

# Exploring the Effective Path of Combining Rural Revitalization and Ecological Civilization Construction: Fuzhou City, Fujian Province as an Example

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**Abstract:** The opinions of the State Council of the Central Committee of the Communist Party of China on the implementation of the strategy for the revitalization of the countryside clearly proposed that by 2050 the countryside will be fully revitalized with strong agriculture, beautiful countryside, and rich in farmers. In recent years, with the promotion of the rural revitalization strategy, the majority of rural areas have ushered in many developments and opportunities, however, they have also suffered serious ecological damage. By taking Fuzhou City, Fujian Province, as an example, this paper discusses the dilemma and solution paths of rural ecological civilization construction in Fuzhou City in the context of rural revitalization, with the intention of realizing the organic integration of rural revitalization and ecological civilization construction, further providing experience and inspiration for the villages in other regions of China.

**Keywords:** Rural revitalization; Ecological civilization construction; Fuzhou

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## 1. Introduction

Countryside is a regional assemblage of ecological and social features with extraordinary effectiveness for human production and survival, and it complements the city by forming a space which human beings can dependent [1]. There is a proverb in China, which is “When the countryside thrives, the nation thrives, and when the countryside declines, the nation declines.” The contradiction between the growing needs of the people for a better life, and unbalanced and inadequate development in the countryside, where China is still in the primary stage of socialism with large manifestation of its characteristics. The most arduous and onerous task of building a moderately prosperous society and a strong socialist modern state lies in the countryside, because the most extensive, profound foundation, greatest potential, and strength lies in the countryside [2]. In additional, it must be noted that due to various factors such as human, technical, and ecological awareness, there are still a certain number of villages in the country that are in relatively serious ecological difficulties, therefore, there is an urgent need to implement an effective solution to address them. On August 2016, Fujian was listed as one of the first national pilot ecological civilization zones [3]. How to reach the deployment requirements of the central and provincial committees, persistently accelerate the integration of development and ecological protection, steadily promote the preparation of a pilot ecological civilization zone in Fuzhou, and accelerate the green development of a blessed state and a happy city, is a

major issue at present.

## **2. Rural revitalization should be effectively integrated with ecological civilization**

Urbanization and the industrialization of rural poverty eradication have certainly led to the involvement of many modern industries in the countryside, which bring development and opportunities to the local area, however, it also brings a huge impact on the ecological environment of the countryside. At present, in China's rural areas, there is insufficient supervision of industrial development and industrialized production, additionally many enterprises have caused serious destruction to the ecological environment of the countryside. For example, their sloppy management methods, backward technical levels and facilities, irregular management, and the large amount of untreated waste water, and exhaust gas produced during production has created an indelible mark on the rural environment, which deviates from the original goals of rural revitalization, which are building beautiful villages, improving the value of ecological civilization, and achieving rural farmers' prosperity. Therefore, it is very important to increase the protection of the rural environment, speed up the prevention and control of pollution sources, improve the rural living condition, and attach importance to ecological governance, which is not only related to the orderly promotion of the rural revitalization strategy, but also to the prosperity and stability of the country and society, and more importantly, to the enhancement of the farmers' happiness, satisfaction, and sense of acquisition. To allow the residents to have the opportunity to see the mountains, the water, and remember their nostalgia is the right thing to do when building a beautiful countryside that is ecologically pleasant to live in<sup>[4]</sup>. In addition, there is proverb in China, which is "If ecology flourishes, civilization will flourish, and if ecology fails, civilization will fail<sup>[5]</sup>." A new countryside with beautiful mountains and clear water with a livable ecology is not only vital to the construction of ecological civilization in Fuzhou City and the whole country, but also to the pursuit a better life for the people is also an important embodiment of rural revitalization.

## **3. Main problems of rural ecological construction in Fuzhou City under the goal of rural revitalization**

### **3.1. Environmental hazards of rural farming**

As the living standards increase, so does the demand for quality and quantity of the product. As a result, in the pursuit of high yields and fresh production, the farmers increase the use of pesticides and chemical fertilizers. At present, vegetables, edible mushrooms, fruits, and rice constitute as the main items of Fuzhou's rural farming products, and the obvious problems with these farming products are, they contained excessive levels of drugs, hormones, and heavy metal residues. In addition, a large amount of pollution from production and agro-industry also poses harmful to food safety. Firstly, pollution of a nature medicine refers to the pollution caused by the indiscriminate application of pesticides, where pesticides dispersed into the environment, contaminating the air, arable land, and water, therefore directly endangering human health. In addition, the consumption of agricultural products containing pesticides, and heavy metal residues may cause health threats. Secondly, fertilizer as the source of pollution, refers to the abuse of indiscriminate application of chemical fertilizers, for example, no or little organic fertilizer, unbalanced application of nitrogen, phosphorus and potassium fertilizer, application of low-priced phosphate fertilizer, and sub-grade calcium superphosphate leads to pollution. As a result, in the long run with the washing of rainwater, a large amount of fertilizer seeps into the ditches, triggering eutrophication of water bodies. Further, the sub-standard calcium superphosphate fertilizers, and small amounts of compound fertilizers can also cause heavy metal pollution of arable land<sup>[6]</sup>.

### **3.2. Environmental hazards of rural livestock farming**

In recent years, due to the intensive, large-scale, and modernized livestock and poultry farming methods, a large number of farms have gradually converged in some villages and rivers in Fuzhou, resulting in a high concentration of pollution pattern, and causing a severe environment problem [7]. Some figures show that one cow produce and discharge more sewage compared to 22 people, meanwhile one pig produce and discharge more sewage than 7 people [8]. According to the survey, there are few hazards of livestock farming on the environment of Fuzhou's countryside. Firstly, is the rural water quality pollution. The dirty water and sewage produced by animal husbandry are discharged arbitrarily, however, the sewage treatment is not up to standard, therefore causing serious pollution of water quality in the townships, which in turn affects the drinking water safety of the cities. There are toxic and harmful ingredients in livestock sewage, therefore if it seeps into the groundwater, it can make the groundwater carry toxic ingredients as well, which in the long run will lead to black and smelly water bodies, causing lasting water pollution, and loss of water body use efficiency. In addition, farming cause an effluent irrigates of agricultural land, causing crops to suffer from poisoning and root rot, which ultimately reduced the crop yields. Secondly, livestock farming produces large amounts of malodorous gases which contain methane, ammonia, and other toxic components, which pollute the surrounding air, and have a direct impact on the lives and health of the surrounding residents, and thirdly, livestock manure carries a large number of bacteria and parasitic eggs, which easily breeds flies and mosquitoes, which may subsequently cause the development of infectious diseases in humans and animals, thereby posing a threat to human and animal health [9,10].

### **3.3. Increasing environmental injustice in urban and rural areas**

The urban-rural dichotomy has a serious impact on rural environment-related issues. In recent years, the issue of environmental management has attracted increasing attention, as reflected by the improvement of laws and policies related to environmental management, and the increased investment in solving the environment-related problems, however all of these improvements focused on the cities. As a result, the urban environment has been improved, in contrast the rural environment has been deteriorating, with a significant impact on the livelihoods, physical, and mental health of farmers. For example, the village of Houwanggezhuang in Beijing's Shunyi district has a total population of 1,000 people only, however, between the year 2003 to 2007, 25 people from this region suffered from cancer, and the root cause of this is most likely due to the Beijing Xitao Technology Development Co. The company builds its factory in 2002, since than a strong acidic smell has been released from the factory, which seriously affects the air conditions in this region. The factory also discharges a sour-smelling water into the village ditch through a 30 cm diameter pipe. This has deprived the farmers right on environmental survival [11], and this phenomenon of environmental injustice can be summarized as the irrational distribution of environmental resources. This shows that, while rural areas provide services to cities through natural resources, such as vegetables, food, and other means of living production, at the same time they also have to bear the pollutants transferred from cities, such as industry, animal husbandry, and domestic waste, becoming the rubbish dump of cities. In additional, the rural residents are the passive bearers of pollution, and their production and livelihood are greatly affected without receiving reasonable ecological compensation [12].

Next, there is inequality between urban and rural environmental management policies. Environmental governance policies are more city-centric with more investment in governance is distributed to the big cities. The General Office of Fujian Provincial People's Government's Circular on the Issuance of the 14th Five-Year Plan for Ecological and Environmental Protection in Fujian Province, mentioned that there are still shortcomings in environmental protection infrastructure and regulatory capacity. In terms of wastewater treatment, a coherent urban and rural treatment system has to be formed, and the treatment capacity of rural areas is significantly weaker than that of urban areas [13]. Since the reform and globalization of China, the

government has placed particular importance on environmental protection, and has enacted and implemented a series of laws and regulations on environmental protection. However, for a long period of time, the environmental laws and regulations have been inadequate, specifically inadequate legal provisions for rural environmental protection, which placed rural farmers at a disadvantage in terms of the procedures of environmental protection laws and regulations, and policies, while the lack of procedural justice may lead to legal injustice for rural farmers.

#### **4. Exploring the path of ecological construction in the countryside of Fuzhou under the goal of rural revitalization**

##### **4.1. Paths to cope with pollution in Fuzhou's rural plantation industry**

The planting industry is an important part of China's economy, and pesticides were commonly used for the crops, to prevent, control pests, and diseases in the process of planting. China's planting industry covers a large area, thereby the application of pesticides is extensive, therefore the source of pollution in the planting industry is mainly due to the use of pesticides. The use of pesticides can give an advantage and disadvantage, where pesticides are more effective to protect the crops from pests or disease, however, in a long-term use of large quantities of pesticides can cause certain adverse effects, where if the pesticides are not used properly or correctly, it can easily cause poisoning in humans and animals, or endanger the growth of crops. Therefore, pesticides should be scientifically and rationally applied to plants, additionally penalties should be increased for the arbitrary sale or application of highly toxic pesticides, to eliminate the pesticides from the source, and to prevent the pesticides from causing irreversible damage to the ecological environment, ultimately endangering human health. In addition, Fuzhou should effectively implement pesticide reduction initiatives, strengthen pesticide research and investment, and devote themselves to research and development of less harmful pesticides to reduce the environmental pollution caused by pesticides.

Next, ensure the rural drinking water safety and quality of the rural water sources. To grasp the water quality dynamics of water sources, to discover the reported problems in a timely manner, and to timely preventing and control, a water quality monitoring and control should be strengthened. Early detection, prevention and control will ensure the safety of drinking water for rural and urban residents.

Lastly, guide farmers to change their agricultural development model towards ecological agriculture [14,15], where vigorously promotes green and organic agriculture by reducing the amount of pesticides used, reducing the pollution of rural arable land, increasing the water quality, air, and other environments, and also promoting and demonstrating advanced ecological farming techniques, thus can achieve a sustainable development while safeguarding farmers' farming returns. At the same time, insist on promoting the safe use of contaminated arable land, increase investment in scientific research on safe arable land use technology, and introduce scientific and technical talents to enhance the repeated safe use of contaminated arable land.

##### **4.2. Pathways for coping with livestock pollution in rural Fuzhou**

Firstly, use the livestock feed, scientifically. The livestock and poultry cannot survive and produce without feed. The misuse of feed causes a large number of harmful substances to be concentrated in the body of stored birds, which directly affects their health, and produces harmful odors. To ensure the quality and proportion of the bird feed, the choice of Chinese herbs, probiotics, and other pollution-free organic feed can be used, which can regulate the intestinal flora of stored birds, improve the digestive and absorption capacity of stored birds, and also can reduce the rate of abnormal defecation of stored birds. Additionally, the rate of absorption of nutrients of stored birds can also be improved, thereby maintaining the health of the stored birds [16]. To a certain extent, it can control the number of toxic odor emissions of stored birds, subsequently reduce air pollution.

Secondly, improve the manure pollution treatment system to achieve the transformation from manure to energy. Increased the investment in manure recovery and transformation technology for the stored poultry, or purchase ecological services from professional livestock and poultry pollution treatment enterprises, additionally, promoting the construction of biogas projects to improve the availability of methane and digestate, to achieve the transformation of manure-biogas-energy <sup>[17]</sup>.

Thirdly, enhance the environmental awareness of farming enterprises. Farmers hold the actual operation of the livestock and poultry farming industry, their knowledge on environmental awareness directly affects the effectiveness of livestock pollution control. Therefore, it is vital to educate farmers and farming enterprises on environmental protection, and introduce the concept of ecological civilization development. This requires the government and relevant organizations to place their efforts in promoting the concept of environmental protection, and ensuring the implementation of multi-faceted, multi-disciplinary, and multi-channel publicity and education efforts. During the farming activities, the supervisory authorities should be strictly supervised the farmers and farming enterprises, to effectively control their behavior, and if it is necessary, impose certain penalties on them, thereby the farmers and farming enterprises will consciously form the concept of environmental protection, and reduce the phenomenon of arbitrary emissions and pollution <sup>[18]</sup>.

### **4.3. Value urban and rural environmental equity and justice, and build the concept of urban and rural environmental community**

Urban and rural areas are inherently interdependent, and they cannot be separated, therefore, the environmental problems in rural areas should be solved together. The concept of an urban-rural environmental community should be constructed, in contrast the path of urban-rural duality should not be followed <sup>[19]</sup>. Meaning that it is important not only focusing on improving the urban environment, but also not ignoring the countryside altogether. Rather, a coherent urban-rural governance system should be developed, and rural governance models should be improved. In the case of cities, policies, and laws need to be implemented, and penalties should be increased for urban enterprises that arbitrarily transfer pollution to rural areas. In rural areas, it is necessary to increase investment in environmental protection funds and talent, make up for the shortcomings in rural environmental infrastructure, gradually narrow the gap between urban and rural areas, and protect the environmental rights and interests of rural residents. For example, in 2008, the central government set up a special rural environmental protection fund for the first time, allocating around 500 million yuan to support 700 villages and towns to carry out environmental improvement and ecological demonstration construction, which attracted nearly 1 billion yuan of investment from all over the world, further benefited more than 4 million farmers <sup>[20]</sup>. It also promotes the implementation of a reasonable ecological compensation policy, gradually easing the serious imbalance between rural environmental expenditure and environmental benefits, balancing the distribution of environmental benefits between urban and rural areas, safeguarding environmental justice for rural residents <sup>[21,22]</sup>, and truly achieving universal, comprehensive, co-construction, and progressive sharing, sharing the fruits of development with urban residents, and lastly enhancing the rural residents' sense of environmental access. The organic integration of rural revitalization and the construction of a green and prosperous countryside with green rhythm, state, and soul is realized <sup>[23]</sup>.

## **5. The new eco-friendly and beautiful countryside is an inevitable development picture for rural revitalization**

Building a beautiful new countryside that is ecologically livable, and allows the countryside to remember its nostalgia is a reflection of the people's growing needs for a better life and a higher pursuit of the comprehensive value of rural geographical space. The most important thing is to adhere to the harmonious

development of man and nature, green development, coordinated and shared development. In the 14th Five-Year Plan period, the ecological development of Fuzhou's countryside still needs to adhere to the scientific leadership of China's ecological civilization ideology, and firmly grasp the policy advantages of multiple areas overlapping. At present, Fujian is listed as a national pilot ecological civilization zone, a pilot free trade zone, and a core zone of the 21st Century Maritime Silk Road, and is in an advantageous position where multiple zones are superimposed. Therefore, in the combination of rural revitalization and ecological civilization, it is important to firmly grasp the opportunities brought about by this policy advantage. To further develop the rural farming, animal husbandry, and other industries, one should increase investment in the prevention and treatment of rural water, air and arable land pollution, formulate relevant policies and laws, increase the control and punishment of urban waste arbitrarily transferred into the countryside, firmly safeguard rural environmental justice. Additionally, increase the construction-related talents, such as high-level professional and technical personnel, professional and composite personnel, staff familiar with environmental supervision of soil and groundwater, and others, and finally, enhance the consciousness of ecological civilization in all the people. Let the concept of green water and mountains is the silver mountain of gold and the harmonious coexistence of man and nature further penetrates people's hearts. One should firmly promote the green and sustainable development of the countryside, and forming a new situation in which all the people and society as a whole, consciously care, protect, and contribute to the environment, thereby all people can gain a greater sense of participation, rural residents can enjoy a greater sense of access and identity, and all people can share the fruits of development. This study discussed about Fuzhou's countryside as a new type of green, technologically advanced, and livable countryside, providing references for the combination of rural revitalization and ecological civilization construction in China, thereby playing a good leading role as a demonstration.

#### **Disclosure statement**

The author declares no conflict of interest.

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