



Water resources management and challenges in the Haihe River Basin with the climate change



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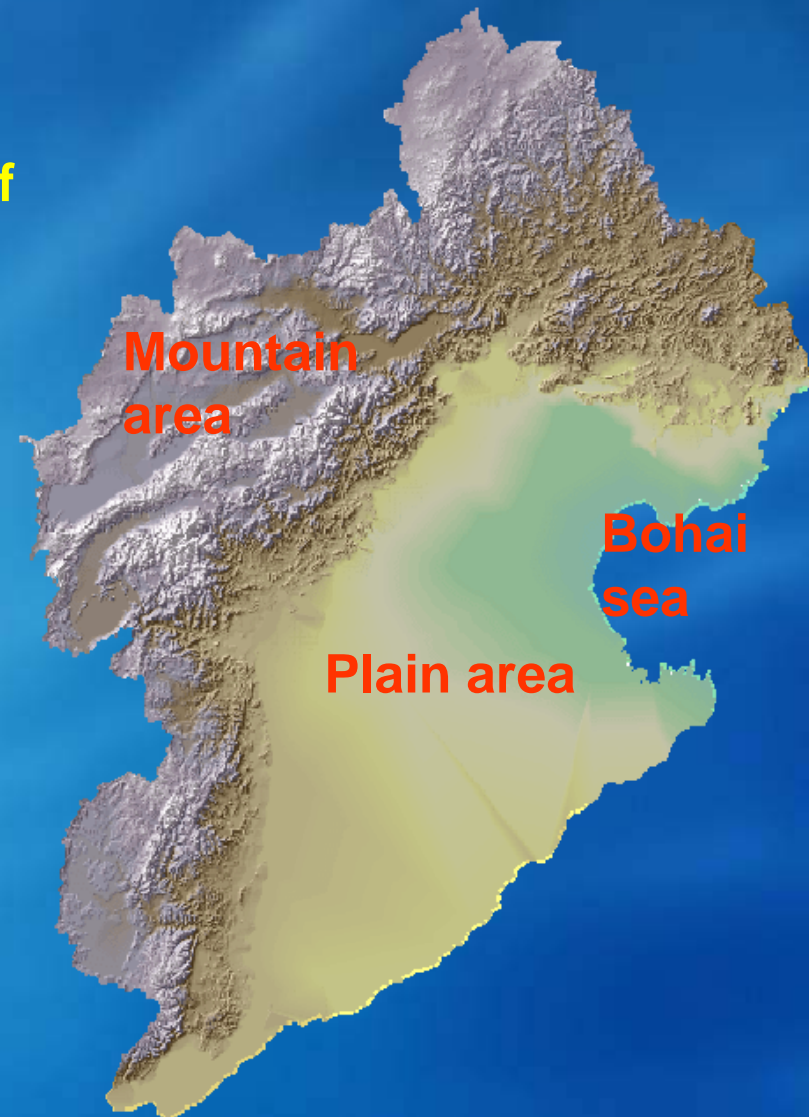
Challenges and measures



1 Basic information of the basin



Haihe basin is located in the north of China with 320,000 km² of the total areas , which is the cultural and economic center of China.

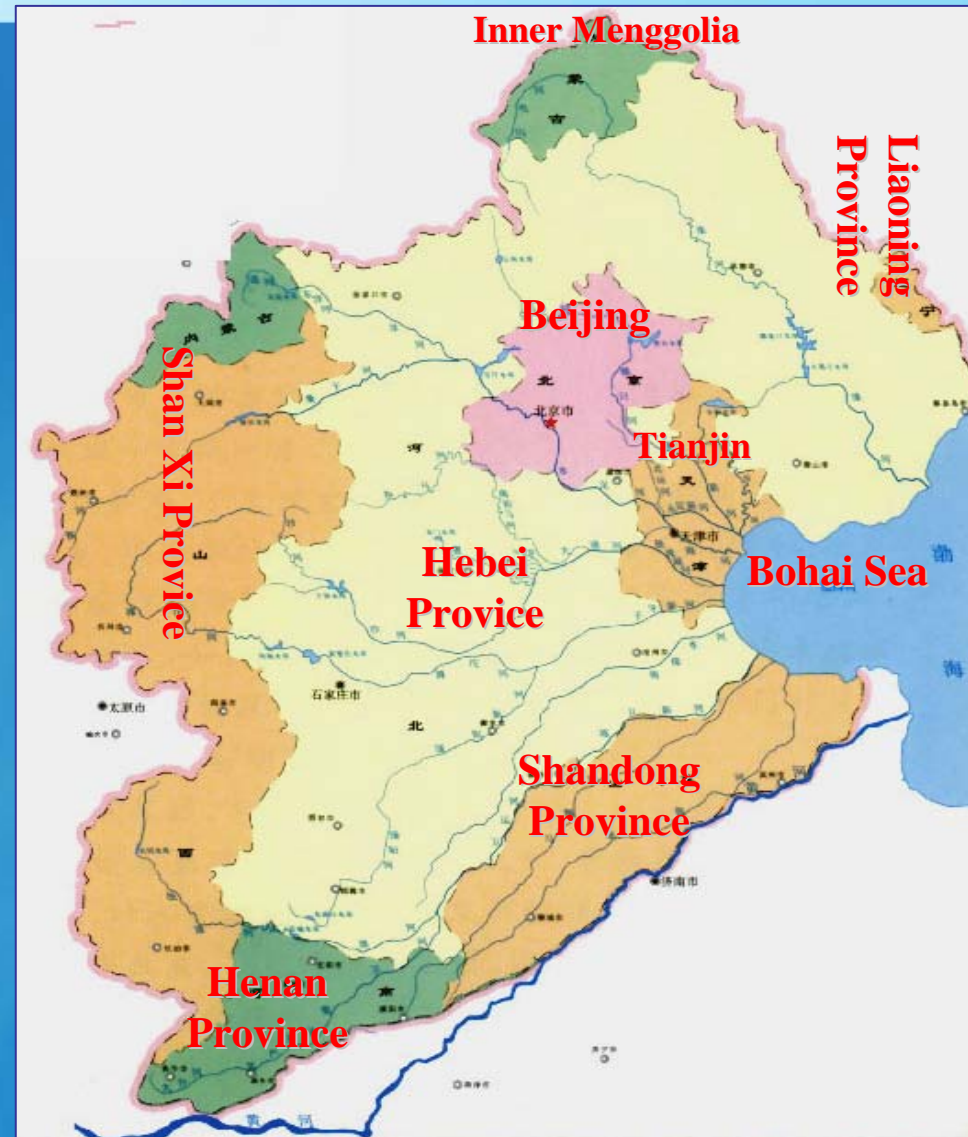




1 Basic information of the basin



8 provinces and municipalities are involved, including capital Beijing, Tianjin etc.



Tianjin city



1 Basic information of the basin



In 2008

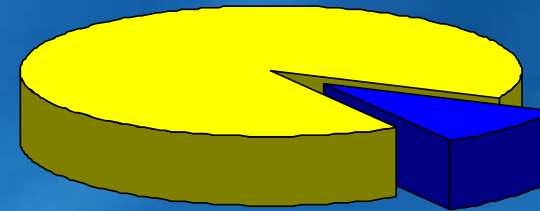
Population: 137 M

urbanization rate: 45%

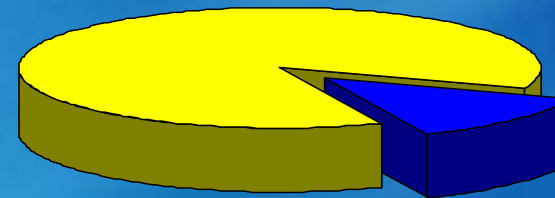
GDP:3540 B Yuan

Farmland: 10M ha

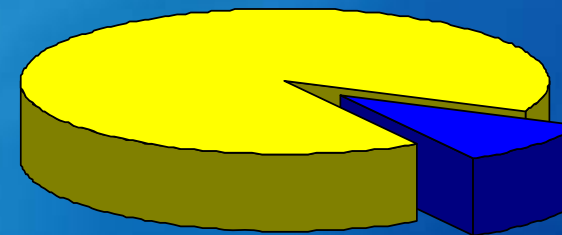
Food production: 52M t



Basin Population proportion in China
10%



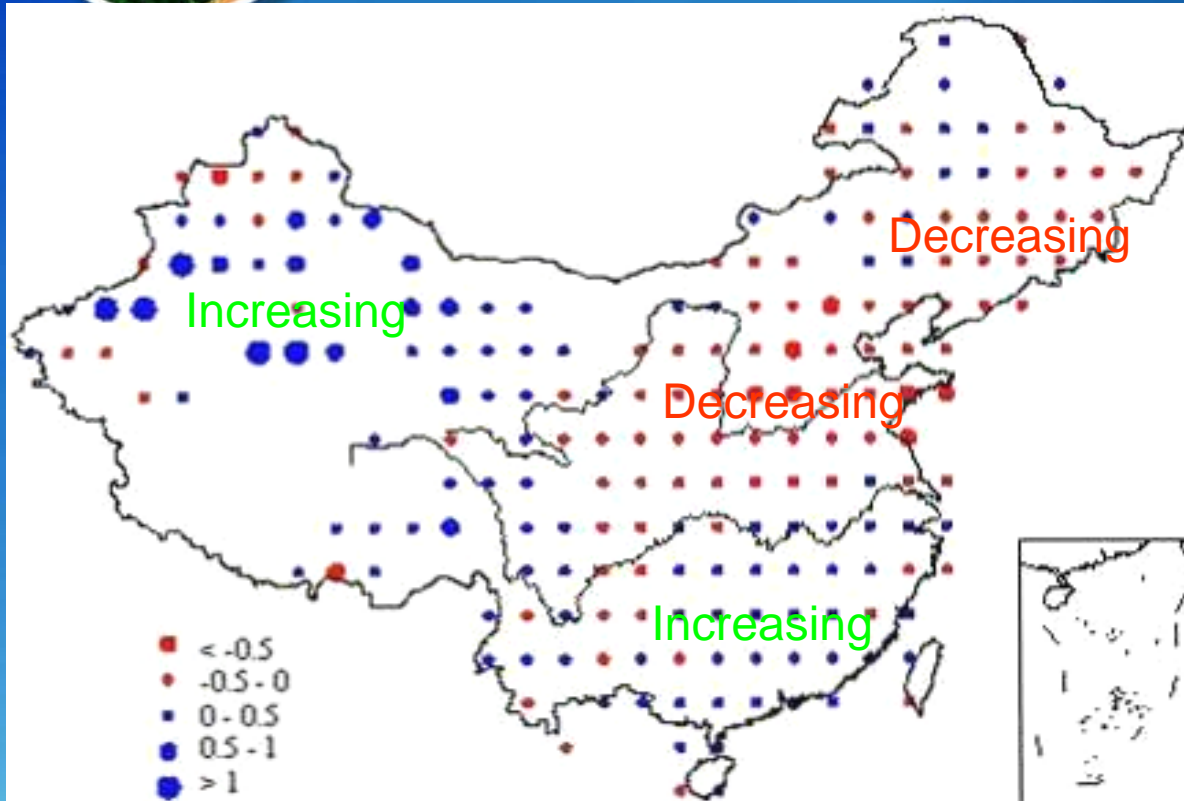
Basin GDP proportion in China
13%



Food production proportion in China
10%



1 Basic information of the basin



Annual precipitation:
535 mm

Precipitation decreased
by 11%

comparing 1956-1979 to
1980-2000

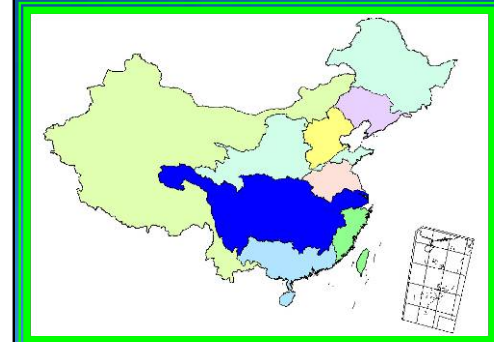
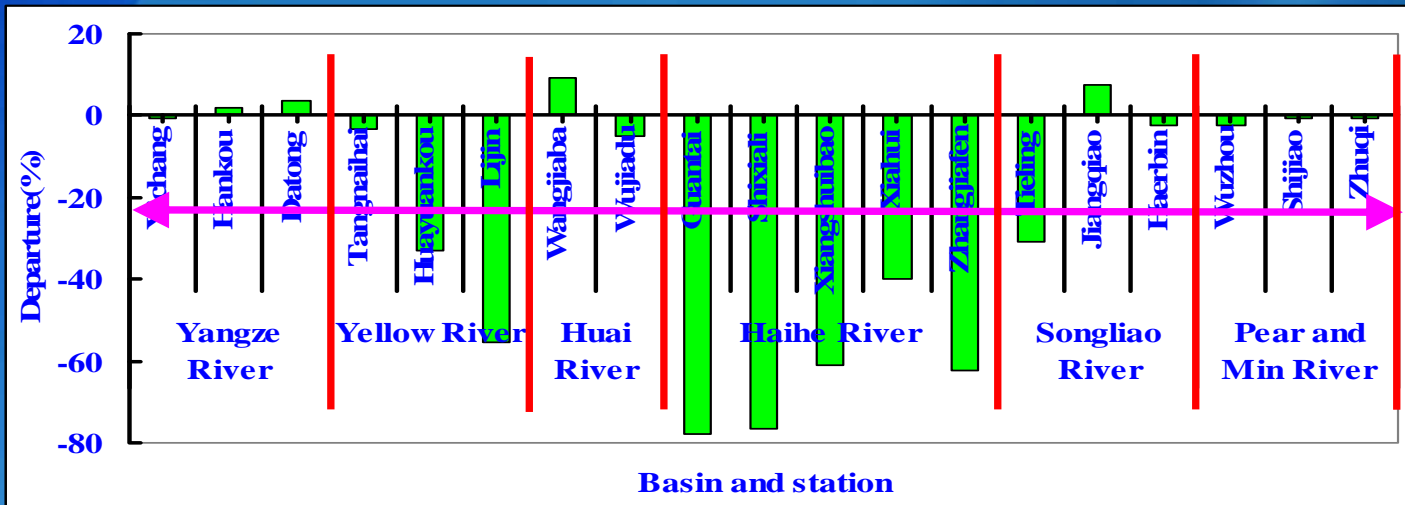
in Haihe river basin

Change of precipitation in China from 1956 to 2000

*According to China's National Assessment Report on CC,
2007*



1 Basic information of the basin



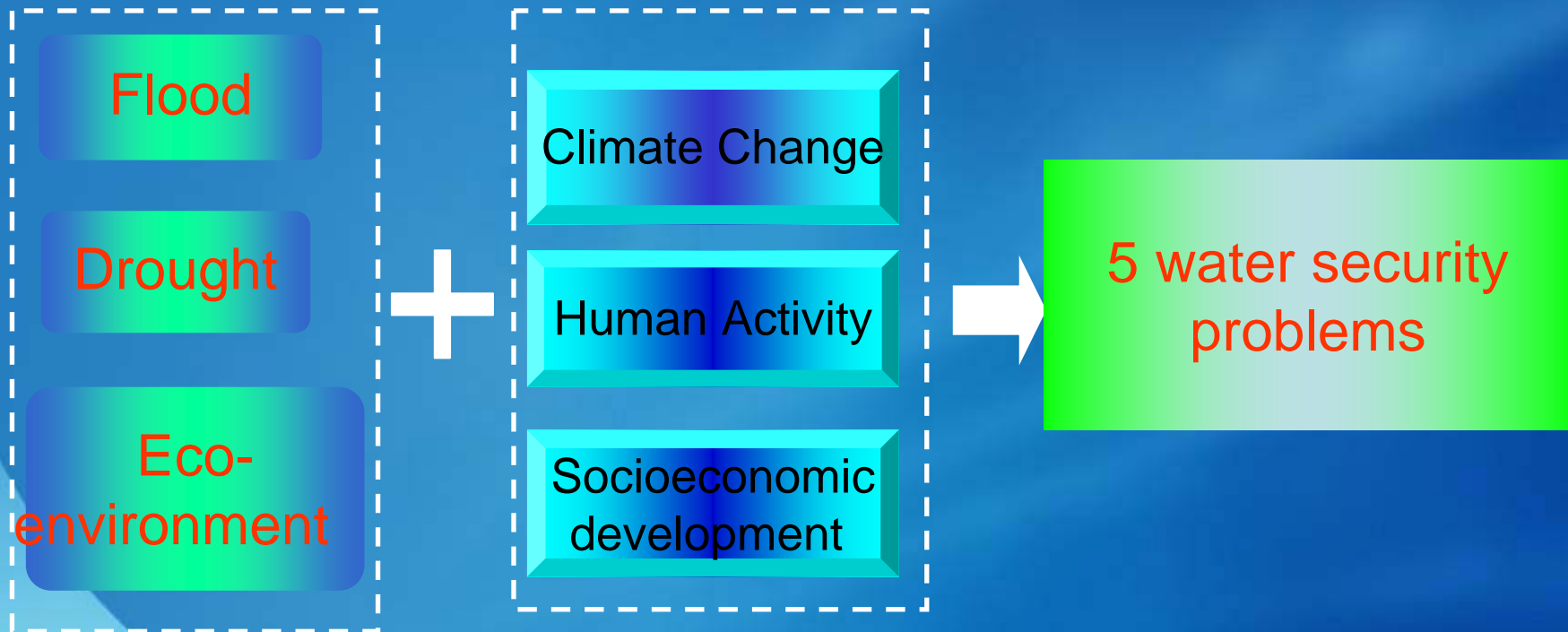
Annual runoff change (comparing 1980-2000 to 1956-1979)

- Remarkable surface runoff decreasing in the Haihe river is about 40%, from 21.6 B m³ to 13.6 B m³.

China's National Assessment Report on CC, 2007



2 Main problems



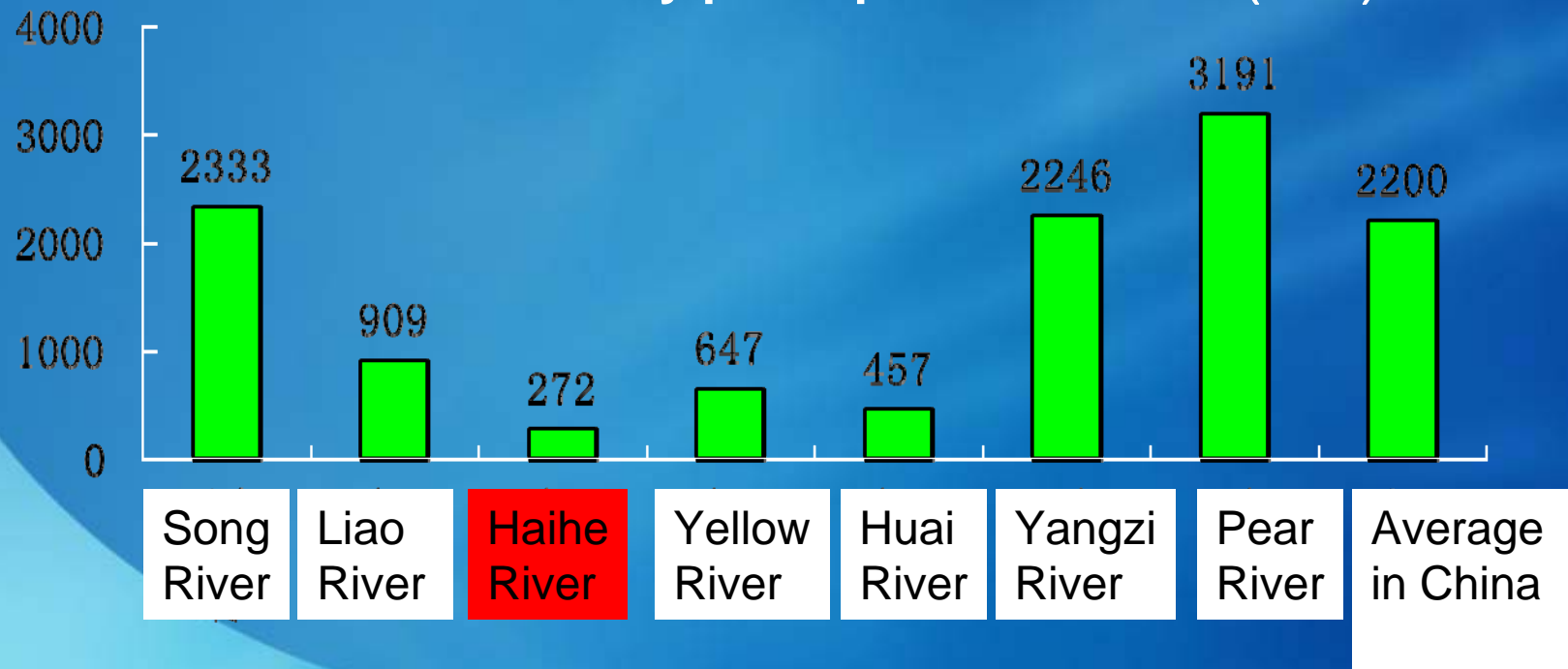


2 Main problems

(1) water shortage

Overexploitation groundwater and transferring water from other basin.

Water availability per capita in 7 basins (m³)

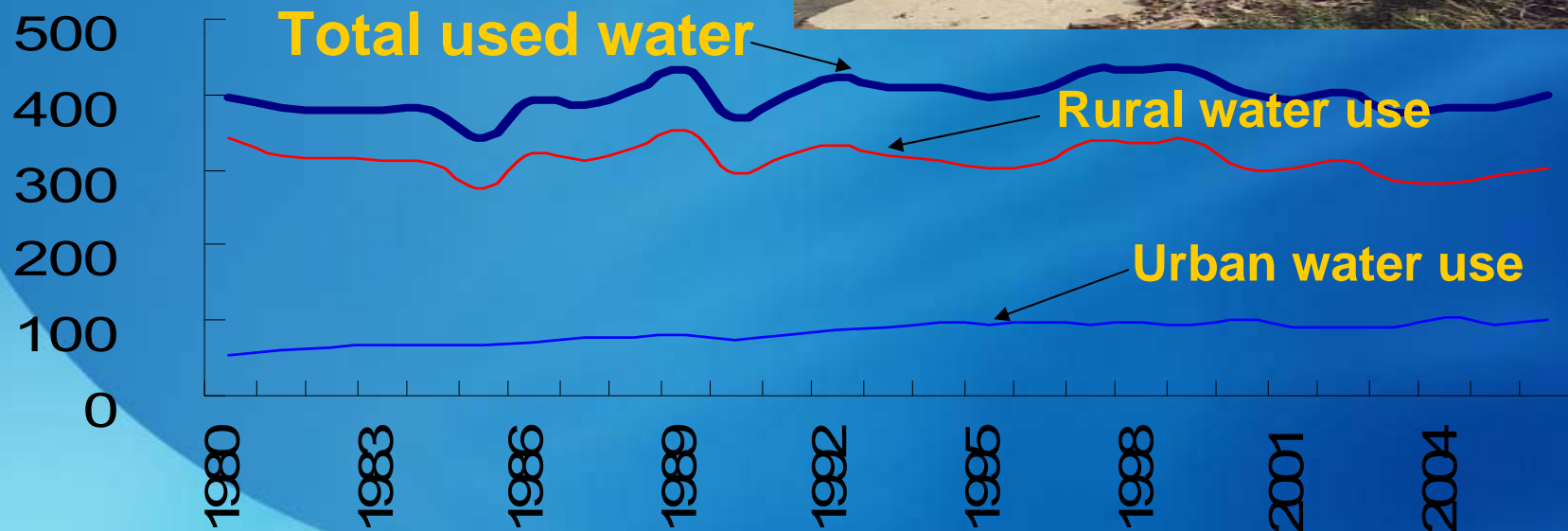




5 Main problems

(2) Low water use efficiency

Irrigation water use coefficient is only 0.55.





2 Main problems



(3) Water pollution

The total sewage is 4.8 B tons , the rate of treatment is only 55%.



Sewage outflow from factory



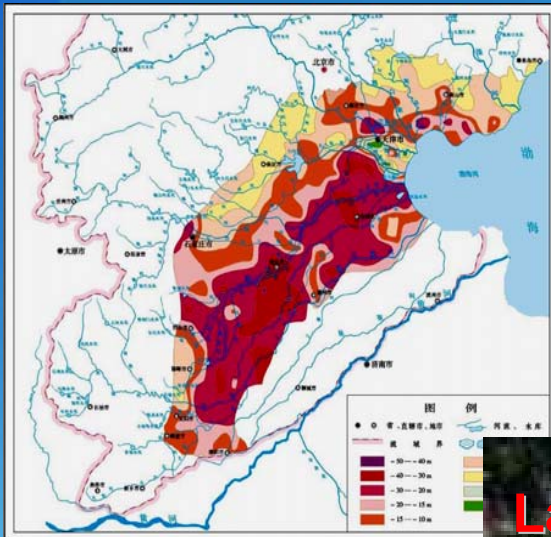
Waste water treatment Plants in Beijing



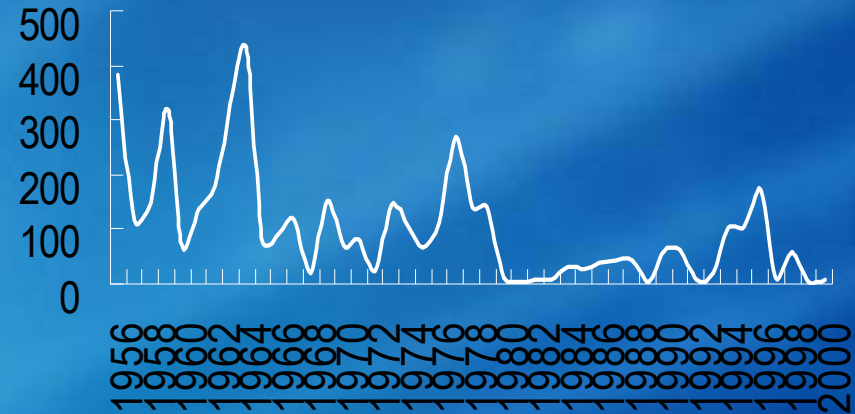
2 Main problems

(4) Ecological system degradation

Water flowing into the sea decreases, estuary eco-system deteriorates (100 million m³)



Groundwater levels descending leads to subsidence , salinity intrusion etc.



Lakes drying up



Rivers drying up

Wetlands diminished by 80% from 1950 to 2000



3 Management responsibilities and outcomes



**The responsibilities of the basin commission is:
to carry out integrated water resources
management and supervision under MWR, such as**

River basin planning;

Water allocation;

Water pollution prevention;

Soil erosion protection;

Flood control;

**Management of construction projects financed
by central government, Etc.**



3 Management responsibilities and outcomes



Outcomes of Water engineering construction

Dikes, reservoirs, irrigation and drainage systems constructed.



3 Management responsibilities and outcomes



Outcomes of water plans:

“Water Master Plan of Haihe River Basin”

“Flood Control Plan of Haihe River Basin”

“Integrated Plan of Water Resources in Haihe River Basin”

“Pollution Protection and Control Plan in Haihe River Basin”

“Integrated Plan of Estuary of Haihe River Basin”

Etc.



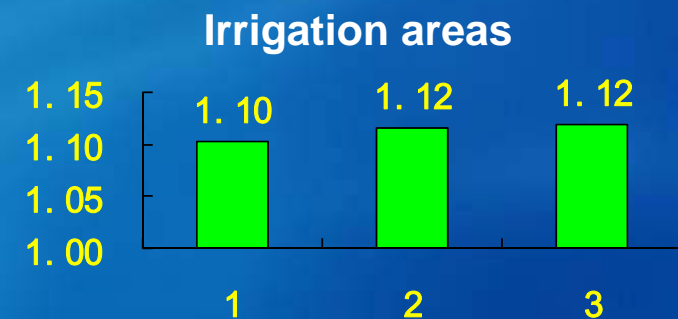
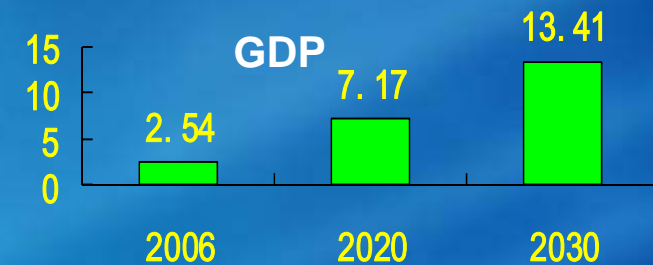
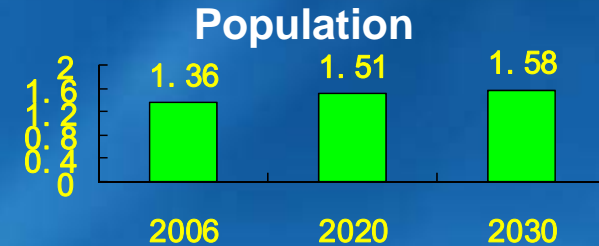
4 Challenges and measures

Social and economic development

The balance between demand and supply should be done

Period	Water demand	supply water	Lack of water
2006	45.1	36.1	9.0
2020	49.5	45.8	3.7
2030	51.5	51.8	0

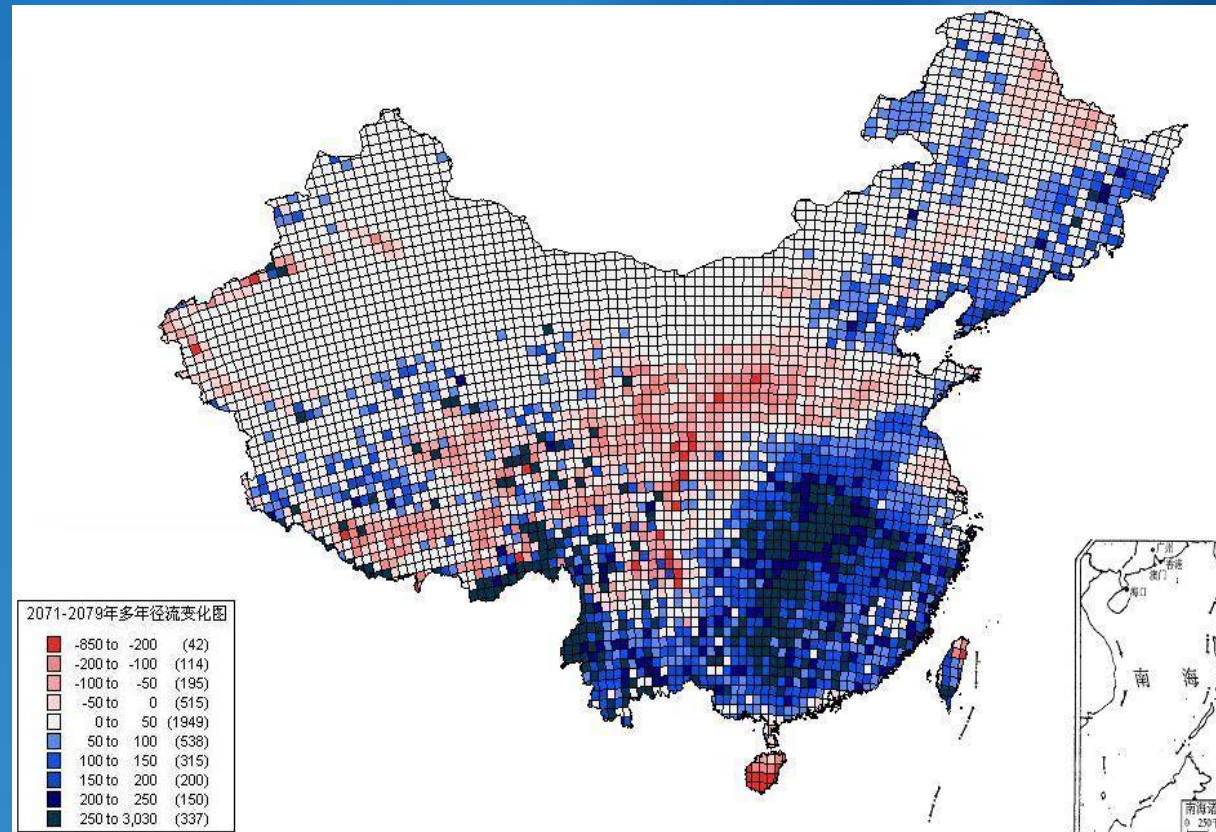
Note: without considering the effects of climate change





4 Challenges and measures

Impact of
climate
change in
the future



Probability of extreme event would be increased, and the pattern of south-flood and north-drought would be aggravated.

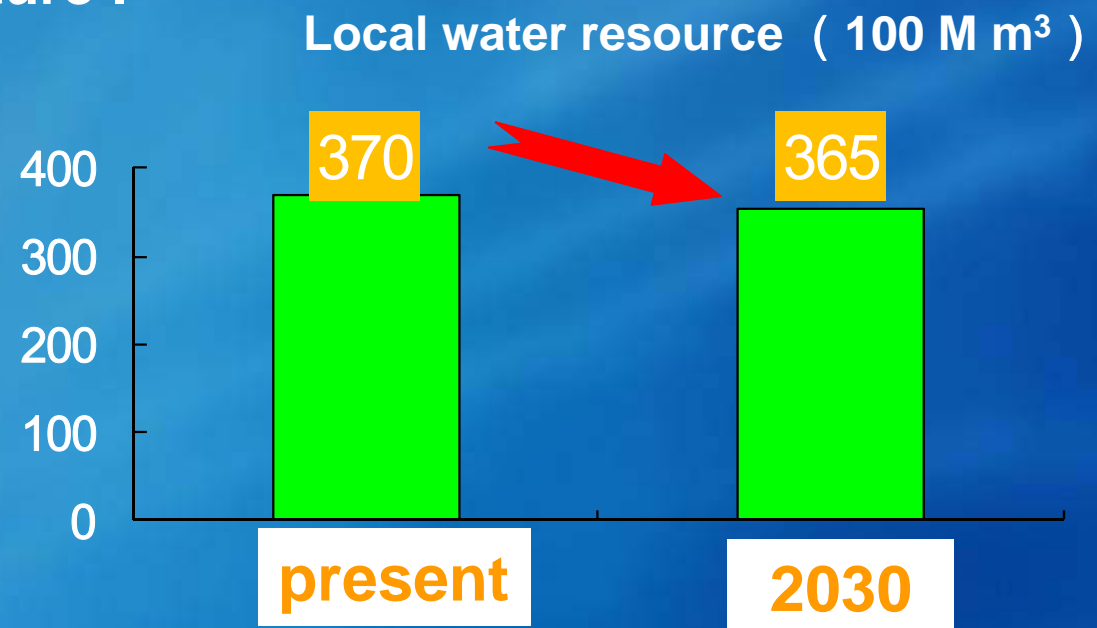
According to China's National Assessment Report on CC, 2007



4 Challenges and Measures

Climate change impacts

A rising trend of temperature would result in a little reduction of water resources in the future .

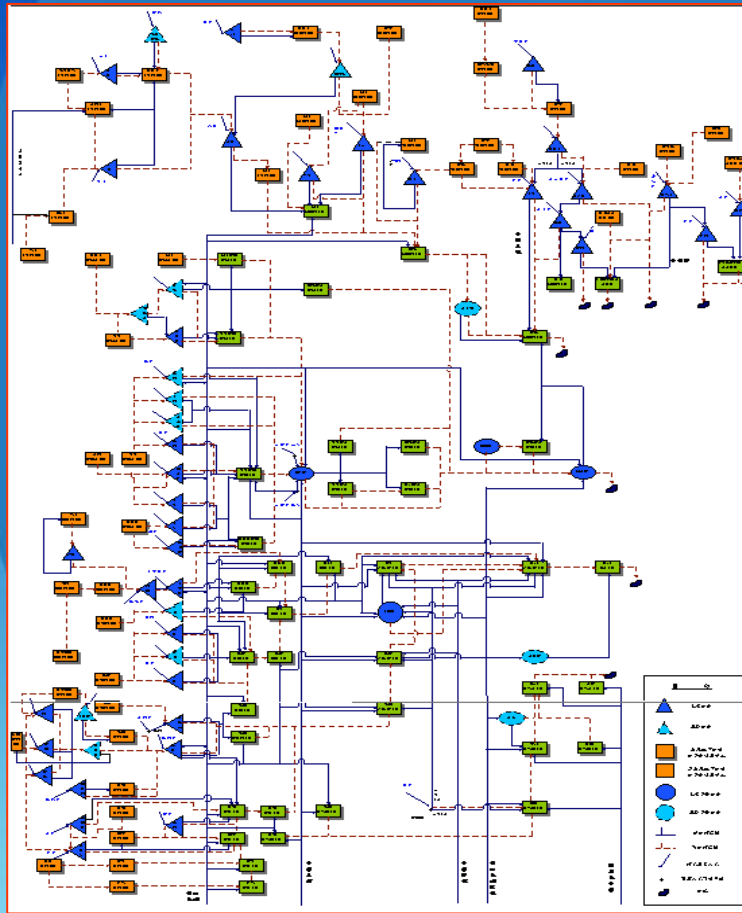




4 Challenges and Measures

Establishing safety water supply system

Optimize the local surface and ground water, the water from Yangzi river and Yellow river , even the unconventional water such as salty and treated water.



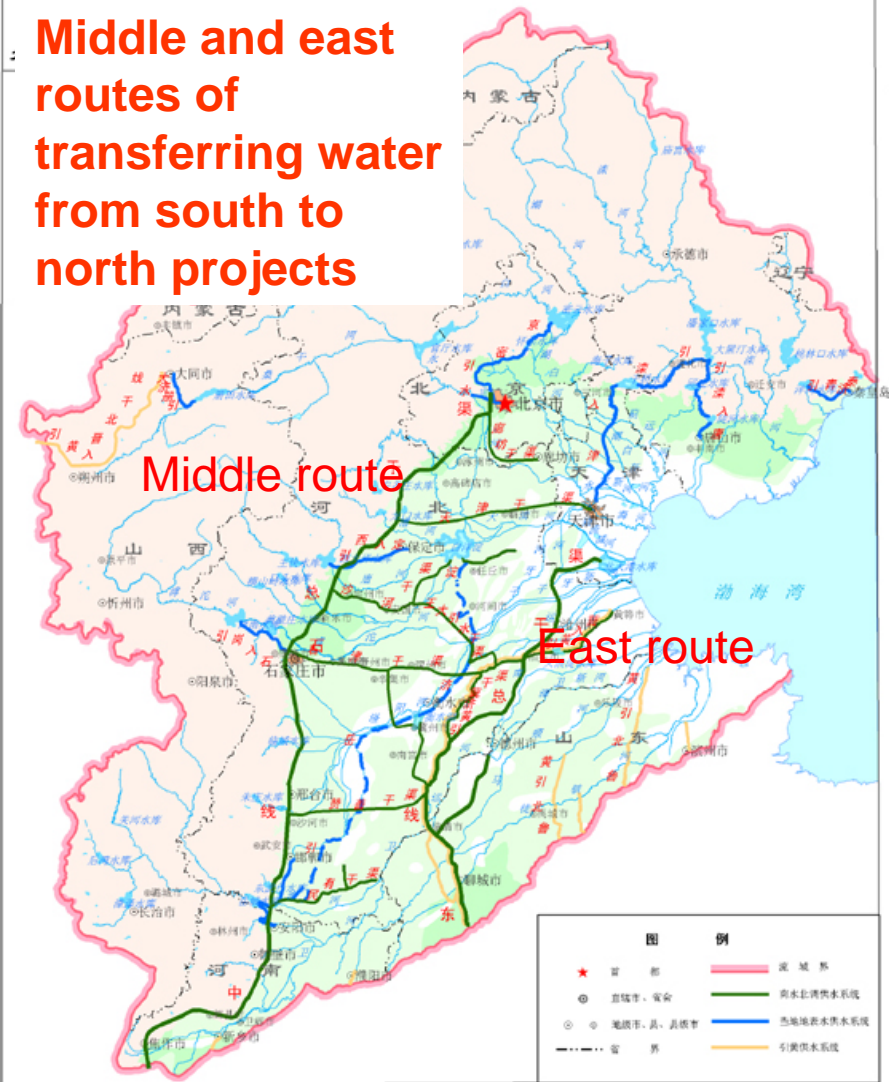
general water allocation systems



4 Challenges and Measures

Exerting water transfer project from the south to the north

Middle and east routes of transferring water from south to north projects





4 Challenges and Measures

To improve water use efficiency, Water conservation, recycling etc.



Irrigation water utilization coefficient is to reach 0.7-0.8





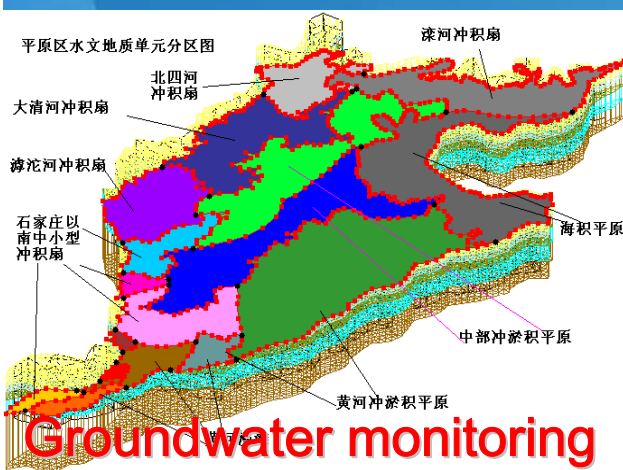
4 Challenges and Measures



Restoring ecological and environmental systems and maintaining river health



- Control groundwater overexploitation and rehabilitate the ecological flow.
- Prevent and control water pollution.
- Build monitoring and forecasting system, especially the groundwater.





A shift in Basin's water policy due to above problems and challenges:



- **People need to live in harmony with nature and not only exploit it;**
- **The focus need to be shifted from a construction orientation to management orientation;**
- **Increase demand management, do not depend entirely on supply augmentation;**
- **Strengthen the study on the effects of the climate change and human activities;**
- **Place more emphasis on comprehensive integrated water resources management and;**



A shift in basin's water policy due to above problems and challenges:



- **Introduce the international experience and assistance, advanced technology and approaches into the Haihe River Basin.**
- **Welcome to Haihe River Basin to do the international cooperation.**



Thanks
for your attention !

