

研究論文

The Situation, Relations and Problems Between Social Economy and Ecology Development of Western Fujian

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Abstract: Western Fujian has special natural and geographical conditions; Mostly mountainous ecological conditions forges the situation that the heavy industry is the main pillar of economic development in Western Fujian; In the Western Fujian economic development ecology plays an important role. Ecological conditions are not only the environmental foundation of economic development, but also provide the most basic resources and energy for economic development. At the same time, the economic situation in turn affects the ecological status and development. Through the analysis of the relationship of economic development and ecological conditions of Western Fujian. This paper attempts to find the main problem of Western Fujian society development at the present at the present stage and future.

Key words: Western Fujian; Economy; Ecology; Environment; Longyan

Western Fujian is known as the southwest of Fujian Province, which is in the east longitude 115°50' to 117°45' and north latitude 24°22' to 26°02'. Western Fujian is located in the junction of Fujian, Guangdong and Jiangxi three provinces. There are Xiamen and Zhangzhou areas of Fujian province in the east of Western Fujian, Meizhou area of Guangdong province in the south, and Ganzhou area of Jiangxi province in the west, Sanming area of Fujian province in the north. The whole area includes Xinluo and Yongding two districts, Shanghang, Changting Liancheng, Wuping four Counties and a county-level city Zhangping. Seen from the natural environment, Western Fujian is blessed with unsurpassed ecological conditions, such as Guanzhai mountain in Liancheng which is a national scenic area,

Meihua mountain which is a grade A of national nature reserve, and the Liangye mountain in Wuping county, and so on. There are enough ecological resources for eco-tourism development in Western Fujian¹; Seen from the historical and cultural perspective, Western Fujian has a deep and rich cultural resources, such as the Earth Building of Yongding, Tingzhou ancient city, Gutian conference site, and so on, which is an educational and cultural propaganda base². Natural and cultural echoing each other form a unique regional characteristics of Western Fujian. Western Fujian has the unique characteristics ecological conditions, such as the red soil conditions that although eroded but are trying to repair³, the quality air conditions that occasionally slightly interfering by substances⁴. There are also mountains and rich forest

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Fund Project :the soft science project of Science and Technology Department of Fujian Province in 2017 year: <Study on the Effective Utilization and Advantages Keeping of Ecological Resources in Western Fujian Under the Green Development Concept> (2017R0078); Project of Central Soviet Area Research Institute of Long Yan University in 2015 year: <Study on the Soviet Society Under the Dimension of Ecological Change in Western Fujian> (LS2015023).



Figure 1 the basic administrative map of Western Fujian (Longyan area)

resources in Western Fujian⁵. From the perspective of social development or from all aspects of the ecological conditions, the preliminary researches are relatively rich, but the study of the combination between economic development and ecological conditions is less to find. Therefore, this paper from the relationship basis between economic and ecology to discuss the facing problem in the society development process of Western Fujian.

I . The economic society and ecology development situation of Western Fujian

Since 1995 year, Western Fujian establishment of city with revocation of counties in Western Fujian, the total area is 19,100 km², and the resident population is about 2,610,000 in 2015. The east-west length is 192 kilometers and south-north width is about 182 kilometers, accounting for 15.7% land area of Fujian Province, of which mountains accounts for 78.4% and hills accounts for 16.3% and plains accounts for 5.3%⁶. Mountain area is 14,964 km², which occupies the vast majority of the whole region, forming a unique Western Fujian ecological characteristics and the economic society



Figure 2 Western Fujian (Longyan area) occupies the location map in Fujian province

development mode. The economic developed rapidly in Western Fujian. The entire region economic developed stably under the complicated economic situation. In the entire economic system, not only the agriculture has been more rapidly developed, but also the industries has grown steadily. Effectively boosting the investment, not only establish the rapid growth foreign trade system, but also develop the urbanization rapidly. The income of urban and rural residents increase steadily.

1. The economic society development situation of Western Fujian

First, the situation of agricultural economic development From 2012 to 2015 year, nearly four years agricultural economic development of Western Fujian, the total value of output status of agriculture, forestry, livestock and fishery respectively were 26.579, 29.063, 31.384, 33.753 billion yuan. It's clear from these data that the agricultural economy grew steadily annually growth. Agricultural output by 2015 year was 14.898 billion yuan, The forestry output value was 4.613 billion yuan. The livestock output value was 12.128 billion yuan. The fishery output value was 1.337 billion yuan. The agriculture, forestry, livestock and fishery service industry was

0.777 billion yuan⁷. Because the mountainous region occupies most area, the agriculture development in Western Fujian area is not strong. The main cultivated crops are rice, tobacco, oil crops, vegetables and so on. But seen from the data above, agriculture in Western Fujian area present a gradually ascending trend. Thus, the agriculture also occupies a indispensable important position in the social development of west of Fujian.

Second, the situation of industrial economy development. From 2012 to 2015 year, nearly four years the industrial value-added of Western Fujian was 65.522, of 6.425, 70.205, 72.648 billion yuan showing the same trend of a rapid growth. Among them, occupying output larger such as above-scale industries output value was 183.005 billion yuan, and machinery, non-ferrous metal, tobacco, refined energy industry, textile, building materials, photoelectric new materials industries realized industrial output value was 17.734 billion yuan⁸. The special geographical location and ecological characteristics of Western Fujian forges the main industrial development characteristics that heavy industry, tobacco, energy, non-ferrous metals is the main local characteristics. At the same time, the agricultural products processing industry such as peanuts, dried sweet potatoes, dried bean curd, dried bamboo shoots, bamboo, turpentine and so on. also occupy a certain economic growth rate.

Third, the situation of service industry and social living standard development. In 2015 year, the whole society fixed assets investment was 193.421 billion yuan, the investment in real estate development was 19.33 billion yuan, of which the commercial housing investment was 13.575 billion yuan. In the "Twelfth Five Year Plan" period, society fixed assets cumulative investment 660.2 billion yuan in the whole region of Western Fujian, equivalent to the "Eleventh Five Year Plan" period of 3.8 times. By the end of 2015 year, the vehicle population was 882.4 million in western Fujian, of which personal car ownership was 842.1 million. The passenger car

ownership 236.3 million, which individual passenger cars was 212 million vehicles, which had a rapid growth trend and compared to last year increased by 11.7%. In 2015, the postal service income was more than 0.45 billion yuan. The annual tourist income was 19.625 billion yuan growing fast, which increased 18% more than last year. The premium of insurance companies income was 4.344 billion yuan in the whole area increasing 8.6% over 2014 year, in which the life insurance accounted for about 70%. With the rapid development of economy, people gradually realize the importance of investment, life quality and life insurance. Therefore, according to the data, the public investment in fixed assets, personal travel, insurance and other aspects show a rapid growth.

Last, the situation of ecological civilization development. In 2015 year, Western Fujian region completed a total forest planting area 227.6 thousand mu over the planned 19.05% area, and the forest coverage rate was 77.91%. The centralized treatment rate of urban sewage is 88.86%, and the harmless treatment rate of municipal solid waste is 99.4%. There are 3 national nature reserves with an area of 46.9 thousand hectares⁹. The air quality, water resources, forest resources and biological diversity of the whole area are all located in the high level in China. Western Fujian has a good ecological basis, therefore in the process of ecological civilization construction. It is not needing a lot of investment mainly into the air and water resources liking other area, but paying more attention in the construction of industrial ecology management and ecological management of urbanization development then achieved certain results.

2. The current situation of unique ecological resources in Western Fujian

The mountainous region occupies the absolute advantage. Western Fujian is the important mining, forestry in Fujian province, which paves the way for the absolute abundance of

ecological resources. The mountains in Western Fujian are gold and silver mines and beautiful scenery, as the means that Western Fujian not only has a large number of mineral resources, but also has the good land, water, forests and other ecological basis.

First, the region there are rich in water resources and variety land resources in Western Fujian. The area more than 50 km² river, and there are 129 rivers in Western Fujian. The total length of these rivers is 423.17 km, mainly from Tingjiang river and the Jiulongjiang river water system. Dueing to the terrain factors, the river source short and fast flowing, the rivers annual runoff is 18.855 billion m³. The theoretical reserves of water resources is 2,458,500 KW, for the development of water reserves is 2,095,600 KW. From water environment quality of the city, the Jiulongjiang river Longyan section water quality compliance rate was 83.3% in 2015 year. Tingjiang river water quality compliance rate was 100%. Minjiang River Shaxi Liancheng section and Meijiang Wuping section water quality compliance rate are 100%¹⁰. The area is mostly mountainous, steep terrain, hilly area occupies 94.83% of the total area. The whole region terrain is east high and west low, with an average above sea level of 460 meters¹¹, 126 seats more than one kilometers mountains. Among the mountains, there are scoured hills, basins, mountains and other features of the landscape by the streams. The geomorphic features form particular form of farmland, villages and towns in Western Fujian.

Second, the climate, air temperature and air of Western Fujian. Western Fujian classifies in subtropical marine monsoon climate, mild climate and four distinctive seasons. Because of the complex landform, forms complex climate phenomenon, different terrain meteorology are different. The annual average temperature is 18.7 ° C ~ 20.7 ° C in the whole Western Fujian area, and the annual sunshine time is 1342.4 ~ 1707.2 hours. In Western Fujian area "the most mountains belong to four mountain ranges such as the

southern section of Wuyi Mountains, Daimao mountain, Caimeiling mountain and Bopingling mountain... For this four barrier, strong southeast winds stop here; unrestrained northwest cold currents also resolve here, the city's climate cool in summer and warm in winter, the humidity is comfortable for people"¹². Seen from the air quality testing results, annual average value of CO₂, SO₂, respirable particulate matter etc. reached the Chinese national secondary standard. The soil in Western Fujian is mainly famous by red soil and yellow soil, which is deep and suitable for the trees growth. The average annual rainfall is 1400-1800 mm, and the precipitation of 3/4 is concentrated in summer. Rain and heat in the same period, then water and heat resources are rich¹³. Thus, Western Fujian formed very rich forest resources. The forest resources are the advantage resources in Western Fujian. The forest coverage rate is 77.91%, which is one of the three major forest areas in Fujian province.

Last, Western Fujian is rich in mineral resources. "The specific geographical location of the city and the unique landscape formed the natural unique resource advantage"¹⁴. Mineral resources in Western Fujian is extremely plentiful. The mineral species has been found are 64 species, where owns the East China biggest iron mine -- Makeng Iron Mine, which one of the largest kaolin ore in China -- Donggongxia kaolin ore that is the famous copper and gold deposits in Zijin Mountain. Currently the mineral has proven are 15 kinds and occupies the first place in Fujian province. Among them, anthracite reserves is 6.08 million tons, which occupy 51.18% of the whole province resources reserves. The ore resources reserves is 315 million tons and accounts for 55.07% of the province. The iron ore resources reserves is 0.465 billion tons and accounted for 79.76% of the province. The copper ore resources is 196 million tons of metal reserves and accounted for 94.69% of the province; gold metal quantity resources reserves is 96.58 tons and accounted for 73.37% of the province. The kaolin ore reserves is 61,962,600 tons and

accounted for 35.68% of the province. The bentonite reserves 1565.9 million tons which is the only producing site in Fujian Province¹⁵.

II . The analysis relationship on the economic and ecological development in Western Fujian

In the study of the relationship between economic development and ecological changes, most scholars consider that the relationship between economy and ecology is a trade-offs relationship¹⁶. That is, if developing then social economic must expense some ecological interests as the cost, and if to preserve the ecological interests must sacrifice a certain economic development. The relationship between them is mutual conversion or substitute for each other. However, in the actual operation process the relationship between economy and ecology is interwovenness. The social economy can not be separated from the ecology and individual development, at the same time will be more or less affected the status of the original ecology, and better economical conditions also lay the foundation for the improvement of ecological level. Conversely, the poor ecological conditions can not provide the economic development environment and rich resources, and the low economic development level will cause to further deterioration of the ecological environment, forming a vicious circle. So relationship between ecological construction and economic growth is the unity of opposites and complementary. Economic growth originates from the resources and environmental costs obtaining from the ecological conditions, but economic growth in turn compensates a certain degree of resource and environmental consumption. Between them may become good complementary and circulation, and may leads to a vicious circle between obstruct each other due to the extent of discretion complementary grasping.

First, the relationship between the good ecological basis and the economic rapid development needs in Western Fujian.

Since 2007 year, Longyan City was named "Provincial Garden City" and "Provincial Health City", and named "National Garden City" in 2012 year, then approved officially as "National Forest City" by the State Forestry Administration in 2015 year, and awarded the title of "national green model units (city)" in 2016 year. The honours can not be separated undoubtedly from the special ecological conditions and good ecological basis in Western Fujian. But in the process of economic development, if only rely on the ecological basis existence as capital, and exploiting resources disorderly, and polluting the environment uncontrolled etc., which will cause to the deterioration of the ecological basis. The area is now facing an important moment in the economic structure reform in Western Fujian. The good or bad ecological state become the important link that economic society can be smooth and healthy development in Western Fujian.

Seen from social development data in the past several years, resources and environmental construction made great progress. As one of a few better ecological environment city in China, Western Fujian also plays a major role. Both land resources utilization, water resources utilization and protection, mineral resources exploitation, air quality maintenance, and other aspects, all of them has given greater attention, and the development is towards a relatively stable trend. Relatively speaking, it also has appeared the situation that "high growth, high pollution" or even "low growth, high pollution" in the process of economic development in Western Fujian, but in the continuous improvement process of ecological civilization, "low growth, low pollution" and "high growth, low pollution" situation gradually replace the traditional development mode becoming the mainstream mode of production. In this process, the game between ecological construction and economic development has experienced a complex process, which is not a short period of time can be clearly reflected in the history curve.

Secondly, the relationship between the appearance

ecological fragile areas and the slow down of economic development in Western Fujian. Since the reform and opening up, the market economy has played an important role in the development of China's economy, which has emerged the erroneous ideas that the highest faith in order to "economic" in the society. During this period, thought of "putting money above everything else" has been far beyond any of the ecological ethics and ecological ethics. Therefore, environment and resources has become free cost of economic development. Soon the ecological problems such as the soil and water loss, heavy metal pollution, biological diversity, decreased land productivity reduction etc. appeared. More importantly, it is on the basis thinking that the ecological development is the free cost. These ecological problems did not valued by the government, which is be thought that is the necessary result of economic development. For example, there is serious soil degradation now in Western Fujian. The soil profile is mainly B-C or even directly exposed in the external layer of C. Dueing to the bad soil structure and low penetration, once the drain is washed down the rain water the soil texture will become more and more barren. The red soil eroded area of soil organic matter content is only 3.95 g / kg. The total nitrogen content is 0.14 mg/kg, and alkaline hydrolysis nitrogen 5.53 mg/kg in the red soil. The total phosphorus is 0.12 g/kg and the available phosphorus is 1.08 mg/kg. The total potassium is 3.09 g/kg and the available potassium is 26.55 mg/kg¹⁷.

Besides the ecological problems of soil degradation, decreasing biodiversity is a consequent important ecological problem too. In the serious soil level degradation only leave several extremely drought tolerant plant species, such as *Pinus massoniana*, *Arundinella hirta*, *Baeckea frutescens*, and animal kinds are more rare. So the barren land is unable give play to the land productivity, and the food crops on this land is impossible to discuss. The agriculture development once affected, the whole social economy is bound to suffer some

obstacles. This is kinds of problems that soil and water loss resulted in the pollution of the surrounding rivers, the changing the quality of water resources. Not only affects the agricultural development surrounding rivers, but also affects the normal life of the surrounding people, and undoubtedly it also affects the whole economical and social development.

For example, according to the remote sensing census show in 1985 year, the soil erosion area was 1462 thousand mu in Changting county. The proportion land is area accounting up to 31.5%, Changting county was known as "soil and water loss champion". Serious soil and water loss causes the gully aspect in the hill, overall fragmentation and island in the natural landscape, which also caused to the ground subsidence and cracking phenomenon while the ecological problems that difficulty to be repaired. The natural ecosystem has the ability to repair itself. But once the ecosystem imbalance is much more serious, if the artificial power doesn't be intervened in it, then the the ideal state before imbalance can not be restored¹⁸. The intervention of artificial power contains a lot of manpower, material resources and financial resources, which must be a part or all of them, even more of them that the achievements of social economic development is at the expense of the ecological environment. That is to say, if there is not a good balance between the ecological and economic development, the ecological cost will be even more than the growth of the economy products, which may clearly reflect in a short period of time.

Finally, the relationship between the development of new industries and the ecology. Because of the natural geographical factors, the traditional industries in Western Fujian are mining, cement industry, machinery and other heavy industry. Even now the Longgong and other heavy industry play an important role in the economic development of Western Fujian. Along with the continuous transformation of the social structure adjustment and the economic development mode, the economic development is also moving

Table 1 The tourism development comparison of West Fujian in 2008, 2012, 2015

Items	Years	2008 year	2012 year	2015 year
Annual total tourism revenue (billion yuan)		4.854	10.935	19.625
Total tourism revenue growth rate over the previous year		0.66%	23.7%	18.6%
Total domestic tourism revenue (billion yuan)		4.834	10.71	13.121
Annual total number of tourists (million people)		5.3691	14.8449	25.3221
Reception of domestic tourism (million people)		5.3562	14.7854	25.2235
Reception of the inbound tourists number (thousand people)		12.9	59.5	98.6

(the data from <the Network of Longyan Municipal People’s Government:Statistical Bulletin of the National Economic and Social Development of Longyan City in 2015>)

into new types technology development, especially the rising of the service industry has become more and more underestimated part of economic development. With an example of the development of the tourism industry, the following table:

In Western Fujian, although tourism has not completely perfected and developed, the service industry development leading by the tourism will be unlimited in Western Fujian seen from the existing ecological basis and space aspect. The development of tertiary industry plays an important role to drive the growth of the local economy. At the same time, because of some problems existing in the industrial structure, management mode and developing method etc., there are some major implications for the ecology of Western Fujian. In the research on the ecological influence, most scholars were investigated for various factors. Such as plants, animals, water resources, land resources, air quality, sanitation, landscape and others of tourist area were investigated. No matter investigating for which one, tourism are not fully mature. In addition that people driven by the interests will bring more or less ecological problems, such as water pollution, environmental problems by spitting discarded garbage, interference for the plants and the influence on normal life of animals etc.. The emerging industries which tourism industry as a representative has been driving the economic

development. But at the same time, it begin to cause immeasurable loss of ecology because of the lower science and technology investment and the less green concept using and other factors.

Ⅲ . Analysis of society and ecological development problems in Western Fujian

As the problem between ecology and economy has become the focus of all over the world, the social development in Western Fujian has encountered the same critical problem of how to coordinate between economy and ecology. In the process of economic development, Western Fujian area will face increasingly fierce regional competition. At the same time considering how to do in the basis of the ecological basis without, even based on the ecological marching toward a better direction. It must maintain sustained growth in the local economy quickly and efficiently which become a huge problem in the region.

First, there are the problems between economic structure and institutional problems under the development process of Western Fujian. From the above data can be analyzed, heavy industry still occupied the unshakable historical status, as the mining state that "having dinner rely on mountain" is still not obvious change. In Western Fujian, the agriculture and the

service industry have some growth trends, but still can not change the status of the existing economic structure. The proportion of agriculture ascend is caused by the objective reasons because of the geographical reasons, but there are lots of natural and cultural tourist attractions in Western Fujian. The proportion of the service industry also increase much slower become a problem which is worth to discuss. In the structure of the service industry in Western Fujian, the smaller overall total amount and lower level imperfect facilities and system has become one of the key factors. Although in the adjustment of the economic structure has also made great efforts, such as the economic status promoting electronic commerce, developing continually and improving the tourism etc. In the area, so far it has not yet played a significant improvement, even will become the hindering factors of social development of Western Fujian in the future.

At the same time, the institutional factor is also a major problem in the development of the future society. The rapid development of society requires a number of enterprises operating mechanism within the rapid change, otherwise it will soon be eliminated in the market competition wave. But the majority of enterprises in Western Fujian remains original operational mechanism, which is lack of innovation and transformation, the traditional technological process and production organizational mode, even the form of the product can not adapt to the market demand. In the majority of enterprises in Western Fujian it is still rarely able to find elements of technological innovation, international vision, intensive management, and the development path which is high technology content, wide field of application and strong awareness of environmental protection, market prospects good scientific is difficult to go through.

Secondly, the environmental pollution and resource depletion problems be faced in the development process in Western Fujian. Mountainous in western Fujian, so the exploitation of mineral and forest resources become the most

convenient production mode to enhance the economic level by the local residents. Since the establishment of new China, the mineral resources in Western Fujian such as core mine, iron ore, copper gold deposits etc. have been mined. In the deposits process, not only the original mineral exploitation resources was exhausted, but also in the mineral resources surrounding environment was already formed the serious environmental problems which is subsidence or discarded or pollution of the nearby houses, buildings, public facilities and water resources etc.. where is caused serious influences on the original lush trees, fertile land, clear water, clean air due to the unreasonable exploitation in the periphery of the mineral, especially around the gold, copper, iron and other metal ore mining which has caused permanent damage after rain erosion penetrate into the surface.

No matter how large and massive mountain mine are exhaustible. Mineral resources storage of Western Fujian is large amount, but so far it has been mined for most parts, a plurality of mines even become exhausted or nearly depleted state. The depletion of resources not only caused a whole mountain ecological deterioration, but also caused to an unsustainable development situation of the local related enterprises. Especially the enterprise that relies on the traditional technology and management mode with the gradual depletion of resources. In the resource development process, because the understanding of resource using is not comprehensive enough, then the resources is not comprehensive analysis and never consider the multiple levels of processing and utilization. It just plays out the value of the surface for the deep processing and utilization is not involved and resulting to the error handling of the first time garbage as slag can no longer be reused.

Finally, the mail problems there are two major contradictions in Western Fujian. In the development mode in Western Fujian, first is the contradiction between the maximization of social effective demand for resources and

extensive mode of resource developed and utilization; second is the contradiction between the innovation and technology needs of enterprise and the lack utilization technology and opportunity. In the final analysis, the two contradiction is respectively expressed about the effective use of resources and the utilization paths of expression. In the mode of production, whether it is government departments or individuals is still used to choose the traditional and quick buck, then resulting the illusion of pulling economic development temporary, but seen from the future it is not good for the production mode. Such as in the traditional production mode, the basic mode relies on mainly the material inputs (resources, energy, manpower and material resources etc. input), extension and expansion (environmental free possession, human resources uncontrolled expansion and so on), but the less considering the investment in high technology, thereby making the a group of enterprises which are lower content of science and technology, lower production efficiency, lower rate of resources and environment utilization. These enterprises are apparently difficult to supporting the sustained and healthy development of the economy in Western Fujian.

Between the two contradictions, there are also some first in contradictions that the disordered abuse for resources and environment, and the income distribution structure is irrational between enterprises and internal the enterprises even the government service is not in place for the personal employment and social security and so on. These contradictions constitute the main contradiction under the unreasonable production mode. Western Fujian as a typical resource-based city is also facing an important moment of economic transition. At the same time the government departments put forward a series of economic transformation way, but how to specific implementation to the grass-roots enterprises becomes a key issue. Society is developing toward a healthy, coordinated and harmonious and sustainable direction, then Western Fujian will keep pace with it naturally.

Obviously it is the preposition the tight combination that about the production mode transformation and the development direction of this area for solving two main problems.

Annotation

- 1 Lin Heping, Lin Shuifu(2005.2): Analysis of the Eco-tourism Resource and Its Development Countermeasures in Fujian, Journal of Fujian Agriculture and Forestry University (Philosophy and Social Sciences), p 33-36
- 2 Zhang Yanqin(2010): the Current Situation Analysis of the Red Cultural Resources Development in Western Fujian, Fujian Forum Social Science Education Edition, p 12-15.
- 3 Ge Hongli,etc.(2011.3): Ecological Degradation and Restoration of Red Soil Erosion in Western Fujian, Subtropical Soil and Water Conservation, p 16-20/28.
- 4 Fang Chunsheng, etc.(2011.2): Statistical Analysis of Atmospheric Particulate Matter Sources in Longyan City, China Environmental Science, p 214-219.
- 5 Zhao Ming(2009.5): Prospect of Study on the Mechanism Construct of Tourism Coupled with Vulnerable Eco-environment of Mountainous Areas in the Western Fujian Province, Yunnan Geographic Environment Research, p 83-87.
- 6 Coming into Longyan(2016), <http://www.longyan.gov.cn/lygl/lygk/zrdl/>.
- 7 Statistical Bulletin of the National Economic and Social Development of Longyan City in 2015(2016), http://xxgk.longyan.gov.cn/srmzf/zfxxgkml/05/03/201603/t20160321_584590.htm.
- 8 Statistical Bulletin of the National Economic and Social Development of Longyan City in 2015(2016), http://xxgk.longyan.gov.cn/srmzf/zfxxgkml/05/03/201603/t20160321_584590.htm.
- 9 Coming into Longyan (2016), <http://www.longyan.gov.cn/lygl/lygk/zrdl/>.

- 10 Coming into Longyan(2016), <http://www.longyan.gov.cn/lygl/lygk/zrdl/>.
- 11 Coming into Longyan(2016), <http://www.longyan.gov.cn/lygl/lygk/zrdl/>.
- 12 Guo Yishan, Zhang Longquan(2002): Anecdotes of Western Fujian, Fujian People's Publishing House, p 20.
- 13 Dai Yifeng(2004): The Religion Economic Development and Social Change, Yuelu Publishing House, p 274.
- 14 Longyan Municipal CPPCC Committee of Historical Materials (1998): Spring and Autumn in Western Fujian, Longyan Municipal CPPCC Committee of Historical Materials, p 23.
- 15 Coming into Longyan (2016), <http://www.longyan.gov.cn/lygl/lygk/zrdl/>.
- 16 JP Rodríguez , TD Beard , EM Bennett, GS Cumming (2006.01): Trade-offs Across Space, Time, and Ecosystem Services. *Ecology & Society*, p 709-723.
- 17 Ge Hongli, etc (2011.03): Ecological Degradation and Restoration of Red Soil Erosion in Western Fujian, *Subtropical Soil and Water Conservation*, p 16-20/28.
- 18 Cai Xiaoming(2000), *Systems Ecology*, Science Publishing Company, p 95.
- 4 Krithika Srinivasan, Rajesh Kasturirangan (2016.10): Political ecology, development, and human exceptionalism. *Geoforum*
- 5 Coming into Longyan (2016), <http://www.longyan.gov.cn/lygl/lygk/zrdl/>.
- 6 Statistical Bulletin of the National Economic and Social Development of Longyan City in 2015 (2016), http://xxgk.longyan.gov.cn/srmz/zfxxgkml/05/03/201603/t20160321_584590.htm
- 7 Guo Yishan, Zhang Longquan (2002): Anecdotes of Western Fujian, Fujian People's Publishing House.
- 8 Dai Yifeng (2004): The Religion Economic Development and Social Change, Yuelu Publishing House.
- 9 Longyan Municipal CPPCC Committee of Historical Materials (1998): Spring and Autumn in Western Fujian, Longyan Municipal CPPCC Committee of Historical Materials.
- 10 Ge Hongli,etc (2011.03): Ecological Degradation and Restoration of Red Soil Erosion in Western Fujian, *Subtropical Soil and Water Conservation*.
- 11 Cai Xiaoming (2000), *Systems Ecology*, Science Publishing Company.

References:

- 1 Colby J Tanner, Frederick R Adler, Nancy B Grimm, Peter M Groffman, Simon A Levin, Jason Munshi-South, Diane E Pataki, Mitchell Pavao-Zuckerman, William G Wilson *Urban: ecology* (2014.10): advancing science and society. *Frontiers in Ecology and the Environment*
- 2 JP Rodríguez , TD Beard , EM Bennett, GS Cumming (2006.1): Trade-offs across space, time, and ecosystem services. *Ecology & Society*
- 3 Nick Revington(2016): The urban political economy and ecology of automobility: driving cities, driving inequality, driving politics, edited by Alan Walks. *Urban Geography*, p 803-804.