

**Poverty in Mountainous Areas in Rural China:
Issues and Suggestions
to Encourage Sustainable Development**

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Relevant theme: Rural China

Abstract:

Despite efforts by the Chinese government to reduce rural poverty in recent decades, the extent of poverty in many mountainous areas of rural China is still high. To survive, rural residents in these areas are often forced to over-exploit the already stretched natural resources; the end result being serious degradation of the natural environment. This lowers productivity and rural incomes, which exacerbates the problem. This paper discusses a variety of factors that contribute to this poverty cycle in China's mountainous areas and explores countermeasures that may help break the cycle while encouraging sustainable development.

Key words:

Rural poverty of China
Poor mountainous areas
Regional sustainable development
'Integrated Regional Management'

Biography:

HAN Jin has two bachelor degrees (in Economics and Geological Science) from Hebei College of Geology. She also has a PhD in economics from the Renmin University of China. She is Associate Professor in economics at Shijiazhuang University of Economics in China and is currently a Visiting Scholar at James Cook University in Australia (a one-year position, funded by the Chinese Government). Her main research aim is to promote sustainable development in the poor rural areas in China, focusing on: the innovation of rural organizations, government policies for regional development, and the internalizing methods of ecological externalities in mountainous regions. At present, she is working on projects concerning the issues of sustainable development of Hebei Province and Taihang Mountainous region.

Natalie STOECKL holds a BEc from the Australian National University (ANU), a MEc from JCU and a PhD from ANU. Her professional career includes more than twelve years in academia (at JCU and at the University of Canberra) and almost three years as a researcher at CSIRO. Her primary research interests concern economic aspects of environmental and natural resource management problems – particularly in regional areas. She is currently working on a variety of different research projects including one that seeks to assess the social and economic values associated with Australia's Tropical Rivers and another that seeks to develop a method of measuring the financial and ecological 'footprint' of different types of industries in remote parts of Northern Australia.

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1 Introduction

In recent years, China – the world’s most populous nation – has enjoyed remarkable economic growth and the living standard of many Chinese people has been growing significantly. Yet these economic gains have not been spreading across all people, especially the poorest people living in poor mountainous rural areas.

There exists significant gap between rich and poor in China, which appear two gaps: between the inland (poorer) regions and the eastern seaboard¹; and between rural and urban areas. Those living in poor rural mountainous areas are amongst the most disadvantaged people in China. Not only does this burden the poor, but it also places additional pressures on the environment, making the goal of sustainable development even harder to achieve.

World wide, the issue of poverty and development had been of central concern to governments and non-government organizations for many decades - especially since World War II. Traditionally, much literature has focused on issues associated with (a) the measurement and analysis of poverty and inequality, and (b) national and international development and cooperation and related issues. The issue of poverty and sustainable development in mountainous areas is a relatively recent addition – coming to the fore in the last 30 years. This has arisen because of sustained observable differences in rates of economic development between mountainous areas and other regions – and it was noted that a vicious circle of poverty and ecological degradation of poverty-stricken mountainous areas was becoming a prevalent worldwide phenomenon. In 1973, UNESCO set the ‘effects of human activities on mountain eco-system’ as the most important projects of the *Man and the Biosphere Programme in mountain areas*; and in 1992, ‘Managing Fragile Ecosystems: Sustainable Mountain Development’ was included as a separate chapter (Chapter 13) in *Agenda 21*.

Within China, a large number of studies focus on rural poverty, rural and urban differences, and provincial or multi-provincial sustainable development. At least part of the reason for this no doubt arises because of the considerable differences between urban and rural incomes across all regions of china (Appendix 1 and Figure 1).

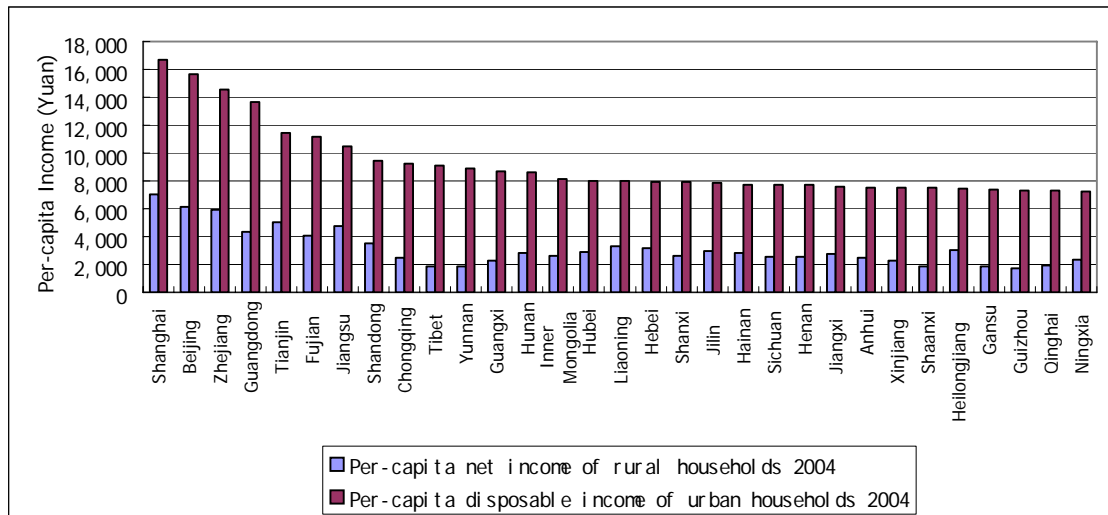


Figure 1. Rural and Urban Incomes by Region (2004)
Data Source: China Statistical Yearbook 2005, pp 345 & 361.

The average ratio of urban to rural incomes across all regions in China is 3.12 (calculated as the mean of column 2, Appendix 2). This contrasts markedly with other countries. The International Labour Organization (1996), for example, reports that the ratio of urban to rural income in most countries is generally less than 1.5.

Not only is the gap between urban and rural incomes larger in China than in many other parts of the world, but also it appears that the gap between urban and rural incomes is larger in China's mountainous regions than in other areas. Specifically, there are 9 provinces where the net income of rural households is less than 30% of the disposable income of urban households, and these provinces have large mountainous areas (the average percentage of mountainous regions in these provinces is about 81%). In contrast, there are 6 provinces where the net income of rural households is more than 40% of the disposable income of urban households. In these provinces there are much smaller mountainous areas (the average percentage of mountainous regions is about 32%).

Nevertheless, relatively little research exists on sustainable development and poverty of mountainous rural areas. Most of the literatures are from local functional sections and local academies. Some comprehensive research has been done on the mountainous areas by the Chinese Academy of Sciences. Chen Guojie et al (2004): *2003 Report for the Development of Mountainous Areas in China* is significant amongst them, which belongs to Sichuan School of Chinese Scientific Academy. It is a nationwide comprehensive research on the conditions and prospects of the development of mountainous areas. Yan Ruizhen and Wang Yuan (1992): *The Development Way of the Poor Mountainous Areas Of China*, which are from Renmin University of China. It concentrates on rural poverty and economic development of mountainous of mountainous areas mainly by using case study on Taihang

mountainous area. They both are fundamental works in the field of mountainous areas development. Both of these works include data relevant to specific administrative regions (mountainous counties) which correlate with but do not necessarily coincide exactly with geographically defined mountainous areas².

This paper follows those examples, using the term ‘mountainous areas’ to refer to mountains, uplands and plateaus in rural China, as defined by Chen Guojie et al. Using both secondary data and information from first-hand investigations in the Taihang mountainous area, this paper describes key characteristics of poverty and the poverty-environmental degradation cycle in China’s mountainous rural areas. It analyses some of the factors that contribute to the cycle and then puts forward a model of ‘Integrated Regional Management’ which aims to break it, thereby contributing to the long-term sustainable development of these poor mountainous regions.

2 Poverty in Mountainous Areas of Rural China

As shown in Table 1, much of China could be termed ‘mountainous’ – with vast tracks of land at more than 3000 metres above sea level, and a relatively large proportion of most regions within China are ‘mountainous’ as shown in Appendix 2.

Table 1. China’s Mountainous Areas and Corresponding Altitudes

Height Above Sea Level	Total Area (Km ²)	Ratio to the Country Area (%)
>500m	7,183,000	74.8
Minus >500m Basins	6,662,400	69.4
>1000m	5,558,000	57.9
>3000m	2,483,000	25.9

Data Source: Chen Guojie et al (2004).

Since the beginning of 1980s, there have been many anti-poverty campaigns throughout rural China. Specific examples include: the ‘Production Responsibility System’ in the beginning of 1980s; ‘Food for Work’ programs and other key infrastructure projects; ‘Poverty Alleviation’ programs by government and NGOs; national education support projects; and both free compulsory education³ for the 592 poorest counties and the nationwide cancellation of agricultural taxation from 2006 onwards. As a result, both farmers’ income and rural conditions have improved greatly. However, rural mountainous poverty has become more prominent than before.

Although a somewhat imprecise method of considering rural poverty in mountainous regions, it is worth noting the apparent relationship between per-capita rural household incomes, and the proportion of any region that has been classified as

‘mountainous’ (Figure 2). Notably, the (Pearson) correlation coefficient between these two variables is -0.550 (which is statistically significant at the 1% level).

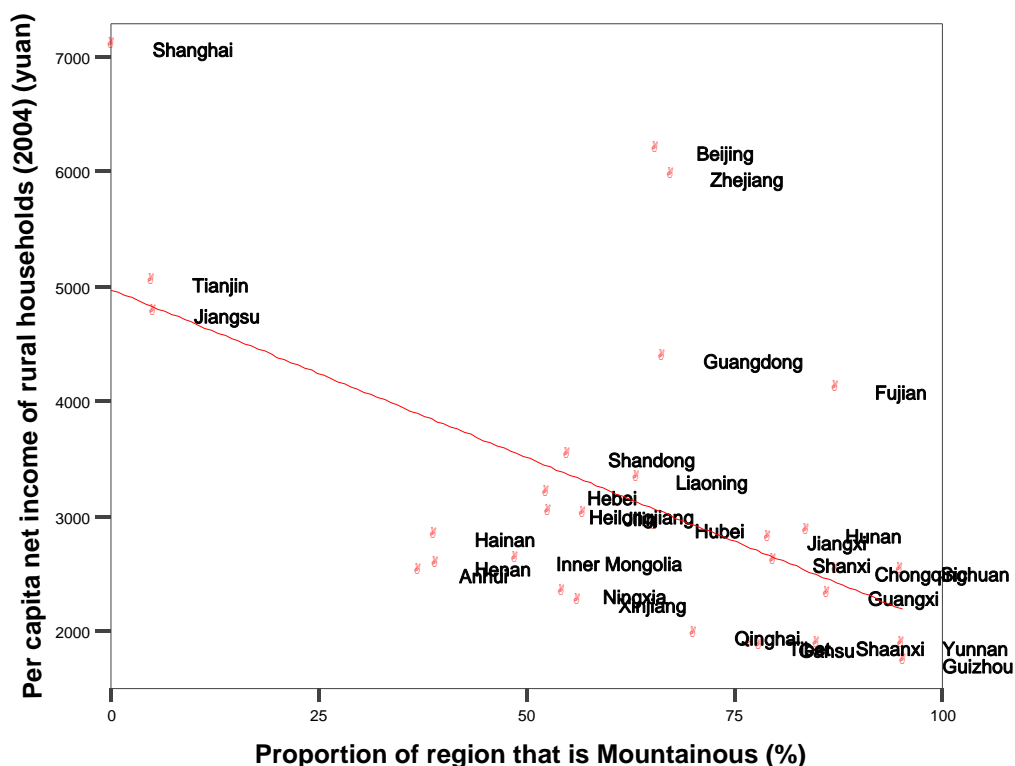


Figure 2. Per-capita Rural Household Incomes by Proportion of Region Classified as Mountainous

Data Source: Chinese Statistical Yearbook 2005, p 361 & Chen Guojie et al (2004).

Evidently, average rural incomes are lower in regions with many mountainous areas than in regions with few mountainous areas. There are, however, a few clear outliers, namely Beijing, Zhejiang, Guangdong and Fujian. These four regions are all special cases: Beijing is the capital of China, and the other three are all southeast seaboard provinces with half of the earliest opened seaboard cities in these provinces.

Further, it is evident that the disparity between urban and rural incomes is greatest in mountainous regions (Figure 3): the (Pearson) correlation coefficient between these two variables is 0.612 (which is statistically significant at the 1% level).

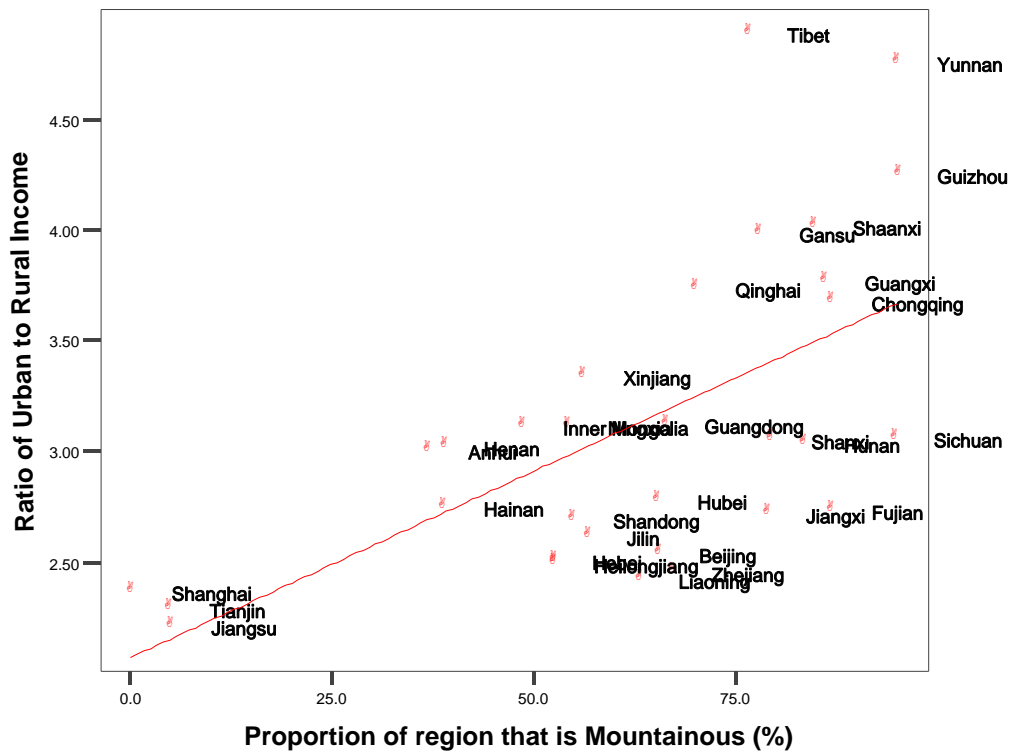


Figure 3. Ratio of Disposable Income of Urban Households to Net income of Rural Households by Proportion of Region Classified as Mountainous
Data Source: Chinese Statistical Yearbook 2005, p 345, 361 & Chen Guojie (2004).

In the middle of the 1980s, the Chinese government identified 18 of China’s poorest zones: all were in mountainous areas and plateaus. In the middle of 1990’s, Chinese government identified 592 State-Level supporting Counties as the poorest in China: 86% of these were in mountainous areas. In 2003, more than 70% of the poorest rural people in China were in mountainous areas (Li, 2004). According to the investigation of the State Council Leading Group Office of Poverty Alleviation and Development, 76% of the continuously poorest rural households are living in mountainous areas (www.cpad.gov.cn, 2005).

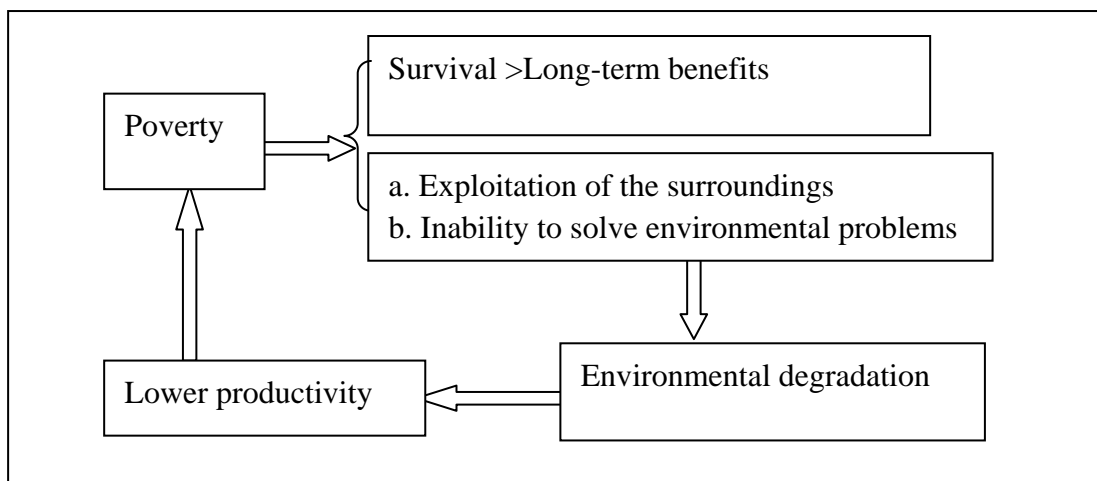
In short, most of China’s poorest people are now concentrated in the mountainous areas – an observation which accords with a phenomenon identified by Pearce and Warford (1993, p. 272), whereby “the poorest of the poor thus occupy the least resilient, most threatened environmental areas of the world”.

3 The ‘Poverty-Environmental Degradation’ Cycle

Like other parts of the world, it seems that in China, poverty and environmental degradation often co-exist and interact in poor mountainous areas (no matter whether

in Eastern, Middle or Western China). Figure 4 presents a stylized picture of the poverty/degradation interaction as a vicious circle: In poor mountainous areas, the poverty drives people to place personal survival above longer-term social and ecological goals, thus exploiting the surroundings (people cultivate sloping fields for grain, exploit mines in disorder, and over-graze grassland), and failing to deal with environmental problems. This leads to environmental degradation such as soil erosion and the frequency of natural disasters (landslides, desertification, sand storms, water source exhaustion, and air and water pollution), which lowers productivity of rural lands consequently, thereby contributing to even more poverty.

Figure 4. The ‘Poverty-Environmental Degradation’ Cycle



Importantly, this does not just affect those in the mountainous areas. Compared to other rural areas, the mountainous areas contain many forests and rivers – the lands serving as environmental filters. The actions of those living in the mountainous areas thus affect those who live downstream. Paradoxically, a relatively large share of environmental responsibility falls not upon those in the plains who are relatively well-off financially upon the poorest of the poor in the mountains.

In short, it seems that many mountainous areas of China may be involved in a vicious circle of ‘poverty, reclamation and yet more poverty’. Yet this destructive relationship between poverty and environmental degradation may not necessarily be inevitable. As argued by Pearce and Warford (1993, p. 274), “The existence of poverty does not mean that environmental degradation will necessarily follow.... [It] depends on the coping strategies of the poor, and these depend, in turn, on the availability of options, cultural factors, and policies of local and national governments.”

As discussed earlier, the Chinese government has devoted considerable resources towards poverty alleviation. It has also been paying close attention to environmental conservation and construction – particularly since deciding to implement its

Sustainable Development Strategy in 1992. So far, the trends towards environmental degradation have slowed – as is partially evidenced by the increase in the rate of forest coverage – up from 13.63% in 1992 to 18.21% in 2003⁴.

The intent of many of the projects that focus on ecological conservation and construction is the double-outcome of improving the environment and alleviating poverty. However, except for very few areas, environmental improvement has not provided farmers with a better living, and the future has become less secure for some people because of land loss and restricted mountain access. Moreover, in some cases the direct environmental effect of these ecological projects has not been beneficial too. Many local officials and farmers have positive attitudes to the project of re-forestation according to the investigation of the Rural Investigating Brigade of Sichuan Province in 2002⁵. But as the lower local officials focused on achieving high visual effect that was easy for officials to inspect, so that they implemented re-forestation on better quality land such as near waterways, low uplands and other easy traffic areas, which caused resistance from some farmers. There are also differences of opinion between local governments and farmers about the types of plants between trees that should be planted, about land use rights, and unfair policies etc. – all of which negatively influence the environmental effect of the programs.

Those interested in developing policies capable of breaking this vicious circle could thus benefit from learning more about factors that influence it – as discussed in the sections below.

4 Factors Influencing the ‘Poverty-Environmental Degradation’ Cycle

4.1 Lack of social capacity

The top right hand corner of Figure 1 highlights the fact that those living in poverty cannot afford the luxury of working towards environmental improvements: they may generate long-term benefits, but the short-run costs are insurmountable. Instead, they may be forced to exploit their surroundings. Sadly, they may not have the capacity to do so in a manner that mitigates environmental problems, and lack of ‘capacity’ is a significant problem in rural mountainous areas of China.

A survey to the 97 villagers in the Taihang Mountainous area asked respondents to consider the question “Do you agree that your living situation is determined by Fate?” (Jia, 1999). Thirty-two responded in the affirmative (33%)⁶, providing some evidence for fatalism in some mountainous areas. This philosophy is popular in mountainous areas, even amongst community leaders, and has been for generations. The locals are used to having to endure much hardship and some seek help from wizards / witches or fortunetellers whenever they have problems.

At least some of this might be attributable to the fact that mountain people tend to

have less education and fewer economic opportunities than those in the plains. This is partially evidenced in Figure 5, which shows the total educational funds per person for regions throughout China. As previously, there is a clear trend in the data: regions with a high proportion of mountainous areas have less per-capita total expenditure funds than regions with less mountainous areas (the Pearson correlation coefficient of -0.342 is statistically significant at the 6% level; if Beijing, the Capital of China, is omitted, the Pearson correlation coefficient is -0.587 and it is significant at the 1% level).

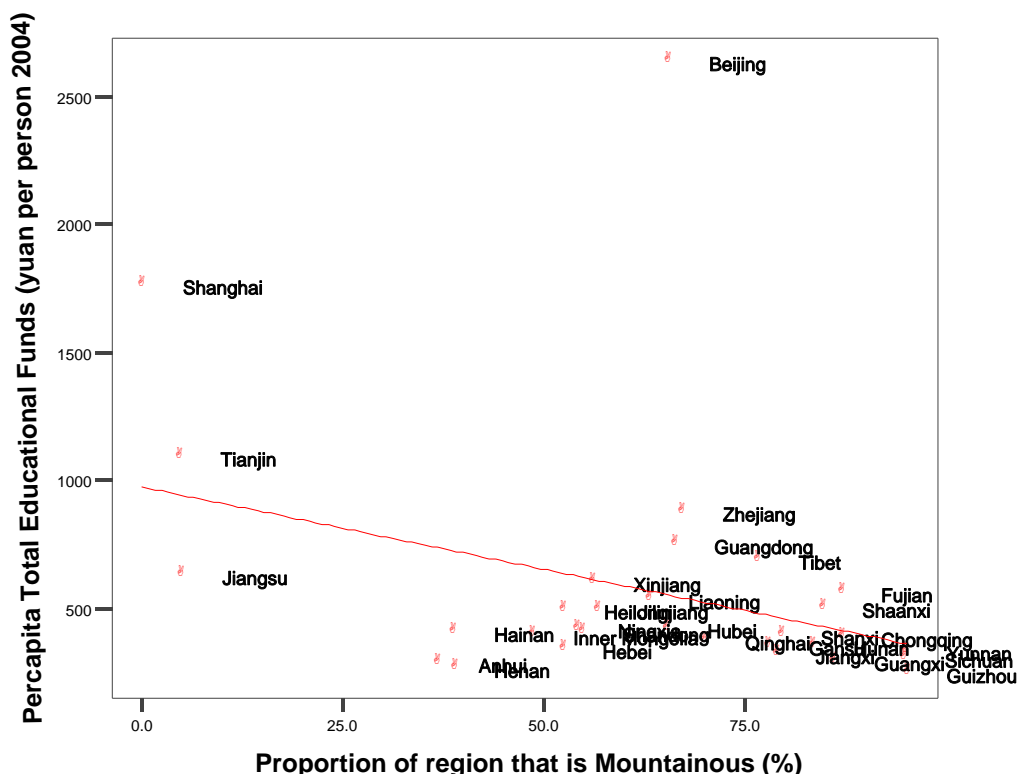


Figure 5. Total Educational Funds by Region Classified as Mountainous
Data Source: Chinese Statistical Yearbook 2005, p 713 & Chen Guojie et al (2004).

Importantly, there is often a link between education and poverty. More specifically, pervasive poverty with no social security tends to encourage large families (Becker and Lewis, 1973), few of which can afford to educate their children. As shown in Table 2, the rate of graduation from primary schools in rural areas is generally high – reflecting the compulsory nature of education. Nonetheless, it is lower for mountainous areas than for those in the plains – particularly for middle schools.

Table 2. Rates of Graduation: Primary and Middle Schools in the Mountainous and in the Plains

Counties of Rural Shijiazhuang	Rate of Graduation from primary school (%)	Rate of Graduation from middle school (%)
Mountainous Average	98.15	42.0
Plain Average	98.88	48.9
Differences	-0.73	-6.9

Data Source: Statistics of Shijiazhuang Educational Bureau of Hebei Province.

Another investigation to Longnan region of Gansu Province conducted by Rural Investigating Brigade of Gansu Province in March of 2004 shows the similar fact that, the illiterate people account for 31% of the population of Dangchang County; in Dacun village, as high as 45.2% except for children before school age.

Those that do progress to higher levels of education often leave the mountains. Those that remain, are thus likely to have relatively low levels of education, and are therefore less likely to earn high incomes, thereby remaining in poverty 'trap'. Their continued poverty may also lead to other social problems, which themselves exacerbate the situation. In short, mountain poverty is not a single problem, but has a close relation to various interrelated problems. None of these problems are easily overcome.

4.2 Remoteness, isolation, lack of infrastructure

In China, the poor mountainous areas are usually on the edge of economic zones, the centres of which have weak financial links to the hinterland. The areas are also generally geographically remote and communication with the 'outside' world is often difficult. The regions have fewer human resources competent for external communication. This increases the isolation of mountainous communities, increasing the uncertainty and risk associated with those wishing to access the market.

Despite recent increases in government investment, infrastructure in mountainous areas is still inadequate. Generally, the mountainous areas are far away from cities, their terrain is undulating and multiform, and the land is stony and hard. So that to build infrastructures in mountainous areas is more costly than in the plains. This is evidenced in Table 3, which compares the cost of different types of farm facilities in a mountainous county with those in a plain county in Hebei Province.

Table 3. The Cost of Farm Facilities: in the Mountainous and in the Plains in Hebei Province

ITERMS	Mountainous County	Plain County	Ratio
Building farming road (US\$/Km)	8062.5	4812.5	1.7:1
Spanning farming wires (US\$/Km)	13654	2787.5	4.9:1
Digging well '80m (US\$/per well)	4037.5	1375	2.9:1

Data Source: 2005 Budget Forms of the Ecological Comprehensive Program of Zanhuang County and Gaocheng County, US\$1=Yuan8.

Note: Zanhuang County is located in Taihang Mountainous area and Gaocheng County is in Hebei Plain in Hebei Province.

As Table 3 shows that, it costs almost twice as much (per kilometer) to build a road in mountainous areas than in the plains; nearly 3 times as much to dig a well; and the spanning cost of farm wiring is nearly 5 times as much in the mountainous areas as in the plains. Therefore, the same amount of government expenditure will thus create fewer infrastructures in mountainous areas than in plain areas, which perhaps explaining at least some of the differences in the overall availability of infrastructure in these areas.

The lack of educational facilities -as one aspect of infrastructures in mountainous areas- is shown in Tables 4 and 5. Both of the ratio of professional teachers and the value of teaching equipment available in primary and middle schools of mountainous areas are less than in the plains.

Table 4. Available Infrastructure in Primary Schools: in the Mountains and in the Plains in Shijiazhuang City

Counties of Rural Shijiazhuang	Ratio of Technical and Higher Fulltime Teachers (%)	Value of Teaching Equipments per Student (Yuan)
Mountainous Average	57.47	296.95
Plain Average	63.23	471.51
Differences	-5.76	-174.56

Data Source: Statistics of Shijiazhuang Educational Bureau of Hebei Province.

Table 5. Available Infrastructure in Middle Schools: in the Mountains and in the Plains in Shijiazhuang City

Counties of Rural Shijiazhuang	Ratio of Bachelor and Higher Fulltime Teachers (%)	Value of Teaching Equipments per Student (Yuan)
Mountainous Average	32.89	519.68
Plain Average	36.27	562.29
Differences	-3.38	-42.61

Data Source: Statistics of Shijiazhuang Educational Bureau of Hebei Province.

Hence, farmers in mountainous areas are likely to be less productive than farmers in other regions – if only because there is less infrastructure and capital for them to work with and because the distances to market are generally large. This further raises production costs, lowers profit margins and thus reduces the incentives for firms to locate in these regions. The poverty cycle continues.

4.3 ‘Misuse’ of Resources

Many of the poor mountainous areas of China have a multiform terrain, with vertical vegetation distribution. Ploughable land comprises average 1/12 of mountainous area⁷, and this is generally sloping, less productive, separated and fragmented, and normally located on higher altitude. The climate is extreme with big differences of temperature between day and night.

When contrasted with the plains, which has more productive ploughable land, and less extreme climates, it is evident that those in the mountainous regions do not have an absolute advantage in traditional crops. Indeed, the mountainous regions may not even have a comparative advantage in that type of production. In short, those living in these areas could be better off if they were to cease planting ‘traditional’ crops, instead using the land to grow that which it is more suited to.

The Zhangye Region of Gansu Province provides an exemplary case-study. In that area, there are many natural plants rooted on sands in barren deserts. However, for centuries local people have cultivated pasture and up-rooted plants for firewood – leading to the degradation of sand plants and medicine herbs as well. Since 1983, this region was identified for special consideration by government. The area is now developing sand plants, which has accomplished high plant coverage rate, local incomes and the hope of sustainable development.⁸ However, this successful case is very few in China. Those living in these regions continue to grow plants that are ill-suited to the environment, and productivity will inevitably remain low. This will continue to contribute to the poverty cycle.

Although people have realized the fact gradually, to make a change into reality still has a long way to go. Neither the mountainous people themselves can do it nor can the leading companies or specialized producers plus government investment, which have been shown not to work in practice.

4.4 Lack of Market Development

Most communities in the mountainous areas in China still operate as subsistence economies with production organized as a household unit. There are few commercial transactions in the deep mountain areas because of the long distances, unfamiliarity with the market, relatively high admission fees to farmers, and/or traditional attitudes to business.

Most peddlers or businessmen, who function in high altitude mountainous areas, are from communities closer to the plains. The main form of commercial transaction is that of transport. In remote villages, those transporting goods from outside the region use bells or loud calls to attract customers. Businessmen who have a good relationship with the village leaders may even be able to use public loudhailer (the most advanced medium in mountainous villages if they have) of the village for warning of their arrival, so that transactions can be done efficiently in half a day. The group of people who do this type of work, changes frequently: people can choose to work or not, according to their own inclination, and they are not generally required to obtain permits to operate. However, businessmen commonly sustain losses because of spoiling of primary products in transit or market change.

There is little other commercial activity in these areas although some towns and larger villages have semi-permanent markets – normally held once every 3-5 days. Some commodities that are required on a daily basis are also available in little shops by the roadside. But these regions are best characterized by their lack of formal markets, making it difficult for residents to use the market to help break out of the poverty cycle. That there are fewer large and formal markets in mountainous areas is further illustrated in Figure 6, which shows the number of large⁹ commodity transactions markets per person in various regions throughout China. Evidently, regions that have many mountains also tend to have fewer large markets per capita than other regions: the Pearson correlation coefficient between the two variables is -0.367 (significant at the 5% level).

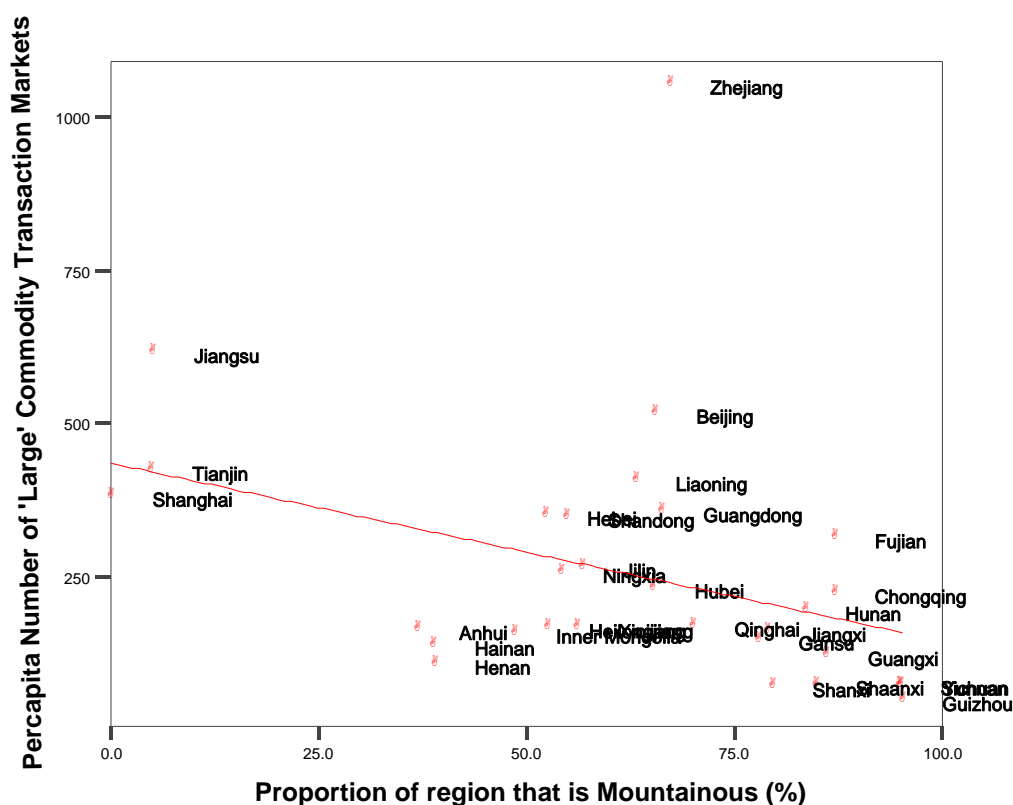


Figure 6. Number of Commodity Transaction Markets with Turnover above 100 Million Yuan per 100 Million Persons

Data Source: Chinese Statistical Yearbook 2005, p 615 & Chen Guojie et al (2004).

Note for Figure 6: (1) Zhejiang, the highest point, is featured by commodity market in China, which has been the largest transaction turnover of commodity market continuously since 1991; if Zhejiang province is omitted, the Pearson correlation coefficient is -0.579 , which is significant at 1% level. (2) Amongst the three lower points but without many mountains, the economies of Anhui and Henan both rely heavily on agriculture, in which commodity market is also less developed; Hainan is heavily dependent upon tourism, where commodity markets also tend to be small.

Furthermore, few regulations and little official monitoring of activities make it relatively easy for unscrupulous businesses to dump fake, inferior, and out-of-date products (false pesticides and chemical fertilizers, fake seeds, low quality goods etc.) in the remote countryside. This contributes to general problems, lowering productivity, raising costs and increasing poverty.

4.5 Government Failure

In China, the Government intervenes in rural economies mainly by allotting and managing projects and funds. The many different government sectors that provide projects and funding to these areas include: the Development & Reform Commission,

Finance, Poverty Alleviation and Development, Agriculture, Water Resources, Forestry, and Education. Each sector has a channel with which to transfer funds from the Ministry to local counties.

The effect of governmental intervention is decided by the financial capacity of Government on the one hand, and on the other hand, the capabilities of administrative and economic management of the local government. The morality and professional integrity of administration personnel are major restrictive factors as well. Although the total amount of financial investment in rural areas has been growing, these latter aspects need more attention. Generally speaking, the capability and standard of administrative and economic management of the government decreases from top to lower levels.

4.5.1 Inefficient Usage of Finances

Under the current administration system, the officials of local government and its functional sectors must manage operating funds but are not responsible for efficiency. The funding that each local official acquires from higher levels of government is often treated as a proof of achievement, and inevitably, some officials struggle to obtain more projects and funds. Therefore, financial funds do not always go to the poorest areas, rather to regions whose officials have the most powerful voice.

Even when funds are available, problems still occur. There is not always enough local finance to match funds from central government – particularly when an area attracts large amounts of funds from several sources simultaneously – and much money ‘leaks’ out of a fund as it flows from the central government to the mountainous regions. The implementation of projects is often of low quality and examples of work that is half-done work, ‘surface work’¹⁰ or Jerry-built¹¹ are common. Furthermore, local governments accumulate heavy debt due to things such as ‘Repetition Construction’ and lavish expense accounts. A good part of this debt is borne by the local residents who are not always paid for their work, goods or services. Consequently, one cannot assume that these projects generate a net economic benefit to the remote mountain communities.

4.5.2 Lack of ‘Capacity’ of Local Government Officials

As noted earlier, with generally low levels of education, and few economic opportunities, many of the local residents in mountainous regions lack ‘capacity’. This is also true of local government officials in these areas: their official status does not automatically endow them with knowledge of markets and management. Some officials not only lack ‘capacity’ but also seek to promote their own interests rather than the interests of local farmers and/or the wider community. As argued earlier, one cannot therefore assume that the net benefits of projects in mountainous areas will be positive, as evidenced by the comment of a bankrupt mountain land contractor who claimed that he would have succeeded if he had NOT had ‘support’ from the

government (Han, 2004).

4.5.3 Regionalism and Lack of Inter-regional Cooperation

Different regions are frequently endowed with different factors. One therefore expects different regions to have different strengths. If a region specializes in the production of that in which it has a comparative advantage and trades with another region that is also specializing in production, then both regions may gain. Mutual dependence and cooperation thus allows areas to benefit each other. Even though there exists a diversity of natural resources in mountainous areas, the economic structures of administrative regions are almost the same. Rather than encouraging specialization, trade and mutual dependence, this form of regionalism serves to create more competition and less dependence among regions, to the detriment of all.

4.6 Conclusion

The foregoing discussion identifies several factors that influence and contribute to the 'poverty-environmental degradation' cycle. The local farmers have little capacity, the various current so-called 'leading' companies or specialized producers are unable to function properly, and the local governments are often in fault in the management of local economy. And many of these factors are inter-related although they are discussed separately. For example, when local governments use finances inefficiently, regions are likely to have less public infrastructure than when finances are used efficiently. Similarly, regional resources are more likely to be 'misused' if residents are poorly educated and local government officials have little management ability. And lack of infrastructure, education and management abilities make it difficult for local farmers to develop markets. In a word, the problems are simply too complex for existing institutions to cope. Hence, above all, there is a lack of an organization that could lead, organize and manage the local resources of the whole region, which has a sense of responsibility for the people, with strategic vision and the ability of economic management. What is proposed here, therefore, is a different approach – that of Integrated Regional Management in poor mountainous areas for the sake of regional integrated management.

5 The Suggestion: Integrated Regional Management

Here it is suggested that the economic function of current administrative systems in mountainous regions (more specifically, regions that are rural, mountainous, and poor) should be weakened. Instead, funding that is currently used to promote regional economic development and/or environmental conservation would go directly to an executive body – termed the Regional United Entity (RUE), which would be directly responsible to the provincial government. The main goal of the RUE would be to ensure the regional sustainable development of a single mountainous area, with two

specific targets: to maximize the integrated (ecological, economic and social) benefits of the whole region; and to promote self-sufficiency and self-development of regional farmers.

In any given region, the actual implementing body would be a productive unit, such as a company or farmer, hence RUE's major task would be to support and promote existing companies and farmers. The RUE would also: carry out some of the policy functions of local government; lead companies and farmers of the whole region to join the market and share market profit on the basis of integrating and mobilizing the local resources, hatch and strengthen farmers' enterprises, and filter market risk. Those charged with coordinating the 'Integrated Regional Management' system would be directed to place the highest priority on ecological services since they form the base of regional sustainable development. Ecological construction and conservation would thus be at the heart of regional planning; economic activities would be directed to complement rather than compete with those goals. In addition, 'green' factors (knowledge, experience, technology etc.) would be employed utmost in mountainous areas.

In densely populated, highly complex market economies, such a system could be administratively difficult to manage. But in the remote, mountainous regions of China where markets are not fully developed, a fully integrated management system could be used to great advantage. It could carry out comprehensive management for poor mountainous areas, including integrated regional planning, regional market orientation, and infrastructure construction. It could hatch and strengthen farmer's enterprises, lead farmers to participate in the market, operate bulk farm produce transactions, protect and develop special or precious resources of mountainous area, ecological conservation and construction, and carry forward the traditional culture of folk customs. Moreover, a fully integrated system could make governmental audits more convenient in mountainous rural areas.

6 Concluding Comments

Those living in the rural mountainous areas of China share the twin burdens of poverty and environmental degradation – two burdens that are currently locked in vicious circle that existing institutional arrangements do not seem to be able to break. This paper identifies many complex, interrelated factors that contribute to and exacerbate the cycle, the almost inevitable conclusion being that simple single-focus policies and institutions cannot hope to manage. Instead, policy makers should consider a new approach: that of Integrated Regional Management.

Such a system could help those in mountainous area move from the current subsistence economies into a market economy. It might even help to curtail local protectionism and reduce inefficiencies generated by using separate regional

administrative bodies. This model could make more funds available to help alter conditions that contribute to poverty (rather than simply dealing with its symptoms), thereby promoting the sustainable development of mountainous areas.

Those points aside, Integrated Regional Management is a complex, untried idea that may meet strong resistance from vested interest groups and the RUE is a new institutional concept. There is no previous precedent, so we need to “cross the river by touching stones”. But go forward we should, for the existing systems are serving neither the poor nor the environment. To quote an old saying:

“Change if you are poor; if you change, there will be a way to go forward.”

Notes:

- ¹ Eastern seaboard provinces account for 70% of GDP and 90% of imports and exports in China in 2003.
- ² Few – if any – countries collect data for geographic regions that coincide with biophysical boundaries; most data is collected for administrative units.
- ³ Exempt from any fees including textbooks and incidental fees, and subsidies for boarding students.
- ⁴ *1992 Report for China Environmental Status, 2004 Report for China Environmental Status*, www.sepa.gov.cn, 2002-11-15, 2005-06-02.
- ⁵ Within 200 farmers, there are 161 (80.5%) that support Re-afforestation, 21 (10.5%) think it is indifferent and 18 (9%) do not want re-afforestation.
- ⁶ 19 (20%) are not sure.
- ⁷ In 2000, the ploughable land area in mountainous regions was 57.22 million km² (8.6% of mountainous regions in China).
- ⁸ www.xujingchun.com, 1997-06-20.
- ⁹ Markets with a Turnover above 100 Million Yuan.
- ¹⁰ The ‘Surface work’ is that seems to be finished, but omit the core work that is the most expensive and most important part.
- ¹¹ The ‘Jerry built’ is that the work has been done and can be put into use, but with less quantity or/and low quality.

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Appendix 1. Rural and Urban Incomes by Region (2004)

Region	Per capita net income of rural households (Yuan)	Per capita disposable income of Urban households (Yuan)	Rural income as a percent of urban income
Xizang	1861.31	9106.07	20.44
Yunnan	1864.19	8870.88	21.01
Guizhou	1721.55	7322.05	23.51
Shaanxi	1866.52	7492.47	24.91
Gansu	1852.22	7376.74	25.11
Guangxi	2305.22	8689.99	26.53
Qinghai	1957.65	7319.67	26.75
Chongqing	2510.41	9220.96	27.23
Xinjiang	2244.93	7503.42	29.92
Guangdong	4365.87	13627.65	32.04
Inner Mongolia	2606.37	8122.99	32.09
Ningxia	2320.05	7217.87	32.14
Sichuan	2518.93	7709.87	32.67
Shanxi	2589.6	7902.86	32.77
Hunan	2837.76	8617.48	32.93
Henna	2553.15	7704.9	33.14
Anhui	2499.33	7511.43	33.27
Hubei	2890.01	8022.75	36.02
Hainan	2817.62	7735.78	36.42
Fujian	4089.38	11175.37	36.59
Jiangxi	2786.78	7559.64	36.86
Shandong	3507.43	9437.8	37.16
Jilin	2999.62	7840.61	38.26
Beijing	6170.33	15637.84	39.46
Hebei	3171.06	7951.31	39.88
Heilongjiang	3005.18	7470.71	40.23
Zhejiang	5944.06	14546.38	40.86
Liaoning	3307.14	8007.56	41.30
Shanghai	7066.33	16682.82	42.36
Tianjin	5019.53	11467.16	43.77
Jiangsu	4753.85	10481.93	45.35

Data Source: China Statistical Yearbook 2005, pp 345 & 361.

Appendix 2. Mountainous Proportion and Ratio of Rural to Urban Income

Region	Proportion of region that is Mountainous (%)	Ratio of per capita urban disposable income to per capita rural net income (2004)
Shanghai	0	2.36
Tianjin	4.7	2.28
Jiangsu	4.9	2.20
Anhui	36.8	3.01
Hainan	38.7	2.75
Henna	38.8	3.02
Inner-mongolia	48.5	3.12
Hebei	52.3	2.51
Heilongjiang	52.4	2.49
Ningxia	54.1	3.11
Shandong	54.7	2.69
Xinjiang	56.0	3.34
Jilin	56.6	2.61
Liaoning	63.0	2.42
Hubei	65.2	2.78
Beijing	65.4	2.53
Guangdong	66.2	3.12
Zhejiang	67.1	2.45
Qinghai	69.9	3.74
Xizang	76.5	4.89
Gansu	77.8	3.98
Jiangxi	78.8	2.71
Shanxi	79.4	3.05
Hunan	83.4	3.04
Shaanxi	84.6	4.01
Guangxi	86.0	3.77
Chongqing	86.9	2.73
Fujian	86.9	3.67
Sichuan	94.7	3.06
Yunnan	95.0	4.76
Guizhou	95.1	4.25

Data Source: Chen Guojie et al (2004) & calculation from Appendix 1.