

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 Zuaogong 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 to 45% and of forestry from 0.5 to 2%, while the contribution of livestock has declined 64 to 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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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 herdsmen. 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