XVIII World Water Congress
International Water Resources Association (IWRA)

Flood storage and detention areas: nature-based solutions for water security

Dr. YU Qian

China Institute of Water Resources and Hydropower Research (IWHR)

XVIII WORLD WATER CONGRESS
Water for All
Harmony between Humans and Nature

第18届 世界水资源大会
水与万物:
人与自然和谐共生

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Content

- General situation of FSDAs
- Flood risk zoning of typical FSDA
- Nature-based model of FSDAs

1. General situation of FSDAs

Reservoirs

Levees

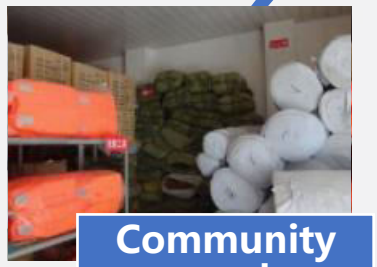
Engineering

Flood storage & detention areas

Gates & locks

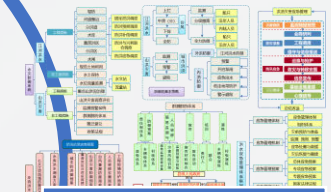
+

Laws & regulations



Community preparedness

Non-Engineering

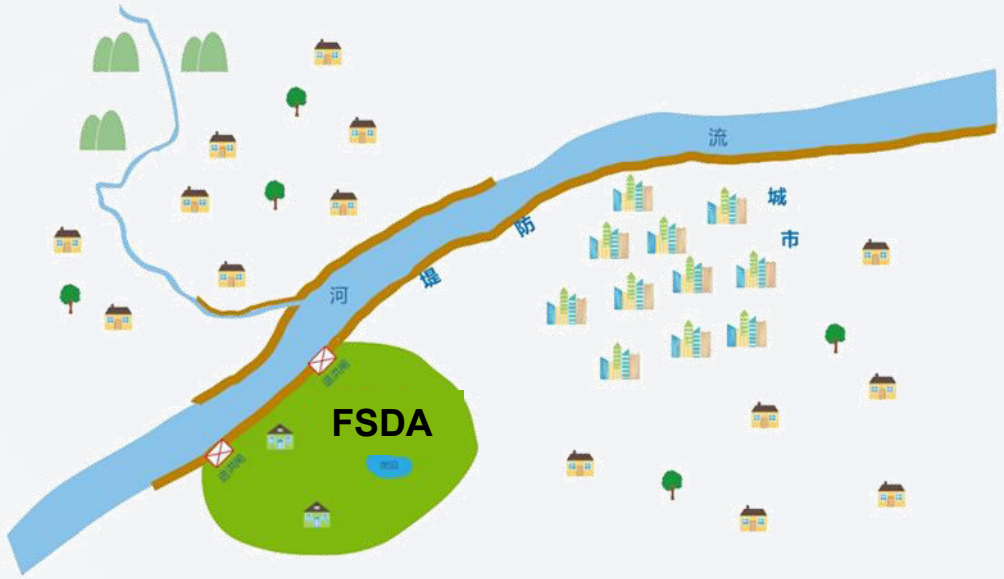


Institutional structure

Sci-tech support

Forecast, early warning, rehearsal, contingency planning

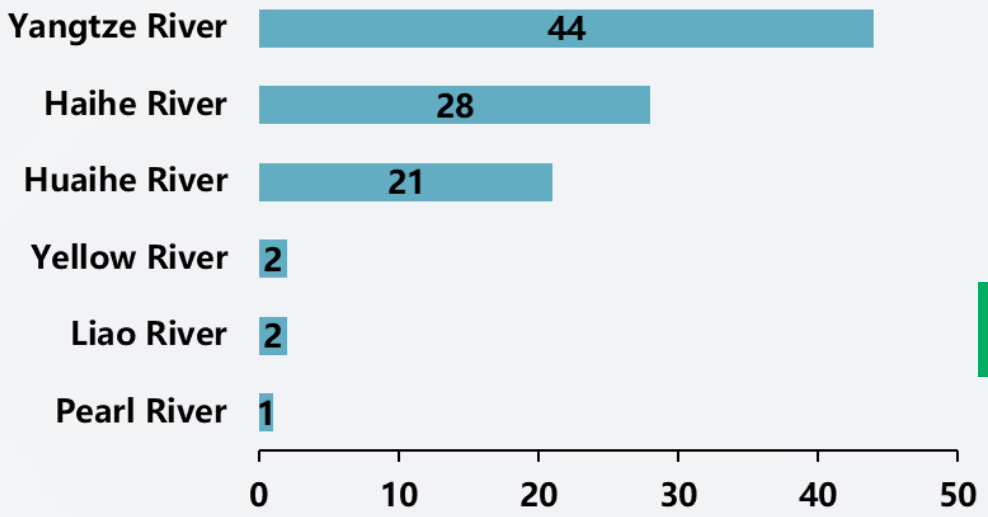
1. General situation of FSDAs



- The Flood Storage and Detention Area (FSDA) is a low-lying area outside of the river levees where floodwaters are temporarily stored. It is a kind of significant flood control project in China. However, tens of thousands of people reside in FSDAs at the same time.

Mainly in engineering	Evacuation Local resettlement	Strengthen construction and management	Systematic planning
1949-1988	1988-1998	1998-2009	2009-Now

1. General situation of FSDAs

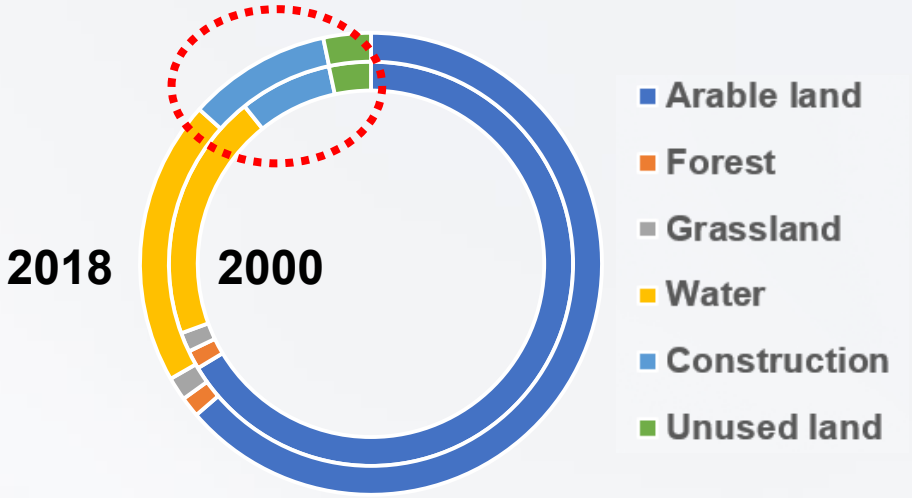


Area

34,000 km²

Storage capacity

109 billion m³



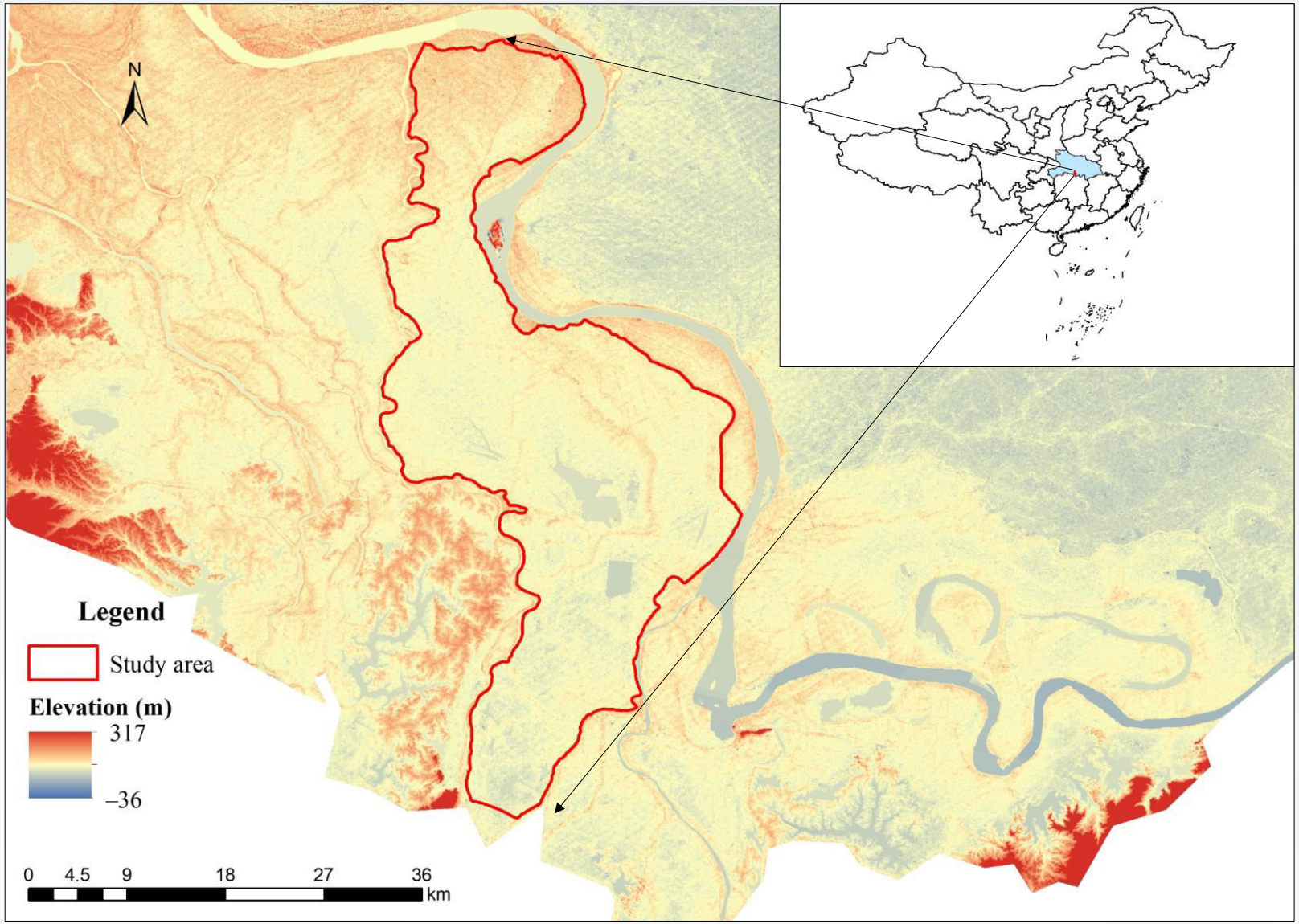
- China average

6.62 million yuan

- FSDA average

15.35 million yuan

2. Study area



1 Study area

- Jingjiang Flood Diversion District (JFDD)
- Constructed in 1952
- Temporarily store floods from the Yangtze River

2 Location

- Gongan County, Hubei Province
- Along the Yangtze River

3 Topography

- 920.6 km^2
- Higher in the north and lower in the south
- The narrowest width is 2.7 km at the neck area

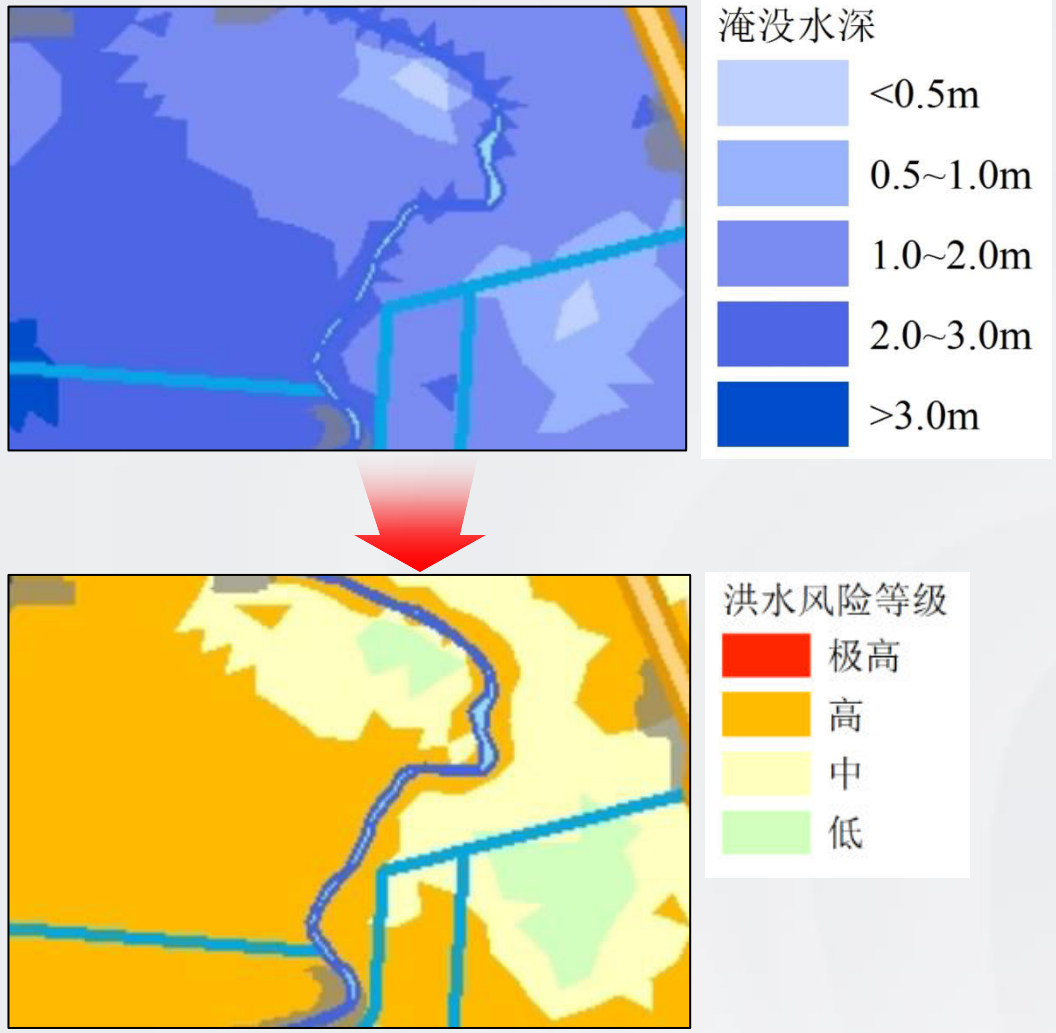
2. Flood risk zoning method

Indicators of matrix

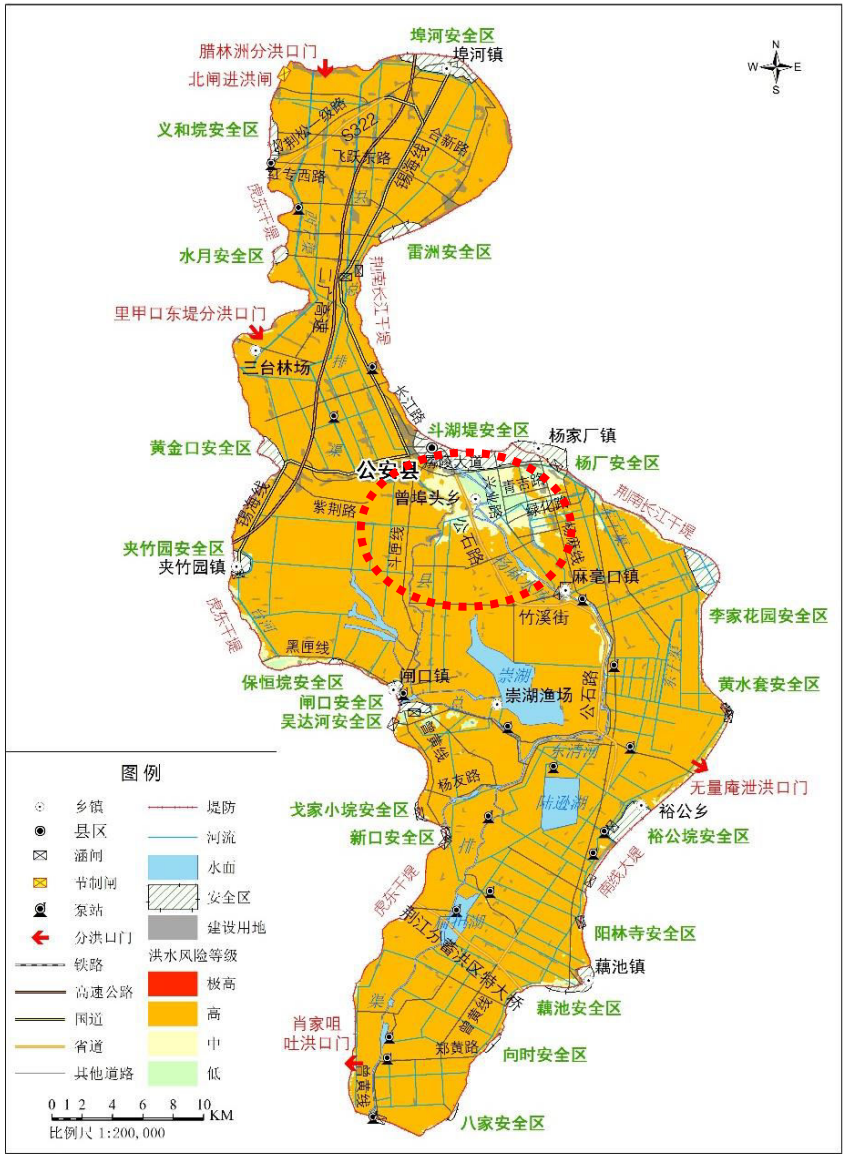
- Inundation depth
- Usage standard of FSDA

Flood risk classification standard of FSDA.

Inundation depth	Usage standard of FSDA			
	<20	[20,50)	[50,200)	≥200
≥1.5	I	I	II	II
[0.8-1.5)	II	II	III	III
<0.8	II	III	III	IV



2. Flood risk zoning of JFDD



High-risk zones

- Relocate residents and polluted industries to medium- and low-risk areas
- Adopt flood resilience measures to improve the flood resilience of critical infrastructures
- Explore and develop suitable economic models that align with the ecological characteristics of the JFDD

The medium- and low-risk zones

- Appropriately expand the scope of major safety areas, such as the Douhudi Safety Area
- Investments in infrastructure development within safety areas

A multi-objective sustainable development model

3. Nature-based model of FSDAs

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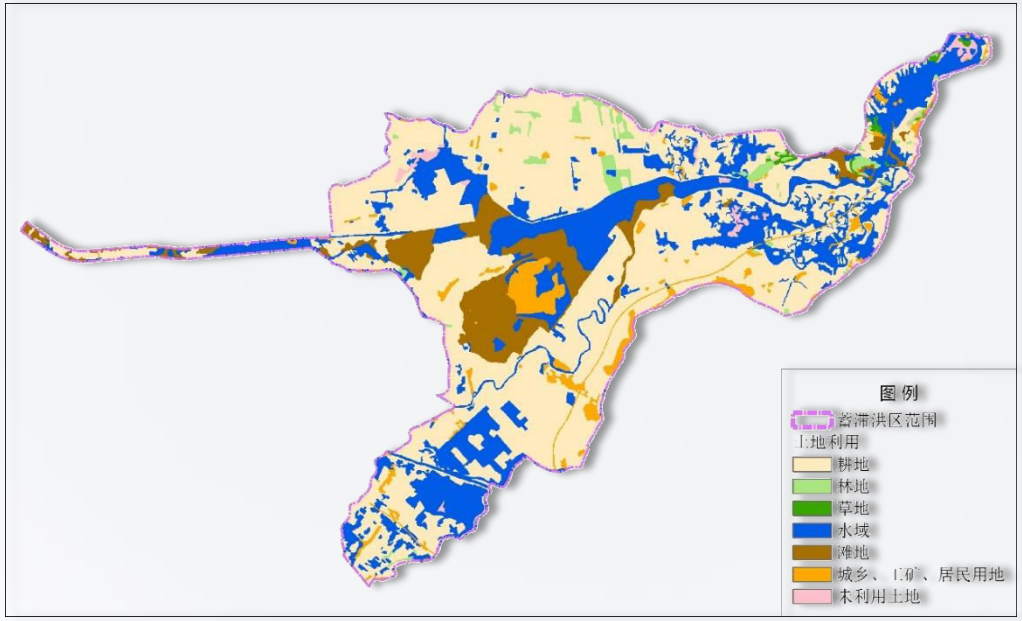
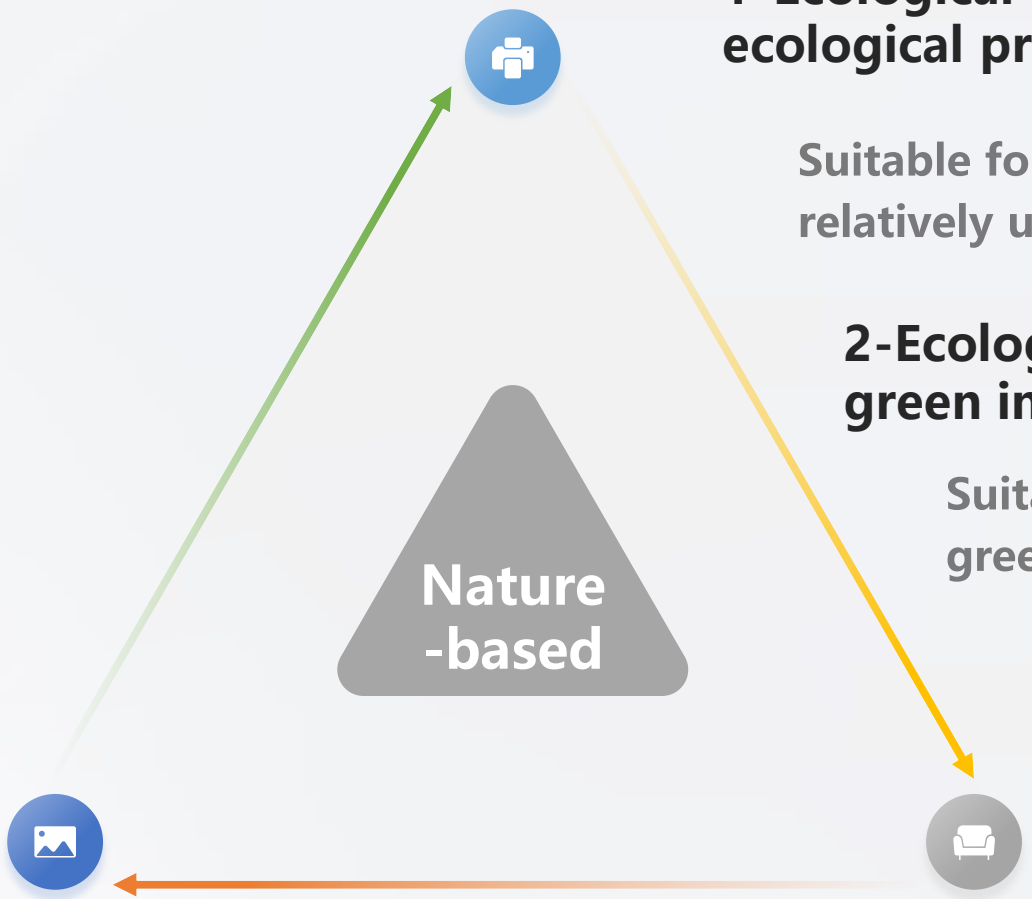
- Generally, there are lakes or wetlands within FSDAs.
- There are 36 nature reserves in 27 of 98 national FSDAs.
- There are relatively few polluted industry.



3. Nature-based model of FSDAs



1-Ecological friendly FSDAs led by wetland economy or ecological protection industry

Suitable for: FSDAs with a large proportion of wetlands or relatively underdeveloped areas.

2-Ecological friendly FSDAs combining landscape tourism and green industry development

Suitable for: FSDAs with a large population and potential for green industry/cultural tourism development.

3-Ecological friendly FSDAs developed in conjunction with the ecological restoration industry

Suitable for: FSDAs with high utilization probability and poor water ecological environment, or with water shortage problems.

Thank you !