

# Risks and countermeasures for the aquatic ecological environment of the Three Gorges Reservoir

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# Content

- **Background**
- **Field research**
- **Risk identification**
- **Risk prevention countermeasure**



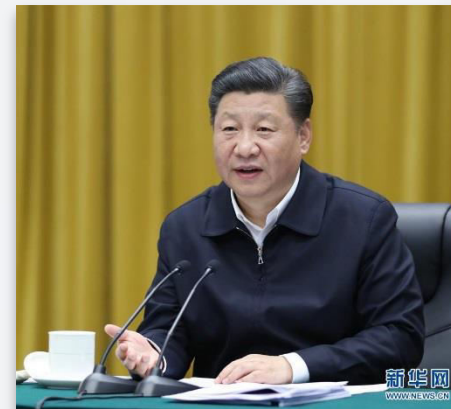
- **Guidance from General Secretary Xi' s major speech series showed that**
- ecological protection of rivers should focus on improving the **diversity, stability** and **sustainability** of the ecosystems
- Both **economic development** and a **beautiful ecological environment** are needed



二十大报告 (2022)



推动长江经济带发展  
座谈会  
2016.1.5 重庆



深入推动长江经济带发展  
座谈会  
2018.4.26 武汉



黄河流域生态保护和高质量发展座谈会  
2019.9.18 郑州



**One** the Changjiang River

**Two** Green hills on both shores

**Three** 32 tributaries , 38 areas

**Six** 68000 km<sup>2</sup> drainage areas

**Many** Numerous ecological protected areas



We have studied the Three Gorges Reservoir from a **watershed perspective**.

- **Field studies were carried out in 2022 during the months of May and July.**
- **Wujiang River, Xiaojiang River, Daning River, Tangxi River, Changtan River, Quxi River, Meixi River, Xiangxi River, Qinggan River, Jiuwanxi River, Tongzhuang River**



Fu Ling



Wan Zhou



Kai Zhou



Chong Qing Conversation



Yun Yang



Feng Jie



Zi Gui



Wan Zhou Conversation

## 1. Unstable water quality and high risk of algal blooms

We found a high frequency of water blooms in some tributaries, while progress in implementing algal bloom management projects is lagging.



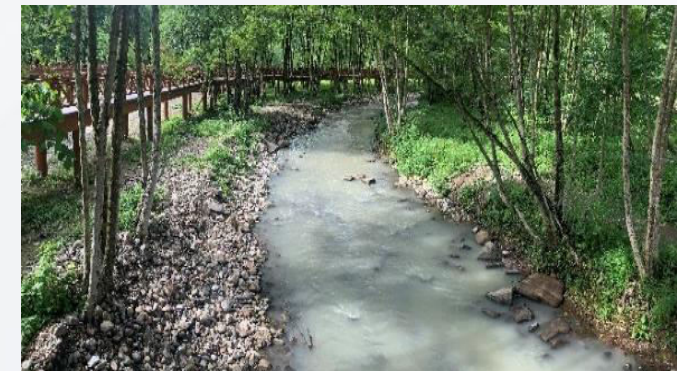
algal blooms in Gaoyang

## 2. Unstable water quality caused by high pollution load in storage

Agricultural non-point sources have a high pollution load.



Agricultural planting on the Slope



Rural Household Pollution

## 3. Insufficient biodiversity and unstable ecosystem structure

The mountainous agricultural plant varieties in the Three Gorges Reservoir area are monophyletic and lack biodiversity. These areas are less resistant to risk.



Intensive planting in mountains



Ecological discharge of power station

## 4. Risk of instability of the ecological system in riparian zone

The Three Gorges Reservoir has large areas of riparian zones, which have different problems, such as bank collapsing and poor landscape. However, at present, the vegetation restoration and other management techniques in the riparian zones are immature and difficult to promote. By natural restoration, only herbaceous plants remain.



Natural recovery of the riparian zone in Quxi River



Natural recovery of the riparian zone in Daning River

## 5. Rural water supply guarantee rate and drinking water safety risks

The water supply guarantee rate and drinking water safety in some rural areas of the Three Gorges Reservoir are still not optimistic.



Scattered residential areas in water source protection area



Agricultural planting in water source protection area

## 6. Unstable shoreline and insufficient ecological management

Due to inadequate management, there are still scenes of disorderly stacking and occupation on the inner banks of the reservoir area, as well as abandoned docks, which lack ecological and landscape integration.



Quarry encroachment on river shoreline



Agricultural planting encroaches on the coastline



Abandoned dock in Pengxi River

## 7. Instability of aquatic ecosystems under extreme climate conditions

the frequency of extreme weather has increased in recent years, and the fragility of the terrestrial ecosystem in the Three Gorges Reservoir will become another threat to the stability of the aquatic ecosystem.



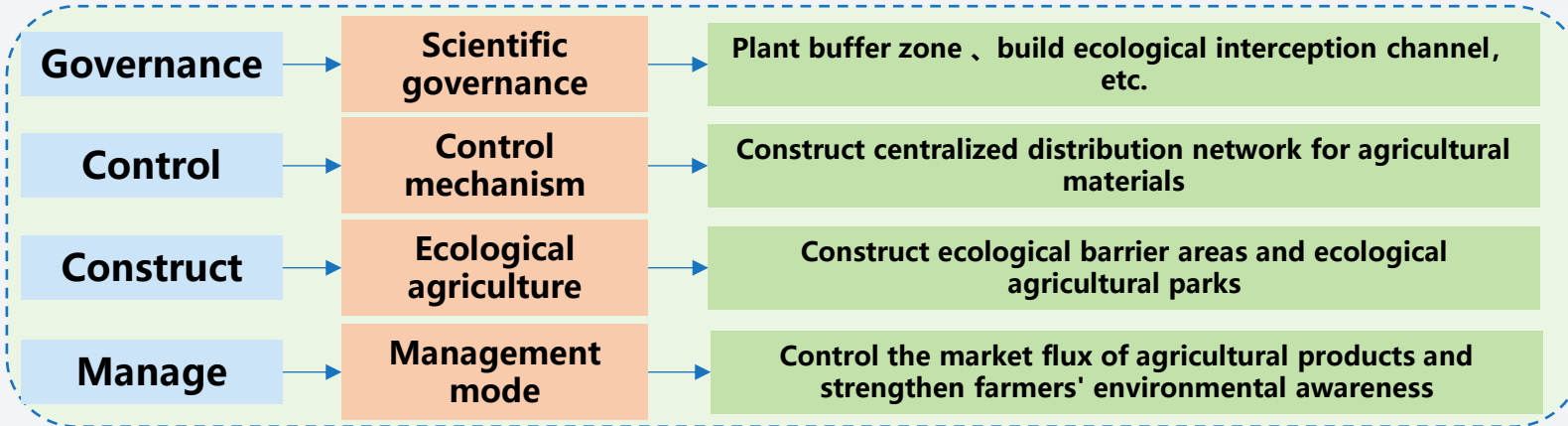
Drought during flood season in Yunyang, Chongqing



Drought during flood season in Jialing River



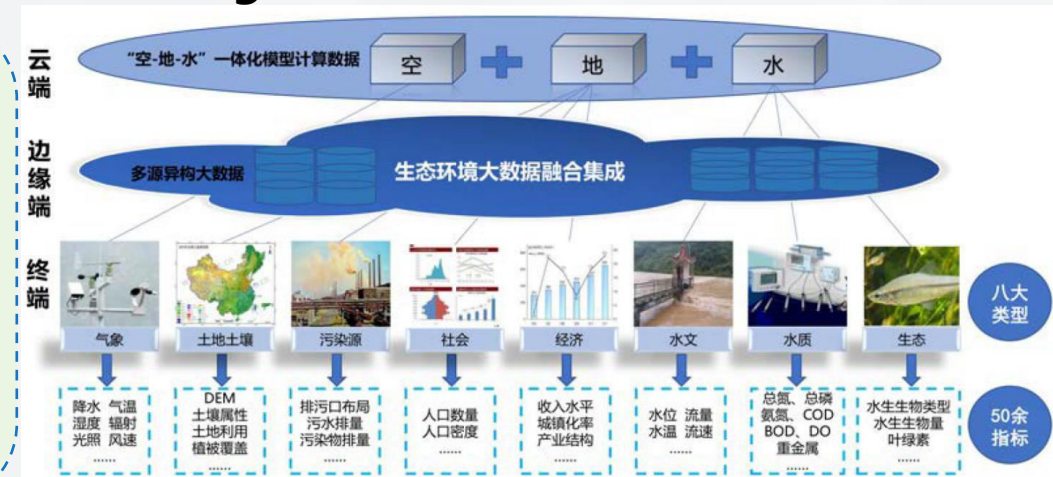
## ■ Establish a long-term mechanism for controlling sources of agricultural pollution



## ■ Improve the monitoring and warning system for water ecological

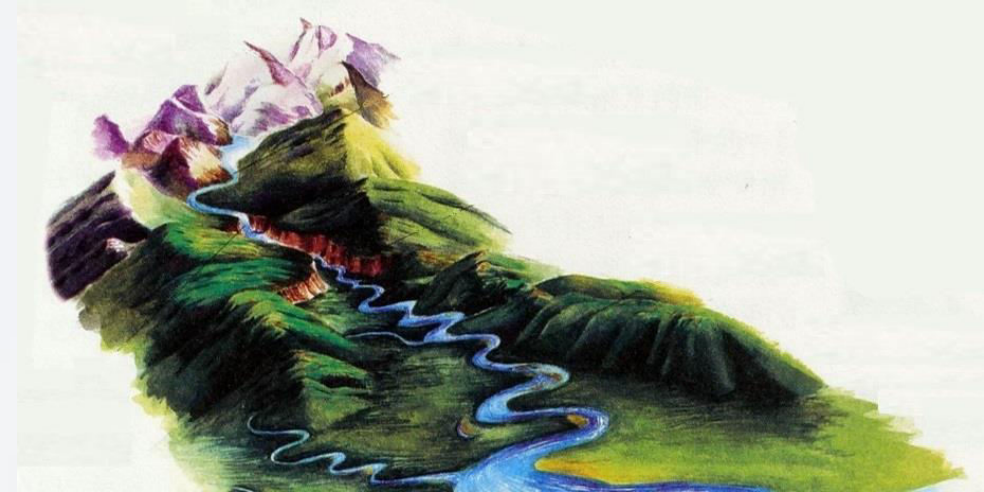
Scientific construction of a comprehensive environmental quality monitoring network that covers factors such as atmosphere, surface water and groundwater, drinking water sources, soil, radiation, greenhouse gases, etc. are needed.

Through digital means, real-time perception of water ecological environmental risks can be achieved, the sources of risks can be analyzed, and emergency warning and contingency plans can be proposed.

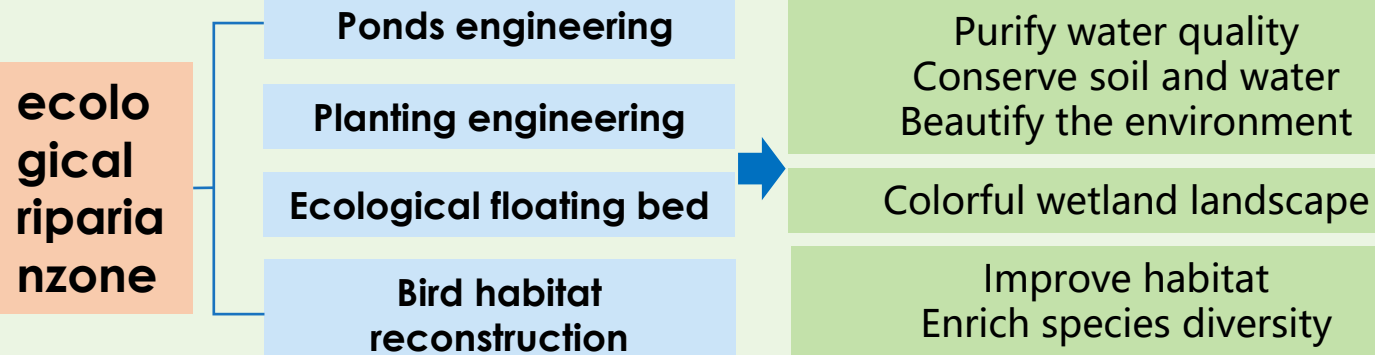


## ■ Preserve the connectivity of river

- Ensure that each incoming tributary has a non hydroelectric power station
- Online monitoring platform
- Multi basin and multi region connectivity
- Establish biodiversity conservation communities

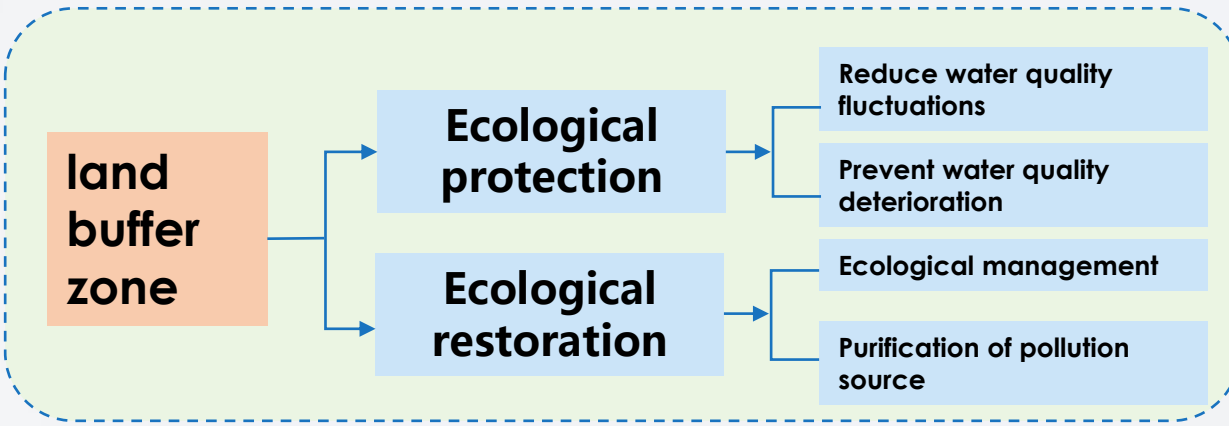


## ■ Ecological restoration in riparian zones

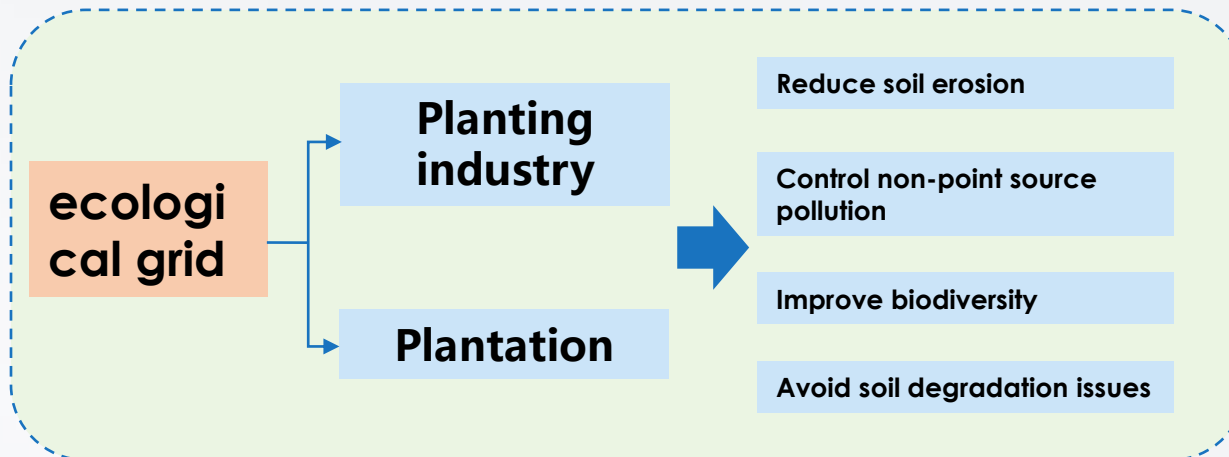


Comparison of Hanfeng Lake's riparian zone before and after treatment

## ■ Construct land buffer zones



## ■ Plant in a grid pattern





**To promote harmonious coexistence between humans and nature  
in the Three Gorges Reservoir!**

**Thank you!**