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# Study on Rural Poverty in Ecologically Fragile Areas

## —A Case Study of the Tibetan Areas in Sichuan Province

LAN Hong-xing\*

Sichuan Agricultural University, Ya'an 625014, China

**Abstract** This article offers an overview of natural environment, economic development, and social development in the Tibetan areas in Sichuan Province. The major manifestations of the status quo of poverty in the Tibetan areas are as follows: there is a wide range of poverty and a large poor population; the poverty degree is high and it is difficult to alleviate poverty; the natural disasters are frequent and the phenomenon of poverty arising from disasters is serious. We analyze the factors responsible for poverty of farmers and herdsmen in Sichuan Province as follows: first, the natural conditions are inclement and the ecological environment is fragile; second, the social attitudes are stale and the religious influence is deep; third, the development of education lags behind, the human capital inputs are short and the self-development capacity is weak; fourth, the state poverty alleviation and development policy is weakly directed at region; fifth, the Tibetan areas are facing the dilemma of choosing resources endowments or ecological protection. Following proposals are put forward to resolve the poverty issue in the Tibetan areas of Sichuan Province: strengthen infrastructure construction, and underpin self-development capacity of the Tibetan areas in Sichuan Province; reinforce organic connection of social security and poverty alleviation and development, and promote self-development capacity of impoverished farmers and herdsmen in the Tibetan areas; strengthen policy support, and improve self-development policy and mechanism of the Tibetan areas in Sichuan Province; drive the popularization of technology and culture in the Tibetan areas, and update the development concept of farmers and herdsmen in the Tibetan areas; accelerate the development of competitive industries in Tibetan areas, and promote economic development capacity of the Tibetan areas.

**Key words** Ecologically fragile areas, Poverty issue, Self-development capacity, The Tibetan Areas in Sichuan Province

In the period 1980–2010, the CPC Central Committee held five Tibet work colloquia, making great contribution to promoting the development of the Tibetan areas in Sichuan Province. However, the development gap between the Tibetan areas in Sichuan Province, and southeast coastal areas of China and the mainland remains large, and the development gap between urban and rural Tibetan areas is also obvious. The issue of rural poverty in the Tibetan areas of Sichuan Province is prominent, and the new factors and old factors responsible for poverty are intertwined, showing the grim situation. On the basis of analyzing the status quo of poverty in the Tibetan areas of Sichuan Province, I analyze the reason of poverty in the Tibetan areas of Sichuan Province, and put forward some proposals for promoting self-development capacity of impoverished farmers and herdsmen.

## 1 Overview of the Tibetan areas in Sichuan Province

The Tibetan areas in Sichuan Province, located in western Sichuan Province, mainly include 18 counties in Garze Tibetan Autonomous Prefecture, 13 counties in Aba Tibetan and Qiang Autonomous Prefecture, and Muli Autonomous County in Liangshan Yi Autonomous Prefecture. The land area of 32 counties in the Tibetan areas is about 250 100 square kilometers, ac-

counting for 51.49% of total area of Sichuan Province, with 1.88 million people containing 1.25 million Tibetans. The Tibetan areas in Sichuan Province are China's second largest areas inhabited by the Tibetans. The Tibetan areas in Sichuan Province, the transition zone between the mainland and Tibet, are in a remote geographical location but strategically important, the stability and development of which is of great significance to stability and development of the Tibetan areas in Sichuan Province and even entire China.

**1.1 Overview of natural environment** The Tibetan areas in Sichuan Province, located in the southeast of the Tibetan Plateau, are the areas with inclement climate in China, where the natural disasters occur frequently, causing great destruction, huge loss, and serious influence. In the mean time, the ecological environment is fragile and the resistance and restoration capacity of ecosystem to external interference is poor, therefore, the Tibetan areas in Sichuan Province are the typical ecologically fragile areas. The Tibetan areas in Sichuan Province are the source areas of the mother river of Chinese nation—Yellow River and the Yangtze River, where the ecological environment plays an important role in protecting and improving the Yangtze River, the ecological environment in the Yangtze River valley, and maintaining the ecological safety of the Chinese nation<sup>[1]</sup>. The water resources, tourism resources, and mineral resources in the Tibetan areas of Sichuan Province not only have comparative advantage in Sichuan Province, but also have comparative advantage in China. The total water resources in the Tibetan areas of Sichuan Province account for 47.85% of total water resources in Sichuan Province; the natural landscape in the Tibetan areas is colorful; there are many historical sites and revolutionary sites; religious culture and

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\* Corresponding author. E-mail: semon410@163.com

custom are unique; the reserves of gold, silver, copper, lead and zinc in the Tibetan areas of Sichuan Province rank first in Sichuan Province, having an important position in China. But restricted by transportation, capital, technology, institution and other factors, the development degree of total resources is low and development pattern of resources is backward, not commensurate with resources endowments. In terms of positioning of the main national functional areas, the Tibetan areas in Sichuan Province are key ecological functional areas, the development of which is restricted or prohibited.

**1.2 Overview of economic development** Since the reform and opening-up, and especially the new century, the economy in the Tibetan areas of Sichuan Province develops by leaps and

bounds, and the economic aggregate increases rapidly. According to statistics, in 2009, the Tibetan areas in Sichuan Province realized 22.66 billion yuan of regional GDP, 149% of that in 2006, but as weak infrastructure, poor conditions, and low level of productivity have not been fundamentally changed, the Tibetan areas are still the areas with sluggish economic development in Sichuan Province. In 2009, the per capita GDP in Garze Tibetan Autonomous Prefecture, Aba Tibetan and Qiang Autonomous Prefecture and Muli Autonomous County was 10 324 yuan, 12 186 yuan and 9 204 yuan, respectively, far lower than the provincial average (17 339 yuan) and the national average (22 698 yuan).

**Table 1 The basic information of economic development in the Tibetan areas of Sichuan Province in 2009**

Region	Regional GDP ×10 <sup>8</sup> yuan	Per capita regional GDP ×10 <sup>3</sup> yuan	Total retail sales of social consumption ×10 <sup>6</sup> yuan	Total fixed asset investment ×10 <sup>8</sup> yuan	General regional budget revenue ×10 <sup>8</sup> yuan
Garze Tibetan Autonomous Prefecture	105.1	10 324	30.8	160.1	13.0
Aba Tibetan and Qiang Autonomous Prefecture	109.5	12 186	23.0	351.3	8.0
Muli County	12.0	9 204	2.9	28.3	1.2
Total	226.6	31 714	56.7	539.7	22.2

Note: Data are from *Sichuan Statistical Yearbook in 2009*.

**1.3 Overview of social development** Due to weak foundation of development and poor conditions, the development level of social undertaking in the Tibetan areas of Sichuan Province is very low, and there is a serious shortage of supply of basic public services. Backward basic education is responsible for the low cultural quality of the population, having a serious impact on local economic development and hampering the masses to banish poverty and become prosperous; backward medical care and poor physical quality form a vicious cycle, and the phenomena of poverty arising from illness are prominent. Because of the special social cultural and historical background, the social attitudes in the Tibetan areas are backward, and the concept springing from thousand years of feudal serf society deeply shackles the idea of multitudinous farmers and herdsmen. The vast majority of farmers and herdsmen in the Tibetan areas of Sichuan Province believe in Tibetan Buddhism, thus religion permeates all aspects of society, with profound impact. It not only has a positive effect on community in the Tibetan areas, but also produces some negative effects, unfavorable to social development.

## 2 Analysis of the status quo of poverty in the Tibetan areas

**2.1 There is a wide range of poverty and a large poor population** The Tibetan areas in Sichuan Province are concentrated and contiguous impoverished areas in China. There is a wide range of poverty and a large poor population. In 36 counties of Sichuan Province listed as key national poverty alleviation counties, the Tibetan areas in Sichuan Province have 9 counties, namely Shiqu County, Litang County, Yajiang County, Xinlong County, and Seda County in Garze Tibetan Auto-

nomous Prefecture, Rangtang County, Heishui County, Xiaojin County in Aba Tibetan and Qiang Autonomous Prefecture, Muli Autonomous County in Liangshan Yi Autonomous Prefecture, accounting for 25% of key national poverty alleviation counties in Sichuan Province, 50% of total counties in the Tibetan areas of Sichuan Province. In 2009, there were 671 500 impoverished people in the Tibetan areas of Sichuan Province, accounting for 33% of the total population in the Tibetan areas of Sichuan Province (2.048 million). At the end of 2010, there were 241 000 poor rural people in Aba Tibetan and Qiang Autonomous Prefecture, accounting for 26.8% of the entire prefecture's population.

**2.2 The poverty degree is high and it is difficult to alleviate poverty** In addition to wide range of poverty and large poverty-stricken population in the Tibetan areas of Sichuan Province, there is the characteristic of high degree of poverty. Restricted by natural factor, economic factor, social factor and other factors, the income level of people and especially the rural residents in the Tibetan areas of Sichuan Province is low. According to statistics, in 2009, the per capita income of rural residents in Garze Tibetan Autonomous Prefecture and Aba Tibetan and Qiang Autonomous Prefecture was 2 228.7 yuan and 3 066.2 yuan, far lower than the net income of rural residents in Sichuan Province (4 462.1 yuan). In addition, the incidence of poverty in the Tibetan areas of Sichuan Province is also high. According to statistics, the incidence rate of poverty in Garze Tibetan Autonomous Prefecture in 2008 was 27.5%, far higher than the provincial and the national average. In addition to low income and high incidence of poverty, the problem of poverty caused by illness is serious. Kaschin-Beck disease in Aba Tibetan and Qiang Autonomous Prefecture of Sichuan

Province is a serious endemic disease, and the vast majority of patients suffer long-term ravage of Kashin-Beck disease, reducing the ability to work and weakening life skills. Basically, II-degree or III-degree patients are unable to work, losing basic living skills. The poverty issue is outstanding.

**2.3 The natural disasters are frequent and the phenomenon of poverty arising from disasters is serious** In the Tibetan areas of Sichuan Province, the natural conditions are harsh; the ecology is damaged severely; earthquakes, landslides, drought, frost and other weather disasters occur frequently; the geological activity is intense. Therefore, the Tibetan region in Sichuan Province becomes one of the regions with the severest mountain disasters in the world. According to official statistics of Garze Tibetan Autonomous Prefecture, in the period 2000 – 2005, various types of natural disasters occur 1 523 times in Garze Tibetan Autonomous Prefecture, and the economic losses arising from disasters reach 0.28 billion yuan, showing an increasing trend. On May 12, 2008, an appalling earthquake occurred in Wenchuan of Sichuan Province, the disaster area close to 0.5 million square kilometers, affecting 45.546 million people and causing direct economic losses of nearly a thousand billion yuan. 13 counties in Aba Tibetan and Qiang Autonomous Prefecture were damaged to varying degrees, and more than 95 percent of construction projects in whole prefecture in the suspended or semi-suspended state. In severely afflicted areas, such as Wenchuan County, Li County, Mao County, Songpan County and other counties, there was a difficult situation as follows: the infrastructure was severely wrecked; the production was paralyzed; the tourism consumption declined sharply; the fiscal revenues plummeted. In 13 counties, 215 townships of Aba Tibetan and Qiang Autonomous Prefecture, 0.69 million people were affected by the disaster, and the direct economic losses exceeded 100 billion yuan. From 1995, the holistic economy of prefecture exhibits negative growth for the first time. Sudden earthquake in the Tibetan areas causes enormous losses on people's lives and property, and the development of economy and social undertaking suffers huge hit.

### 3 The reason of poverty of farmers and herdsmen in the Tibetan areas of Sichuan Province

**3.1 The natural conditions are inclement and the ecological environment is fragile** The Tibetan areas in Sichuan Province is located in the transition zone between the southeast of the Tibetan Plateau and Yunnan-Kweichow Plateau, and the first geographic step ladder. In the Tibetan areas, mountains and canyons are widely distributed, with an average elevation of 3 000 m or more. The average elevation of Muli Autonomous County and Garze Tibetan Autonomous Prefecture is more than 3 100 and 3 500 m, respectively. The average elevation of Aba Tibetan and Qiang Autonomous Prefecture also reaches 2 100 m or more. Steep topography contributes to the region's harsh weather conditions. According to statistics, apart from Jinsha River, Yalong River, and downstream valley of Dadu River with

the annual average temperature of 10 °C – 15 °C, the annual average temperature in most of other regions is about 6 °C, and the annual average temperature in highland and pastoral areas is below 0 °C. In addition to harsh natural conditions, ecological fragility is also a major factor restricting the development of the Tibetan areas in Sichuan Province. Due to unique geography and landscape in the region, the Tibetan region in Sichuan Province also becomes one of regions with the most fragile ecological environment in China. In the Tibetan areas in Sichuan Province, the climate is cold and fickle; the growing season of plants is short; the rocks are broken and loose, and the soil erosion is serious; the area of land desertification is large, desertification of grassland and rodent infestation are serious; there are many types of natural disasters, with high frequency and great intensity. Harsh natural conditions and ecological environment has seriously hampered the development of regional resources and economic development.

**3.2 The social attitudes are stale and the religious influence is deep** Although the Tibetan areas in Sichuan Province step across the feudal serfdom society into socialist society dramatically, the long-established ideas for thousands of years still deeply shackle the idea of myriad farmers and herdsmen, especially religious ideas. First, the concept of farmers and herdsmen is stale and their behaviours run in a groove. In the Tibetan areas, a large portion of impoverished people still entertain the idea of submitting to providence, and they'd rather starve at home than work outside the home. Second, the religious ideas have a tremendous negative impact on social life in the Tibetan areas. A large number of men become monk, resulting in dramatic changes in the structure of gender and sex ratio in society<sup>[2]</sup>, and significant decline in the rural labor forces, which affects the development of productive forces in rural areas and improvement of farmers' living standards. Considerable religious spending intensifies the life burden on farmers and herdsmen, making the poor get poorer; gathering of a large number of monks and nuns easily triggers the large-scale security risks, greatly affecting the social stability and development.

**3.3 The development of education lags behind, the human capital inputs are short and the self-development capacity is weak** Due to many historical debts, coupled with weak economic and social foundation, the development of education in the Tibetan areas of Sichuan Province critically lags behind; the cultural level and population quality are generally low; the ratio of school attendance for school-age children is low; the illiteracy rate is high and few people receive higher education. According to the statistics from the sixth census, it shows that the illiteracy rate in Garze Tibetan Autonomous Prefecture and Aba Tibetan and Qiang Autonomous Prefecture is 30.17% and 12.39%, respectively, far higher than the provincial average of 5.44%, while in Garze Tibetan Autonomous Prefecture, there are 5 760 people with collegiate grade per 0.1 million people, less than the provincial average of 6 675 people. In addition, statistics show that in Shiqu County of Garze Tibetan Autonomous Prefecture, the ratio of school attendance

for school-age children was only 83.7% in 2009, the province's minimum<sup>[3]</sup>. Education is the key to restricting the level of self-development capacity, and backward education in the Tibetan areas of Sichuan Province severely restricts improvement in self-development capacity of local people, which is also one of the fundamental factors responsible for poverty in these areas.

**3.4 The state poverty alleviation and development policy is weakly directed at region** The government plays a very important role in poverty alleviation and development, and the poverty alleviation policies promulgated by the government have great effect on guiding the work of poverty alleviation and achieving poverty reduction results. Although the internal cause is the main cause of poverty in the Tibetan areas of Sichuan Province, but the government's poverty alleviation policy, as the external factor, is also very important. First, the classification of poverty alleviation standard is unreasonable. The Tibetan areas in Sichuan Province is located in the Tibetan Plateau, with high altitude, low temperature, and higher calorie intake required than the mainland; as the areas are remote and transport is not convenient, the price of necessities of life is higher than that in the mainland, but unified poverty line is implemented in China. Second, there are few counties classified as the state key poverty alleviation counties. The poverty degree of most of the counties in the Tibetan areas of Sichuan Province is roughly equal, but limited by indicators, only 9 counties in 32 counties are listed as the key state poverty alleviation counties, and the proportion of the key state poverty alleviation counties in Garze Tibetan Autonomous Prefecture and Aba Tibetan and Qiang Autonomous Prefecture is only 26.7%. Due to shortage of strong national support, the social and economic development in the majority of impoverished counties, but not the state poverty alleviation counties, is sluggish, and even lags behind that of the state poverty alleviation counties. Third, the quota of anti-poverty project is low. The investment quota of national anti-poverty project uses the standard in the mainland, without taking into account the high construction cost in the Tibetan areas of Sichuan Province, resulting in insufficient inputs to projects.

**3.5 The Tibetan areas are facing the dilemma of choosing resources endowments or ecological protection** The Tibetan areas in Sichuan Province have many advantages and special resources, but the superior resources are insufficiently developed. Inadequate development of characteristic industries greatly impedes increase in people's income and regional economic development. First, the development of animal husbandry is not adequate. The Tibetan areas in Sichuan Province boast abundant animal husbandry resources, but the development of animal husbandry has not yet formed industrialization chain, so that the development of animal husbandry is severely limited. Second, there are obstacles to the development of tourism. The Tibetan areas in Sichuan Province have rich tourism resources and tourism is also an important source for the economic development, but at current stage, there are obstacles to the tourism: the marketing and management strategies are poor; infrastructure is not well constructed; in-depth development is not enough. Third, the development of energy

resources is not enough. The Tibetan areas in Sichuan Province have rich energy resources, especially hydroelectric resources, but the energy development intensity is not enough and the energy development inputs are short, significantly limiting the overall development of local areas. Superior and special industries are not fully developed, which is another important issue in the development of the Tibetan areas in Sichuan Province, inflicting enormous impact on economic development.

## 4 The proposals for resolving the poverty issue in the Tibetan areas of Sichuan Province

**4.1 Strengthen infrastructure construction and underpin self-development capacity of the Tibetan areas in Sichuan Province** The natural environment is harsh, making the infrastructure construction in the Tibetan areas of Sichuan Province difficult. The vast majority of impoverished farmers and herdsman lack basic conditions for withstanding harsh natural environment, and have extremely urgent demand for improving infrastructure. First, we need to pay attention to the transport infrastructure: strengthen township and village road construction in rural areas; improve the building of township passenger transport stations in; improve the quality and level of key roads; gradually establish convenient transportation network to facilitate outing of the majority of poor people. Second, we should further implement "bring power to the town (village)" project, "the Tibetan areas-kitchen-stove" project, and other rural power grid construction projects and new energy construction projects, vigorously develop small hydropower, biogas, solar energy, wind energy and straw gasification and other clean energy in rural areas, to basically resolve power use difficulties for farmers and herdsman, and improve production and living conditions for farmers and herdsman. Third, we should strengthen broadcast communication project in rural areas; continue to consolidate and expand the project of "extend radio and TV coverage to every village" and the "Tibet - Xinjiang Project"; develop and optimize the telephone network, and accelerate construction of transmission network, input network and telephone network, to gradually achieve comprehensive coverage of mobile signal; strengthen communication and contact of the Tibetan areas with the outside world, and enhance the basis of mutual trust and cooperation.

**4.2 Reinforce organic connection of social security and poverty alleviation and development and promote self-development capacity of impoverished farmers and herdsman in the Tibetan areas** The self-development capacity is a kind of self-ability that can promote harmonious, balanced and long-term development of regional economy, society and other aspects, and this kind of self-development capacity occupies the fundamental status in various factors, and plays a fundamental role. The rural self-development capacity in ethnic minority areas is the key to rural development in ethnic minority areas. Promoting self-development capacity is the long-term measure for fundamentally resolving poverty issue, the external driving force for increasing income of farmers and herdsman, and the funda-

mental driving force for improving the living conditions of poor people. On the one hand, the traditional way of dispersed relief can only guarantee survival, while development-oriented poverty relief can promote the development of the poverty-stricken masses, so in addition to improving the basic agricultural production and living conditions, we should further strengthen efforts to provide technology, education, health and other public service functions to the poor people, for example, "9 + 3" Free Education Program in the Tibetan areas of Sichuan Province, has promoted their self-survival capacity, self-selection capacity and self-development capacity. On the other hand, the self-development capacity is an endogenous variable. We should strengthen the participation of the poor subject, guide the poor masses to emancipate the mind, change concepts and actively adapt to the new idea and new measure of development-oriented poverty relief, and encourage the poor people to make a fortune by means of industry.

**4.3 Strengthen policy support and improve self-development policy and mechanism of the Tibetan areas in Sichuan Province** In order to accelerate the economic and social development in the Tibetan areas of Sichuan Province, we should establish macroeconomic policies and mechanisms to improve and promote the development of the Tibetan areas, on the basis of implementing the ethnic regional autonomy system earnestly. On the one hand, there is a need to adjust policies and further establish and improve the ecological compensation mechanism. The 17th National Congress of Communist Party of China pointed out that we should establish and improve the ecological compensation mechanism. The Tibetan areas in Sichuan Province are the areas with protection of ecological environment as the main function. We should elevate the ecological environment compensation from the policy level to system level; establish laws and regulations for the ecological environment compensation; ensure the source of ecological environment compensation funds through levying ecological regulatory tax; establish sound resource development compensation mechanism (The compensation coverage includes compensations for direct losses in submerging, land expropriation, migration, removal and so on.); reasonably elevate the compensation standard to cover resource consumption compensation, environmental compensation, follow-up support and so on. On the other hand, we need to strengthen and improve the financial revenue policies and financial support policies. We should further strengthen financial transfer payment, reinforce the preferential national financial transfer payment, set aside a certain percentage of fiscal revenue newly added every year for ethnic minority areas, focus on strengthening infrastructure construction, poverty alleviation process, basic public services, and financial support for environmental protection. At the same time, we should promote the rural financial system construction in the Tibetan areas of Sichuan Province, strengthen the reform of rural credit cooperatives, continue to expand the micro-loans in rural areas, encourage financial institutions to take syndicated loans, hybrid loans, trust management, financing and leasing, equity trust and other ways to strengthen the financial support

for the Tibetan areas in Sichuan Province, and help farmers and herdsmen to shake off poverty and get rich.

**4.4 Drive the popularization of technology and culture in the Tibetan areas and update the development concept of farmers and herdsmen in the Tibetan areas** The backwardness of ethnic minority areas is largely the backwardness of concept, and the dissemination of modern technology and culture is the most effective means and most convenient way to help people of various nationalities broaden horizon and transform concept. In order to vigorously strengthen the training and popularization of science and technology in the Tibetan areas of Sichuan Province, we need to carry out technology training and application on the basis of superior industries, ecological protection, and poverty alleviation for farmers and herdsmen; enhance the construction of rural economic information service system, and improve rural information-based level in the Tibetan areas; carry out the project of benefiting farmers by culture in the Tibetan areas, implement the construction of grass-roots cultural stations, and perfect prefecture, county cultural centers, museums arts groups and other cultural structures; vigorously promote the construction of township cultural stations to achieve "one township, one station", "one village, one center", and constantly enrich the cultural life of farmers and herdsmen. In addition to the comprehensive implementation of the Party's policy of religious freedom, we should abide by law to strengthen the management of religious affairs in the Tibetan areas, strengthen the correct orientation of propaganda, focus on strengthening the consciousness of "safeguard the dignity of law, safeguard national unity, safeguard national unification", increase inputs into the work of patriotic education, vigorously train and establish a number of erudite and high-minded religious representatives.

**4.5 Accelerate the development of competitive industries in Tibetan areas and promote economic development capacity of the Tibetan areas** Agricultural industrialization is the basis for promoting the self-development capacity of the poor people in the Tibetan areas, and the fundamental way to increase per capita income of farmers and herdsmen. We should vigorously promote the industrialized operation of ecological animal husbandry, strengthen the key construction projects of competitive industries, and focus on the construction of livestock and poultry breeding projects, technology driving projects, and industrialization base of animal husbandry. At the same time, we should actively develop the leading enterprises of unique ecological agricultural products and sideline products, and characteristic animal husbandry; actively develop the rural cooperative economic organizations and capable breeding farmers; strengthen the circulation network construction of agricultural products and sideline products; strive to establish the wholesale markets of agricultural products and sideline products and regional wholesale markets in counties. At the same time, for the spectacular natural scenery and historic sites in the Tibetan areas of Sichuan Province, we should continue to strengthen the construction of existing world-class, state-level

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landscape is high. The calculation formula is as follows:

$$\text{CONTAG} = \left[ 1 + \frac{\sum_{i=1}^m \sum_{k=1}^m \left[ \left( P_i \frac{g_{ik}}{m} \right) \ln \left( P_i \frac{g_{ik}}{m} \right) \right]}{2 \ln m} \right] \times 100\% \quad (10)$$

In (6) – (10),  $P_i$  is the landscape proportion of patch  $i$ ;  $m$  is the type of patch;  $H_{\max} = \log_2 m$ ;  $\sum N_i$  is the total number of landscape patches;  $\sum A_i$  is the total area of landscape;  $g_{ik}$  is the neighbouring number of patch type  $i$  and patch type  $k$ .

Using formula (6) – (10), I calculate the spatial pattern index of landscape in Anhui Province from 1995 to 2005 (Table 5).

**Table 5 The spatial pattern index of landscape in Anhui Province from 1995 to 2005**

Year	Diversity index (H)	Evenness index (E)	Dominance index (D)	Fragmentation index (C)	Contagion index (CONTAG)
1995	1.184 1	61.72	0.875 4	1.279 0	60.519 3
2000	1.348 9	64.53	0.732 9	1.325 5	49.743 0
2005	1.696 0	73.56	0.641 3	1.580 2	45.127 6

From Table 5, we can find that in the period 1995 – 2005, due to returning farmland to lakes, ecological migrants, implementation of strengthening forestry development and other policies, and the continuous development of roads and urban construction, the proportion of various land use types experienced great change, and the diversity index and evenness index of landscape showed an upward trend. The diversity index rose from 1.184 1 in 1995 to 1.696 0 in 2005; the evenness index rose from 61.72% in 1995 to 73.56% in 2005; the change in dominance was contrary to change in diversity, and the dominance index declined from 0.875 4 in 1995 to 0.641 3 in 2005; due to strengthening of human activities, the landscape fragmentation increased, and the fragmentation index increased from 1.279 0 in 1995 to 1.580 2 in 2005; in addition, the contagion of landscape declined, from 60.519 3% in 1995 to 45.127 6% in 1995, indicating that the aggregation degree tended to be de-

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excellent tourist attractions; focus on the construction of the tourism ring road in Sichuan Province, such as Jiuhan Ring Road, Xihuan Ring Road, Hongse Ring Road, Sanguo Ring Road and Luoke Ring Road; accelerate the construction of Jiuzhai international tourist area, Wolong panda ecological park, and Shangri-la eco-tourism inner circle; strengthen the tourism marketing, pay attention to multi-level and high-level international publicity and promotion, further promote the tourism fame of the Tibetan areas, drive the rapid development of cultural tourism industry, and strive to construct the the Tibetan areas in Sichuan Province into the best destination of the world's natural heritage and eco-tourism. On the other hand, for abundant water energy resources and mineral resources in the Tibetan areas of Sichuan Province, we should establish new resources development model, make the domi-

centralized from centralized.

## 4 Conclusions

First, through analysis of the change in land use structure in Anhui Province from 1995 to 2005, it indicates that the change in land use structure in Anhui Province is prominent, and the change in grassland, farmland, residential area and mining area, and construction land is prominent, and the ecological construction and municipal construction have a far-reaching impact on the change in land use structure.

Second, through analysis of the change in land use degree in Anhui Province from 1995 to 2005, it indicates that the land use degree in Anhui Province is not high, still in the period of development, but the extent and intensity of use are increased year by year.

Third, through analysis of landscape pattern change of land use in Anhui Province from 1995 to 2005, it indicates that the land use structure and the spatial distribution in Anhui Province are adjusted and optimized constantly, and the spatial pattern of land use tends to be reasonable and gradually develops toward the equilibrium state.

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nant position of the autonomous region in resource development clear, establish and improve the benefit distribution pattern which gives consideration to government, business, and the masses, ensure the people's interests first, achieve interests sharing, and adhere to the road of sustainable development, placing equal stress on development and protection.

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