income per capita (Yuan)	-	-	175	582	1521
Population (10,000)	115.00	137.1	178.8	221.47	266.88
Urban pop. (10,000)	-	-	20.21	36.32	52.85
Hi. Education (No)	-	2251	2081	2025	8438
Spe. School (No.)	-	455	4640	4175	8437
Mid. School (No.)	-	1059	17679	21303	90469
Pri. School (No.)	-	66800	262600	157400	320000
Hosp. Beds (No.)	-	1570	4198	5015	5694
Ma. Personnel (No.)	-	2424	5780	7498	7117

Source: 2002 Tibet Statistical Yearbook, China Statistics Press, Beijing; 2003 Tibet Statistical Yearbook, China Statistics Press, Beijing

From Table 1, it can be seen that Tibet has been developing rapidly since the 1950s, particularly since when the open policy reform was carried out in China. The rates of increment for various parameters during the period from 1978 to 2002 are shown in Table 2. There has been a tremendous increase in per capita income and GDP, as well as in the output of tertiary industries. Significant improvements are also seen in the social sectors of education and health.

Table 2: Increment rates for various parameters from 1978 to 2002 for Tibet

Indicator	Increment rate	Indicator	Increment rate
GDP	5	Population	1.5
Per GDP	16	Urban population	2.6
Agri. output	14	Hi. education	4
Sec. Industry	17	Spe. School	1.4
Ter. Industry	61	Mid. School	5
Revenue	30	Pri. School	1.2
Urban income	14	Hosp. Beds	1.4
Rural income	9	Me. Personnel	1.2

Source: based on the data from Table 1

However, from the national point of view, the TAR is still an economically backward area in China, and the disparity between rural and urban areas is greater than in China. For instance, in 2002, the GDP for the region was only 16,142 million yuan, which is a mere 0.15% of the total GDP of China for the year. Considering that the TAR accounts for 12.5% of China's total territory, the low GDP is an indication of its overall economic status vis-à-vis the national economy of China. As far as the balance of per capita income is concerned, the per capita income of the Tibetan urban household ranks eighth in China and is higher than the average level of China, but the per capita income of the Tibetan rural household ranks only 30th in China, which is 62% of the average of rural areas in China. The disparity ratio between urban and rural areas in Tibet is 1: 0.20, but 1: 0.32 for China; that is to say, its urban-rural gap is greater than that of China (Tables 3 and 4). The per capita GDP for the TAR is only 74% of the average for China (2004 China Statistical Abstract).

Some social and household possession indicators also show the relative underdevelopment of Tibet compared to the national averages. Student enrollment per 10,000 people is 36 in Tibet, but 70.3 in China (51.2%); hospital beds per 10,000 people is 16.1 in Tibet, but 23.2 in China (69.3 %); the TV viewer coverage rate is 81.14% in Tibet, but 94.6 in China;

the radio listener coverage rate is 82.59%, but 93.3% in China; colour TV sets per 100 urban households is 122 in Tibet, but 126.4 in China; colour TV sets per 100 rural households is 18.96 in Tibet, but 60.5 in China (2003 Tibet Statistical Yearbook, 2004 China Statistical Abstract).

Table 3. Ranking of per capita income for Tibetan urban households among the provinces in China (2002)

Province	Rank	Amount	National average
Tibet	8	7762.0	7702.8
Shanghai, Beijing, Zhejiang, Guangdong, Tianjin, Fujian, Jiangsu,	1 to 7	Per capita income in these provinces is higher than in Tibet	
Shandong, Guangxi, Yunnan, Chongqing, Xinjiang and others	9 to 31	Per capita income in these provinces is lower than in Tibet	

Source: 2003 Tibet Statistical Yearbook, China Statistics Press, Beijing

Table 4. Ranking of per capita income for Tibetan rural households among the provinces in China (2002)

Province	Rank	Amount	National average
Tibet	30	1521.0	2475.6
Shanghai, Beijing, Zhejiang, Guangdong, Tianjin, Fujian, Jiangsu and others	1 to 29	Per capita income in these provinces is higher than in Tibet	
Guizhou	31	Per capita income of this province is lower than in Tibet	

Source: 2003 Tibet Statistical Yearbook, China Statistics Press, Beijing

Regional disparities in Tibet

Regional disparity at prefecture level

Population distribution among prefectures can be divided into four grades. Prefectures in the first grade include Shigatse and Chamdo (1.23 million in total, that is to say 46% of the total population of Tibet is concentrated in these two prefectures); Lhasa and Nakchu rank the second (0.78 million in total, 29.3% of the total population of Tibet); Lhoka is in the third grade (0.32 million in total, 12% of the total population of Tibet); Nyingtri and Nagri are in the fourth grade (0.23 million in total, 8.6% of the total population of Tibet). The population in Shigatse is 8.6 times the population in Nagri.

GDP disparity can also be divided into four grades. Lhasa ranks the first (5.5 billion yuan), Shigatse and Chamdo are in the second grade (2.9 billion to 2.1 billion yuan), Nyingtri, Nakchu and Lhoka are in the third grade (1.6 billion to 1.3 billion yuan), and Ngari is in the fourth grade (0.5 billion yuan). The disparity between the highest GDP prefecture of Lhasa and the lowest GDP prefecture of Nagri is 1: 0.08, the

absolute disparity between them is 0.92 (the national disparity between Guangdong and Ningxia is 0.97). The prefecture of Nagri is the poorest area in Tibet.

Table 5. GDP, Population and Per Capita GDP by Prefectures(2002) (10000 yuan)

	Lhasa	Chamdo	Lhoka	Shigatse	Nakchu	Ngari	Nyingtri
GDP	550691	209586	130000	290231	138000	44204	158874
Population	409500	582200	317800	641400	376800	76600	150100
Per GDP	13447	3599	4090	4524	3662	6031	10584

Source: 2003 Tibet Statistical Yearbook, China Statistics Press, Beijing

The regional disparity distribution of per capita income is different from the regional GDP and population distribution and can be divided into five grades. Lhasa and Nyingtri rank first (from 13,447 to 10,584 yuan); Nagri, where the total GDP is in the lowest rank, stands next (6,031 yuan); followed by the prefectures of Shigatse and Lhoka in third place (from 4,524 to 4,090 yuan). Chamdo, where the population and total GDP rank in second place, is in the lowest grade. The disparity between the highest per capita GDP and the lowest per capita GDP is 1:0.26, the absolute disparity is 0.73, which is lower than the absolute disparity of the regional GDP in Tibet. Except for the per capita GDP in Lhasa and Nyingtri, the per capita GDP in the other five prefectures is much lower than the national average (8,187 yuan as per 2004 China Statistical Abstract). An interesting observation is that, when per capita GDP is considered, the lowest GDP prefecture of Nagri is then listed in second place. The possible explanation is its small population scale helps it to have a high per capita GDP (See Tabel 5).

Regional disparity of total GDP at county level

There are 71 counties, one district and one county level city in Tibet. Based on the statistical data, the total GDP of these 73 administrative units is 10.5 billion yuan and can be divided into five grades. Roughly, the first two grades could be considered the richest and the richer counties, and the other three grades the poorer and poorest counties.

District and counties in the first grade (GDP ranges from 0.32 billion to 0.79 billion yuan) are the City of Lhasa proper, County of Nedong, Shigatse City, County of Nyingtri, County of Nakchu and County of Gyantse, accounting for 8.4% of the county number although the total GDP of these six counties is 3.2 billion yuan which makes up about 30.5% of the total GDP by counties in Tibet.

The second grade (GDP ranges from 0.32 billion to 0.17 billion yuan) includes nine counties: the county of Damshung, county of Tolung Dechen, county of Mędro Gongkar, county of Chongdu, county of Gyamda, county of Tengchen, county of Markham, county of Gonggar, and the county of Pome, accounting for 14.1% of the total number of counties. The total GDP of these nine counties is about 2.0 billion yuan, accounting for 19% of the total GDP of the counties of Tibet.

There are 17 counties, which is about 23.2% of the total number of counties in Tibet, in the third grade (from 0.11 billion to 0.17 billion yuan); and they are the counties of Lhundup, Chushur, Taktse, Rioche, Dayak, Zogong, Lhorong, Namling, Tingri, Lhatse, Dirl, Palgon, Kongpo Gyamda, Miling, Zayul, and Ngamring. The total GDP of these counties is about 2.4 billion yuan, accounting for 22.9% of the total GDP of the counties of Tibet (See Tabel 6).

The number of counties in the fourth grade (from 74 million to 0.11 billion yuan) is larger than in the third grade, containing the 20 counties of Nyemo, Gongjo, Paksho.

Table 6: GDP, population and per capita GDP of counties in Tibet (2002)

Region		GDP (10000)	Popu-lation	Per capita GDP	Region		GDP (10000)	Popu-lation	Per capita GDP
Total		1050961	2554434	4114.26					
Lhasa		191781	409455	4683.81	Counties cont.	Ngamring	13020	41477	3139.09
Counties	City proper	78508	144485	5433.64		Thongmon	10610	45666	2323.39
	Lhundup	16161	55651	2903.99		Tingkye	6736	18108	3719.90
	Damshung	21178	39767	5325.52		Dongpa	10205	18323	5569.50
	Nyemo	9313	29223	3186.87		Kyirong	6943	11831	5868.48
	Chushur	11018	32665	3373.03		Nyalam	10176	14306	7113.10
	Tolung Dechen	20052	40677	4929.57		Saga	6576	12193	5393.26
	Taktse	14330	25835	5551.04		Gyantse	32040	61893	5176.68
	Medro Gongkar	21221	41172	5154.23		Panam	16708	41802	3996.94
Chamdo		176576	582149	3033.17		Rinpung	6441	30934	2082.17
Counties	Chongdu	27185	89484	3037.97		Khangmar	8243	19691	4186.18
	Gyamda	22066	65414	3225.36		Gampa	4596	11681	3934.59
	Gongjo	10056	43533	2309.97		Tsetang	8582	9468	9064.22
	Rioche	14449	41709	3464.24	Nakchu		131278	376854	3483.52

	Tengchen	19853	62191	3192.36	Counties	Nakchu	64165	82616	5345.82
	Dingri	13600	53218	3262.18		Chali	6444	25535	2523.60
	Nyalam	10162	36949	2750.28		Qui	13795	46971	2936.92
	Zogang	14727	42578	3458.83		Nyarong	7451	29453	2516.21
	Markham	22511	71862	3132.53		Amdo	10082	32911	2973.08
	Lhorong	14118	41328	3299.63		Shuanhu	10662	16791	6349.83
	Pulbar	8849	30583	2893.44		Sakchen	8047	25566	2262.55
Lhokha		132578	317800	4171.74		Palgon	11980	32395	3587.36
Counties	Nedong	48261	54619	8934.08		Bachen	7972	37655	2117.12
	Danang	9118	36841	2474.96		Nima	10720	34961	3066.27
	Gongger	17024	46265	3679.67	Ngari		34942	76619	4560.62
	Sangri	5717	15876	3601.03	Counties	Purang	4698	7881	5961.17
	Chang-Gye	5745	17414	3299.07		Taxko	4464	5710	8368.13
	Choum	6525	15917	4099.39		Ger	3784	12644	2992.72
	Tsome	3487	13758	2534.53		Rutok	5598	7560	7404.76
	Lhodak	5027	18558	2708.80		Gulyi	5437	13039	4169.80
	Lhuntse	8695	32443	2680.17		Gertse	7106	17787	3995.05
	Tsona	7278	14854	4899.69		Taschen	3656	11998	3047.17
	Nakartse	8098	33854	2391.45	Nyingtri		165260	150174	9672.80
	Gyatso	7605	18002	4224.53	Counties	Nyingtri	72944	33011	22096.88
Shigatse		238545	641382	3719.22		Kangpo Gyamda	12613	24832	5141.45
Counties	Shigatse City	45611	91434	4988.95		Milling	15168	17267	8784.39
	Nanling	14376	73592	1953.47		Metok	4149	9852	4211.33
	Tingri	12890	45907	2807.85		Pome	20607	29298	7835.96
	Sakya	9919	44919	2208.20		Zayu	12228	24609	4968.91
	Lhatse	14873	48168	3087.73		Namshan	7551	14605	5170.15

In general the regional GDP disparity characteristics by counties in Tibet could be described as follows.

1) The richest and richer administrative units at county level (from first grade to second grade) are mainly distributed in eastern Tibet, particularly in south-east Tibet and the poorest and poorer county-level administrative units (from third grade to fifth grade) in western Tibet, particularly in west-north Tibet.

2) Apart from the second grade whose percentage of GDP is lower than the third grade, the larger the land area, the smaller the GDP.

3) The disparity between the highest GDP county and the lowest GDP county is 1: 0.04 and the absolute disparity is 95.6.

4) Among the five grades, the absolute disparities are 78.3 between the first grade and the second grade, 65.6 between the second grade and the third grade, 56.5 between the third grade and the fourth grade, and 68.4 between the fourth grade and the fifth grade. It seems the higher the grade, the larger the disparity, except for the lowest grades.

5) Within the five grades, the absolute disparities are 59.2 for the first grade, 46.8 for the second grade, 35.3 for the third grade, 32.7 for the fourth grade, and 52.9 for the fifth grade. It also seems that the higher grade, the greater the disparity is. Not withstanding, for the poorest areas in the fifth grade, the disparity is also very great.

Regional disparity of per capita GDP at county level

The average per capita GDP is 4,114.26 yuan in Tibet. According to statistical data, the per capita GDP regional distribution of the 73 administrative units is also divided into five grades, ranging from the highest of 22,096 to the lowest of 1,953 yuan.

There are only two counties, Nyingtri and Yatung, which can be classified in the first grade, accounting for 2.7% of the total 73 administrative units and their per capita GDP ranges from 9,064 to 22,096 yuan. The absolute disparity in this grade is 58.9.

The seven counties of Shantso, Nyalam, Tsada, Miling, Rutok, Pome, and Nedong are in the second grade, accounting for 8.2% of the 73 administrative units. Their per capita GDP ranges from 6,349 to 9,063 yuan. The absolute disparity in this grade is 29.9, about 50% of that in the first grade.

There are 16 counties in the third grade, and among them are the three counties of Damshung, Namshan, and Shigatse county. These 16 counties make up 21.9% of the total 73 administrative units. Their per capita GDP ranges from 4,229 to 6,349 yuan. The absolute disparity in this grade is 33.3, about 56% of that in the first grade.

As for the fourth grade, there are 20 counties, among which are Nyemo, Chushur, and Metok. These 20 counties account for 27.4% of the total 73 administrative units and their per capita GDP ranges from 3,139 to 4,224 yuan. The absolute disparity in this grade is 26.2, about 44% of that of the first grade.

The other remaining 28 counties are in the fifth grade. They represent 38.4 of the total 73 administrative units. The per capita GDP of these counties ranges from 1,953 to 3,139 yuan. The absolute disparity in this grade is 37.7, about 64% of that in the first grade.

A general overview of the regional per capita GDP disparity characteristics by counties in Tibet can be given as follows.

1) There are only two counties at the highest and higher per capita GDP grade. These two counties are located in eastern and western Tibet, and this differs from the distribution of GDP as a whole. This distribution may have been determined by the two factors of high regional productivity and sparse population concentration.

2) As far as the per capita GDP is concerned, most of the counties within Lhasa are not in the first grade, but in the third grade. It shows that Lhasa as the regional centre plays a relatively weak role in promoting the economic development of its neighbouring country areas. On the other hand, high density of the population distribution may explain this phenomenon.

3) The relationship between the absolute disparities and the grade rank is not very close, though there seems to be a rule that the higher grade, the higher absolute disparities exist: the higher absolute disparity being in the lowest grade, the fifth, is much higher than that in the second and the fourth, for example

4) The disparity between the highest per capita GDP county and the lowest per capita GDP county is 1: 0.08; and the absolute disparity is 91.2, which is lower than the absolute disparity GDP at county level (95.6), but much higher than the per capita GDP examined at the prefecture level (73).

5) Among the five grades, the absolute disparities are 71.3 between the first grade and the second grade, 53.4 between the second grade and the third grade, 50.6 between the third grade and the fourth grade, and 53.8 between the fourth grade and the fifth grade. It seems that the higher the grade, the greater the disparity, except for a slight difference in the lowest grade.

6) Within the five grades, the absolute disparities are 59 for the first grade, 30 for the second grade, 33.5 for the third grade, 25.7 for the fourth grade, and 37.8 for the fifth grade. It also seems that the higher grade, the larger the disparity is. However, for the lowest per capita GDP areas in the fifth grade, the disparity is also great.

Regional distribution of population at county level

Regional distribution of population at county level is classified into five grades as well. The most densely populated areas are the city of Lhasa proper, the county of Changdu, Shigatse city, the county of Namling, and the county of Nakchu. The total population of the five county level areas is 0.48 million, making up 18.8% of the population of Tibet.

The next level of densely-populated areas embraces the 10 counties of Lhundup, Gyamda, Tengchen, Doyak, Markham, Nedong, Lhatse, Ganggar, Gyantse, and Dirl. The total population of these counties is about 0.57 million, which is 25.3% of the population of Tibet.

There are 26 counties in the third grade, with a population range from 29,454 to 46,168. The total population is 0.98 million or 38.4% of the total population of Tibet.

There are 14 counties in the fourth grade with a total population of about 0.30 million, accounting for about 12% of the total population of Tibet.

The remaining 18 counties are the most sparsely populated areas, mainly distributed in the marginal prefectures of Ngari and Shigatse. The total population in these counties is 0.22 million or 8.6% of the total population of Tibet.

The regional population distribution characteristics by counties in Tibet can be described as follows.

1) Counties in the third grade play a very important role in the population concentration of Tibet with about 38% of the total population of Tibet. But these counties are not rich areas as far as their total GDP and per capita GDP are concerned.

2) It seems the third grade of population distribution is a dividing line, and beyond this line are grades one and grade two; the higher the grade, the less the percentage share in the total population of Tibet. For the other two grades beyond this line, the lower the grade, the less the percentage share in the total population of Tibet.

Urban-rural gap in Tibet

There are several aspects to the urban-rural gap in Tibet discussed here, i.e., urban-rural income disparity, composition of per capita annual net income of rural households, urban-rural access to the outer world ,and urban-rural living expenditure.

Urban-rural income disparity

It is difficult to obtain data about the net income of rural households by counties in Tibet, except for the general information available about the whole autonomous region from the statistical yearbook. Based on the data, the general situation of income disparity between urban and rural households can be described.

Table 7 shows that, in 2002, urban household per capita income was 7,762 yuan, but only 1,521 yuan for the rural household, which is about one fifth of the income for the urban household. The absolute disparity is 0.80. Table 7 compares urban and rural households.

1) Per capita annual disposable income in Tibet is marginally higher than the average figure at national level. However, the rural net income in Tibet is much lower than the average at the national level. The per capita net income for the rural household in Tibet is only 61.4% of the per capita net income for the urban household.

2) The income disparity ratio between urban and rural households in China is 1: 0.32 and 1: 0.20 for Tibet in the same year. The absolute disparity at national level is 0.68 compared to 0.80 for Tibet. The income disparity between urban and rural households in Tibet is greater than the national level, the ratio between the two is 1: 0.85.

Table 7: Income disparity between urban and rural households in China as a whole and in Tibet(in yuan) (2002)

	Urban	Rural	Ratio	Absolute disparity
China (Total)	7703	2476	1:0.32	0.68
Tibet	7762	1521	1:0.20	0.80

Source: 2003 *Tibet Statistical Yearbook, China Statistics Press, Beijing* 2003 *China Statistical Yearbook, China Statistics Press, Beijing*

Urban-rural expenditure disparity

Urban-rural expenditure disparity is another indicator showing the disparity between urban and rural areas. Based on a brief analysis of Tables 8 and 9, a similar trend in income disparity is also observed.

1) The living expenditure of urban households in Tibet is 6,952 yuan, which is higher than the national average in China (6,029 yuan). The percentage of the total expenditure of urban households in Tibet is 80.6% of the total income, which is higher than the 73.4% reported for China as a whole. Correspondingly, the living standard, as indicated by the Index of Engle (Engle and White 1999), is 40.8 for Tibet and 37.7 for the whole of China. It is clear that there is not much difference between the urban households in Tibet and the urban households in China.

Table 8: Percentage of expenditure from the income of urban households in China (total) and Tibet in 2002

	Income	Living expenditure	Percentage	Index of Engle
China (Total)	8177	6029	73.7	37.7
Tibet	8627	6952	80.6	40.8

Source: 2003 *Tibet Statistical Yearbook, China Statistics Press, Beijing* 2003 *China Statistical Yearbook, China Statistics Press, Beijing*

2) In rural areas, the picture is rather different. The living expenditure of rural households is 78.5% of the net income of Tibet and about 74% of the net income for the rural households in China as a whole. Correspondingly, the indicator that shows the living standard, the Index of Engle, is 63.6 for rural households in Tibet, but 46.3 for rural households in China as a whole. It can be seen that there is a significant gap between the rural households in Tibet and the rural households in China as a whole. That is to say, the disparity between the rural household in Tibet and the rural household in China is greater than the gap between urban households in Tibet and urban households in China as a whole.

Table 9: Percentage of expenditure from the income of rural households in China (total) and Tibet

	Income	Living expenditure	Percentage	Index of Engle
China (Total)	2476	1834	74.07	46.3
Tibet	1521	1194	78.5	63.6

Source: 2003 *Tibet Statistical Yearbook, China Statistics Press, Beijing*

2003 *China Statistical Yearbook, China Statistics Press, Beijing*

3) As far as the disparity between the expenditure for the urban household and the rural household within Tibet is concerned, it is safe to say that there is a significant gap. The absolute figure and the Index of Engle are 5,758 yuan higher and 22.8 points lower respectively. But in China as a whole, the Index of Engle is 46.3 for rural household and 37.7 for urban households, indicating that the gap is not so significant. Hence, urban-rural disparity for China as a whole is lower than that for Tibet.

4) According to the criteria set by the Food and Agriculture Organization (FAO) of the United Nations (UN), an Index of Engle above 59% indicates the incidence of poverty while between 50 to 59% indicates that a region is in the development stage at which people have enough to eat and wear. When the Index of Engle is between 40 to 50%, it is in the development stage of the so-called comparatively well-off, and when the Index of Engle is between 30 to 40%, it is in the so-called rich development stage. When the Index of Engle is lower than 30%, the society is considered to be in the richest development stage. So, according to the criteria of the FAO of the UN, urban areas in Tibet are in the development stage of the comparatively well-off or even in the rich development stage, but the rural areas of Tibet are still at the poverty stage. When rural China is seen as being in the development stage of the comparatively well-off, the disparity between rural and urban households in Tibet can be considered a serious problem that needs to be addressed urgently.

Composition of per capita annual net income of rural households

The composition of per capita annual net incomes of rural households in Tables 10 and 11 shows that the total income of rural households is not only much lower than that of rural households in China as a whole, but the structure is also different. In 2002, about 51% of the total income of the rural household in Tibet was contributed by the primary sector, about 28% by the secondary sector, about nine per cent by the tertiary sector, and about 12% by non-productive income (such as financial transfers). But the structure in China shows that about 47% of the total income of the rural household is contributed by the primary sector, about 24% by the secondary sector, about 23% by the tertiary sector, and only about 0.6 per cent by non-productive income (maybe rural households in Tibet receive more financial transfers than rural households in the inner areas in China).

Table 10: Composition of the per capita annual net income of rural households 2002 (yuan)

Total income	Productive income			Non-productive income
1521	1339			182
	Primary	Secondary	Tertiary	
	775	431	133	
% of the total	50.95	28.33	8.7	11.96

Source: 2002 Tibet Statistical Yearbook, China Statistics Press, Beijing

Table 11: Composition of per capita annual net income of rural households 2002 China (yuan)

Total income	Productive income			Non-productive income
2475.6	2326.79			148.9
	Primary	Secondary	Tertiary	
	1167.8	586.9	572.1	
% of the total	47.2	23.7	23.1	0.6

Source: 2003 China Statistical Yearbook, China Statistics Press, Beijing

Urban-rural access to the outer world

Tibet is a comparatively isolated region of China because of its unique physical conditions. So, the all-round development of Tibet is, to a great extent, dependent upon accessibility to the outside world. Modern communication tools, represented by telephones, computers, and televisions, serve as indicators of accessibility and exposure to the outside. From Table 12, the disparities between rural and urban areas in Tibet and China, in terms of possession of these tools, are shown.

1) Telephones owned per 100 households in rural Tibet are about four per cent of the total owned in urban Tibet and eight per cent of the total owned in rural China. However, the disparity between urban Tibet and urban China is not very significant. TV sets owned per 100 households in rural Tibet total 15% of those owned in urban Tibet and 17.6% of those owned in rural China. The disparity between urban Tibet and urban China is also very small. As far as household computer ownership per 100 households is concerned, the disparity could be much greater, although there are no data about access to computers in rural areas. There is also a marked disparity between urban Tibet and urban China in terms of access to computers, with urban Tibet having only about 43% of the access in urban China. The comparative discussions above show the very poor accessibility of Tibet to the outer world.

2) There are not enough data on the social welfare and education disparity between rural and urban areas, but the available data show the general disparity between Tibet and China. The number of students per 10,000 people in Tibet is 32, which is 45.5% of that in China. There are 16 hospital beds per 10,000 people in Tibet, but 23 in China, the rate in Tibet is 69.6% that of China.

Table 12: Urban-rural access to the outer world and education disparity, Tibet and China 2002

Item	Tibet	Rural Tibet	Urban Tibet	China	Rural China	Urban China
Stud. per 10000 population (person)	32	-	-	70.3	-	-
Hos. beds per 10000 population	16	-	-	23	-	-
Telephones per 100 households		3.20	80		40.8	92.7
Household computers per 100 households		-	9		1.1	20.6
Colour TV sets per 100 households		18.96	122		108.6	126.6

Source: 2004 *China Statistical Abstract*, China Statistics Press, Beijing, 2004. 2003 Tibet Statistical Yearbook, China Statistics Press, Beijing

Changes in employment structure and employment opportunities in Tibet

Table 13 provides the data for structural changes in employment in Tibet from 1978 to 2002. It can be seen very clearly that in the last twenty years and more , there have been great changes in employment structure in Tibet.

1) The employment rate in the primary sector decreased by 13.2%, but increased 0.3% in the secondary sector and 12.9% in the tertiary sector.

Table 13: Proportion of employed persons by type of industry (1978 to 2002)

	1978	1985	1990	1995	2002
Primary	82.0	81.0	80.7	77.8	68.8
Secondary	5.9	4.6	3.8	4.9	6.2
Tertiary	12.1	14.4	15.5	17.3	25.0
Tot. employee	930900	1057200	1078800	1150900	1302000

Source: 2003 *Tibet Statistical Yearbook*, China Statistics Press, Beijing

2) As for employment opportunities, the primary data are insufficient. However, deducing from the data given in Table 13, some clues about employment rates emerge. As per the statistical yearbook (TAR 2003), the total population was about 1.8 million in 1978,

which means that the employment rate was about 52% in 1978. Despite the increase in population to over 2.6 million in 2002, the percentage of employment remained similar at 51%, indicating a corresponding growth in jobs. The total number of people employed in China in 2002 was about 57% of the total population (2004 China Statistical Abstract), six per cent points higher than Tibet.

3) It seems that the total number of staff and workers was 0.15 million in 2002 (Table 14), which is about 12% of the total employed. The data are far from accurate and there is a lack of records that can be used for analysis of the other 88% of employees and the general employment patterns for the population in Tibet.

Table 14: Number of staff and workers and their wages 2002 (10,000 yuan)

	Lhasa	Chamdo	Lhoka	Shigatse	Nakchu	Ngari	Nyingtri	Others
Tot. staff	21688	15378	14081	22851	9966	3983	10778	49300
Tot. wage	51538	22909	37326	52054	35760	11973	21170	131736

Source: 2003 *Tibet Statistical Yearbook*, China Statistics Press, Beijing

Inner disparity of urban areas

Tables 15 and 16 provide some data on the inner disparity of urban areas in Tibet. As shown in Table 16, the inner disparity of urban areas in Tibet can be described as follows.

1) The lowest income (2,131 yuan) is only 13% of the highest income (16,780 yuan) in urban areas. The absolute disparity within urban areas is 0.87.

2) The absolute disparity within urban areas is even greater than the absolute disparity between urban and rural areas, which is 0.80 as shown in Table 7.

3) Compared to the inner disparity in China, the inner disparity of urban areas in Tibet is the same as the inner disparity in China, the national absolute disparity between rural areas and urban areas is 0.68.

4) As far as the inner disparity of urban areas in Tibet is concerned, it may be as serious as that in China.

Table 15: Income disparity between the highest and the lowest incomes in urban households, Tibet (2002) (yuan)

Highest income	Lowest income	Ratio
16780	2131	1: 0.13
Absolute disparity	0.87	

Source: 2003 Tibet Statistical Yearbook, China Statistics Press, Beijing

Table 16: Income disparity between the highest and the lowest incomes in urban households, China (2002) (yuan)

Highest income	Lowest income	Ratio
18995.85	2408.60	1: 0.13
Absolute disparity	0.87	

Source: 2003 China Statistical Yearbook, China Statistics Press, Beijing

Conclusions

Summing up the above discussions, the conclusions of this paper are as follows.

1) Regional disparity can be seen from two aspects: regional disparity at prefecture level and at county level. The absolute disparity between the richest prefecture and the poorest prefecture is 0.92, which is smaller than the absolute disparity at national level (0.97 between Guangdong and Ningxia). The absolute disparity between the richest county and the poorest county is 0.96, higher than the disparity at prefecture level.

2) The development level between urban Tibet and urban China as a whole is similar. As far as the per capita income is concerned, Tibet's average is even higher than the national average level, but the gap between rural Tibet and rural China is very great.

3) As for the urban-rural disparity, it can be seen from the three aspects of income disparity, expenditure disparity, and social welfare and education disparity. The absolute income disparity is 0.80, higher than the national one (0.68); the expenditure disparity expressed by the Index of Engle is about 40 for urban areas in China, but more than 60 for the rural areas in Tibet, 20% higher. Students per 10,000 population in Tibet number 32, which is 45.5% of the number in China. There are 16 hospital beds per 10,000 population in Tibet, but 23 in China, 69.6% of the number in inner China .

4) The inner urban absolute disparity in Tibet is 0.87, which is as great as that in China: higher than that between the rural and urban areas in Tibet (0.80), but lower than the regional disparities at prefecture and county levels.

5) The difference in accessibility of Tibet to the outer world—measured by telephones owned per 100 households, TV sets owned per 100 households, and household computers owned per 100 households–illustrate greater disparity between rural and urban areas in Tibet than in inner China.

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Chapter 10

The Impact of Globalisation on Rural Development with a Particular Focus on Mountain Areas

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Introduction

Globalisation has become the argument of our time, as rightly captioned by Held and Hirst (2002). It is the new international system that determines domestic politics, commerce, environment, and international relations and touches the lives of individuals across the globe. The driving ideal behind globalisation is free-market capitalism promoted through such institutions as the WTO (The World Trade Organisation), the World Bank, and the IMF (The International Monetary Fund). Through such technologies as computerisation, digitisation, miniaturisation, satellite communications, and Internet, globalisation aims to bring about socioeconomic development largely through liberalisation of trade. Its popular hype is to create a level playing field for nations and individuals to compete on the world stage. Currently, world opinions are divided among those who are all out for globalisation, those who think it needs some reform to be useful, those who seek alternatives, and those who reject it outright as a modern day form of colonisation.

Rural development in mountain areas is concerned primarily about uplifting people out of poverty through improvement in their access to basic needs. The impact of globalisation on rural societies, their economy, and environment must therefore be viewed through this perspective. Many governments of developing nations have acknowledged that globalisation cannot be avoided and that accession to the WTO is a political necessity rather than a matter of choice (Wangyel 2004). Hence, rural areas in these developing nations are not going to be spared from the onslaught of globalisation bringing along with it both positive and negative impacts. The key to balancing the two lies in the selection of choices for economic development.

Selective investment in agricultural products that do not compete with the lowlands and that command niche markets, such as off-season vegetables, spices and herbal medicines, and organic food, offers the promise of being competitive in the local and international markets. Caution must be taken to ensure that a minimum level of self-sufficiency in traditional food crops is maintained so that rural people are not placed at the mercy of market forces. Tourism is another sector that offers great potential for capitalising on the opportunities offered by globalisation. Cultural and nature tourism of various forms can be promoted, and these will not only generate income but also create employment to enable rural people to live in their native areas. However, to avoid the negative impacts of tourism on the culture and environment of rural people, adequate provisions need to be made to limit the number of tourists within sustainable levels and to empower local people to take charge of what they want to share and how far they want to share it with outsiders.

Globalisation and rural development

Globalisation became the new international system at the end of the twentieth century- replacing the Cold War System-virtually shaping everyone's domestic politics, commerce, environment, and international relations (Friedman 2000). According to Friedman, the Cold War system was characterised by one overarching feature—division—while the overarching feature of globalisation is integration. He argues that the world has become an increasingly interwoven place and, today, whether you are a company or a country, your threats and opportunities increasingly derive from who you are connected to; and he also went on to say that this globalisation system is characterised by one single word: the Web.

Rural development, on the other hand, is not so much about gaining access to global markets and about connections, as it is about uplifting rural communities from poverty and providing them with a decent living standard through increased access to food, shelter, and clothing. While the two are interlinked, access to markets is not always compatible with the goals of rural development and does not necessarily translate into tangible socioeconomic benefits for the majority of rural people. However, given proper planning and foresight, globalisation does provide opportunities for rural people in a number of ways.

This paper is, therefore, an attempt to examine what impact globalisation is having on the development of rural areas and to identify areas for

tapping the opportunities offered by globalisation as well as measures to mitigate its negative impacts. The strategy I propose is not to resist globalisation, but rather to learn to use the advantages it offers wisely through careful analysis of choices. In writing this paper, I have not only drawn inspiration from the wealth of recent literature on globalisation, but have also extensively used my own observations and experiences from my travels in the Hindu Kush-Himalayan countries. The views expressed in the paper are solely my own and do not in any way reflect the formal position of ICIMOD.

Context and Definitions

Globalisation is defined by Friedman (2000) as:

"the inexorable integration of markets, nation-states and technologies to a degree never witnessed before-in a way that enables individuals, corporations and nation-states to reach around the world farther, faster, deeper and cheaper than ever before, and in a way that is enabling the world to reach into individuals, corporations and nation-states farther, faster, deeper, cheaper than ever before."

The driving ideal behind globalisation is free-market capitalism-and means the spread of free market capitalism to virtually every country in the world through such institutions as the WTO, the World Bank, and the IMF. Its dominant culture is to a large extent homogenisation-in other words, Americanisation—from Big Macs to iMacs to Mickey Mouse.

Friedman (2000) further elaborates that globalisation has its own defining technologies: computerisation, miniaturisation, digitisation, satellite communications, fibre optics, and the Internet, which reinforce its defining perspective of integration. He also describes the defining measurement of the globalisation system as speed—speed of commerce, travel, communication and innovation and the defining anxiety in globalisation as:

"fear of rapid change from an enemy you can't see, touch or feel-a sense that your job, community or workplace can be changed at any moment by anonymous economic and technological forces that are anything but stable"

Glasius (2002) describes four major positions on global capitalism among global civil societies: reformist, rejectionist, supportive, and alternative. She argues that the reformists believe that unbridled global capitalism has gotten out of hand and needs to be civilised, tamed,

humanised, democratised. These include those who want to make specific and incremental changes as well as radicals who aim at bigger and more transformative change. The rejectionists, on the other hand, reject globalisation outright as another form of imperialism and colonisation by economic powers. These groups see self-reliance and self-sufficiency as the only way forward. The supporters of globalisation include generally those who are close to governments and business, and who believe that those who object just fail to understand the benefits. The alternatives are a minority who are concerned with reclaiming things from the encroaching market and creating space for alternative lifestyles. For rural areas, I believe that reforms through specific and incremental changes would be most beneficial.

Rural development is implied as bringing about improved living conditions for rural people through the development of roads, communications, health and education facilities, as well as through creating opportunities for generating income and enhancing the capability of rural people to purchase goods beyond their immediate needs. This requires investments and interventions from outside, whether from within nation-states or from bilateral or international sources. There is thus a high degree of compatibility between the goals of globalisation and rural development. However, often the interests, either long-term or short-term, of the beneficiary communities are sacrificed at the altar of perceived benefits by the benefactors–albeit with good intention. This leads to homogenisation and may lead to increased vulnerability of rural communities by bringing about such events as either mass emigration or immigration and loss of unique identities and opportunities for retaining sustainable lifestyles.

Whether we like it or not, it is now widely acknowledged that globalisation cannot be avoided and is there to stay. Rural areas are no exception and economic dictates will prevail whether or not we drink Coca Cola or Chang or eat Big Mac or 'Tsampa'. The question is more about how far, how fast, and how deep we would allow ourselves to be affected by globalisation; about how competitive we could be with the other competitors to survive and to prosper; about what safety measures we can put in place to reduce the risk of unwanted changes from invisible market forces; and about how far we want to let go of traditional lifestyles and cultural values. The question is also about what goes on behind the making of Coca Cola versus Chang and Big Mac versus 'Tsampa'. We need to think of who are employed in their making, what resources (local or foreign) are used, and what they stand for as symbols of cultural identity and communal belonging.

Impact of globalisation

On rural society and culture

Rural societies are traditional societies and globalisation will have far-reaching social and cultural impacts on them. Therefore, transition from traditional to market-oriented societies will have to be managed carefully to avoid marginalisation of vulnerable sections of society as well as emergence of corruption, nepotism, and monopolisation by stronger sections. Under the WTO, for example, countries must abide by the market principles and any attempt to diverge is illegal and subject to challenge by other members. Thus the latitude of governments to pursue certain social goals, through subsidies and quotas, for example, is limited as it may prove to be a barrier to trade (Wangyel 2004). Economic liberalisation will marginalise the vulnerable sections of society, especially the poor and women, if adequate social safety nets are not in place.

The impacts of globalisation on local traditions and culture are magnified in the case of traditional rural societies, particularly in countries like Bhutan with no history of colonisation. The exposure to the outside world through travel, literature, visits by tourists, television, and Internet will have a profound impact on traditional societies. Globalisation will challenge traditional values like the joint family system, hospitality habits, kinship support systems, respect for the elderly and superiors, and social behaviour and attitudes. These networks and norms, also referred to as social capital, serve as potent mechanisms for social safety nets, cohesion, harmony, and collective action. Globalisation calls for every individual to be an economic unit and the young and the old receive little attention in the bargain.

The access to education, information, and the market will naturally favour the richer sections of society and the divide between the 'haves' and 'have-nots' will widen. The emergence of the new rich will invariably affect the lives of the poor, as the rich will dominate local politics and control the job markets and access to social facilities. The root cause of ongoing conflicts in Nepal and many parts of the HKH region may be traced to this widening gap between the urban rich and the rural poor and the associated corruption and nepotism. On the other hand, if institutions and mechanisms are put in place, this new rich class can play a productive role through investments in local enterprises and creation of jobs. Thus it is important to ensure good governance with proper institutions and procedures, so that public sector employees are not susceptible to malpractices.

Perhaps the most dramatic consequences of globalisation on rural areas would be the 'shrinking', 'dislodging' 'feminisation', and 'greying' of rural populations. A shrinking of rural populations is taking place as more and more people leave for towns and cities within the country and abroad. In many areas, government schemes like construction of highways, rail tracks, hydropower plants, dams, factories, and towns are 'dislodging' people from their land and cultural heritage. They are required to sell or relinquish their family and communal properties, often on terms dictated to them, and, whereas compensation in the form of resettlement or cash are provided in most cases, they are far from adequate to ensure a sustainable source of livelihood to those affected. More and more the urban rich are also buying up land from small rural farmers who are tempted by the lure of money with which they can buy a car or television. In Bhutan, many of the urban poor are migrants from villages where they have disposed of their land in one way or other. Most of those who migrate out in search of opportunities are male and young, and those left behind are the women and aged, hence the 'feminisation' and 'greying' of rural populations. This is the phenomenon taking place throughout the developing world, the HKH region being no exception. The diversion of labour from agriculture to other jobs, resulting from increased opportunities in the urban areas and from increased education, contributes to this trend. Added to these major trends are the more controversial dimensions like human trafficking, drug abuse, HIV-AIDS' infection, and rising crimes occurring from and among rural populations.

Migration has, of course, some positive impacts on rural livelihoods (Jodha et al. 2002). The temporary migrant sends remittances home and brings information and technological knowledge. Migration also reduces pressure on natural resources and the fragmentation of household landholdings. Despite these positive impacts, unless steps are taken to ensure improvement in living standards in rural areas through development of basic amenities, such as education and health services, electricity, and water supplies, as well as investment in local industries for employment generation to mitigate mass out-migration, many developing nations will have the dual problem of empty and underdeveloped rural areas and overpopulated and overstretched urban centres with many associated problems.

The ability of nation-states to address the social needs of the rural poor is increasingly questionable. Despite all the hype, in reality developing countries have not witnessed the expected growth in the social service sector essential for the physical and intellectual empowerment of the

poor to survive and compete successfully in a globalised world (Thinley 2002). The illiterate and the sick have continued to see their governments spending more on debt servicing than on their education and health. Contrary to the pledges made in several world fora to increase overseas' development assistance (ODA), in actual fact it has declined in the '90s to an average of 0.2% of the gross domestic product (GDP) from the Organisation for Economic Cooperation and Development (OECD) countries, against their pledge of 0.7%. According to Thinley (2002):

"as globalisation continues to accelerate on the wings of profit, social responsibility seems to have flown from our collective conscience".

It is not in the normal nature of the market forces, dictated to a great extent by multinational corporations, to show concern for the needy, for equity, and for 'globalising' profit. Under the circumstances the governments of poor countries need to intervene to supplement the actions of the market forces, at the very least to establish, promote, and protect distribution arrangements for basic services, fair wages, food security, and so forth. For example, should India, under the Trade-related Aspects of Intellectual Property Rights' (TRIPS) agreement, follow both product and process patent, and raise the price of essential drugs which are in the range of a 182-225% increase; can countries like Bhutan afford the standard of health services it provides to its people without government intervention? By the same token, no Indian institutes of higher learning will be affordable for Bhutanese students.

On the rural economy

For developing countries, like Bhutan for example, the government has come to recognise that globalisation is inevitable and irreversible, and the benefits of economic integration will eventually outweigh the costs (Wangyel 2004). Global integration is increasingly viewed rather as an economic and political necessity than a matter of choice. However, these countries are faced with enormous challenges to meet the costs of conforming to the requirements of a globalised economy under the WTO, while the benefits of membership through market access, dispute settlement, and so on are long term and diffused.

The WTO aims to promote multilateral trade in goods and services on the premise that free trade fosters economic growth, generates employment, enhances consumer choices, enables efficient allocation of resources, and helps to maintain international peace.

One can only see from the experience of Mongolia how joining WTO in 1998 has impacted the economy of this landlocked country. Instead of creating more jobs, boosting exports, and enhancing living standards, and improving the economy of the country, the results to date could be rated as almost disastrous. Without the necessary infrastructure, legal frameworks, and capacity to deal with a free market economy, the country's rural economy base has suffered and taken a turn for the worse since then (Noeberger and Gyamtsho 2003). All the negative consequences of globalisation are amply evident: the mass movement of people from rural to urban areas, the change in lifestyles from self-employing nomadism to underpaid employees or unemployed poor, the closing of manufacturing units, the substitution of local products with cheaper imported alternatives, the loss of confidence in their own system, and the increase in dependence on the outside for even basic necessities (Centre for Policy Research 2002). Yes, more choices are there, but for whom and who can afford them are questions that need serious analysis. This dichotomy between theory and reality of the benefits of WTO membership, in particular for small developing countries like Bhutan, is discussed thoroughly by Wangyel (2004). The assumption and the hype about free trade promoting economic growth and enhancing welfare are increasingly questioned, at least in the short-term.

The WTO agreements aim to create a 'level playing field' in international trade by progressively reducing tariff levels and removing barriers to trade arising from national laws, regulations, and administrative procedures. The General Agreement on Trade and Tariffs (GATT) deals with progressive liberalisation of trade in goods, while the General Agreement on Trade in Services (GATS) aims to reduce the barriers limiting flow of services among member countries. However, the playing field is anything but level as yet. Unlike developed countries that framed the WTO rules, the developing countries lack the institutions, established procedures, and the economic resources to adequately participate in the WTO. One need not look beyond the procedures for exporting agricultural produce to developed countries or obtaining a visa to the West to assess the 'levelness' of the playing field. According to Bhutan's foreign minister, Lyonpo Jigme Thinley, (2002), *"the oft repeated cliché 'level playing field' conjures the image of little David having to face, without his sling, the wrathful might of Goliath."*

In larger and more competitive countries like India and China, the benefits from WTO are more evident as they have the competitive edges needed. However, these benefits are felt largely in the capital cities and the urban areas and have not touched the lives of the millions of rural people. Telling

evidence of this phenomenon is the recent loss of elections by the ruling Bharat Janata Party (BJP) in India with the slogan of 'India Shining' based on the premises of the overall economic growth of the country. Therefore, even within countries and within rural areas in a country, attention must be given to differentiate between the consequences of globalisation, for example, between rural coastal areas and rural mountain areas.

On rural environment

At the global level, the Kyoto Protocol is yet to be signed by the global superpower, and yet clean development mechanisms are expected to be adopted by those who need development and not by those who have become developed on unclean mechanisms. Carbon trading, a scheme much flouted as a way out for many environmentally healthy but economically sick countries, remains at best an illusive dream. This substantiates the argument that the developed countries shrug off the responsibility for reducing greenhouse gases and improving the state of the environment as a concern of the developing countries. The developed countries expect the developing countries to forego economic gains through industrialisation and exploitation of their natural resources, while they themselves are not prepared to give up their consumerist lifestyles built with the very technologies and resources that they are advising against. At the national level, the same can be said of the expectations of the urban rich from the rural poor. The former often 'romantise' about rural areas and want them to preserve nature and rural lifestyles, while they themselves pursue economic gains without heeding environmental concerns.

Rural areas generally have a pristine environment as yet largely undisturbed by the forces of environmental destruction. This is not to deny that inroads by these forces are already evident in many areas – even in the remotest corners like Mustang in Nepal, Lunang in Linzhi prefecture, the TAR, and Laya in Bhutan. One can see piles of metal cans, plastic bottles and bags, broken glasses, paper packets, used batteries, and all kinds of 'foreign' matter. Globalisation promotes commercialisation and commercialisation promotes consumerism. Traditional respect for nature and natural beings has been sacrificed on the altar of the individual quest for wealth and for increased consumption of goods and services foreign to the locality. In the process, nature, which belongs to everyone and no one in particular, becomes a victim of abuse. Pollutants of all sorts are eating away into the hitherto pristine environment of rural areas. Carbon emission into the air from numerous sources—from vehicles to farm machineries to factories—is rapidly increasing and aquifers and water bodies are slowly being poisoned by toxic effluents from commercial

crop and livestock farms to solid waste, which normally end up in water bodies. Large areas of forest are fast disappearing from many rural areas and along with them the dependent flora and faunal wealth and the environmental services they provide as carbon sinks and in regulation of water regimes. The quest for western style commercial farming on the open rangelands, embracing such technologies as barbed wire fencing and reseeding with exotic grasses, poses serious threats to the conservation of wildlife and floral diversity. Fencing restricts the movement of wildlife species which require movement over large areas for their nutritional, reproductive, and self-preservation needs. Similarly, reseeding creates monocultures of commercial varieties at the expense of native species, many of which have other social functions such as the source of medicines and incenses. The introduction of commercial varieties of crops is not only replacing and pushing native races towards extinction, but also the need to use large quantities of chemical fertilizers and insecticides is placing further strain on the environment. As already discussed, tourism, which holds tremendous promise for socioeconomic development, could also be a major vehicle for environmental degradation through littering at campsites, consumption of fuelwood, purchase of products from endangered species, and disturbance of habitats.

Unless attention is given to safeguarding environmental health and setting minimum standards of conduct, the benefits from tourism and increased agricultural production could be short-term and of a temporary nature. I am not arguing for a total ban on any thing new and foreign, but only pointing out the need for a balanced conscious effort to take environmental concerns seriously in planning rural development. It is time for us to reflect on what is going wrong, especially when the black-necked cranes do not come to their winter roosting areas any more in parts of Bhutan, and when yaks in Tibet have to resort to feeding on plastic bags and garbage.

Key avenues of impact

Through agricultural transformation

Agriculture continues to be the major occupation and source of livelihood for most developing nations and rural provinces. The proportion of rural people dependent on agriculture is 73% in Tibet (Tashi et al. 2002); 79% in Bhutan (Planning Commission 2000), and 85% in Nepal (ICIMOD 2004). The transformation of agriculture is a major challenge for rural areas, particularly in mountainous regions, because of poor access, high cost of mobility and transportation, shortage of investment, low level of technological inputs, persistence of traditional production systems,

and low level of support services (Jodha et al. 2002). The benefits of agricultural transformation in rural China through introduction of more efficient technologies, diversification, and market-led production were well articulated by Wang (2002).

For most rural communities, overcoming poverty and meeting basic needs for food, clothing, and shelter are more overarching concerns than trade and commerce. The subsistence agriculture, whether in crop or livestock production or a combination of both, that dominates the livelihood system has considerable resilience for coping with natural and man-made disasters through diversification and risk spreading. Globalisation, as already mentioned earlier, promotes commercialisation and a narrowing of the production base to the produce and products in demand by the markets. This poses a dilemma for rural people. If they are to benefit from globalisation and market access, they have to overcome supply side constraints, of which lack of economy of scale is a major one. This would require them to use their limited land or other resources to produce the particular product demanded by the market and forego the growing of traditional food crops. In the event of market failures or production failures from inclement weather conditions or infestation by pests, rural people would become highly vulnerable to food shortages due to externalities beyond their control. They would neither have the income from the cash crops to purchase the 'cheap imports' nor their own food production to fall back on. Most rural households have very small landholdings, and even these are generally marginal lands with limitations in terms of mechanisation or irrigation. Hence, unless steps are taken to ensure that niche cash crops are grown that do not directly compete with food crop production, the risk of creating a situation of food insecurity and further impoverishing the rural people is high. National governments must therefore ensure that a policy of maintaining a minimum level of self-sufficiency in food from local production is considered for rural areas.

For rural households, more attention needs to be given to local and national markets before even thinking of international markets. In many areas, production of off-season vegetables and potatoes for consumers in urban centres and downstream markets has proved to be a winning gamble. In Bhutan, the sale of off-season potatoes and vegetables to downstream Indian and Bangladeshi markets fetches an annual export earning of up to Nu. 169 million (US $ 3.7 million) (PPD-MoA 2003). Most of these vegetables are grown during early spring and do not compete with the main staple crops of rice, maize, and wheat. The income from this source enables farmers to supplement their own food production with imports like Indian rice, fish, and other household commodities. The

Government of Bhutan's policy is to maintain a minimum level of 70% self-sufficiency in food grains.

The production of fruit is another avenue for enhancing income without compromising food security. Most fruit trees allow intercropping with either ground crops and fodder or even climbers like beans so that the fruits can be sold as cash crops and other crops used for household consumption. Raising fruit also lends itself to raising backyard livestock like dairy cattle, pigs, poultry, honeybees, and others. Organic farming using biological methods of fertilization and pest and disease control is another avenue that has not been fully exploited and for which rural areas have definite advantages. With the increasing numbers of health conscious consumers in urban areas, the market for organic produce is likely to increase several fold.

Whatever opportunities are available, caution must be taken to mitigate the negative consequences of market-led production. In the case of cultivated crops, resorting to single crops as a result of market forces and external sources of investment should be avoided so as to avoid 'putting all the eggs in one basket'. There are ample examples around to illustrate the fatality of falling for such a trap. The story of ginger in the West Kashi hills of Meghalaya, India, is a case in point (C.N. Anil[1], Personal communications). Traditionally, only a few families could afford to invest in ginger cultivation and the price was lucrative with the production being very limited in contrast to the demand in the market. In 2000 with the support of the North Eastern Community Resource Management Project (NECRMP) supported by IFAD, the communities invested in large-scale plantation of ginger. They purchased ginger seeds at the rate of Rs. 30 to 40 per kg (US$ 0.65 to 0.87) and invested about Rs.1 million (US$ 22,000) in ginger cultivation. The result was over-production of ginger leading to a collapse in the market price because of the ensuing glut in the ginger market. The farmers had to eventually sell off their produce at less than Rs. 2 per kg (US$ 0.04).

This pitfall applies equally to livestock farming. The secret for rural areas in mountain countries of Asia is not to compete with New Zealand, Australia, Canada, and the United States to produce Angus beef but to exploit the niche for producing yak steaks and aggressively market them in these countries as exotic and healthy alternatives. It is not in the interest of the nomadic herders to raise western-style beef farms with Angus breeds nor dairy farms with Holstein Friesians in fenced pastures and

[1] C.N. Anil was the Community Development Officer of NECRMP, India, from 2000 to 2003 and is presently working at ICIMOD.

bred on concentrates. As long as a balance is maintained between the herds and the natural capacity of the rangelands is maintained, herders can still enjoy a decent living and even capitalise on niche products like yak steak, yak cheese, and Pashmina products. However, care must be taken to have appropriate measures to mitigate overexploitation of grazing resources. Following the collapse of the command economy in Mongolia since the early '90s, Mongolians turned to herding as a way out of unemployment resulting from the breakdown of state-run enterprises and services. The number of herds in Mongolia had increased by 30% by 1999 to some 34 million herds, resulting in tremendous pressure being exerted on the grasslands (IFAD 2002). When successive drought and 'dzuds' (severe winter) hit the country in 2000 and 2001, some seven million head of livestock were lost along with the livelihoods of thousands of herder families.

Globalisation has also opened new markets for herbs, mushrooms, and other non-domesticated food items from the wild. Sustainable collection and selective marketing of these products can bring very high returns for relatively low investment. The collection and export of Matsutake (*Tricholoma matsutake*) mushrooms by rural villages in Bhutan and parts of China to Japan are an example of such opportunities. In Bhutan, poor households in rural villages, with little agricultural land and no other sources of income, suddenly earned up to Nu. 50,000 (US$ 1086) a season from the collection and sale of this mushroom to exporters (Namgyel 2000). The Chinese caterpillar (*Cordyceps sinensis*) is another niche produce which has changed the lives of many rural people in China, Bhutan, and Nepal because of a very lucrative market in China.

The challenges, of equitable distribution of income and sustainable harvesting of these communal resources are many. Commercialisation leads to two consequences: monopolisation by business houses and influential local leaders and over collection by both local people and encroachers. It is usually those who have access to markets outside and the means to export goods that reap the benefits and not the local people who end up being paid enough to keep them excited. Often it is the governments, who impose irrational conditions and levies on the rights to collection, for example the total ban on collection in Bhutan (until recently) and the exorbitant royalty rates in Nepal. Over collection and poaching become serious problems and often threaten the survival of the species as the collectors are not concerned with future regeneration in an uncertain policy and market environment.

Through tourism

The impacts of globalisation on rural areas through tourism are both positive and negative. Tourism offers one avenue where constraints to development-remoteness, difficulty of access, the natural and biological diversity, wilderness, insular cultures, and a subsistence-focused way of life-can be transformed into opportunities (Jodha et al. 2002). It allows 'markets to be brought to the products' and services can be charged on site, thus creating income and employment-generating opportunities for local people. Under GATS, tourism has been included as one of the key sectors for liberalisation, and, associated with it, many other sectors are likely to benefit such as communication and transport, hotel and hospitality businesses, and financial services. To date, however, the benefits are seen to be largely concentrated in the hands of the state and a few tour and travel operators in remote rural areas of Bhutan, Tibet, and most parts of Nepal. There are, however, very good cases of success from the Mount Everest region of Nepal where the local Sherpa communities have derived significant economic benefits from tourism through provision of guiding, transporting, and food and lodging services. Many Sherpas who had started off as porters and guides have now established themselves in the higher rungs of the tourism business as travel agents, hoteliers, and mountaineers (Sharma 2002).

If properly planned, rural areas offer many comparative advantages in the tourism sector. As traditional societies with little influence from the modern sector until recently, they still retain unique cultures and traditions worth preserving. Not only can these unique cultures and traditions benefit the local people from tourism, but they can also help their preservation as otherwise they would be replaced by popular cultures from outside. People recognise their commercial values in addition to their traditional values associated with ethnic and communal identities and beliefs. Many rural areas in the HKH have their own cultural and religious festivals, as well as centuries old farming practices, that could attract both domestic and international tourists. The tangible benefits from tourism to rural populations are well documented by Li and He (2002) for Tibet and by Sharma (2002) for Nepal. The case studies from Gongzhong village in Linzhi Prefecture and Samiu village near Lhasa, presented by Li and He (2002), illustrate how participation in rural tourism business had enhanced the income and transformed traditional farming societies into a modern service sector based on tourism.

Tourism can induce development, expansion, and reorientation of settlements along trails and tourist destinations. In Nepal, the number of lodges in the tourist areas of Annapurna and Khumbu increased

dramatically from 45 and 17 in 1980 to 518 and 225 respectively in 1997/98 (Sharma 2002). The number of tourists during the same period increased from 14,300 and 5,836 to 54,100 and 18,200 respectively for these two areas. The people in these areas have become some of the richest in the highlands of Nepal. Sharma (2002) acknowledged that not all developments have been positive and mentioned that the supply of lodges in many areas outstripped demand. This has become particularly acute in recent years, following the rise in insurgency and drop in tourist arrivals. In the rush for tourist dollars, the needs of the section of the local population which does not depend on tourism were largely ignored and inflation made life difficult for them. Moreover Sharma lamented that vernacular architecture was fast disappearing. He concluded that pro-poor tourism has to be deliberately planned and nurtured and should not be left to chance and the popular belief of 'trickle down' effects. We are by now getting used to seeing signboards with 'Tourists Only' on lodges, taxis, restaurants, and entertainment facilities, and this is precisely what we need to avoid as it undermines the very foundation of globalisation, i.e., integration.

Rural areas also have the distinct advantage of having pristine environments and a diversity of flora and fauna. Nature treks, botanical tours, wildlife safaris, bird-watching, fly fishing, and hot spring baths are just some products that could come into an eco-tourism package. This would, however, require substantial investment in institutional and capacity development if the rural people themselves are to derive any direct benefit. Government policies must be conducive to attracting tourists and to ensuring that the benefits accrue to local people. The provisions of GATS must be carefully analysed to ensure that liberalisation does not end up in monopolising business nor in exceeding the carrying capacity of local resources and the capacity for absorption of local populations. This calls for a careful balance between economic gains and cultural and environmental conservation. Presently Bhutan, for example, follows a 'high value low volume' tourism policy whereby the government administers the tariffs in the tourism sector, ranging from US$ 165 in the low season to US$ 200 in the high season per person per day. This may not be the best option for attracting tourists, but it has thus far succeeded in avoiding the negative impacts of tourism on the country's culture and environment.

Conclusion

The challenge in the era of globalisation–for countries and individuals–is to find a healthy balance between preserving a sense of identity, home, and community and doing what it takes to survive within the globalisation

system. A country without a strong sense of identity and security will never feel secure enough to open up fully to the world and reach out into it. But a country that is closed and does not participate will never grow and will become stagnant. Keeping the two in balance is going to be a constant challenge.

For rural areas, necessary safeguards must be put in place to ensure that market forces do not affect their sense of belonging and identity, their social safety nets, their cultural values, their food security, and their natural environment. Careful thought needs to be given when planning development programmes in rural areas. In agriculture, the switch to market-led products and production systems should not be at the cost of maintaining a minimum level of self-sufficiency in food crops and to the detriment of the environment. Similarly, the development of tourism should include measures to protect the interests of local people and ensure that they not only benefit from it but also have a major say in how far and how much they want to expose their way of life to tourists. Finally, it should be borne in mind that any development programme that does not take into account the environmental impact will bring only temporary benefits and will hurt the long-term interests of rural communities.

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Chapter 11

Developing a National Strategy for Rural and Regional Development in Mongolia

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Introduction

Mongolia covers an area of 1.5 million sq. km. and is thus a very large country with a small population of about 2.5 million inhabitants. The average population density is only about 1.6/km². In 2002, the rural population was 38% and the urban population was 62%. Ulaanbaatar alone accounts for about one third of the country's population. The average annual growth rate of the population during the last decade was about 1.4%. Assuming the population growth will be as extrapolated by geometric function (Figure 1), Mongolia will have a population of about 2.7 million in the year 2020.

Mongolia is divided into 21 Aimags or regions, plus the capital Ulaanbaatar. The country stretches for about 2,600 km from East to West and about 1,200 km from north to south. Had the country been round, the average radius would be about 1,223 km. In some of the Aimags, the population density is as low as 0.5/km². During the last 14-year transition phase, many people did migrate from the rural areas in the Soums, or districts, and Aimags to a few Aimag centres, and especially to Ulaanbaatar. In rural areas of the country, there are about 165,000 nomadic herdsmen's households with a total population of about 640,000 (2004).

Mongolia urgently needs a clear concept for rural and regional development. The regional development policy must be very genuine, considering the unique geographical and demographic situation of the country. A certain degree of regional economic autonomy is essential, since, with the GDP of such a small population, a sophisticated communication infrastructure in such a large country is unaffordable.

The authors of this paper have developed methodologies to quantify and qualify the degree of regional development. The average Regional Development Indicator (RDI) is 0.71 (the optimum would be 1.0). The RDI takes into account the regional distribution of population and income, the distances of the regional capitals from the country's capital, the standard deviation and variance of population, and income in the different regions.

Background to the approach

In Mongolia over the centuries, people believed that a large country of 1.5 million sq.km., most of it steppe land, could easily feed a small population of 2.5 million people. It now seems that, after 14 years of transition towards a market economy, this dream is over.

Any concept for regional development in Mongolia must consider that with a small population and a correspondingly small gross domestic product (GDP), a large country cannot afford a dense network for infrastructure and communications. A certain degree of regional autonomy is necessary.

Regional economic development should always be balanced with the conservation of nature, environment, and climate. In Mongolia it is being learned that such a balance is better maintained with relatively more intensive agricultural production in a smaller area, rather than with extensive production scattered all over the country.

The objective of a 'regional development policy' for any central government can be defined as follows –'balanced regional development should involve all existing regions and their population in the economic, social, and cultural development process, based on local natural and human resources and an exchange of such resources and products among the different regions'.

Some important criteria for defining a region are:

- historical development of the territory and population,
- geographic and natural conditions of parts of the country,
- ethnic, cultural, and linguistic differences among the population,
- an efficient administration of the region and the whole country, and, finally,
- a region gives maximum security to the population in the region as well as in the country and guarantees territorial integrity.

Generally a region is a mix of these criteria, but one or the other aspect might be in the foreground.

The term 'rural development' is more difficult to define. In general, statistics simply determine urban and rural populations according to the number of persons living in 'a given area'. In other cases, areas are considered 'rural' if the major part of the population gets its income from agriculture or forestry or lives in an area of predominant agricultural production.[1] In today's economies and countries, it is frequent and usual that people live in rural areas but work in urban areas.

However, dividing a country into rural and urban areas is not enough. In fact, many countries in the world have huge areas of so-called 'pure nature land' where there is virtually no population and no economic activity. In the more developed countries in Europe, and also in very densely-populated countries like Korea and Japan, there is almost no 'pure nature land' such as deserts, steppes, untouched forests, and mountains, apart from national parks and others. In other countries 'pure nature land'[2] is a significant part of the country's territory. Such land is generally state[3] property.

The regional development scenario of Mongolia today

The two basic criteria for rural and regional development are the distribution of population and income in a given territory. An evaluation of regional development in Mongolia is given in Table 1, the basic demographic data for Mongolia are given in Table 2, and the income data in Table 3.

The regional distribution is largely characterised by the section of the population living in urban areas. In Mongolia, the urban population in 2002 was about 62% and the rural population only 38%[4].

Looking at Table 2, it can be concluded that a large part of the country is virtually 'unpopulated'. There are eight of 22 Aimags with a population density of less than one person per km² which means that about 80% of the total population live in about 40% of the area. A very large part of the country, in fact more than 75%, is actually populated by nomadic

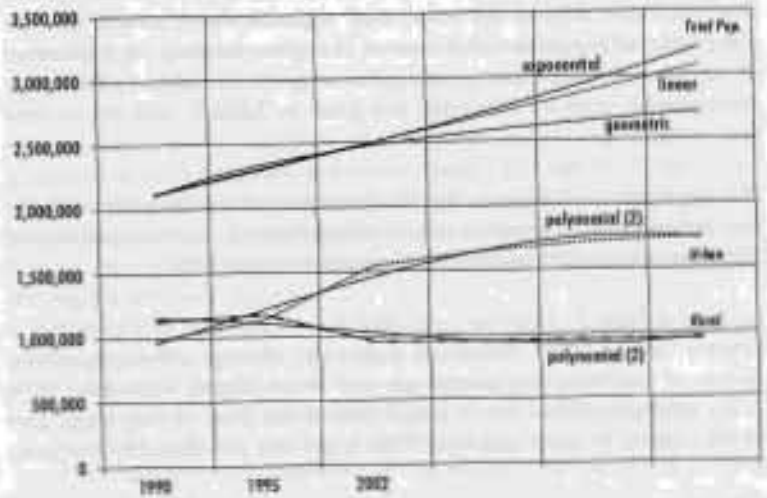
[1] The term 'agriculture' is used by the authors to explicitly include crop and livestock production.
[2] ... which is not a 'national park' ...
[3] or communal
[4] The NSOM yearbook gives 42% ; the authors estimated their figure of 38% by a different methodology based on herders' households and herders' family members.

herdsmen only. However, the population density in these areas is less than 0.5 persons per km².

In fact, nomadic herdsmen 'control' about 83% of Mongolia's territory, although the average population density in these areas is only 0.53/km².

How will the urban and rural population develop during future decades? The average population growth at 1,40% is relatively low (see Table 2). It also seems that migration from rural to urban, and from remote to more centrally-located areas will continue for some time. The average growth rate during the last 12 years was 3.83% for urban areas, mainly due to the average annual increase of the population of Ulaanbaatar of almost five per cent. On the other hand, the average growth rate of the rural population was 1.40% . The census of 2000 reveals that 25% of permanent residents had migrated to areas other than their place of birth.[5]

Figure 1 : Estimated future population growth in Mongolia
This figure gives a projection of population growth in Mongolia towards the year 2020.



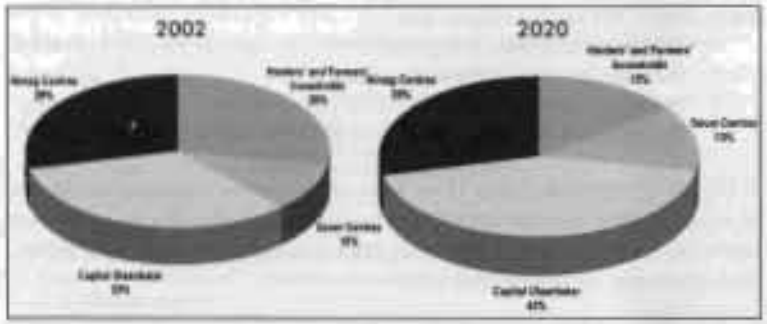
Source : NSOM 2002; projections after 2002 estimated by authors

[5] Economic growth support and poverty reduction strategy. Government of Mongolia, 2003

The projection for the total population for 2020 is approximately 2,750,000, using an extrapolation of the geometric function. Extrapolating the exponential function, the total population would reach about 3,200,000 in 2020, which seems rather unrealistic.

Extrapolating the polynomial functions, the urban population might reach about 1,750,000 in 2020, the rural population about 960,000. The urban population is still increasing but tends to stabilise below two million people. On the other hand, the rural population is further decreasing but tends to stabilise at a rather low level of about one million people. The change in the composition of the population is indicated in the following figure.

Figure 2: Changing distribution of the population in Mongolia



The projection for the year 2020 is based partially on the results of Figure 1. In addition, The authors assume the following.

- In 2002, the herders' households included about 30,000 people living in crop brigades, which of course maintain subsistence herding. There was no significant development at that time of small farmers' enterprises.
- It is assumed that in 2020 the herders and the upcoming small farmers' households will stabilise at about 100,000: the average household will consist of four family members.
- The decreasing number of herders' family members leaving the rural areas will be settling down equally at Soum Centres, Aimag Centres, and in Ulanbataar.

It is difficult to project the future development of Aimags, since it depends so much on government policy. During the period from 1990 to 2002, there was an absolute decrease in population in nine of the 22 Aimags. However, assuming that the natural growth rate of the population is 1.4%, there were only three Aimags above this level in 2002: Ulaanbaatar, Erdenet, and Govisumber. The last one is still rather unimportant in

relation to the total population of the country. It is remarkable that even the total population of Darjan was decreasing during that period. All these figures indicate that there is an unbroken migration of people not only from rural to urban areas but also from the regions to Ulanbataar. Careful estimations by the authors indicate that, in 10 years' time, one third of the Aimag population will consist of the family members of herdsmens' households, one third will live at Soum centres, and one third at the Aimag centre.

Quantifying and evaluating regional development in Mongolia

Few methods of quantifying regional development in a country are known.

Basic criteria for such analyses are:

- the areas of different regions,
- the population in different areas,
- the gross national product (GNP) in different areas, and finally
- the distance between the capital and the regional centres.

In the following table (Table 1) we have attempted to measure the degree of regional development with these four main criteria. Various statistical methods, such as simple and weighted averages as well as standard deviations and variances, are used.

Four 'Indicators of Regionalisation'(IR) are being used in this evaluation. The first one is the average distance between the regional centres and the capital, which is weighed with the population living in the respective regional centre.[6] The IR can fluctuate between zero and two. A value closer to zero would mean a concentration of the population in the regions closer to the capital. A value closer to two would mean an increasing concentration of the population in the more distant regions. A value around one means a more equal distribution of the population between the more distant and the closer regions.

IR two indicates whether a larger number of the Aimags with larger areas are located near to or far from the capital comparatively. Also in this case, the value can fluctuate between 0 and two. A value close to one would be the best relationship, indicating a more balanced distribution of regions within the country. This IR is of course a given geographical value to which the regional development policy has to adjust – unless the individual regions are redefined.

[6] The weighted average distance is related to the simple average distance between the capital and the regions. It is obvious that the maximum relationship is 2 .

IR three is the standard deviation and the concluding variance for the populations of the regions. IR four is the standard deviation and the concluding variance of the gross domestic product (GDP) per capita in the different regions.

For IR3 and IR4, the inverse value of the double variance goes from zero to two. A value close to zero indicates strong deviations from the average of the population or the GDP of the regions, a value close to two is a rather homogeneous distribution of population and GDP between the different regions.

Finally we tried to combine the four IRs into one Regional Development Indicator. This can be a simple arithmetic average of the four IRs, or a weighed average with variable importance being given to the individual IRs.[7]

Table 1: Evaluating regional development in Mongolia, the basic scenario[a, b]

RDI : Weighted average of the four IRs	0.71	Relative weight	Value
IR one : average distance to regional centres, weighted with respective populations		2.0	0.72
IR two : average distance to regional centres, weighted with respective areas		0.5	1.25
IR three : (inverse value of [a]) variance of population distribution among different regions		3.0	0.81
IR four : (inverse value of [a]) variance of GDP per capita among different regions		0.5	1.48

Item	km²	Persons /km²	Population	GDP/capita 2002 (Euro[c])	Distance
Total	1,564,160		2,498,700		
Arithmetic average	71,098	1.60	113,577	362	586
Average, weighted with population					422
Average, weighted with Aimag territories (km²)					732
Variance			0.59	0.26	
Number of regions	22	22	22	22	22

[a] *Inversion of variance done in order to get a comparable IR*

[b] *All basic data for this calculation appear in the worksheet population plus territory*

[c] *Including any budget transfer from the Central Government to the Aimag*

Source : Calculations by the authors, based on NSOM basic data

[7] The relative weight in this table is just the authors' assumption; it can be changed according to priorities set.

The results of this table are interpreted as follows:

IR 1=0.72: The population seems to be too concentrated in the more central areas. The population-weighted average distance to the Aimag centres is 422 km, whereas the simple arithmetic average of the distances is 586 km.[8]

IR 2=1.25: This indicates that a major part of the Aimags with large areas is actually located in remote areas. This is, in principle, a given situation unless the government decides to redefine the borders and sizes of the Aimags.

IR 3=0.81: Indicates a rather unequal distribution of the population among the Aimags, some of which have a rather large population, others a very small population only. The low figure also is an indicator of the concentration of the population in the capital Ulaanbaatar where about one third of the total population lives.

IR 4=1.60: This means that with the given figures of the per capita GDP in the Aimags[9], the differences between Aimags are not so great and the distribution homogeneous. But rather than drawing a positive conclusion, these phenomena could be called a 'uniform distribution of poverty'.

RDI=0.72: Assuming that an RDI of 'one' would be an optimum achievement, the present situation of Mongolia with an RDI of 0.72 is a sign of unsatisfactory regional development. The government policy should aim to shift resources, population, and employment to the relatively remote Aimags and to restrict the population growth of Ulaanbaatar.

Regional development is also determined and limited by the shape of the country, its natural resources, and natural conditions. The basic shape of a country is generally rather irregular. An indicator for this is the difference between the given average distance from the capital to the regional centres and the radius of an assumed round-shaped country territory.

However, there are limitations to reaching a statistically balanced regionalisation with an equal distribution of population and GNP. Those regions with less population and income should not live and survive with permanent budget subsidies from other regions. Both population

[8] In fact, if the weighted average was 586 km, the population would be equally distributed between the nearer and the further located Aimags.

[9] ... which are only a rough estimate of the authors ...

and income can only be increased up to a certain level, based on the local natural and human resources. However, a central government may decide that, for strategic reasons, some territories of a country should be permanently subsidised. Any central government has an understandable interest in maintaining administrative and political control over the whole territory of the country. This can be achieved only if small, marginalised populations can be helped to live in areas that are less favoured with natural resources.

The government policy for regional development

The government and the parliament of Mongolia adopted 'the concept of regional development in Mongolia' in the year 2001. In addition the government's Policy on Food and Agriculture, which was adopted by the government and parliament in 2003, constitutes an important part of the legal framework for regional and rural development. The government also considers that minimising the disparities in socioeconomic development among the Aimags of the country is one of the prerequisites of movement towards sustainable development in the 21st century.

Besides promoting advanced agriculture and industrial production in the country, the government has an obligation to integrate the existing population of nomadic herdsmen into a modern social and economic system, considering that this sector still constitutes about 30% of the total population.

Within the aforementioned 'concept of regional development in Mongolia' the government has created five major development regions: the Western, Hangai, and Central Regions have approximately around one fifth of the population each; the Eastern Region about one tenth; and Ulanbataar alone one third of the total population.

The Eastern Region has only about five per cent of the national GDP, whereas the other three Regions have between 10 and 15%, compared to the share of Ulanbataar which is about 50%. All this indicates that there is still a lot of work to be done to achieve more equal development among the five regions and to maintain a basic core of population in each of the regions.

There is a Regional Centre in each region, but, at present, these regional centres do not have a major political and administrative role in regional development. These regional centres are at the same time considered to be 'economic development centres'. In addition, each region has one, alternative 'economic development centre.' Finally, three cities—Erdenet,

Darjan, and Ulaanbaatar—have the status of 'industrial development parks'. There is no doubt that this definition of 'regional points of emphasis,' as they are called, is of importance for the future of regional development in Mongolia. Such points include the four categories: Aimag Centres, Regional Centres, Regional Development Centres, and the 'industrial parks'. It is a world-wide experience that 'development takes place around development centres'. In Mongolia the distribution of development centres covers the whole country equally.

The concept behind this distribution of centres is the continuity of a historically evolved social, political, and administrative structure which has not been disrupted by artificial regions. The second criterion for distribution was optimum communication between different Aimags and regions of Mongolia. The most important facts are (a) a rail and road connection between Sukhbaatar City in the north at the Russian border and Zamin Ud in the south at the Chinese border, via Ulaanbaatar, and (b) the millennium road from Choibalsan in the east to Bayan Ulgi in the west, also via Ulaanbaatar. In addition, there is a short secondary rail connection from Darhan to Erdenet. The railway line from Choibalsan in Dornod Aimag to the Russian border in the north is still operating: it is doubtful, however, whether it will continue to work in future.

The road from Ulanbataar to the Russian border is completely paved. The road down to the Chinese border is still a track in the steppes. Of the 'millennium road' category, so far (2004) only about ten per cent is paved, 15% gravelled, and the rest is still a steppe track, although improvements are planned.The existing and planned strategic north-south and east-west communications[10] do touch 14 of the 20 Aimags[11]. There are only five Aimags in the southern part of the country that await connection by secondary roads[12]. One of these is an existing road (mostly steppe tracks, although small sectors have been gravelled) from Ulanbatarr down to Omnigovi and Dundgovi. Another road travels southwest to Overhangai, Bayanhongor, and Altai. Finally, Sukhbaatar Aimag is connected through Dornod and Henti Aimags (still steppe tracks).

Final considerations and conclusions

No doubt for better regional development in Mongolia, a clear concept, more attention to government policy, more support, and better services are needed. The establishment of development regions was a step in the right direction; however, more emphasis has to be given especially to the development of Soum centres which are the core of regional and rural development.[13]

Besides the aforementioned road communications, which serve, especially, the movement of people and goods, regional development needs a constant flow of information to and from the rural and remote areas. In the 19th century, such information was brought by messengers on horseback and, in the 20th century, it was mainly brought by road. No doubt in the 21st century the main medium will be the Internet. In 1999, email and mobile phones only worked in Ulaanbaatar, in June 2004 they are already working in 19 of the 21 Aimags in the country.

Soum development can be promoted through many means. There should be well-functioning social services, especially for education, health, and security in all Soums. Another critical issue is local energy supply. Many Soum centres have no permanent electricity supply. There is a great potential in Mongolia for making extensive use of solar and wind energy. There is also modest scope for promoting tourism at Soum level, involving herders' settlements in 'Hot Ails'.[13]

An important instrument of the government's for promoting regional development is taxation and budget management. A differentiation of taxes and subsidies according to the level of economic development and, also, the social importance of the Aimags is essential.

There is no doubt that the number of herders' households in rural areas will decrease. Numbers might consolidate finally at a level of around 100,000. However, attempts should be made to keep former herders' family members in rural areas, especially at the Soum centres, to limit their migration to Aimag centres and especially Ulaanbaatar. Since Mongolia has such abundant land resources, the government should consider granting long-term user rights of today's state pastureland to local people at Soum level to be used for small-scale potato and vegetable production (if water is available) and for small but intensive livestock production, including pigs and poultry. Herders who can no longer make a living from the traditional, extensive, nomadic livestock production show willingness to change their way of life, become small farmers, and remain in the rural areas.

[10] ... including the Darhan-Erdenet railway ...
[11] ... in most cases even the Aimag centre ...
[12] ... although all of them are already connected by steppe tracks ...

[13] A Hot Ail is an informal group of herders' households living close together, sharing labour and pastureland.

Finally, the Soums and Aimags in remote areas must develop a certain degree of economic independence and autonomy. In most cases, it is more economical to establish small-scale marketing and processing facilities in rural areas, rather than bringing them over long distances from far away.

Although the Aimag capitals are counted as urban centres, development in them needs to be promoted, especially in the remoter areas. During the last decade, the population of 15 of the 21 Aimags has significantly decreased.

The basic principle of the new agricultural policy, adopted by the government in 2003, is that more intensive agricultural production in small areas on good lands is more economical, better for regional development, and also better for maintaining a healthy environment than extensive production scattered over a large territory.

So far, not only government, scientists but also private people conclude from the statistics of natural regions in Mongolia that 83% of the territory is 'agricultural land', which means mainly steppe lands suitable for grazing. The authors very much disagree with such an interpretation. It makes better economic sense and is also better for regional development to consider 40% of the country's territory ,at least, as 'pure nature land' where in principle economic activities neither take place nor are promoted.[14]

It is finally important for the government development policies in future to consider that regional development comes first and globalisation comes second. Precipitous moves towards globalisation will just bring poverty to the remote and rural areas if there is no sound local, economic and social development.

[14] ... except for modest tourism and recreation.

Table 2: Evaluation of population in Aimags and in rural and urban areas in Mongolia

Aimag	Total population of Mongolia 2003	Growth rate 1995-2000	Aimag Centre	Total population of UB and Aimag 2002	Growth rate 1995-2002	Rural population 2002	Growth rate 1995-2002	Population of Soum Centres 2002	Herders' households 2003	Population of herders' households 2002	Aimag territory km²	Inhabitants per km² 2002	Road distance from UB to Aimag Centre, km
Total Mongolia	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Western Region	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Khangai Region	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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Central Region	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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Table 2 cont...

Dorkhan-Uul	87,800	0.55	Dorkhan	85,100	-0.20	7,700	28.56	2,548	1,319	5,012	3,380	26.77	319
Dornogovi	53,000	-0.83	Sainshand	51,050	14.17	1,035	-27.47	10,218	7,308	29,670	48,700	1.07	463
Dundgovi	51,200	-0.11	Mandalgobi	19,900	1.37	21,300	-0.93	11,055	4,959	18,844	133,600	0.41	260
Dornogovi	47,200	0.66	Dalanzadgad	28,400	5.82	18,800	-3.60	11,055	18,721	71,140	62,900	0.75	553
Selenge	102,000	0.54	Sukhbaatar	49,300	7.46	52,700	-2.36	13,529	3,762	10,486	41,300	2.48	351
Tov	96,500	-0.19	Zuunmod	15,100	-1.54	81,400	-0.61	19,889	9,804	37,255	74,000	1.30	43
Eastern Region*	202,700	-0.57	Choibalsan	113,500	3.19	89,200	-3.19	32,428	19,575	74,380	272,100	0.74	885
Khovd	72,500	-0.25	Undurkhaan	40,300	6.03	92,700	-3.24	13,529	8,019	30,461	80,300	0.90	331
Dornod	74,600	-0.22	Choibalsan	50,500	2.26	34,100	-2.72	10,318	4,105	15,599	109,500	0.68	655
Sukhbaatar	36,100	0.40	Baruun-Urt	20,700	1.58	33,400	-0.21	9,581	7,454	28,321	82,300	0.68	565
Ulaanbaatar	844,900	3.58	Ulaanbaatar	600,000	4.67	16,000	-11.87	6,633	2,015	7,657	4,700	180.11	

* Which includes population of Soum Centres, nomadic herdsmen and a minor percentage of people living at brigades and a few non-herders at bag level

* Estimated average populations 727

* People per herder's household 3.8

* Final place not yet determined

* Excluding Ulaanbaatar

Note UB = urban area

Source: NSOM 2002 and 1999, and calculation of authors

Table 3: GDP, revenue, and population in Aimags of Mongolia

Aimags	Total Population of Mongolia	GDP 2002 Euro		Revenue of Aimag Government 2002 Euro		Subsidy from Central Government 2002 Euro	
	2002	Total*	Per Capita	Total	Per Capita	Total	Per Capita
Total/Average	2,498,700	1,239,601,556	496	114,005,333	46	54,708,000	138
Western Region	418,300	125,199,737	299	11,003,667	26	16,518,800	39
Bayan-Olgi	98,900	24,792,031	251	2,231,778	23	3,476,111	35
Govi-Altai	62,700	22,312,828	356	1,708,000	27	3,631,889	58
Zavkhan	84,500	27,271,234	323	2,308,444	27	3,107,556	37
Uvs	85,600	23,502,430	282	2,260,667	27	3,179,778	38
Khovd	88,500	27,271,234	308	2,494,778	28	3,132,667	35
Hangai Region	558,000	192,138,241	344	21,006,333	38	14,555,222	26
Arkhangai	97,500	32,229,640	331	2,995,111	31	2,487,667	26
Bayankhongor	84,400	30,990,039	367	2,274,556	27	3,065,223	36
Bulgan	63,500	24,792,031	390	2,473,889	39	2,448,222	39
Orkhon	77,400	48,344,481	625	6,432,444	83	–	–
Ovorkhangai	113,900	23,552,430	207	3,456,333	30	2,816,556	25
Khuvgol	121,900	32,229,640	264	3,363,000	28	3,437,556	28
Central Region	472,700	179,742,226	380	21,301,111	45	15,874,778	34
Govisumber	36,000	6,198,008	172	622,667	17	855,867	24
Dorkhan-Uul	87,800	34,708,844	395	5,470,778	62	2,298,333	26

Table 3 cont...

Dornogovi	52,000	16,114,820	310	3,800,889	34	2,154,000	41
Dundgovi	81,900	18,594,023	363	1,658,556	33	1,738,667	34
Omnogovi	47,200	19,833,625	420	1,729,000	37	2,323,333	49
Selenge	102,000	40,906,881	401	4,407,000	43	3,774,000	37
Tov	96,500	43,384,054	450	4,613,222	48	3,705,778	39
Eastern Region	302,708	81,980,078	306	6,821,222	35	8,060,000	40
Khentii	72,000	17,354,422	241	2,392,000	33	3,814,444	36
Dornod	74,600	19,833,625	266	1,448,000	32	2,736,889	37
Sukhbaatar	56,108	24,792,031	442	2,481,222	44	2,508,667	48
Ulaanbaatar	844,600	680,541,334	806	54,173,000	64	-	-

* Exchange rate in 2002 approximately 800 Tgr/Euro

Source: NSOM 2002 and 1999, and calculation of authors

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Chapter 12

Change in Rural Tibet: Progress and Problems

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Introduction

Like the rest of rural China, rural Tibet has experienced a dramatic change in the past 25 years. In the early 1980s, the system of communal production in Tibet was replaced by the current quasi-market system called the 'responsibility system' (Tib. 'gan gtsang; ch. cheng bao'), and, in almost all areas, the commune's land and animals were divided among its members on a one-time basis. From then on, the household became the basic unit of production as it had been in the Old Society and in the years from democratic reforms in 1959 until collectivisation in the late 1960s. A new economic era, therefore, began in the early 1980s.

Although Tibet is still a relatively poor area in China, it is also clear that, in the two decades since 1980, the standard of living in rural Tibet has improved a great deal. Tibet has a long way to go, but it is important to understand how far it has come and what problems it faces moving forward.

My comments today are based on my own longitudinal research in rural Tibet in collaboration with the Tibet Academy of Social Sciences. It began in 1986, first with pastoral nomads, and then with farmers. In particular, this talk is based on data from a large field study begun in 1998 in collaboration with Dr. Cynthia Beall, the Tibet Academy of Social Sciences, and Dr. Ben Jiao, an anthropologist who is a research scholar in the Tibet Academy. This study, which is of 780 households in 13 farming villages in three counties, is based primarily on firsthand data collected through field work in rural villages where the researchers lived in the villages and revisited the areas a number of times. Both systematic household surveys, focus groups, in-depth life history interviews, and participant observation were used. The farming villages studied are in Shigatse Prefecture and the Lhasa Municipal area, and include a range of economic types from poor to well-off.

The 13 study villages contained 780 households all of whom were included in the study. Forty-nine point eight per cent of the villagers were male and 50.2% were female. The median age of the sample was 22 and 63.7% of respondents 18 years and older were married, 4.9% were widowed, and less than 1% were divorced. Household sizes were high, the average household containing 7.1 persons, and ranging from 1-15 people.

All 5,590 individuals in the 13 villages were ethnic Tibetans. There were no Han or Hui Chinese living there either as residents or temporary workers. Also, there were no ethnic Chinese working in the four study rural 'xiang' centres, as either officials or shopkeepers. The villages were entirely Tibetan in language and culture.

The study villages were farming communities, although all also kept some animals for milk and meat. In a few areas where sizeable adjacent pastures existed, larger numbers of sheep and goats were raised. The diet was traditional Tibetan with parched barley flour (Tib. rtsam ba) being the staple food in all areas. Villagers, however, now eat a range of non-traditional foods like rice, sweets, and, in some villages, chicken, eggs, and pork.

Religion is an important part of the life of rural society. In terms of formal practitioners, 3.6% of all males were monks and 2.6% of females were nuns; and 16.3% of households had one of its members living as either a monk or nun.

A breakdown of the composition of the population by age and sex reveals an expansive triangular shape with 34% of the population under the age of 15. This is intermediary between adjacent Third World countries, such as Nepal and Bhutan, that have 43% of their population under the age of 15 and China as a whole that has 26%. The age-dependency ratio—the proportion of the population in the dependent ages (under 15 and 65+) relative to those in the productive ages (15-64)—was 63.6. This also was intermediate between Nepal/Bhutan (which respectively were 88.7/85.2) and China as a whole (which was 47.1%)(PRB 1999).

Almost all the rural farmers we studied had a favourable opinion of the new responsibility system, and 94% indicated that their livelihoods had improved since de-collectivisation in 1980. Similarly, when respondents were asked whether they thought they had a better life than their parents, 85.5% responded positively. Only 8.6% said they were worse off. As Table 1 illustrates, even older villagers in the age category from 60-79 held

this view—and their parents would have been adults at the end of the traditional society, i.e., they would have been between 40-60 years of age when the socialist period began in 1959.

Table 1: Responses to the query: "Do you have a better life now than your parents did?"

Current Age	Better	Worse	Same
60-69 (N=111)	87.4%	6.3	6.3
70-79 (N=39)	92.3	5.1	2.6

Moreover, focus group discussions were held to discuss in detail the grain situation of every household in each village. These discussions revealed a consensus that 77% of households produced either enough grain or a surplus of grain. Direct survey questioning of each household revealed a similar result—67% said they had one or more year's grain stored away and another 21% said they had six months to a year's grain in storage. Using our own locally-constructed index of economic status, we determined that overall only 14% were poor in the sense that they did not have enough grain from either their own fields or purchased from earned income, whereas 58% were rich or middle level in economic status.

It is difficult to meaningfully measure quality of life in rural areas using household income figures, so we interviewed every household about their diets because there is a clear consensus on what a high-quality Tibetan diet should be.

The three main high quality or luxury traditional foods are locally brewed barley beer (chang), butter, and meat. We found that all were being widely consumed. Three quarters of the households said they now make and drink barley beer regularly rather than just on special occasions, and the majority of families reported that they ate meat or fat either daily or several times a week; and 91% reported they drank butter tea every day. On average, households reported using approximately 416 kg of barley per year for making beer. That amount of grain is roughly equivalent to the output of three mu of land which, in turn, is roughly equivalent to the share of land one person received at the time of de-collectivisation. Thus, conditions are such that most households are able to divert substantial amounts of the main staple crop to the production of a luxury food.

Another empirical indicator of improved livelihood and quality of life is housing. Fifty-five per cent (430) of households reported that they had either built a new house or expanded their old house since de-

collectivisation. The average reported cost of these improvements was 5,078 yuan (median=3,000 yuan). Even in Medrogongkar, the poorest area, 42.4% of households reported they had either built a new house or expanded their old house.

The material possessions of village households is another useful empirical way to assess standards of living, so we asked households about their ownership of a range of durable consumer goods that went beyond the 'basics'. The results are interesting: 71% of households owned a pressure cooker, 60% had a Tibetan carpet set, 57% had a metal stove, and 53% a bicycle, but only 30% had a sewing machine.

What accounts for these gains: first and foremost the new economic framework. The responsibility system allowed households to keep the fruits of their labour. In farming, this allowed households to intensify the care with which they planted their own fields and resulted in most households quickly experiencing increases in production. These increased yields were further amplified by the government's new policy in the 1980s of exempting rural Tibetans from taxes.

Productivity in animal husbandry was especially impressive in these farming areas. Domestic animals increased 82% after de-collectivisation, and this would have been even more if chickens and pigs had been counted. And with regard to female cows and 'dzo' that provide the essential milk that every rural household needs to make the butter for tea, these have increased by an amazing 668%.

Finally, the new economic structure also has allowed and encouraged rural households to engage in non-farm income-generating activities, and, as we shall see, many did so.

Despite these improvements, Tibet has a long way to go vis á vis inland China. For example, as of 2002, none of the 13 villages we studied had running water in the houses and only the village immediately adjacent to a county seat (xian) had a water tap and electricity. None of the areas had improved dirt roads, let alone paved roads.

There is still a great deal of poverty. Despite starting off equally in 1980 14% of sample households were poor by our criteria[1] and another 28.5% fell into the category of lower-middle households (which we defined

[1] After extensive discussions with local officials, individual villagers, and focus groups, we defined a household as poor if it did not have sufficient grain either from its own fields or from income earned in work and had to borrow or get welfare to meet its needs. In borderline cases, other factors such as the quality of the house and the number of possessions in the house and the number of animals were also considered.

to mean that they had a difficult time meeting their basic subsistence needs). The poorest two 'xiang'—Medrogongkar and Panam2— had roughly one third of their households poor (37 and 31% respectively), and in the poorest of these, Medrogongkar, 47.2% of the households reported they were not producing enough grain from their land for their own subsistence. In contrast, government statistics for China as a whole report that less than 5% of the rural population was below the poverty line(World Bank 2000). Thus, while progress in rural Tibet in some ways has been impressive, many families have faltered and are in need of assistance.

Although the Responsibility System is still in operation, the situation in rural Tibet is not static and there are fundamental changes going on that need to be mentioned since these raise serious questions about whether the overall increases of the past 20 years can be sustained, let alone improved over, say, the next 20 years, and especially whether the 40% of rural households who are poor or almost poor can raise their standards of living.

Firstly, and most critically, is the serious decline in per capita landholdings. As a result of population growth and fixed land size, there has been on average decline of 20% in per capita landholdings, and this does not take into account land lost to new home building sites, floods, roads, and so on. Moreover, even though the Total Fertility Rate(TFR) is beginning to decline due to increasing contraceptive use in the rural areas , there is no question that Tibet's rural population will continue to grow during the next decade, so this process of decline in per capita landholdings will continue.

Secondly, the cost of living is increasing. In addition to general inflation, the price of key farm products, such as chemical fertilizers, has increased substantially, while at the same time there has been a decrease in government subsidies and an increase in local taxes.

Compensating for this by trying to increase yields will not be easy, because farmers are already using high levels of chemical fertilizers and improved seeds. And although there is some potential for increasing the amount of land under agricultural production by means of modern irrigation projects, these are enormously expensive and unlikely to create anywhere near enough new land to impact the above trends.

Similarly, it is difficult to find a market for Tibetan crops so that their value will increase and compensate for the changes. The market for Tibetan

crops is limited and declining. Tibetan barley and wheat have no export potential outside of Tibet because many ethnic groups do not eat barley and find the Tibetan wheat too coarse. Even in Tibet, the increasing consumption by Tibetans of rice, vegetables, and imported white flour, means they are consuming less barley and Tibetan wheat, and this is likely to increase.

Tibetan farmers are aware of these changes and challenges and they are trying to compensate in a variety of ways, for example, by traditional cultural strategies like fraternal polyandrous marriages in which two or more brothers take a wife since this concentrates labour in the household and avoids the need to divide the land the household received at the time of de-collectivisation between the brothers. Families are also increasingly using contraception to have fewer children and, most critically, are actively taking steps to secure non-farm income.

It is clear to rural villagers and their leaders that without a source of non-farm income households can not move from basic subsistence to a good standard of living, and in the future it may not even be possible for households who are now self-sufficient from their fields to remain so if they do not have some source of non-farm income. Nowadays, non-farm income is the singlemost important factor underlying a high standard of living in rural Tibet.

The rural villagers in our study were engaged in five basic types of non-farm work.

1. Migrant manual and low-skilled labour (usually construction)
2. Skilled and craft labour (usually carpentry, masonry, painting)
3. Private business (running a shop, trading, transportation)
4. Ritual work (such as 'ngagpa' mantra specialist)
5. Government employment (such as official, teacher, health aid)

The majority of rural Tibetans in our study who were engaged in non-farm labour were migrant manual labourers. Migrant labourers typically left the village for a four-month period beginning with the end of planting and returning at the start of harvesting. The different earning capacities of the various types of jobs are substantial. In 1997-98, the reported median income earned per worker engaged in manual labour was only 1,000 yuan net, while that of those engaged in skilled labour was 65% higher at 1,650 yuan net.

In 1998, 44% of all males between the ages of 20-34 in the 13 villages we studied were engaged in migrant labour for part of the year, and 49% of all households had at least one member so engaged.

Table 2 shows the relationship between non-farm labour and household economic status. Whereas 61.6% of rich families had one or more members engaged in non-farm income-producing activities, only 30.8% of the poorest did. And whereas 21.5% of rich households had two or more non-farm income earners, only 3.7% of poor households did.

Table 3 shows that for those households engaged in non-farm work, there was a big difference in the amount of earned income for rich and poor families. Whereas rich families had net incomes of 3,900 yuan per year, poor families netted only 700.

Table 2: Percentage of households having one or more non-farm labourers by economic status

Economic Status	% having 1 or more non-farm wage labourers	% of households having 2 or more non-farm wage labourers
Rich	61.6	21.5
Middle	54.6	15.4
Lower Middle	42.3	2.8
Poor	30.8	3.7

Table 3: Median income in yuan for households from non-farm work by economic status

	Median Income
Rich	3900
Middle	1500
Lower middle	1000
Poor	700

In rural Tibet, small amounts of earned income make a big difference in standards of living. For example, if we take the 1,280 yuan (the median income) earned on average by households who had a member engaged in non-farm work, that was equivalent to approximately 29% of the cash value of their total grain production.[1]

[1] To obtain this estimated cash value of crops we multiplied the average number of mu / household (17.4) by the average seed sown for barley (30 jin) by an average yield of 11 times the seed sown to get the total yield in barley. The price for a jin of barley in 1998 was 0.78, so this was multiplied to get the cash value. This is a rough estimate since a portion of the crop is wheat and oil seed, but it suffices to give a general idea of the importance of this income

Non-farm labour, therefore, is clearly related to the socioeconomic status of farm households and, it is significant to note that, in the poorest area we studied, only 24% of households were engaged in non-farm labour.

Given the trends in per capita landholdings that are mentioned above, the problem, therefore, for most rural Tibetan households, is how to gain access to the world of non-farm income. Villagers commonly complained that there were not enough jobs for them and that, because their skill levels are low, most of the jobs they find pay poorly. There was widespread frustration about the difficulties villagers faced in finding jobs, let alone good jobs.

Rural Tibetan farmers now find themselves in competition for construction jobs with large numbers of more skilled and experienced workers from other areas of China, and this competition may well increase. How rural Tibetans will fare in the future, therefore, is less than clear. If they are able to increase access to income from non-farm labour, I think the majority of households will continue to improve their standards of living. However, if they are not, then there may be an overall decline in standard of living over the next decade unless measures are taken to prevent this.

The development strategy for rural Tibet should be seeking to foster the development of a mixed economic model that includes farming and non-farm labour components. What rural Tibetans really need at this point in time is a combination of short-term and long-term programmes that will develop new opportunities in farming (cash crops, new seeds, more irrigation, flood control, and setting up innovative self-sustaining programmes like the five-year revolving sheep and goat bank programme Dr. Ben Jiao and I established in Ngamring xian) as well as providing concrete programmes that will assist rural Tibetans to secure more non-farm work and, gradually, higher quality non-farm work.

I would like to suggest today that one such programme for the government to consider now is to implement a programme of what we call 'set aside' contracts/projects for Tibetans to ensure that they(Tibetans) are able to earn some off-farm income from government contracts and sub-contracts and are productively employed in government projects. This would infuse substantial income into the rural Tibetan economy and greatly enhance the standard of living. It would also give rural Tibetans greater motivation to pursue education and vocational training and could transform life in rural Tibet. Programmes like this are carried out in many parts of the world and are consistent with China's laws and regulations. The State Council's recent White Paper on Tibet, for example, reiterated that "the

Tibetan people have full decision-making power in economic and social development", so crafting a programme to specially assist Tibetans for some period of time—ten years—to secure jobs and contracts is not a problem legally. At the same time, it would be useful to experiment with a more focused Tibetan 'Job Corps' programme that would organise a government-funded education and vocational training scheme that helps young people from the ages of 16 through 30 to enroll in boarding programmes to learn a trade and other relevant subjects like the Chinese language, and then helps them to find work, e.g., in the set-aside programme projects. Such a development strategy would integrate rural Tibetans more completely into the wider economy and demonstrate to them that their needs at this time are being taken seriously and acted upon. It would be a popular win-win approach for all.

In closing, there are many things that rural Tibetan communities need, and different areas certainly have different circumstances that must be factored in, but, in general, because of the ongoing pressure of declining per capita landholdings, increasing inflation in necessary commodities, and escalating tax and health responsibilities, I think a major emphasis in Tibetan rural development must be to include programmes that address what rural Tibetans themselves primarily want and need—assistance in generating non-far income.

Innovative programmes that facilitate rural Tibetans obtaining more non-farm income are the key to improving their standards of living in the coming decade. Intensifying food production will not be sufficient, particularly in the poorer upland village areas. What are needed are programmes to provide non-farms jobs to rural farm families (or to assist them to locate them) that are given as much priority as programmes to reduce flooding and improve seeds and crops. It would only take a fraction of the expenditure used on infrastructure to increase standards of living in rural Tibet and it would be well worth the money spent.

Chapter 13

National Strategies for Rural Development in the TAR

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Introduction

This Conference held by the TAR government with support from TAAAS, InWEnt, and ICIMOD, is a timely and relevant event. In the past few days, experts from abroad, other parts of China, and Tibet have come together to exchange their knowledge and experience in sustainable rural development in mountainous regions. They have put forward valuable suggestions about the development of agriculture and animal husbandry in Tibet, and we have greatly benefited from them. In this paper, I would like to provide a brief introduction to agriculture and animal husbandry in Tibet and our policies for rural regions.

General status

Tibet lies in the southwest of China, sharing borders with other Chinese regions such as Xinjiang, Qinghai, Sichuan, and Yunnan, as well as other countries like India, Nepal, Burma, and Bhutan. It has a total area of over 1.2 million sq.km.

There are altogether seven prefectures with a total of 74 counties in Tibet. By the end of 2003, there were over 2.7 million permanent residents in this region, of which 2.2 million lived in rural areas, making up 84% of the total population. Around 2.46 million were of Tibetan nationality, making up 91.23% of the total population.

Tibet has diverse climatic conditions. Cold dry weather characterises the North-western regions while warm and moist conditions dominate the South-eastern regions. It has long sunshine periods, but low temperatures. The temperature varies greatly between day and night, and the wet seasons are clearly divided from the dry seasons. The air is fresh, but its content of oxygen is low. The average altitude of the region is above 4,000 metres, hence it is called the 'Ridge of the World'. The annual average temperature of Lhasa city is 7.5°C, and the average annual rainfall is 445mm.

Agriculture and animal husbandry constitute the basis and backbone of the Tibetan economy. The whole autonomous region has 3.5 million mu of farming land, supporting cultivation of highland barley, wheat, rice, rape, peas, broad beans, corn, and green vegetables. There are also 15 billion mu of rangeland supporting approximately 23 million free-ranging livestock, mainly yaks, cattle, sheep, goats, horses, pigs, and chickens. For many years, under the leadership of the Chinese Communist Party and through the joint efforts of the people in the Tibet Autonomous Region, the agriculture and animal husbandry in Tibet have been improving rapidly. Especially in the 21st century, the focus of agriculture and animal husbandry in rural areas in Tibet has shifted from productivity-promotion to profit-promotion, and the economic effectiveness of agriculture and animal husbandry has been greatly enhanced. Farmers' incomes have been increasing rapidly. In 2003, the production of food, rapeseed oil, and vegetables had recorded an increase of 1, 15, and 87.4% respectively over their production in the year 2000. Meat and milk production had also increased by 22.6 and 26.5% respectively during the same period. The output of village and township enterprises and the output of the diversified economy had increased by 56 and 98%, and the per capita net income of rural households had increased by 27%.

Policies for rural areas

Ever since the peaceful liberation of Tibet, the central government has attached great importance to the life of rural households. At different periods, the government has made different policies to motivate people to increase agricultural production, to improve the living standards of rural people, and to promote the economy in rural areas. Such policies were well received by the rural people. It is obvious that all the achievements we have made in Tibetan economic development since the peaceful liberation were because of the support of the central government and of people from all over the country. The present preferential policies for Tibetan rural areas can be summed up as follows.

- *Providing the user with rights to land and ownership of livestock:* In rural areas of Tibet, the right of land use is given to individual households. Every household is independent in management, and this policy will be unchanged for a long time. In addition , every household can own and manage its own livestock. Under this policy, while the ownership of land remains with the state, individual households are encouraged to lease it for planting trees and grasses. The government guarantees that the profits from land thus developed and managed will be enjoyed by the leaseholder. This right to land use and economic benefits can be inherited. The execution of this policy has provided a steady and solid basis for improving the productivity of land and the livelihoods of rural households.

- *Exemption from taxes:* Rural households in Tibet are exempt from agricultural and livestock farming tax as well as agricultural speciality tax and its surtax. Similarly, village and township enterprises are exempt from income tax. In addition, there are further policies to relieve the burden on farmers and herders. These policies have already been put into action.

- *Provision of intensive development assistance:* The whole of Tibet has been identified as a poverty area and provided with intensive development aid. Such aid is available to all rural areas in Tibet. According to statistics, from 2001 to 2003, the central government invested 885 million yuan in the development of Tibet, and the rate of absolute poverty has decreased to under five per cent.

- *Provision of financial subsidies for farming:* Rural households in Tibet are provided with financial subsidies to purchase farm inputs to increase production. Annually, the central government allocates 72 million yuan for the purchase of chemical fertilizers; 31 million yuan for the purchase of pesticides, veterinary medicines and vaccines; and 10 million yuan for the mechanisation of agriculture and supply of diesel oil. In addition, there are various types and amounts of subsidies for purposes such as increasing improved varieties of animals and crops, fighting and preventing calamities, and adopting practical technology in agriculture and animal husbandry.

- *Supporting water conservation and energy projects:* The construction of water conservation and hydropower projects is supported in rural areas of Tibet through implementation of the integrated development of the drainage areas of important rivers. According to statistics, since 2000 A.D. the central government has invested approximately 3,000 million yuan in the construction of such projects in rural Tibet in the form of small hydropower stations, irrigation canals, drinking water supply systems, and so on. This has increased the capacity of power stations by nearly 20,000 kilowatts and the rate of household electricity use by over 50%. The area of properly irrigated land has reached 2.1 million mu. The project has also solved the problem of drinking water supplies for 0.33 million people and 3.88 million livestock in 1,870 villages. Concerning integrated agricultural development, in the past three years the central government has invested nearly

400 million yuan in establishing pilot villages for agricultural and animal husbandry production and technology. This project has enabled people in such villages to gain an increase in per capita annual net income of over 287 yuan.

- *Supporting the improvement of the ecological environment:* The protection and improvement of the ecological environment in rural Tibet are actively promoted. Since 2001, the central government has invested 130 million yuan in the improvement of pastures and the settlement of herders in 14 counties. This project has settled 27,515 herders in 5,503 households. The government has also invested 440 million yuan in pilot projects for natural pasture construction in nine counties and has finished enclosing cultivation of grassland with an area of 270,400 mu. There is also a planned investment of 125 million yuan in three counties for converting grazing land into non-grazing grassland in an area of 1.3 million mu. The government has also invested 261.57 million yuan in three counties for the protection of natural forests in a total area of 18 million mu.

- *Improving access to information:* This is pursued through the project for 'Bringing Television and Radio to Every Village'. By the end of 2003, over 6,000 village TV and radio stations had been established in the whole Tibetan Autonomous Region. Forty-two of the 74 counties have fulfilled the goal of 'bringing TV and radio to every village'. In addition, training of rural film projection teams has intensified, and this enables rural people to watch films twice a month. The government has also established 600 cultural stations at township and village levels and has formed a cultural network at regional, prefectural, county, township, and village levels.

- *Providing free medicare for rural households:* Rural households are provided with free medical care and a health service system covering the whole of Tibet was established. Presently, there is a commune hospital in every township in Tibet and most villages have health workers. Health service networks with county cities as their centres, linking every village, are operational. The per capita annual health care subsidy provided by the central government is over 40 yuan.

- *Supporting childrens' education:* Free food, clothing, and accommodation are provided to students in primary schools in rural Tibet. Increased investments are being made in promoting compulsory education, vocational training, adult education, and distance education in order to eliminate illiteracy. Presently, the

enrollment rate of school-aged children has reached 92%, and the coverage of six-year compulsory education has reached over 80% of the total population.

- *Intensifying support for the development of Tibetan transportation:* A railroad from Qinghai to Tibet, with a total state investment of 262 billion yuan, is under construction. It is expected to be completed in 2007. The construction of branch airports, such as the Nyingtri airport, has begun. The percentage of townships and villages accessible by motor has reached 92 and 72% respectively.

Plans for future development in rural areas

The future development of rural Tibet will be centred on increasing the income of rural households by focusing on adjustment of the economic structure in rural areas. A correct outlook towards sustainable development should be adopted. According to the requirement for the integrated development of cities and rural areas, and with regard to the source of income for rural households, we will try to realise the 'Three Extensions' and speed up implementation of the 'Five Strategies'.

The three extensions

- *Extension of the source of income in rural areas from agriculture and animal husbandry to processed products and marketable commodities:* With the support of agricultural and township enterprises, the processing of agricultural and livestock products will be promoted. In doing so, caution will be taken to combine the available skills with advanced technology in order to develop highly competitive products. Effective measures to expand circulation channels for agricultural and livestock products will be taken to promote the systematisation of marketing, support cooperative organisations in rural areas, and speed up the marketing of agricultural and animal husbandry products.

- *Extension of production from the first industry to the secondary and tertiary industries:* Support will be provided to develop alternative opportunities for employment and income to traditional farming, e.g., deployment of rural labour service, livestock product processing, transportation, tourism, food and lodging services, and so on to open up channels of income. In recent years, the TAR Government made a series of preferential policies to support the use of the rural labour force. These policies require all infrastructure projects to intensify the absorption of surplus labour in rural areas. The government also acquires the participation of farmers in state-funded rural construction projects by paying

them lucrative amounts. Continued importance will be attached to the deployment of labour as an important means of increasing income by training the labour force in relevant skills. Intermediary organisations for recruitment of labourers and for safeguarding their interests and well-being will be established. Agricultural and township enterprises will be encouraged to absorb surplus labour in rural areas, intensify the training of rural labourers, and improve the connection between enterprises and rural households to try to make agricultural and township enterprises exert greater influence in development of the rural economy.

- *Extension of the presently mono-sectoral rural economy to integrated development of the city and rural economy*: Efforts will be intensified to combine the development of county towns, small towns, and rural households. Rural labourers will be provided with assistance to work in towns and cities and agricultural enterprises will be promoted to accelerate the growth of an economy based on agriculture and animal husbandry. Effective measures will be taken to support county-specific pillar industries that take into account the special resources of each county. The participation of the agriculture and animal husbandry sectors in the market economy will be encouraged by exploiting the advantages offered by local conditions and resources, improving communication and production technologies, and building the capacity of the institutions and personnel involved.

The five strategies

- *Promote the production of niche products*: The first strategy is to develop the economy based on the unique and comparative advantages of Tibet in order to survive in the market . The development of special industries will be a key aspect in the strategic adjustment of the rural economic structure and an important way of increasing income for rural households. In future, with regards to different geographical types, resource features, economic layout, and comparative advantages, products with a market advantage are to be developed, i.e., Cashmere wool, caterpillar fungi, mushrooms, rapeseed oil; and products with high potential such as meat from yaks and Tibetan sheep, improved highland barley, dried fruits, traditional Tibetan medicine; organic vegetables, fruit and tea; and resource conservation products such as fish, edible worm eggs, Tibetan chicken, and pigs. Production is to aim at achieving high quality, low cost, and high efficiency. An integrated development plan will be implemented based on advantageous industries and fast-growing products, improving the competitive power of the rural economy and increasing the income of rural households.

- *Promote industrialisation and integration with the market economy*: The second strategy is to promote industrialisation and integrated development. Industrialisation will be set as the main thrust for economic development of the autonomous region. The development of leading enterprises is the key to industrialisation and to breaking the barriers between traditional sectors and district divisions, providing support to those who are capable and willing to develop, and supporting leading enterprises that can give impetus to the development of industrialisation. Through such leading enterprises, the needs of individual household production and the demands of the market can be brought together, leading to the transformation of household production into large-scale specialised production. Through leading enterprises, a value chain of production, processing, and marketing can be formed. The output from agricultural and livestock products will continue to increase and enterprises and rural households can both benefit. Through leading enterprises, the mono-sectoral rural economy can be converted into labour-intensive processing industries and commercial industries, thus creating more job opportunities and income for rural households.

- *Modernise agriculture and animal husbandry*: The third strategy is to speed up modernisation of agriculture and animal husbandry and to promote quality and economic efficiency. The basic requirements for modern agriculture and animal husbandry are a high degree of efficiency, systematic renovation, scientific management, and sustainable development. In future, technological development and renovation will be seen as a key method for addressing the following five challenges. The first challenge is the focus of the scientific research and extension system, which needs to shift from quantity increase to quality improvement, and from mono-technical service to provision of integrated technical services. The second challenge is the application of core technology and research to the development of special industries. A series of important scientific research achievements are to be attained and spread among rural areas, in order to provide strong support for the development of special industries in such areas. The third challenge is the quality of livestock products, for which the protection of the environment for livestock production and the management of agricultural production are critical. The fourth challenge is the training of new types of qualified staff, especially farmers, who have appropriate knowledge of technology, operation, and management. The last challenge is the sustainable development of agriculture and animal husbandry, and this should not take place at the expense of the environment and resource degradation. The agriculture

and animal husbandry sectors are to be developed along with the development of the environment and resources.

- *Develop new industries*: The fourth strategy is the development of new industries to make use of surplus labour in rural areas. New industrialisation is a historic mission in the process of our country's modernisation. Industrialisation cannot be confined to light industry and heavy industry. Livestock cultivation, livestock product processing, and many other special industries are very important in the context of industrialisation. The new industrialisation in Tibet Autonomous Region must be based on the shift of surplus rural labour and the promotion of employment and income of rural households. While we develop our new technological industries, we should also develop labour-intensive industries, agricultural and livestock product-processing industries, and tertiary industries in rural areas. According to the latest development trend, township enterprises are being restructured, diversified modes of ownership and management promoted, specialty products developed, and large-scale production introduced. The use of information technology is being promoted in the development of township enterprises, as well as in other fields such as production, processing, circulation, service, and management to diversify product types, improve product quality, lower production costs, and improve production efficiency.

- *Promote urbanisation*: The fifth strategy is to promote urbanisation in order to reduce the rural population. Presently urbanisation in Tibet is still very low, and 80% of the total population still lives in rural areas. This has seriously restrained development of the rural economy and the income of rural households. In the long run, urbanisation can reduce the rural population and facilitate development of the rural economy. The principle of moderate scale and effectiveness will be based on development of small towns in rural areas as a leading force in the integrated development of urban and rural areas. The construction of small towns with the development of township enterprises, service trades in rural areas, and agricultural and livestock processing will be promoted. The key elements of this strategy are to develop rural markets and activate commodity circulation in rural areas to promote the division of labour among rural residents; make small towns the new growth points in the rural economy; and facilitate their being the main force in absorbing surplus labour from rural areas.

Coordinated development of urban and rural areas has been one of the core goals of the central government. This will require improvement in the capability to manage the overall situation and commitment to the

'three rural issues', i.e., promotion of integrated social and economic development; improvement of overall programming and planning; and promotion of different industries to absorb surplus labour and generate employment and income for rural people.

Conclusions

The rural areas of Tibet have come to a new stage of development with exciting opportunities and challenges ahead. It is hoped that, with the support of the central government and development agencies from abroad, the TAR will be able to realise the opportunities and meet the challenges posed by its unique environment.

Chapter 14

The Assessment of Land Resource Conservation and Utilisation in Source Regions of the Yangtze, Yellow, and Lantsang Rivers

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Introduction

This paper analyses the status of land resource use in the source regions of the Yangtze, Yellow, and Lantsang rivers in Qinghai and argues that priority should be given to protecting and enhancing the efficiency of grassland use. It examines the fact that the potential for intensive use of land resources is very small. The paper looks at the factors causing degeneration of grassland and the main land types, beginning with a general description of the study area, and it puts forward a series of recommendations for using grassland in a sustainable and rational manner.

The general situation in the study area

District coverage

The source regions of the Yangtze, Yellow, and Landsang rivers lie at 89°24' to 102°41'E and 31°39'to 6°16'N. They cover the hinterland of the Tibetan plateau, where the average elevation varies from 3,450 to 6,621m; and include 24 counties-which include Yushu(except Kekexili), Guoluo, Huangnan, Hainan (part of Ganghe county), Xunhua county and Hualong county in Haidong region and one village(i.e., Tanggula village of Ge'ermu). The area of the drainage basin in Qinghai is 31.8190×10^4 km^2- 44% of the total area of Qinghai.

Natural environment

Since this region is in the interior of the Tibetan plateau, it has a plateau climate, i.e., cold, dry and windy, with strong radiation. The yearly average air temperature ranges from -6.0°C to 4.0°C ,and the annual average precipitation is about 300mm. Soil types include alpine tundra

soil, alpine meadow soil, and alpine pasture soil. Given that the soil formed over a short duration, the soil layer is thin and has poor chemical properties and strong physical variations, so it is difficult to restore the constituents of the soil once destroyed. The vegetation types in source regions from southeast to northwest are mountain forestry, alpine shrub and shrubbery, alpine meadow, alpine grassland, and alpine scree vegetation. Alpine grassland, which is the dominant vegetation type in the region, will be discussed in this paper.

Basic characteristics and main problems about soil use

Basic characteristics of land use

There are 173,100 ha of cultivated land (including garden land) in this region, accounting for 0.57% of the total area, and this land is mainly to be found in Xunhua,Hualong, Guide, and Jianza counties. Forests are mainly to be found in southeast Huangnan and Guoluo and south of Yushu, and the area they cover is 1,229,500 ha, which is 3.8% of the total area. The area covered by water is 1,372,200 ha or 3.95% of the total area. What is more, an area of 4,009,000 ha is bare as it is covered by glaciers, jokul (snow/ice-covered mountains), desert, and so on, which covers 11.04% of the total area.

In this area, the status of land use generally coincides with the characteristics of the soil. On all types of land, the area of grassland is much more than that of forestry and farmland. According to the records, in 1998, the grass land area accounted for 251,681.3 sq.km., covering 79.1% of the total area of the source region of the three rivers, 212,248 sq.km.of which is usable or 84.33% of the total grass land (Table 1). This determines the orientation of animal husbandry development in the source region. The area of swamp, glacier, and jokul accounts for above 80% of the total area of unusable lands that are difficult to exploit, so the potential available land resources are limited.

Table 1: Area of grassland in the source regions of the Yangtze, Yellow, and Lantsang rivers in 1998

Unit: km²

Land area	Grassland area	Available grassland area	Percentage of grassland (%)	Percentage of available grassland (%)
318190	251681.3	212248	79.1	84.33

Source: Qinghai Bureau of Statistics. *Plare Data during 50 years*. Beijing: China Statistics Press, 1999

Grassland resources and main problems

The key factors leading to grassland degeneration in source regions of theYangtze, Yellow, and Lantsang rivers contain natural factors and human factors. The climate is dry and chilly; the growth period for grass is short, which confines vegetation growth making it lower, sparser, and even withered. Humans tend to overuse the grasslands, which accelerates the trend of grassland degradation. Overgrazing restrains the growth of root, stem, and leaf of edible grass to a significant degree. Thus, the height, cover area, and growth speed decline sharply, and the grass quality is reduced annually, which not only influences grassland productivity but also produces a large amount of noxious grasses and weeds that occupy space and provide spaces for rodents. The rampant activity of rodents results in great damage to the feeble soil structure and withering of grass. The bare surface soil is carried away by wind converting the cold meadows to deserts. It is reported that the grassland area of upwards of moderately degraded resources is 10,323,000 ha (35% of the total area), among which the black soil type covers more than 2,000,000 ha. Compared the 1950s, the yield of pasture per unit area has decreased by 30 to 70%. The construction of grass community and variety has changed and the degradation of palatable forage grasses has resulted in the loss of grazing. For example, from 1988 to 1998, while the area of grassland and the available grassland in the whole region increased by 1,961,600 ha and 105,300 ha (Table 2), the use efficiency declined by 5.7%. The basic reason is the degradation of the quality of grassland.

Table 2: Changes in grassland in the source regions of the Yangtze, Yellow and Lantsang rivers in 1988-1998

Unit: 10^4 hm²

Year	Grassland area	Available grassland area	Availability ratio
1998	2516.81	2122.48	84.3%
1988	2320.65	2111.95	91%

Black soil type degraded grassland

The degradation of grassland in this area, especially the formation of the black soil type is due to both natural and biological factors. The natural factors include wind and water erosion, frequent freezing and melting of grassland, and a warmer and drier climate, amongst others. The biological factors consist of seasonal overgrazing over prolonged periods, damage due to rodents, excessive reclamation, and aging of fields, amongst others. Overgrazing is the main reason for the grassland's ecological unbalance and the degradation and the formation of black

soil types over vast areas. There are 3,333,000 ha of black soil type degraded grassland in Qinghai, and this is mainly distributed in the source regions of the Yangtze, Yellow, and Lantsang rivers, namely, in Yushu and Guoluo as well as in Zeku county. There are 33,000 ha of black soil type grassland in Zeku county, among which the moderately degraded accounts for 48.02%. Guoluo has 1,234,000 ha of black soil type grassland, accounting for 37% of the whole black soil type (Table 3). In Guoluo, this type mainly occurs in Maduo and Dari counties, accounting for 51.39 and 32.97% of the whole degraded grassland. In Maduo and Dari counties, where grassland degradation is very serious, damage caused by rodents is very severe, accounting for 52.02 and 20.25% of the entire area damaged by rodents.

Table 3: Status of degraded grassland in Guoluo Canton

Unit: 10^4 ha

County	Black sandy degraded grassland area	Area damaged by rodents and insects					
		Total	Rodent damaged area	Rodent appearance area	Insect pest area	Insect appearance area	Intermix area of rodents and insects
Maduo	63.41	128.81	121.29	4.75	/	/	2.27
Magin	7.25	28.38	22.61	0.43	0.57	/	4.77
Gande	8.05	22.27	19.48	0.16	/	/	2.63
Dari	40.69	50.13	44.24	1.65	/	/	4.24
Jiushi	1.76	11.11	6.4	0.46	/	0.04	4.21
Banma	2.24	6.9	5.9	1.0	/	/	/
Total	123.40	247.60	219.92	8.45	0.57	0.04	18.62

Desertified grassland

Desertified grassland in the source regions of the Yangtze Yellow, and Lantsang rivers is mainly distributed in farming and pastoral areas, and the condition in Gonghe County is the most serious and typical (Table 4). The total area of desertified grassland in Gonghe and Guinan is 1,267,000 ha, accounting for about 29% of Hainan. The main types of degradation are *Achnatherum splendens*, *Orinus thoroldii*, *Stipa purpuroscens*, and *Iris lactea var.chinensis*. The area of degraded grassland in Gonghe is 506,000 ha or about 39.3% of the county's grassland, among which lightly degraded grassland covers 63,800 ha, accounting for 12.61%; moderately degraded grassland covers 412,200 ha, accounting for 81.47%; and heavily degraded grassland covers 30,000 ha accounting for 5.92%. The degradation of grassland results in the decline of productivity (Table 5) . The production of *Achnatherum splendens* has decreased by 45.8%, and the overgrazing is serious.

Table 4 : Status of degraded grassland in the main regions in Hainan Canton

Unit: 10^4 ha, 10^4kg, 10^4head

County	Grassland area	Degraded grassland area							Percentage of Degenerative grassland %	Population	Livestock capacity decline (goat)
		Total	Lightly degraded		Moderately degraded		Heavily degraded				
		Area 10^4 km²	Area 10^4 km²	%	Area 10^4 km²	%	Area 10^4 km²	%			
Tangke	47.5	31.8	16.1	82.89	0.6	2.68	3.2	14.43	45.91	260739.90	25.23
Xinghai	106.2	39.1	20.9	53.42	8	20.56	10.2	26.02	36.82	370468.30	29.57
Guinan	57.4	28.6	15.8	55.23	10.8	37.69	2	6.98	49.82	433038.52	29.46
Gonghe	138.8	30.6	6.4	12.61	41.3	81.47	3	5.92	36.38	87690.84	59.99

Source: *Statistical data of Hainan canton*

Table 5: Change in productivity of grassland in Gonghe

Unit: kg/ha

Site	Grassland types	Average in 1974	Average in 1982	Percentage of decline in production (%)
Gonghe	*Achnatherum splendens* Pasture on bottomland	3060.0	1657.5	—45.8
	Orinus thoroldii Pasture on bottomland	1782.0	1210.5	—32.1
	Kobresia capillifolia Pasture	2955.0	1893.0	—35.9
	Kobresia pygmaea Pasture	2655.0	1834.5	—30.9
	Iris lactea var. chinensis Pasture	5985.0	4348.5	—27.3

Source: Shi and Wang 1994

Poisonous and weedy grassland

This pattern of degradation happens to all kinds of grasslands and in all kinds of climate conditions. The degradation process from the grassland from good quality to poisonous and weedy, mainly, *Achnatherum inebrians*, *Oxytropis globra*, and *Ligularia virgaurea*, decreases the ratio of availability of grassland and does great harm to livestock. Other factors include the over-exploitation by humans and the rampant activity of rodents.

Improving use and sustainability of grasslands

Management of grazing capacity

Grassland degradation is accelerated by overgrazing, especially in the regions were there is desertification. It is necessary to control the numbers of livestock according to the grass available in different seasons so that the grazing capacity of grassland is not exceeded.

Grassland restoration

Productivity and quality of grasslands can be improved through reseeding with grass species that are suitable for the natural environment and require little or no soil disturbance. This should be aimed at conserving local species, increasing grass varieties, improving grass quality and productivity, and preventing the grassland from desertification.

The most efficient measure for recovering and improving degraded natural grassland is by enclosing and closing pastures in the degraded areas. Enclosing facilities can benefit forage growth, allow seeds to mature and reseed, and improve vegetation varieties and the productivity and quality of grassland. Examples can be cited of the biomass of *Kobresia* meadow in a semi-enclosed situation for three years increasing by 44.41%, the edible grass increased to 78%, the non-edible grass decreased to 22%.

Rotational grazing

Rotational grazing can increase grazing capacity by 10–20%, because the intake rate of livestock is much higher, the vegetable composition of forage is raised , the productivity and quality enhanced , the management improved, labour saved and labour intensity lowered, and reseeding and fertilization is enabled and weeds cleared in the rotational grazing areas at the same time. One of the measures for reasonable use of grasslands is to choose livestock according to the different kinds of pasture and promote rotational grazing according to the season.

Enhancing grassland management

The black soil type degradation trend can be managed through timely control. At the same time, the spread of rodent damage can be prevented through carrying out biotic control methods. Biological control and biological synthetic products, for example, type C which is environmentally friendly as well as non-toxic to livestock and human beings. What is more, it produces less contaminants in the ecological system. The method has been used widely in Qinghai province and in the other northern provinces of China, and it has resulted in the average fatal rate of type C reaching more than 90%. In the source regions of the Yangtze, Yellow, and Lantsang rivers, type C should be chosen to kill rodents efficiently and safely.

Context-specific models

In the source regions of the three rivers, different areas must choose different uses and protection patterns for grasslands according to their different natural, social, and economic conditions. Dividing the source region into farming areas and pastures and better protection patterns could be put into practice in these three areas.

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Chapter 15

Experiences of Aid Agencies in the TAR Shared at the Round Table Meeting

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Introduction

The Round Table Meeting (RTM) was held so that various development and aid agencies working in Tibet could share their experiences. It was moderated by Dr. Nyima Tashi, Vice-President of TAAAS, and attended by representatives from the Bridge Foundation, Canadian International Development Assistance (CIDA), EU (European Union), The Mountain Institute(TMI), The Swiss Red Cross, the Tibet Poverty Alleviation Fund, and World Concern. The organisations were involved in a wide range of socioeconomic development programmes in Tibet, including rural development, education, and health services. The participants were asked to share their experiences and the major challenges they faced in implementing their activities in the field. The RTM was conducted in an open session which provided the representatives with an opportunity to respond to questions from the other participants at the Conference.

Development planning, approach, and strategy

The participants stated that the examples of agricultural development, from Himachal Pradesh, India, and of integrated rural development from Pakistan are relevant for TAR. They emphasised that community mobilisation and institution building were fundamental prerequisites for sustainable development and lauded the approach of the Aga Khan Rural Support Programme (AKRSP), Pakistan, in addressing gender issues by including education for women. There was general agreement that educating women must be given high priority since "an educated mother will educate the whole family."

The participants at the RTM also acknowledged that cultural dimensions needed to be considered from the inception of development programmes

to ensure that interventions are acceptable to the beneficiaries. They stressed the need for adequate time for consulting local communities to ensure that their views and priorities are taken into account. The representative from World Concern mentioned the difficulty associated with communication between the various stakeholders, which is not just limited to communications between foreign aid workers and the beneficiary communities but also between the Chinese and local officials, as a result of language and cultural differences. This problem is aggravated by the vast distances involved in travelling, making it nearly impossible to bring people together for joint meetings.

The representative from the EU pointed out that it is not realistic to expect results from a few years of work and that commitment from donors and development partners should be extended over several phases. Due to lack of follow-up and continuity, successful innovations and useful lessons are lost before they produce tangible impacts. He also emphasised the importance of an integrated and coordinated approach among the various agencies in the field.

The participants also stressed the need for improved coordination among the line agencies of the government involved in providing services to the rural people. They mentioned that the services are disconnected and isolated, even among closely-related sectors such as livestock and agriculture. Similarly, the energy crisis in remote areas cannot be solved by a single sector and requires the cooperation of several sectors, e.g., energy, forests, and livestock, in order to exploit the potentials of various sources.

Education services

In the education sector, some of the participants thought that, even though they helped build schools, they faced difficulties in encouraging parents to send children to school because of the lack of employment opportunities for educated youth. Even those who have gone to school become misfits and do not engage themselves productively. Hence, it was agreed that creating employment opportunities and equipping youth with skills through vocational training should be given high priority.

Health services

The organisations involved in medical aid emphasised the fact that development is linked to health and vice versa. According to them, "poor health results in poor productivity." The Swiss Red Cross representative noted the remarkable progress that had been made in controlling diseases like smallpox and leprosy in the last few decades, but stated that

there are still major problems. Of these, the two most important health problems at present are related to iodine deficiency and lack of clean drinking water. The soils of Tibet have no iodine, and since intelligence quotient (IQ) levels suffer from lack of iodine, the IQ level of those badly affected by iodine deficiency is only 29, which explains why there are so many 'kugpas' (mentally challenged people) around. The average IQ level in iodine deficient areas is only 85 compared to an average of 100 in non-deficient areas. Therefore supply of iodised salt and iodised capsules should be given high priority to reduce the number of such cases.

The Tibet Poverty Alleviation Fund (TPAF) also shared its experiences in linking health and development and the representative said that, although Tibet has good conditions for health as it is difficult for germs to survive the cold harsh environment, its people still suffer from a variety of ailments. However, many health problems are due to bad behaviour and practices: poor feeding habits of children, poor hygiene, bad sanitation, poor maternal health care, and poor road safety. As a result, most casualties are related to malnutrition in children (40%), complications after child-birth for women, and road accidents for men. As doctors almost always focus on curative rather than preventative measures, there is a lack of awareness and knowledge on the part of rural people about preventative measures, and the development agencies need to address this. There is an eminent threat of spreading infectious diseases such as Hepatitis B through unsafe injections in rural clinics. Other problems are associated with poor food habits and sanitation such as epilepsy and tapeworm infections.

Income generation

The participants acknowledged the challenges of promoting income generation in remote rural communities, in particular the difficulties of providing access to credit and investment capital. This is also the challenge faced by the Agricultural Bank of China throughout Tibet, i.e., how to provide credit to remote villages. The TPAF had started a micro-finance scheme six years ago for very remote communities and disbursed over 300,000 dollars to over 1,400 women and men in seven townships and three prefectures. While it initially targeted men it has now shifted to targeting women as the repayment rate from women is very high at 90%. Currently it is supporting groups of six or seven women to take up processing village dairy products or woollen garments for the county markets and this is known as the 'Mengshapa' system. In this respect the village representatives play very important roles in organising the groups and facilitating repayment. The use of women leaders as repayment

officials has proved to be very effective. It is of utmost importance to provide training to the recipients. This training should be over a period of three to four days to enable the beneficiaries to understand which of the activities and repayment systems they should choose and to identify problems and solutions. It also enables them to present their proposals to their communities. The interest rate charged to the groups is three per cent and the income from it is used to finance a community education fund. The communities are, however, encouraged to decide how best to use the interest money, and the choices range from paying village doctors to financing visits to other townships to see what other activities can be undertaken. This scheme is a good example of how international donors, the government, and banks can work together to increase income generation in rural areas.

Infrastructural development

The participants noted that, whereas the quality of construction in Lhasa was generally very good, construction in remote villages was very poor. This was attributed to the difficulty of monitoring and the lack of accountability on the part of contractors. Even where construction was good, there was a common inability to maintain the structures and accessories because of lack of resources and capacity at local level. It was suggested that a better procedure for selecting contractors and awarding contracts should be adopted by placing more responsibility on local bodies and beneficiaries. In addition adequate resources should be allocated for skill training to develop the minimum capacity for operating and maintaining services.

Rural-urban migration

Mitigating rural to urban migration is a complex task. One can either encourage people to stay in rural areas by providing them with schools, hospitals, and employment – or help them to migrate to areas with better opportunities. Out-migration from rural areas should not be viewed always as negative, since the decrease in population reduces pressure on natural resources, thus enabling the population remaining behind to have better standards of living. The government's scheme for constructing resettlement villages, which allows for consolidation of the scattered population into viable units for establishing schools, hospitals, and other amenities, was felt to be the right strategy. Combined with provision of vocational training to develop skills, as carried out by the TPAF in Nakchu in relation to construction skills, it has proved to be a winning strategy. However, there was general consensus that alternative options to traditional livelihoods should be provided in rural areas, and migration should not be advocated as the only means.

Focus on women

All the representatives from the agencies shared the view that women must be specifically targeted as the primary conduit for reaching out to the community as a whole whether in terms of access to education, health, micro-credit, or rural infrastructural development. In this respect, the success of the AKRSP in Pakistan and the group lending scheme adopted by the Agricultural Bank of China needed to be replicated. For example, solving the problem of malnutrition among children in Tibet would not occur by simply supplying vitamins and food supplements, but by educating the mothers to feed their children properly. Similarly, the high maternal mortality rates can only be addressed by educating women about reproductive health and hygiene at home.

Donor coordination

The representatives of the donor agencies felt that the TAR government should play a more active role in coordinating the activities of the donor agencies, including the work of NGOs, so that the delivery of services and development initiatives would be much more effective. It could also ensure a better spread of the aid basket among the counties and prefectures to bring about more equitable development. At present, while many agencies work in some counties, there are none in others. In this context, the donor community has already approached the Foreign Affairs' Bureau about establishing a forum for holding donor coordination meetings.

Conclusions

The Chairman wrapped up the meeting and concluded that it had been a very useful session which had highlighted many of the problems faced by the donor agencies and NGOs in Tibet. He assured them that their views were very pertinent and would be brought up with the authorities concerned in the TAR so that the donor assistance and involvement would be more effective and meaningful in future.

Annex 1

Programme

Friday July 23 – Sunday July 25, 2004

Pre-conference field trip for international participants

Saturday July 24, 2004

13:00 - 17:00	Pre-workshop session for TAR participants

Sunday July 25, 2004

08:30 - 12:30	Pre-workshop session for TAR participants cont'd
18:00 - 19:00	Registration
19:00	Welcome Cocktail and Dinner

Monday July 26, 2004

Opening Ceremony

09:00 - 09:10	Welcome Address by *Lobsang Danda, General President of TAAAS*
09:10 - 09:20	Welcome Address by *Hans Pfeifer, Director, InWEnt,* *Environment, Natural Resources and Food Department*
09:20 - 09:30	Welcome Address by *Uwe Wissenbach, First Secretary, EU Delegation,* *P. R. China*
09:30 - 09:40	Welcome Address by *Gabriel Campbell, Director General, ICIMOD*
09:40 - 10:15	Highlights of the TAR Government Plan for Rural Development in Tibet and Official Opening *Mr. Tsering, Vice Governor of the Tibet Autonomous Region for Agriculture*

10:15 - 10:30	Objectives and Structure of the Conference *Ji Yimin, Chairman* *Director of International Cooperation, Department of Rural and Social Development, Ministry of Science and Technology, P. R. China*
10:30 - 11:00	*Group Picture and Tea/Coffee Break*

Plenary Session I: Poverty in Remote and Mountainous Regions

11:00 - 11:10	Working Definitions and Glossary *Ji Yimin, Chairman*
11:10 - 11:30	Sustainable Rural Development in Tibet: from Poverty to Prosperity *Tej Partap, Himachal Agriculture University, India, and Nyima Tashi, TAAAS, TAR, P. R. China*
11:30 - 11:50	Perception, Assessment and Indicators of Poverty and Food Security in Mountain Areas of TAR *Tanzen Lhundup, Chinese Centre for Tibetan Studies, P. R. China*
11:50 - 12:10	Perception, Assessment and Indicators of Poverty and Food Security from the Perspective of the Panam Integrated Rural Development Project *Karl Kaiser, EU-PIRDP, P. R. China,* *Zhan Dui, DOFCOM, Shigatse*
12:10 - 12:30	Introduction to the Working Approach, Terms of Reference and Formation of Working Groups
12:30 - 14:00	*Lunch*
14:00 - 16:00	Working Group Discussions A, B, C, D
16:00 - 16:30	*Tea/Coffee Break*
16:30 - 18:00	Working Groups cont'd
18:30	*Dinner Reception*

Tuesday July 27, 2004

09:00 - 09:10	Introduction to the Day *Ji Yimin, Chairman*
09:10 - 11:00	Plenary Presentation and Discussion of Working Group Results
11:00 - 11:30	*Tea/Coffee Break*

Plenary Session II: Approaches and Experiences (Case Studies)

11:30 - 11:50	Land Resource Management in Herder Areas of Qinghai *Yang Gaihe, Northwest China Agriculture University, P. R. China*
11:50 - 12:10	Livestock Development: Toward Livelihood Improvement of Herders in Tibet *Zhao Haoxin, Chen Yuxiang, Nyima Tashi, TAAAS, P. R. China*
12:10 - 12:30	Environmental Management in the Tibetan Plateau *Zhang Ze Yong, EPA-TAR, P R China*
12:30 - 14:00	*Lunch*
14:00 - 14:20	Rural Livelihoods in Nepal *Kamal Banskota, ICIMOD, Nepal*
14:20 - 14:40	Village-based Development in the High Mountains of Pakistan, Lessons from the AKRSP Pakistan *Abdul Malik, Aga Khan* *Rural Support Programme, Pakistan*
14:40 - 17:00	Round Table Discussion Approaches and Experiences in Rural Development by NGO Projects in TAR *Incl. Tea/Coffee Break*
18:30	*Dinner*

Wednesday July 28, 2004

09:00 - 09:10	Introduction to the Day *Ji Yimin, Chairman*

Plenary Session III: Challenges

09:10 - 09:30	Poverty in the Rural-Urban Gap and Regional Disparities with a Focus on TAR *Lu Qi, CAS, Beijing, Nyima Tashi, TAAAS, P. R China*
09:30 - 09:50	Participation in Development through Local Organisations *Liu Yonggong, CIAD-CAU and Lynda Nicholls, CIDA, Shannan, P. R. China*
09:50 - 10:10	Participation in the National Market and Exchange Relations *Tudeng Kezhu, Tibet University, P R. China*

10:10 - 10:30	Impact of Globalisation on Rural Development in Mountainous Regions *Pema Gyamtsho, ICIMOD, Nepal*
10:30 - 10:45	TOR and Formation of Working Groups
10:45 - 11:15	*Tea/Coffee Break*
11:15 - 12:30	Working Group Discussions A, B, C, D
12:30 - 14:00	*Lunch*
14:00 - 16:00	Working Groups cont'd
16:00 - 16:30	*Tea/Coffee Break*
16:30 - 18:00	Plenary Presentation and Results of Discussions of Working Groups
18:30	*Dinner*

Thursday July 29, 2004

09:00 - 09:10	Introduction to the Day *Ji Yimin, Chairman* *Plenary Session IV: Strategies and Policies*
09:10 - 09:30	National Strategy for Rural Development in Mongolia Karl Wierer, Doljinsuren Nyamdorj *EU-TACIS Integrated Crop and Livestock Project* *Ulaan Baatar, Mongolia*
09:30 - 09:50	Impact of Changing Policies in the TAR *Melvyn Goldstein,* *Co-Director, Centre for Research on Tibet,* *University of Cleveland, USA (presented by Hermann Kreutzmann, University of Erlangen, Germany)*
09:50 - 10:10	National Strategy for Rural Development in the TAR *Prof. Zhou Chunlai, DG, Department of Agriculture and Animal Husbandry, TAR*
10:10 - 10:30	Plenary Discussion and Questions for Clarification

Plenary Session V: Recommendations

10:30 - 10.45	Terms of Reference and Formation of Working Groups
10:45 - 11:15	*Tea/Coffee Break*
11:15 - 12:30	Working Group Discussions on Recommendations A, B, C, D
12:30 - 14:00	*Lunch*
14:00 - 15:30	Working Groups cont'd
15:30 - 16:00	*Tea/Coffee Break*

16:00 - 17:30	Working Groups cont'd
18:30	*Dinner*

Friday July 30, 2004

09:00 - 09:10	Introduction to the Day *Ji Yimin, Chairman*
09:10 - 11:00	Plenary Presentation and Results of Discussions of Working Groups
11:00 - 11:30	*Tea/Coffee Break*
11:30 - 12:00	Synthesis of Conference Results
12:00 - 15:00	*Lunch*

Closing

15:00 - 16:00	Report on the Findings and Official Closing with Invitees (For Conference Participants-Lhasa Sightseeing Tour 16:00 – 18:15)
16:00 - 18:00	Briefing of the TAR Government by the Chairperson and Representatives of Conference Organisers
18:30	*Farewell Dinner and Cultural Show*

Saturday July 31 - Monday August 02, 2004

Post-conference field trip for Chinese participants

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Prof. Liu YongGong
Mr. Frank Diingjie
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Annex 3

Information about the Organisations

InWEnt – Internationale Weiterbildung and Entwicklung gGmbH, Capacity Building International, Germany

InWEnt stands for the development of human resources and organisations within the framework of international cooperation. InWEnt's range of services caters to skilled and managerial staff as well as decision makers from businesses, politics, administrations and civil societies worldwide. Each year, some 55,000 persons participate in our measures.

Programmes and measures at InWEnt aim at promoting change competencies on three levels: They strengthen the individual's executive competencies, increase the performance of companies, organisations and administrations, and at the political level improve decision-making skills and the capacity to act. The methodological tools comprise modules and can be adapted to meet changing requirements in order to provide solutions. Apart from face-to-face situations in measures offering training, exchange of experience and dialogue, emphasis is on e-learning-assisted networking. InWEnt cooperates equally with partners from developing, transition and industrialised countries.

InWEnt's shareholders comprise the Federal Republic of Germany, represented by the Federal Ministry for Economic Cooperation and Development (BMZ), the Carl Duisberg Gesellschaft that represents the business community, and the German Foundation for International Development that represents the Länder (German federal states).

InWEnt was established in 2002 through the merger of Carl Duisberg Gesellschaft (CDG) and the German Foundation for International Development (DSE).

Tibetan Academy of Agricultural and Animal Husbandry Sciences

The Tibetan Academy of Agricultural and Animal Husbandry Sciences (TAAAS) was re-formed in 1995, with the mission to improve livelihoods for rural Tibetans by improving the overall efficiency and productivity of the agriculture system through implementation of applied problem-solving programmes; generation, synthesis, and dissemination of appropriate technologies to farmers and extension-workers; and training of trainers' for integrated mountain agriculture development, rural development, and poverty alleviation projects.

TAAAS is the principal institute implementing Chapter 13 of UNCED's Agenda 21 and the TAR's Agenda 21 for Sustainable Agricultural Development. It is the focal institution for carrying out and implementing national and regional research and development programmes on agriculture, livestock, vegetables and horticulture production in TAR.

There are four research institutes and one laboratory under TAAAS; the Tibet Agricultural Research Institute, the Livestock and Veterinary Research Institute, the Vegetable and Horticultural Research Institute, the Centre for Highland Agricultural Resource Management and Environmental Research, and the Central Laboratory, which was also setup as the Lhasa Centre for Agri-Products Quality Inspection and Control. There are six divisions at the headquarters: the Administration Office, the Division of Finance, the Division of Integrated Mountain Agriculture Industry, the Division of Research Project Management, and the Division of International Cooperation.

As the only academy at the provincial level for conducting research on agriculture, TAAAS has the objective of promoting the development of economically and environmentally sound highland agricultural systems with the vision of securing prosperous and peaceful highland communities in TAR. TAAAS pursues a scientific approach to environmentally sustainable agriculture and rural development in TAR by influencing development decisions and practices. TAAAS implements, conducts, tests, disseminates and consults on problem-solving research and methodologies and it develops models and strategies for sustainable agricultural development by acting as a 'Centre of Excellence' for relevant research, demonstration, extension and training. TAAAS has the roles of mobilizer and promoter, formulator and implementer, trainer and learning transfer centre, consultant and advocate, collaborator and partner, ideas generator, and knowledge centre.

International Centre for Integrated Mountain Development (ICIMOD)

ICIMOD is an international, independent mountain learning and knowledge centre committed to improving the sustainable livelihoods of mountain peoples in the extended Himalayan region. ICIMOD serves eight regional member countries of the Hindu Kush-Himalayan area: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan as well as the global mountain community. Founded in 1983, ICIMOD is based in Kathmandu, Nepal, and brings together a partnership of its regional member countries, over 300 partner institutions, and committed donors. The Centre is multidisciplinary, area-focused, and mountain-based.

ICIMOD's Ecoregion

The greater Himalayan region served by ICIMOD extends for 3,500 km from Afghanistan in the west to Myanmar in the east sustaining over 150 million people. The peoples in this mountain region are disproportionately vulnerable, poor, marginalised and cut off from access to markets and social services. Mountain areas of this region and the world are home to most of today's conflicts. Yet promising new opportunities exist for sustainable, community-based natural resource management, new products and incomes, hazard mitigation, social inclusion and empowerment, long-term sustainability, and effective communication and knowledge sharing.

ICIMOD's Mission

To develop and provide integrated and innovative solutions, in cooperation with regional and international partners, which foster action and change for overcoming mountain people's economic, social, and physical vulnerability.

ICIMOD's Long-term Vision

Prosperous and secure mountain communities committed to peace, equity, and environmental sustainability.

EU-CHINA
Panam Integrated Rural Development Project (PIRDP)

Panam County is located in the south-western part of Tibet in the centre of Shigatse Prefecture. It has a total area of 2,759 sq.km. and a population of approximately 42,000 of whom more than 95% are Tibetans. More than 95% of the area is mountainous and unsuitable for cropping. About 85% of the population live in the two valleys of the Nyashu and Chu Sun and cultivate around 8,700 ha of irrigated land, with an average farm size of 25 mu (1.8ha). Fifteen per cent of the population live as herders from raising livestock (yak, sheep, and goats).

Conceived as a mono-sectoral irrigation project in the early 1990s, the Panam Integrated Rural Development Project (PIRDP) evolved over the years into an integrated rural development project. Between 1994 and 1999, the Chinese side invested the equivalent of around 14.2 million US$ into the construction of the Chu Sun irrigation system: the Chu Sun dam and nine earthen secondary canals with a total length of approximately 58km. The primary canal is the Chu Sun River.

Similar to most other parts of Tibet Autonomous Region, one of the biggest constraints in Panam County is the lack of alternative fuel sources, which forces people to burn manure instead of recycling it to crop land. Other major constraints are unbalanced nutrition, poor hygiene, and the outdated teaching methods in the primary school of Panam County.

PIRDP aims to have, at its closure, developed a sustainable and replicable model for improving the quality of human development of the people of Panam County. With its support to irrigation, agriculture/crops, community forestry, and livestock and extension, PIRDP is contributing towards making the major farming systems of Panam County more sustainable, productive, and profitable (Main Result 1). By providing clean drinking water, basic health, and education, PIRDP contributes towards improving the capacities and capabilities of the people of Panam County.

The total European funds amount to €7.6 million, while in addition to the initial investment the Chinese government has allocated the equivalent of a further €2.3million.

The Ministry of Commerce (MOFCOM) at national level and the Department of Commerce at regional and prefecture levels are the institutions of the Chinese government responsible for PIRDP. At county level, the different components of PIRDP are implemented by the following government line bureaux: Panam County Water Resources' Bureau, Panam County Bureau of Agriculture and Livestock, Panam County Education Bureau, and Panam County Health Bureau. On behalf of the European Union, the German consulting company AHT Group, the British INGO, Save the Children-UK, and the Italian INGO ASIA are jointly implementing the project. The project will end on December 31st, 2005.

Annex 4

Welcome Addresses

Welcome Address
by
Gabriel Campbell, Director General, ICIMOD

Hon'ble Vice Governor of the Tibet Autonomous Region of China;
Professor Lobsang Danda, General President of TAAAS;
Dr. Hans Pfeifer, Director, InWEnt;
Distinguished Guests and Participants;

Dear Colleagues,
I am indeed thrilled to be back here in this great city and to have this opportunity to meet you all. Let me first of all join Professor Lobsang Danda and Dr. Hans Pfeifer in welcoming you to Lhasa on behalf of ICIMOD and my colleagues who are participating in this conference.

It is a matter of great satisfaction to me and to ICIMOD that TAAAS, which is one of our most important partners in mountain development, is hosting this conference on 'Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the Tibet Autonomous Region'. It is only appropriate that this should focus on agriculture in Tibet, as nowhere are the challenges of eking out a living from mountain ecosystems more daunting than on the roof of the world.

I am also particularly pleased to mention here the very fruitful collaboration that we continue to have with InWEnt, Capacity Building International, represented here by Dr. Pfeifer and his colleagues, Dr. Jürgen Richter and Ms. Petra Kade. This conference represents the third of a series of conferences that we have jointly organised with other development partners in the HKH region. The first one was held in Kathmandu from January 31st to February 4th 2000 and the second in Chengdu from November 11th-15th 2002 in collaboration with the Institute of Mountain Hazards and Environment, InWEnt, and the International Fund for Agricultural Development (IFAD). We have published the proceedings of the second conference, and these will have been distributed to you already or will be shortly. We hope that this conference will be as successful as the first and second ones and look forward to a very fruitful exchange of experiences and perspectives for the future development of mountain areas.

Mr. Chairman, Ladies and Gentlemen,
The pre-conference field trip has served to remind us of the many challenges that face sustainable development of rural areas as well as the opportunities for development. We are impressed by the numerous initiatives being taken by the government and its development partners in improving agricultural productivity, in environmental protection, in natural resource management, in social services, and in tourism. Yet, the difference between rural and urban areas was striking; and it reminded us all that there is still a long way to go before rural areas can attain the level of living standards that people in the cities enjoy. There are important lessons that each one of us learned and brought back from the field trip, and these will no doubt help us in guiding our deliberations in the next few days. Let me thank Dr. Karl Kaiser and his team for organising this wonderful field trip.

I see that we have a very comprehensive agenda for the conference, covering many diverse topics from a wide geographical region. We will be hearing presentations ranging from assessment of poverty in Tibet to the impact of globalisation on rural development in mountainous areas; and from livelihood systems in Nepal to a national strategy for rural development in Mongolia. This width in diversity of topics and geography will no doubt allow us to share invaluable experiences and to engage in meaningful dialogues towards better solutions to the problems and more efficient ways and means of harnessing the opportunities available. It will also provide us with a forum for forging closer ties and understanding between rural and urban regions, between mountain regions in different countries, and between professionals and individuals involved in mountain development.

Of the many challenges facing rural mountain communities, out-migration to cities by young people to seek better employment and income-earning opportunities is one that deserves serious consideration in this conference. While, out-migration does have a positive impact in terms of the remittances sent by migrants to the families in the villages and reduction of pressure on local natural resources, it is a drain on the human capital of rural areas, capital that is vital for their sustainable development. Therefore, I feel that the challenge ahead is how to make rural areas attractive enough for the youth to remain behind. It would, in my opinion, need a combination of not only providing basic amenities like schools, health services, electricity, and communication facilities, but also opportunities for employment and income generation within their areas. Therefore, selective investment should be made consciously and adequately in rural areas where there are comparative advantages like

tourism, bio-products, and off-season vegetable production to overcome the traditional supply side constraints in a competitive market. Unless we are able to mitigate the flow of rural-urban migration, we will continue to be plagued with the dual problems of unproductive and empty rural areas on the one hand and increasing numbers of slum dwellers and poverty in the urban areas on the other.

Mr. Chairman, Ladies and Gentleman,
Before I conclude, may I take this opportunity to assure our partners from TAR and other regions and countries represented here, that ICIMOD remains fully committed to working with them to find lasting solutions to the above challenges as well as the many other challenges facing us in the HKH region. In December this year, we will be celebrating our 20th Anniversary with a symposium to reflect on our achievements and to contemplate on our future as a mountain research and development institution. We hope that the recommendations from this conference will help us to embark on a clearer agenda for the future with regards to development of rural mountain areas, which will remain our primary mission.

In concluding, let me thank the organisers, particularly Dr. Nyima Tashi, Dr. Karl Kaiser, and Dr. Jürgen Richter, and their respective teams.

I wish you all a pleasant and memorable stay in Lhasa.

Thank you and Tashi Delek.

Welcome Address
by
Mr. Cheng Zhengrong, Director of TAAAS

Leaders, Distinguished Guests, Ladies and Gentlemen,

Good morning!
Today the International 'Conference on Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the Tibet Autonomous Region' is officially opened. On behalf of the Tibetan Academy of Agricultural and Animal Husbandry Sciences, I would like to extend the warmest welcome and most sincere wishes to our friends coming from afar.

This conference is hosted by the People's Government of the Tibet Autonomous Region, and jointly sponsored by TAAAS, InWEnt, the Europe-China Poram Integrated Rural Development Project, and ICIMOD. The main subject for the conference is the issue of sustainable rural development in Tibetan mountain areas. We have forty international delegates from twelve different countries and fifty-two domestic delegates here with us today. They have altogether submitted twenty-three essays and papers.

TAAAS, as the only comprehensive research organisation in the TAR combining scientific research, promotion, development, and agricultural testing and modelling, was re-established in 1995. Ever since then, with nine years of relentless effort, we have achieved important progress in the quality control of agriculture, animal husbandry, grazing, horticulture, and vegetables and other produce, providing strong technological support for agricultural and animal husbandry development in this area. International exchange and cooperation have been strengthened in recent years, with long-term relationships being established with over 20 countries, international organisations and institutions, and more than 30 domestic agricultural academies. These exchange and cooperation programmes have enhanced the efficiency and innovative ability and promoted human resource development in our academy, thus helping with its general development. At this point, we would like to offer our sincere thanks to everybody and state that we will continue our efforts in these programmes.

Currently, we are working towards the objectives of building a more specialised academy that will embrace innovative abilities, storage abilities, and commercialisation capacities. We will further readjust and

make science and technology the focus of our work. We will actively implement the three strategies of human resource development, project promotion, and developing the academy through industrialisation. We will strengthen our research efforts and try to achieve more progress in developing and promoting high-yield crops and animal species; introducing and presenting new technologies; and processing produce and developing industries with local features. We will then be able to provide powerful technological support to agriculture and husbandry development in the TAR, helping farmers and herders to increase their incomes and build a prosperous society in an all-round way.

We greatly cherish the opportunity this international conference gives us to learn from you, hold academic exchanges with the scholars participating in the conference, make more friends, and strengthen cooperation between us. Here, we sincerely invite everybody to pay a visit to our academy to inspect and help with our work.

Finally, I wish this international conference every success and hope everybody is enjoying good health and a happy stay here in Tibet.

Welcome Address
by
Dr. Hans Pfeifer
Environment, Natural Resources and Food Department
InWEnt

Your Excellencies, Honourables, Dear Ladies and Gentlemen,
It is my privilege and great pleasure to welcome you in the name of InWEnt – 'Capacity-building International'. We are very glad to join in and contribute to this conference, following a good tradition which started thirty years ago in my home town of Munich. The 'Munich Mountain Environment Manifesto' (1974) addressed the still valid, key issues of mountain- related development. However, the importance of mountain areas and plateaux, such as the Tibetan Plateau, did not come into focus immediately and took a long time coming. But now experts, researchers, and decision-makers from China and all over the world are meeting here in Lhasa and InWEnt is very proud to join in since the 'Deutsche Stiftung für internationale Entwicklung' (DSE)-the predecessor organisation of InWEnt-was one of the prime initiators of that conference in Munich.

Shortly after the Munich declaration, the supra-national UNESCO-led, research programme under the title 'Man and Biosphere' (MAB) was launched. A shift from a solely natural science-led approach to interdisciplinary, problem-oriented investigation could be realised and became known as the 'Theory of Himalayan Environmental Degradation'. Population growth as a phenomenon and the mountain farmer as the decisive actor were made responsible for deforestation, land degradation, erosion in the mountains, and flooding and catastrophes in the plains below.

The gravity of the problems led to the establishment of the 'International Centre for Integrated Mountain Development' (ICIMOD) in Kathmandu in 1982. This research institution was meant to be included in the CGIAR network of topical research and have a prime focus on the Hindu Kush-Karakoram-Himalayas stretching in a West-East direction from Afghanistan to Bhutan, and North-South from the Peoples Republic of China to India. The German government played an important role in funding ICIMOD and this has continued until today.

Fifteen years ago, Jack Ives and Bruno Messerli published a book entitled 'The Himalayan Dilemma' in which they questioned the theory of Himalayan environmental degradation. Their book can be credited with bringing about a paradigm shift in efforts to understand the socio-economic, cultural, and ecological processes in mountain communities.

A combination of activities supported the Swiss government in lobbying for independent recognition of mountain issues in Agenda 21 during the Rio Conference on Environment and Development in Rio de Janeiro in 1992. Consequently, Chapter 13 of Agenda 21 became the point of reference for follow-up activities in mountain development.

The UN declaration of the 'International Year of the Mountains 2002' became the culmination point for activities in the field of mountain research and development so far. InWEnt, as part of the German cooperation activities, followed these through a sequence of conferences in which experiences from other world regions were projected towards the Inner Asian mountain region and in which a unique concept was applied. The nexus of research, development practice and policy-making, and implementing has often been gravely neglected. The conferences organised by InWEnt have specifically addressed the issue of reducing the gap in communication and exchange.

In the millennium year, InWEnt cooperated with ICIMOD in hosting a conference in Kathmandu under the title 'Growth, Poverty Alleviation and Sustainable Resource Management in the Mountain Areas of South Asia'. The InWEnt approach of bringing together experts from different backgrounds and facilitating communication among them through specific working groups is what distinguishes our conferences from academic symposia.

Inspired by the success of the Kathmandu conference, shortly after the Bishkek 'Global Mountain Summit', Chengdu became the venue for a second conference on 'Poverty Alleviation in the Mountain Areas of China'. In cooperation with the International Fund for Agricultural Development (IFAD), ICIMOD, and the Institute of Mountain Hazards and Environments (IHME) in Chengdu, the specific lessons learned from the Chinese experience with poverty alleviation, food security, and participatory approaches in rural development were the central issues. Once more, the working group results demonstrated how important it is to acknowledge sectoral expertise and disciplinary languages when coping strategies, institutional development, and decision-making processes need to be understood. These elaborations are well in line with the Bishkek Mountain Platform which intends to "guide governments and everyone involved with mountain issues on future activities and actions in the 21st century." Its ultimate goal is "to improve the livelihoods of mountain people, to protect mountain ecosystems, and to use mountain resources wisely".

Today the focus is no longer on ecological aspects alone, but also on capacity building for mountain development. It has been recognised by the international community as well as by national governments that changes will happen only if successful capacity building programmes take place. To bridge the gap between theoretical research and county-level implementation is the special knowledge InWEnt gathered through more than 40 years of activities.

In a region-centred approach we have met here in Lhasa for the 'International Conference on Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the Tibet Autonomous Region'. TAAAS and the EU-funded Panam Project are the local hosts, in cooperation with InWEnt and ICIMOD, promoting discussion and communication about poverty in remote mountain regions. The specific situations of the districts and counties in sustainable rural development are discussed with representatives from there, while, at the same time, examples and experts from neighbouring mountain areas are presented.

Thirty years after the Munich Declaration and three years before the envisaged opening of a railway line to Lhasa, the Tibetan Plateau and its agriculture are the focus of an international conference. It is my sincere wish that this conference will contribute to a better understanding of subsistence production and market-oriented strategies in mountain agriculture. The ultimate goal is the combination of sustainable development and increased incomes for mountain farmers.

Welcome Address
by
Lobsang Gyaltan, Vice Governor of the Government of The Tibet Autonomous Region

Distinguished Guests, Ladies and Gentlemen,
Lhasa in July is endowed with bright sunshine, a pleasant climate, and flowers in full bloom. In this beautiful season, the 'International Conference on Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the Tibet Autonomous Region' hosted by the TAR People's Government and jointly sponsored by the TAAAS, InWEnt, EU-China Project for Panam Integrated Rural Development, and ICIMOD is having a grand opening today in Lhasa, this beautiful and ancient city on a plateau. Experts from 12 countries, and from inside and outside Tibet, have gathered together to discuss issues of sustainable rural development in mountainous regions and are focusing on agriculture in Tibet. This will play a positive role in promoting sustainable economic and social development in our region. On behalf of the TAR People's Government and the 2.6 million people of Tibet, I would like to extend our congratulations to the conference and express a warm welcome to all the experts from home and abroad.

Tibet Autonomous Region, located on the border area of China's southwest and with a total area of over 1.2 million sq.km., is the main component of the Qinghai-Tibet Plateau as well as the source of many rivers. Tibet is vast in territory, densely occupied by mountain ranges rising and falling, displaying a wavy and complicated terrain, and enjoying the reputation of the 'Roof of the World', with 86.1% of the land over 4,000 masl. The unique landforms of Tibet result in its rich climatic, biological, and soil diversity. The region consists of approximately four natural ecological zones: namely, the North Tibet Plateau, Tibet's main pastoral area, with an average altitude of over 4,500 m. and making up two thirds of the total area of Tibet; the South Tibet Valley, the major agricultural area boasting flat terrain and fertile soil and lying at about 3,500 masl; the Southeast Tibet Zone endowed with high mountains, deep valleys, magnificent views, and a vertically distributed ecological system fit for farming, animal husbandry, and forestry; and, lastly, the Himalayan mountains, the grandest and most majestic of the mountain systems on earth, with an average elevation of 6,000 masl and accredited to be the kingdom of the most precious fauna and flora in the world.

Tibet is a multiethnic region, with Tibetans being the main inhabitants living here generation after generation. In the extremely harsh environment,

they have fashioned their ethnic characteristics, featuring industry, bravery, and wisdom, and created their unique modes of production and Tibetan culture-dating back to antiquity.

After the peaceful liberation of Tibet, under the leadership of the CPC, Tibet experienced fast economic growth, greatly improved living standards, and social stability. Now Tibetans are working and living in peace and contentment. In 2003 Tibet achieved a total production value of 18.457 billion yuan, up 12.1% over the previous year; a local fiscal general budget revenue of 815 million yuan, a rise of 19.5%; social fixed asset investments totalling 13.862 billion yuan, up 27.2%; annual per capita share of grain reaching 378.8 kg, achieving basic self-support and self-sufficiency; and an average annual net income for farmers and herdsmen of 1,690 yuan. Meanwhile, inputs into education have greatly increased and school-operating conditions have improved. Attendance in primary schools among all schoolchildren reached 91.8%, and the gross attendance rate for junior middle schools reached 61.1%. The medical care system based on free medical care in the agricultural and pastoral areas covers all counties and 96.1% of the townships. There has been sound development of cultural undertakings and smooth progress of the New Tibetan Project, a project establishing roads reaching every village, and Project 2131 distributing cinema to farming and pastoral areas. Now radio and TV cover 83:1 and 84.4% of the population respectively. Great importance has been given to the protection of ethnic culture. There are 1,800 cultural and historical sites in the region, among which 27 are given special protection by the state and 55 by the region.

The TAR Party Committee and government have invested large sums of money and materials in farming, animal husbandry, water conservancy projects, forestry, pasture, agricultural machinery and farmland capital construction, and greatly improved infrastructure and production conditions. Now agricultural and pastoral means of production have been supplied on a large scale, agricultural machinery developed from scratch, and popularisation of science and technology, in particular, has been given great emphasis. The recent years have witnessed the dissemination and application of over 30 scientific and technological achievements, opening of different types of training classes, and emergence of a large contingent of skilled personnel and farming and pastoral technicians. Now a scientific and technical team has been formulated with Tibetan people as the main participants implementing the strategy of revitalising Tibet through science and education. With constantly intensified efforts, our scientific and technological undertakings are making headway rapidly. Now the region boasts 34,702 technicians of various kinds, 1,398 of

whom are scientific researchers; 26 independent academies; 7 private research institutes; 20 institutions of specialised secondary education and higher education, 54 academic societies; and 140 organisations for farming and animal husbandry technology dissemination at the regional, prefecture and county levels. The basics of a scientific research and dissemination system with plateau features have been formulated and are playing a principal role in scientific research, popularisation of science and technology, scientific farming, and stock raising.

The Party Central Committee, the State Council, the TAR CPC Committee, and the TAR Government have always attached great importance to issues related to agriculture, farmers, and rural areas, undertaking sustainable rural development, increasing farmers and herders' incomes and, rapidly building a more prosperous society in the region as the core task of governments at various levels. I believe that, as long as we conform to the requirements of scientific concepts of development and work together with one heart, Tibet's farming and animal husbandry will have a better tomorrow.

However, we should realise that Tibet has very harsh natural conditions, a fragile ecological environment, and relatively backward basic facilities. All these factors have restricted the speedy agricultural growth of Tibet. Now experts from home and abroad are assembled in Lhasa, jointly discussing and studying the issues of sustainable development in the mountainous regions of Tibet. It offers us a very good opportunity to learn from you. Your academic research and exchange of ideas will provide us with valuable experience and suggestions that will surely be conducive to the swift development of our farming and animal husbandry.

Now Tibet is enjoying political stability, people are working and living in contentment, ushering in a prime time for fast growth. With the implementation of the Western Development strategy and substantiation of the spirit of the 4th Working Conference on Tibet of the Central Government, the infrastructural facilities and software environment in Tibet have greatly improved and are more conducive for investment and business. I'm convinced that the' International Conference on Sustainable Rural Development in Mountainous Regions with a Focus on Agriculture in the TAR' will not only be an opportunity for scientists to learn from each other and carry out academic research, but also will be a grand gathering for enhancing understanding, increasing collaboration, and making friends. Meanwhile, the far-sighted scholars and experts are more than welcome to apply your scientific research results in Tibet.

Distinguished Guests, Ladies and Gentlemen,
July is the best time for sightseeing in Lhasa. I hope all our guests will take the opportunity to look around a bit and get an idea of the splendid panorama of the plateau and unsophisticated local customs and practices.

To conclude, I would like to wish the conference every success. I wish all our guests good health and a pleasant stay in Lhasa. Good luck and happiness to you all.

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