

# Study on Rural Water Pollution Management in Honghu City from the Perspective of “Two Mountains” Theory

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**Abstract:** With the rapid development of social economy and the increasing improvement of farmers' living standards, many problems have emerged, among which rural water pollution is particularly prominent, restricting the sustainable development of rural social economy and threatening the life of rural residents. In this paper, we analyze the causes of rural water pollution from different aspects such as production, life, management and system through field research in Honghu City. The countermeasures are proposed to provide scientific and feasible guidance for the improvement of rural water environment management in Honghu city.  
**Keywords:** “Two Mountains” Theory; Water Environment; Honghu City; Governance measures

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## 1. Introduction

Rural water environment is an important part of rural ecological environment, roughly including rivers, ditches, lakes, fish ponds, paddy fields and groundwater, etc., which are distributed in rural areas. Through field research we found that the most prominent problems are domestic pollution, industrial pollution, agricultural planting pollution and aquaculture pollution in rural areas of Honghu, indicating that the problem of water pollution need to be solved.

As a typical county-level city in the Jiangnan Plain of Hubei Province, Honghu City is a major grain-producing area in the Yangtze River Basin and is the largest city in China for freshwater products farming. Therefore, in Honghu City, whose pillar industry is aquaculture and fishery farming, it is of great importance to protect rural water environment.

## 2. The Origin and Connotation of the Two Mountains Theory

In August 2005, Xi Jinping, secretary of Zhejiang Provincial Party Committee, proposed that “green water and green mountains are golden mountains” during his visit to Anji, Huzhou, Zhejiang Province. Later, Xi Jinping once again pointed out when talking about environmental protection: “We want both green water, green mountains and golden, silver mountains. We would rather have green water, green mountains than golden mountains”, further elaborating on the three stages of development between green water, green mountains and golden mountains. Subsequently, General Secretary Xi Jinping mentioned the “Two Mountains” Theory many times on various public occasions, gradually enriching and developing the theory to form a complete and scientific theoretical system.<sup>[1]</sup>

After 16 years of ecological construction practice, the connotation of the “Two Mountains” Theory is getting richer and richer. The essence of the “Two Mountains” Theory is to realize the dialectical unity of economic development and ecological protection. When we develop the economy, we should pay attention to the protection of the environment, stop the deterioration of the environment, and ensure the normal cycle of ecology. In addition, we need to transform good ecological resources into visible and tangible income for the public, so that a beautiful environment can bring about substantial improvement in living standards.

## 3. Basic information

The author has analyzed the main causes of the continuous deterioration of the rural water environment through a number of surveys on the planning of beautiful villages in Honghu City, and summarized them as follows.

### 3.1 Free discharge of domestic sewage without treatment

With the improvement of people's living standards, the generation of rural domestic sewage increases year by year, and there are also more and more chemical adherents in the sewage. Furthermore, the villagers' domestic sewage is directly discharged into the nearby waters without any treatment, and over time the pollution of the surrounding water environment is becoming more and more serious. At the same time, a large amount of domestic sewage residue gradually deposited due to slow water flow and small flow rate of rural rivers and ditches which were scarcely cleared, resulting in greatly reduction in the functions of self-purification, water storage and agricultural irrigation of rivers and ditches.

### **3.2 Insufficient supervision on rural enterprises' sewage discharge**

In rural areas, industry often stays at the level of small workshops, and only a small number of villages have quite large-scale breweries, grain processing plants, aquatic product processing plants and other rural enterprises, most of the product processing enterprises constructed in rural areas lack the appropriate sewage treatment facilities. Therefore, these unsupervised rural enterprises discharge untreated quantities of industrial wastewater that produced in their producing process into waters. The long-standing discharge has caused serious pollution to the surrounding rivers and ditches which are natural water bodies, and greatly increased the probability of agricultural pollution accidents.

### **3.3 Extensive application of fertilizer in agricultural**

In Honghu City, agricultural development is strong, agricultural planting covers a wide area, and farmers apply fertilizers and pesticides in large amounts on a daily basis and more frequently. At the same time, Honghu area is rich in rainfall, excessive application of chemical fertilizers and pesticides is very easy to lose with rainwater. Along the river system gradually gathered, the chemical elements which are difficult to decompose will cause serious pollution to regional water bodies and irreversible damage to the ecological balance, most importantly, endanger people's lives and health eventually through the ecological cycle.

### **3.4 Eutrophication of water boodies caused by aquaculture**

Honghu City is a typical aquaculture exceptionally prosperous area, almost every household engages in aquaculture. However, the good economic effect makes the villagers keen to pursuit of aquaculture production and excessive blind unplanned feeding. Overcapacity and high load of aquaculture with a large amount of excess feed easily leads to eutrophication of the water body and decline of the water body oxygen content. The deterioration of aquaculture water quality seriously affects health of the interconnected rural water environment.

### **3.5 Imperfect management mechanism and system of water environment**

In rural areas, rivers, ditches, lakes, ponds and other natural water quality has been largely untested for a long time and a variety of drainage networks, irrigation canals and other infrastructure maintenance situation also are long-term unmanaged. This has led to various problems such as stagnant water deposits, smelly water bodies and clogged ditches everywhere, almost unmanaged and unasked for. Although the local government has implemented management policies such as the river and lake director system, there is a lack of corresponding management efforts and means, and the policies are not well implemented on the ground.

## **4. Suggestions**

To promote the comprehensive management of water pollution in Honghu Lake, we need to grasp the contain of "Two Mountains" Theory, take the construction of ecological civilization as leading goal, take economic development as the core, take characteristic organic agriculture as supporting industry. Based on new requirements of rural development, we must coordinate resources and make an overall layout to address both symptoms and root causes, both construction and management. And we should combine with national, provincial and municipal rural development policies to vigorously promote measures for water environment improvement and to achieve a "beautiful Honghu" with smooth rivers, clear water and green shore.<sup>[2]</sup>

### **4.1 Improving rural sewage treatment system**

It is imminent to implement centralized treatment of village sewage and construct a comprehensive sewage treatment system. For the specific situation of each village, we should implement a "three-pronged" layout in sewage treatment, separate and classify villagers' daily washing sewage, toilet sewage and industrial sewage from each other to ensure a complete collection. For daily washing sewage, after simple purification, tail water can be directly discharged into the canal or farmland irrigation; for toilet sewage, after combined treatment in several villages, waste resources can be fully-utilized to reconstruct and build the septic oxygen tank; while for industrial sewage, the sewage can be concentrated to nearby sewage disposal plant in the town. Overall, it is imperative to establish a complete rural sewage treatment system to ensure that every share of sewage be properly disposed of.

### **4.2 Strengthening training in agricultural science cultivation**

For water environment protection in Honghu Lake, accelerating the national guidance on scientific fertilization and medication of crops and regulating standards of pesticides and fertilizers applied by farmers in agricultural production is an urgent task to be performed. Specifically, the Municipal Bureau of Agriculture must take the initiative in refining the guidance for agricultural planting and strictly prohibiting the use of strong polluting chemicals according to the national guidance, taking into account the actual situation in rural Honghu; each town must assign corresponding person in charge of publicizing polices to each village; village cadres should set an example on implementing policies, and finally form a public sense of recognition of reasonable fertilization and scientific planting from top to bottom and achieve an ecological and scientific agricultural planting model.

### **4.3 Investing in organic farming**

How to make industrial development and ecological protection to reach an organic balance? Combining with their own ecological characteristics and developing special organic agriculture is undoubtedly a two-pronged strategy and the most way in line with the "Two Mountains" Theory of development. In the specific implementation, they should proceed an appropriate amount of planting according to their own advantageous industries and ecological carrying capacity of the land. Each village should gradually guide the advantageous industries into the ecological planting level to form an overall layout of ecological and organic agricultural planting and to create a regional brand of organic products. And they can jointly promote the development and progress of the village, and ultimately achieve a happy scene with beautiful environment, wealthy life, prosperous industries.

### **4.4 Vigorously promoting healthy farming model**

In the context of the "Two Mountains" Theory, making a reasonable program for fishery ecological civilization construction is a very effective measure to achieve the goal of green water. Firstly, we should focus on the promotion of rice shrimp, rice frogs, rice crabs, rice loach and other rice field integrated ecological breeding model and reduce the cost of breeding through holding training courses for

mastery of technology in aquatic fishery culture and doing point demonstration and so on; secondly, we should adjust the number and proportion of fish stocking, change throw fertilizer for breeding to ecology breed, standardize the use of drugs, baiting, fertilization, and vigorously promote integrated oxygenation, fine feeding and low emissions, low emissions breeding technology; thirdly, we need to establish the standardization of ecological and healthy aquaculture, formulate the technical regulations of aquaculture, and guide the fishermen to make ecological and healthy production.<sup>[3]</sup>

#### **4.5 Perfecting a long-term management mechanism of water**

In view of imperfection of the existing rural water environment management mechanism system in Honghu City, we should increase the investment in water environment testing and management in order to introduce professional water management talents. We also need to set up special management institutions and develop management programs for water environment, so that we can hand over sewage treatment, pass the rights of water quality supervision and infrastructure construction to professional teams. Eventually we can achieve global control, construction management, operation and maintenance and other aspects, and deeply promote the full coverage of long-term management mechanisms such as river and lake long system, responsibility system and assessment system, so that rural areas can maintain a long-lasting ecological blueprint of clear water and green shore.

### **5. Conclusion**

In the background of “Two Mountains” Theory, the future construction of rural areas in Honghu City must not take the old road of development first and governance later, but focus on the protection and construction of rural water environment while developing the economy, so that rural areas can embark on the road of sustainable development in harmony with people and land, and truly realize the “Chinese dream”.

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