

# Establishment of a Monitoring System of Eco-Environment – Suggestions and Reflection

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## ABSTRACT

The eco-environment is closely related to human's daily life, and it is also a collective name of various resources, such as biological resources, land resources, and water resources. In recent years, as the environment continuously deteriorates in China, the monitoring of the eco-environment is increasingly important. Then, the establishing monitoring network system of the eco-environment can be able to improve the effect of eco-environment monitoring effectively. In doing so, people can better understand the timeliness and accuracy of the eco-environment status quo, which can cope with future development. This article will research the establishment of the eco-environment monitoring network system and identify its existing problems and analyze them. Finally, the article also suggests the current monitoring system.

**Keywords:** *eco-environment, network system, monitoring, suggestions, reflection*

## 1. INTRODUCTION

With economic growth, people's demand for the utilization of ecosystems has gradually increased. Due to the over-exploitation in some provinces of China, it has caused irreversible damage to their eco-environment, which impedes the social-economic development. Fortunately, with enhanced awareness of environmental protection in recent years, people have begun to implement ecological and environmental protection measures. Furthermore, China has strengthened the protection of the eco-environment and established an eco-environment monitoring network system so as to promote the sustainability of social development, which also provides data support for the eco-environment protection. However, there is a gap between China's current eco-environment monitoring network system and realistic demand. Therefore, we need to improve the quality of monitoring data by reform, and then promote China's ecological civilization construction.

## 2. ECO-ENVIRONMENT MONITORING

Ecological monitoring is another name for eco-environment monitoring. It can collect information in the natural environment by using different ecological methods and analyze ecological information. eco-environmental monitoring is a novel concept. It mainly monitors the destruction of human activities to the eco-environment and predicts various factors and related indexes of the eco-environment. Without doubt, eco-environment monitoring can not only improve the ecological environment but also theoretically support sustainable economic and social development. However, the current eco-environment monitoring network system focuses more on macroscopic

ecological environment problems, and this only reflects the influence of people's activities on the eco-environment. Actually, eco-environment monitoring can target plants, animals, lakes, grasslands and meteorology. Each of these types is complex, and they contain biological diversity, human activities, environment and other factors. Moreover, there are also differences among various factors, and the objects of the eco-environment in the monitoring can be divided into ecological, socioeconomic aspects, etc. Based on different monitoring scales and dimensions, eco-environment monitoring can be separated into micro- and macro-ecological monitoring<sup>[1]</sup>. Macro-ecological monitoring focuses on the regional scope, and it adopts regional ecological surveys, geographic information systems, and other approaches monitoring eco-environment. In contrast, micro-ecological monitoring narrow down a certain region and a single ecological type. They often employ chemical and physical approaches to monitor eco-environment at an ecological monitoring station.

## 3. THE ESTABLISHMENT OF ECO-ENVIRONMENT MONITORING NETWORK SYSTEM

### 3.1 Promotion of environmental protection

With environmental degradation, environmental protection is valued more highly than before. For example, some areas with serious environmental pollution have implemented many feasible measures. Nevertheless, similar problems recur because some people lack environmental consciousness. If we can

model an effective ecological environment monitoring system, this may be able to promote environmental protection work, thereby improving the effect of eco-environmental protection<sup>[2]</sup>.

### ***3.2 Strengthening people's environmental awareness***

Although China has attached importance to environment in recent years, the uneven development in various regions has caused that people pay too much attention to the economy in some economically underdeveloped areas, which hinders protection of the eco-environment. Therefore, it is important to improve the monitoring of the ecological environment, and we should use the data from effective monitoring and evaluate the environmental circumstance. Then, we should inform the local people about the outcomes. They could realize the urgency of ecological problems, raising people's environmental awareness.

### ***3.3 Environmental standards setting***

Environmental monitoring involves air, soil, water, and so on so that we need to use appropriate monitoring approaches to collect data which can provide strong evidence for different industries to establish environmental protection standards. Therefore, during the process of environmental monitoring, relevant instruments and tools will be used to collect data, and the staff compare data from different regions to formulate more appropriate standards, thereby restricting non-standard operation of enterprises. In addition, it is necessary to investigate residents' health problems and ecological problems caused by environmental problems. Finally, when we analyze the given data, we began to develop standards to provide a reference for the controlling of eco-environment in the future<sup>[3]</sup>.

## **4. THE LIMITATIONS OF THE CURRENT ECO-ENVIRONMENT MONITORING NETWORK SYSTEM**

### ***4.1 Monitoring segmentation***

Different departments will monitor the eco-environment in China's ecological environment monitoring system, which leads to overlapping problems in monitoring. At present, China's eco-environmental monitoring tasks are carried out by the water conservancy, forestry and land departments, and their monitoring network system also needs to be managed by these departments, respectively.

### ***4.2 The difference between the central and local monitoring network***

The eco-environment monitoring network uses multiple state-controlled networks to monitor eco-environment in China, and the local government will pay its costs. According to the administrative level, multiple state-controlled networks can be divided into local networks and state-controlled networks. This can further be divided into the provincial network, county network, city network, etc. Moreover, the government builds each network, and the government operate the network. Although the central government empower local government to operate most of the state-controlled monitoring tasks, there are lots of limitations on the local level. For instance, the lack of finance has caused local monitoring agencies cannot operate the network very well, which has weakened the quality of the monitoring<sup>[4]</sup>.

### ***4.3 The level of monitoring technology should be improved***

Firstly, eco-environment dynamic monitoring technology should be continuously improved. Although China has adopted automatic continuous monitoring in air pollution source emissions and air quality, continuous automatic monitoring in water is rare. We still rely on traditional manual sampling. The monitoring of eco-environment, such as soil erosion, forests, land use, and grasslands, requires dynamic monitoring, and we have to monitor the process of project development. Therefore, we have to deal with insufficient data continuity and timeliness, which results in limitations for the construction of an eco-environment monitoring and pre-warning system. In addition, monitoring equipment is a disadvantage of affecting the quality of monitoring. Even though China has made remarkable progress in monitoring instruments, the needs of monitoring still cannot be reached. Furthermore, imported monitoring instruments are not suitable for China. Therefore, these reasons lead to false height problems in the monitoring results, and even a serious data deviation. This has adversely affected the scientificity of the eco-environment quality, and this will also produce decision-making mistakes<sup>[5]</sup>.

## **5. ESTABLISHING ECO-ENVIRONMENT MONITORING NETWORK SYSTEM**

### ***5.1 Accelerating eco-environment monitoring system with a big data technology***

The "Internet +" plan for eco-environment monitoring can promote the information sharing of the ecological environment monitoring system. First, based on the eco-environment monitoring management cloud platform, big data analysis of eco-environment monitoring contributes to ecological civilization construction. We need to complete the technical

standards and improve specifications for the production of data and information, and we should enhance real-time among various monitoring devices. In doing so, this will improve the monitoring technology of the eco-environment, and update equipment, and enhance the application level of the eco-environment monitoring system. Additionally, we need to intensify research on ecological monitoring equipment. Finally, it is important to expand the scope of application of eco-environment monitoring, such as the Internet of Things, online monitoring technology, mobile Internet, cloud computing.

### **5.2 Planning eco-environment monitoring network system and improving its quality**

We have to deploy a nationwide network monitoring system for eco-environment quality. For example, we should integrate the current eco-environment monitoring network scattered in various parts into the state-controlled monitoring network. We also need to encourage local networks to join the state-controlled monitoring network. We can manage information publishing, monitoring planning, and technical standards, thereby expanding the scope of eco-environment monitoring<sup>[6]</sup>.

### **5.3 Improving the system for eco-environment monitoring**

We should clarify the regulations of eco-environment monitoring. Therefore, it is necessary to encourage the related departments to process 'the establishment, reforming and abolishing', and to formulate regulations on eco-environment monitoring management. In addition, we need to clarify the functions of the ecological environment monitoring network system based on the status quo. We also need to understand the significance of the eco-environment quality monitoring network for ecological civilization construction and regulate the eco-environment quality monitoring network system. We should develop the monitoring system according to the reform of the ecological civilization system. Further, the monitoring functions of various departments in detail should be classified and thus promoting the overall development of the monitoring network. Finally, eco-environment monitoring requires a long-term mechanism for information sharing and transparency<sup>[7]</sup>.

### **5.4 Coordinating multiple coexisting eco-environment monitoring network systems**

After the classification of the eco-environment quality monitoring functions, we have to understand other monitoring functions scattered in various departments. These functions usually match specific management demands. Therefore, we call it 'the special monitoring function of the eco-environment', and the functions will be

allocated in the eco-environment monitoring network. Then we have to ask some questions: Can the special eco-environment monitoring network be better used in the eco-environment monitoring network system? Can the network have coordinated development? Are the functions optimized? According to the "Overall Plan of Ecological Civilization System Reform" issued by the State Council, the construction function of ecological civilization will be adjusted. We can fulfil the duty of environmental protection in various departments and take measures to prevent pollutant discharge, improving environmental protection systems. Moreover, we should fulfil the responsibilities of natural resource assets and reinforce the management system of natural resource assets. Based on these measures, problems, such as low monitoring efficiency and poor data quality, caused by the lack of intellectual technology, might be resolved<sup>[8]</sup>. Finally, in terms of the requirements of each eco-environment monitoring unit, we need to list the responsibilities of eco-environment monitoring based on the existing monitoring system of different departments. For instance, which areas of eco-environmental monitoring are the responsibility of the central government and which are the responsibility of local governments? Which is required for their joint responsibility. It will be clear to divide the power and responsibility between the local and the central government.

## **6. CONCLUSION**

To sum up, this study found that China's eco-environment monitoring network system has performed well after many years of development by analyzing the establishment of the eco-environment monitoring network system at the moment and its significance for different aspects. However, there are still some problems to be solved. As a result, this article believes that only if we establish an eco-environment monitoring network system, can the protection of the ecological environment be improved.

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