

WATER RESOURCES MANAGEMENT IN CHINA UNDER CLIMATE CHANGE

LILI YU

GENERAL INSTITUTE OF WATER RESOURCES AND HYDROPOWER PLANNING AND DESIGN

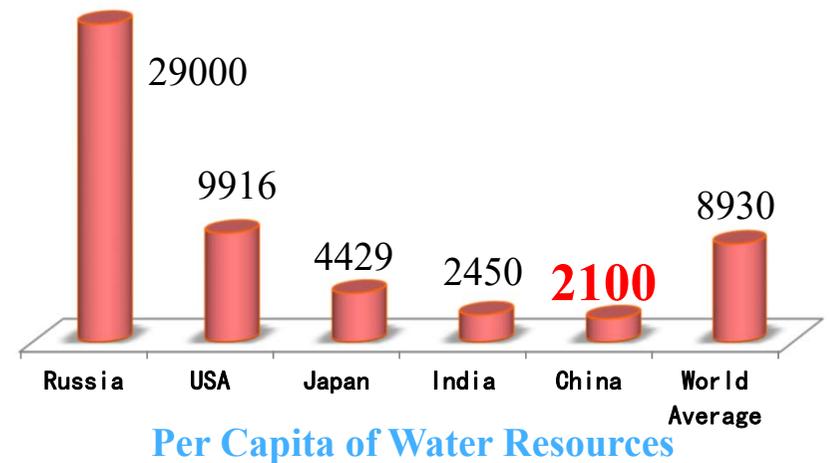
1.Background

2.Challenges

3.Strategies

1. Background

- The annual average total water resources in China is 2.8 trillion m³. Per capita is 217.3 billion m³, which is only about 1/4 of the average world level.
- The northern regions of China support 64% of its land area, 60% of its farmland and 46% of its population with 19% of the country's water resources.
- The average precipitation of the maximum 4 consecutive months in the north mostly occurs from June to September, which accounts for more than 70% of the annual precipitation.



1. Background

The annual amount of water use in China is about 600 billion m³, which accounts for 21% of total amount of water resources.

As for the north, the ratio is about 50%.

2. Challenges

Affected by climate change and other factors, it shows a decrease trend of water resources in some regions.

The water resources in Haihe area, Yellow River area and Liaohe River area, which are short of water resources and have a high degree of exploitation, have a prominent attenuation.

2. Challenges

Some researches show that the frequency of droughts increased in recent years. During the 41-year period from 1950 to 1990, China experienced severe drought in 11 years, with a frequency of 27%. During the 20-year period from 1991 to 2010, China experienced severe drought in 9 years with a frequency of 45%.



Severe drought in 2009 in
Chaoyang, Liaoning
Province



The biggest flood in a century
in 2006 in Chongqing



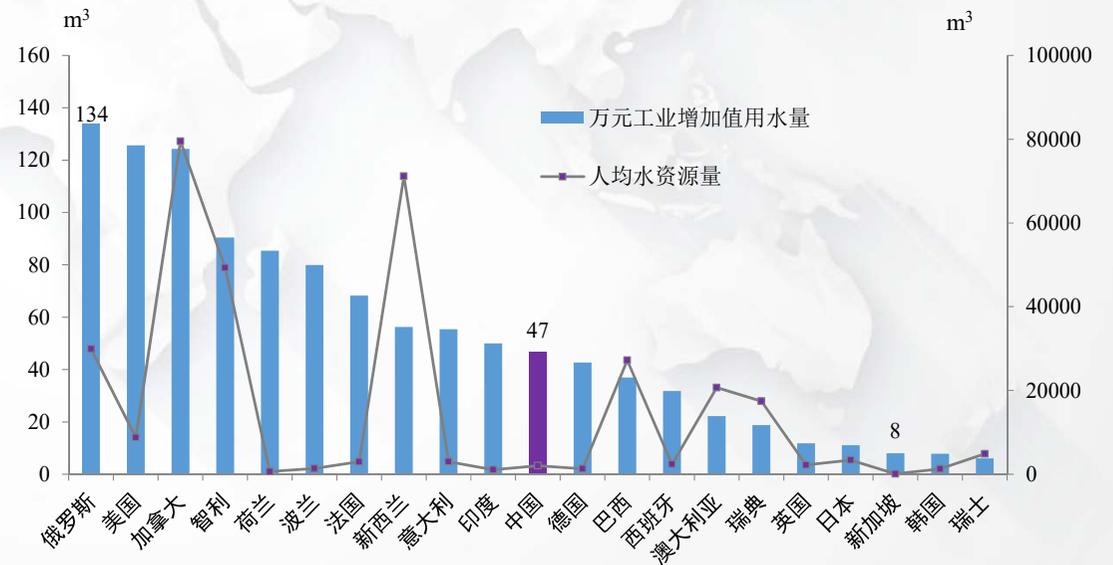
3. Strategies

- **Regard water resources as the most rigid constraint**
 - Based on National Water Resources Assessment, National Water Resources Integrated Plan, analyze the availability of water resources for each county and limits for various sectors.
 - Analyze the water resources bearing capacity for each county, and define overstressed zones, critically overstressed zones.
 - Establish a capacity warning system. Try to establish an integrated system of monitoring, warning, publishing and control of water resources carrying capacity, and record in a regulation system of water resources carrying capacity and control overuse and manage the over use.

3. Strategies

- **Strengthen efficient water use**

Compared with the world's advanced level, China's water use efficiency is relatively low which further aggravates the water shortage.



3. Strategies

● Strengthening efficient water use

● Agriculture Water Savings:

- ✓ Agricultural techniques and biological measures.
- ✓ Adjustment in crop pattern according to the water availability.
- ✓ More rational water use.

● Urban and Commercial Water Savings

- ✓ Water saving devices
- ✓ Leakage control

✓ Industry Water Savings

- ✓ Optimize Spatial Layout of High-water-consumption Industry
- ✓ Advance Structural Adjustment of High-water-consumption Industries.

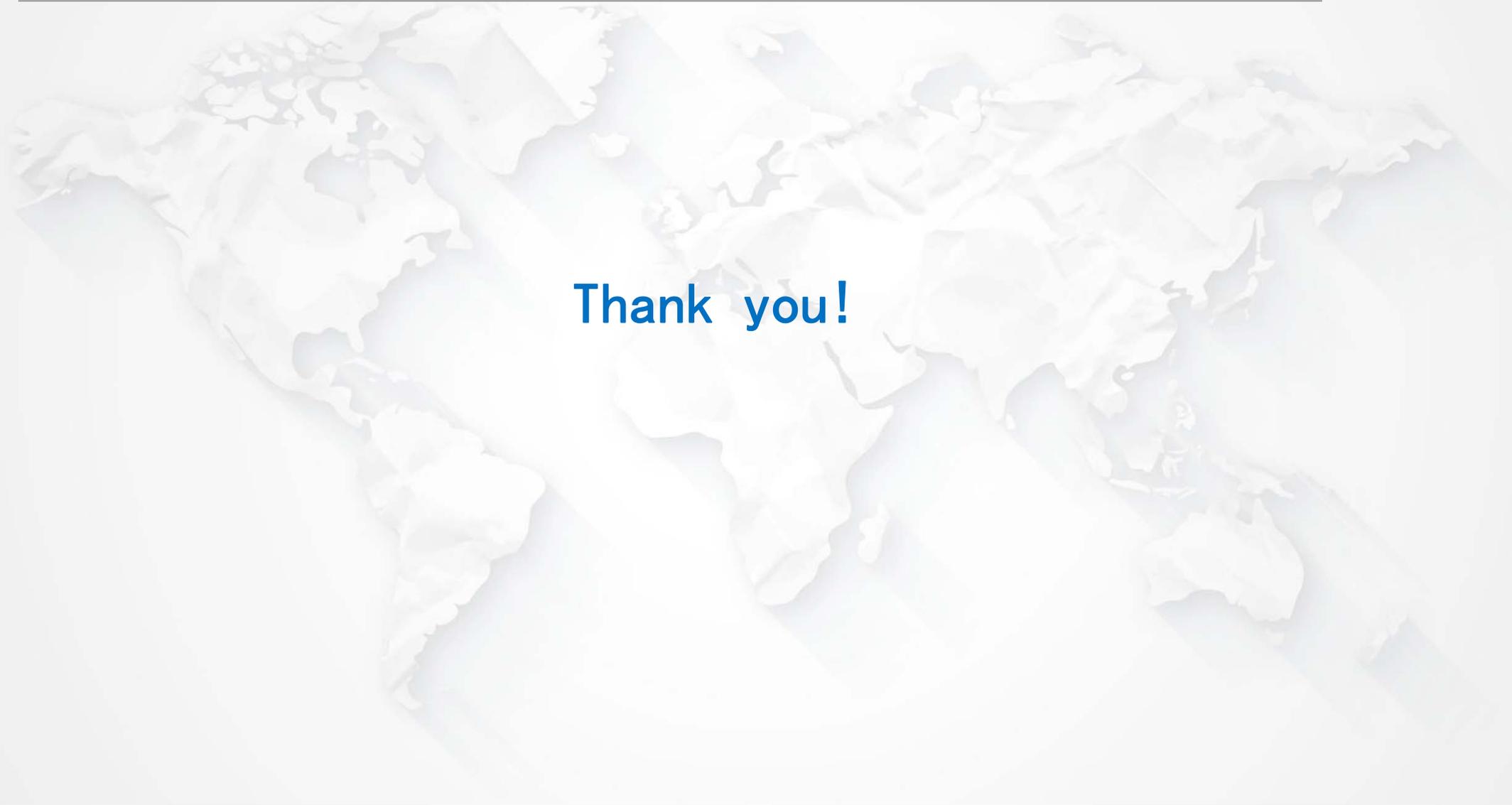


3. Strategies

● Restore and protect aquatic ecosystems

- River ecology restoration
 - ✓ Control and Rehabilitate Protected Water Areas
 - ✓ Rivers and Lakes Ecology Restoration
- Groundwater conservation and recovery
 - ✓ Groundwater use Allocation Schemes
 - ✓ Reduction of Groundwater Overexploitation
 - ✓ Increase Groundwater Reserve





Thank you!