

中国的水资源规划与管理

Water Resources Planning & Management in China

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Outlines

1、中国水资源的基本状况

1. Primary status of water resources in China

2、中国水资源规划的基本情况

2. Brief introduction on water resources planning in China

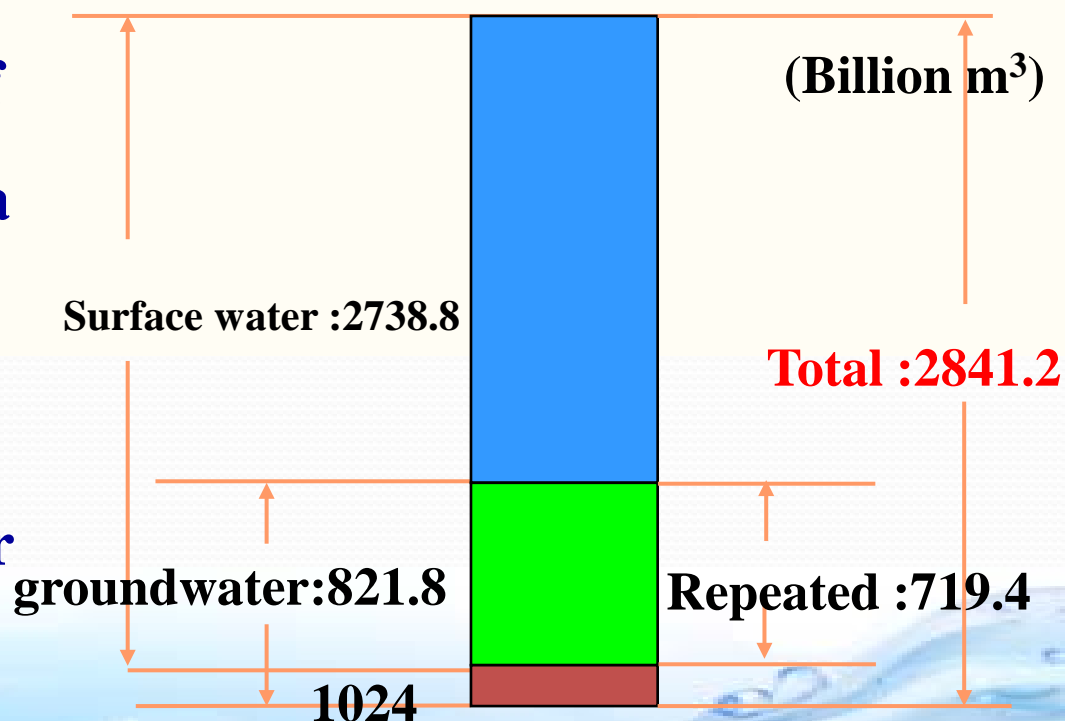
3、中国水资源管理的主要措施

3. Major actions of water resources management in China

Primary status of water resources in China

Inadequate water contrasting to large population;
unevenly spatial and temporal distribution of water
resources; and mismatching of soil and water resources.

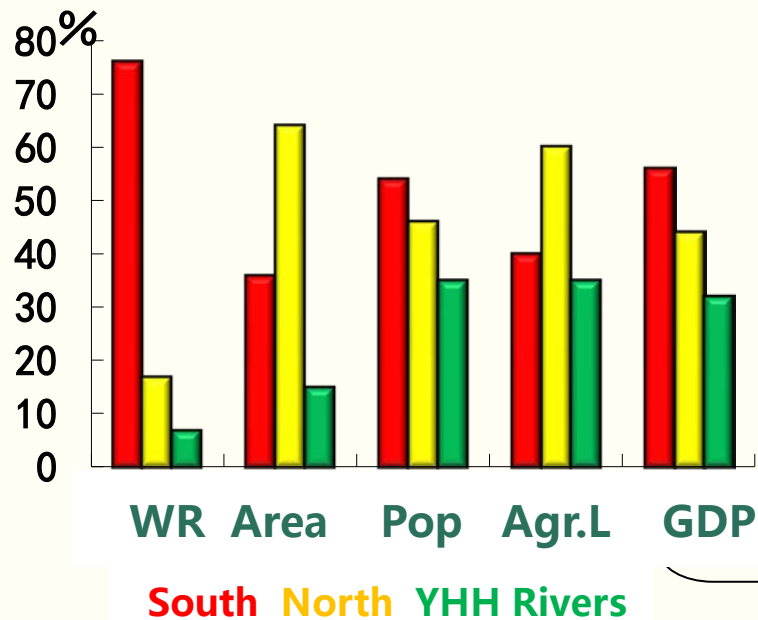
The total amount of
water resources in China
is 2841.2 billion m³,
ranking as No. 6 in the
world. The surface water
accounts for 96%



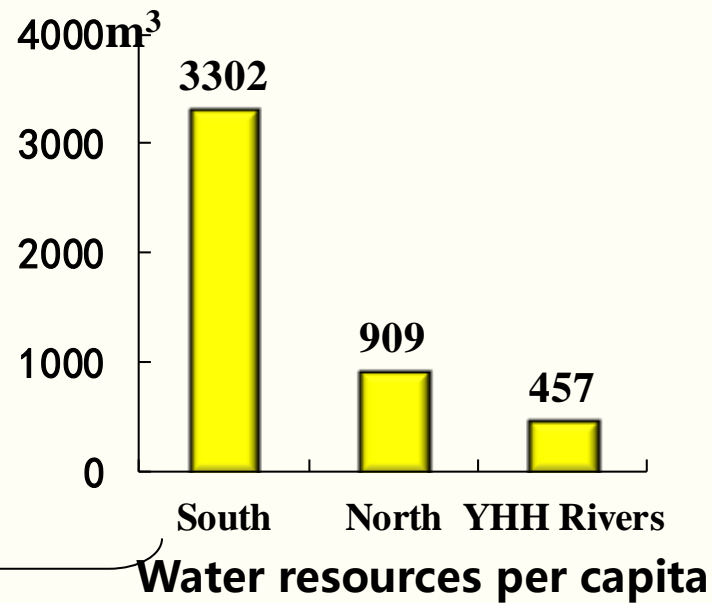
Composition of water resources in China

Primary status of water resources in China

The water resources per capita of China is 2100 m³, less than 1/3 of world average level. The south of China has more than 80% of total water resources.



Unbalance

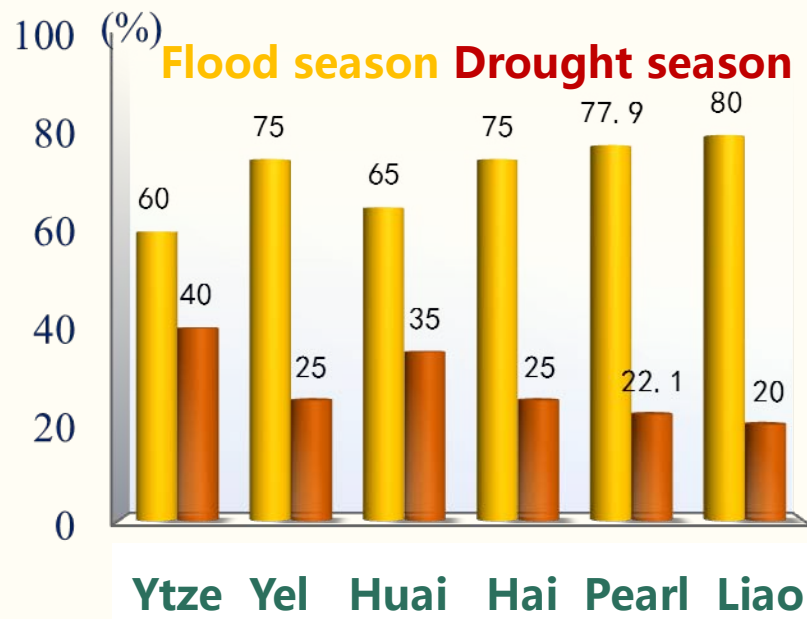


Extremely bad in Yellow, Huai, Hai Rivers(Y H H Rivers)

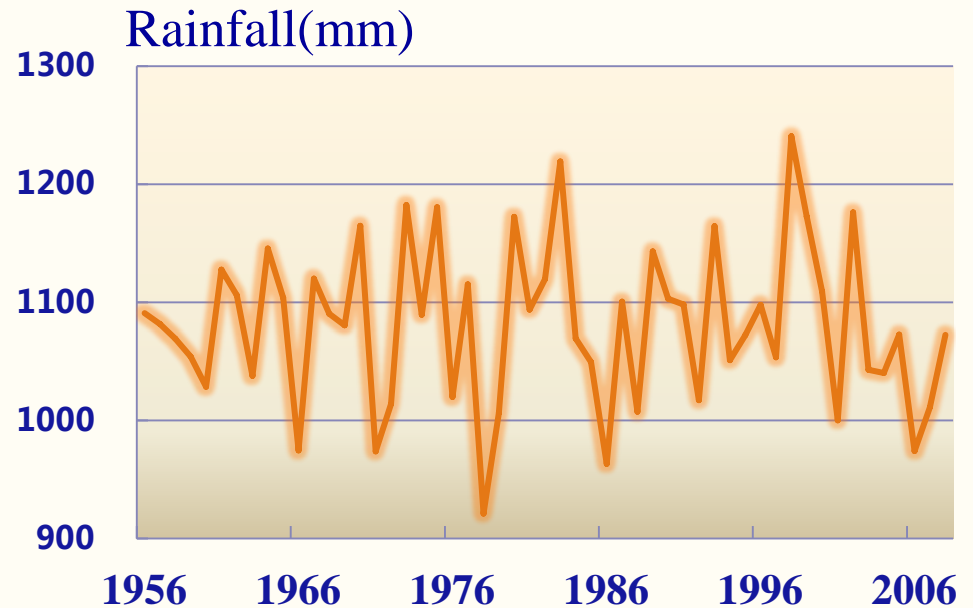
Primary status of water resources in China

Precipitation mainly falls between Jun. and Sep., occupied the 60 - 80% of the total annual precipitation.

Precipitation amount in wet year is 2~6 times of the one in drought year.



Rainfall during the year

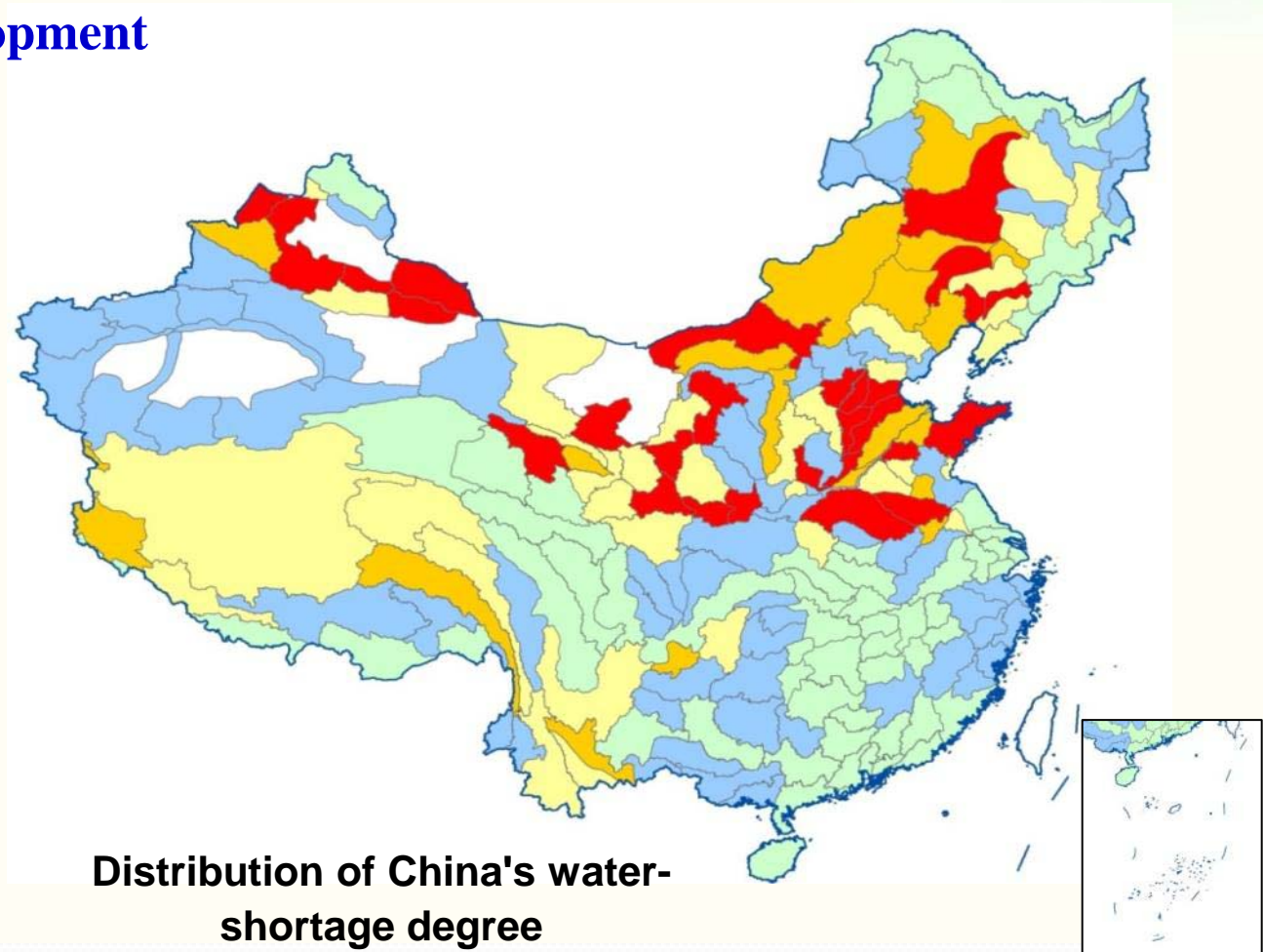


Annual precipitation of Yangtze River

Primary status of water resources in China

North: many areas meet the serious problem of resource-related water shortage

South: some areas have resource-related water shortage because of unreasonable development

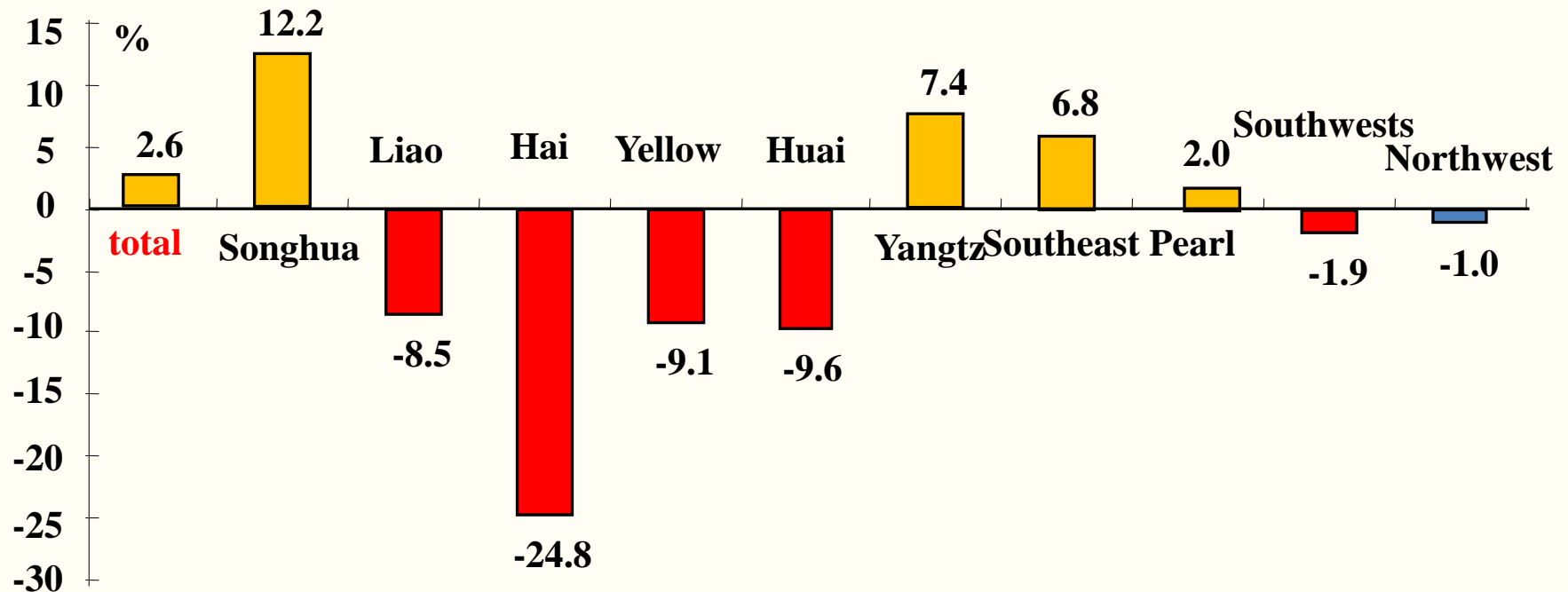


图例

- 未评价
- 基本不缺水
- 轻微缺水
- 中度缺水
- 较严重缺水
- 严重缺水

Primary status of water resources in China

Since 1980s, the spatial and temporal distribution has been more uneven. The water resources in the north is significantly decreased, especially in Yellow, Huai, Hai and Liao Rivers



1956-1979 VS 1980-2000 total water resources

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Brief introduction on water resources planning in China

How to plan the utilization of water resources is an essential and important issue in China, since the spatially and temporally uneven distribution makes the situation of China's water resources extremely complex.

The framework of water (resources) planning contains three levels: national, river basin, and regional level. The planning includes two types: comprehensive ones and specific ones.

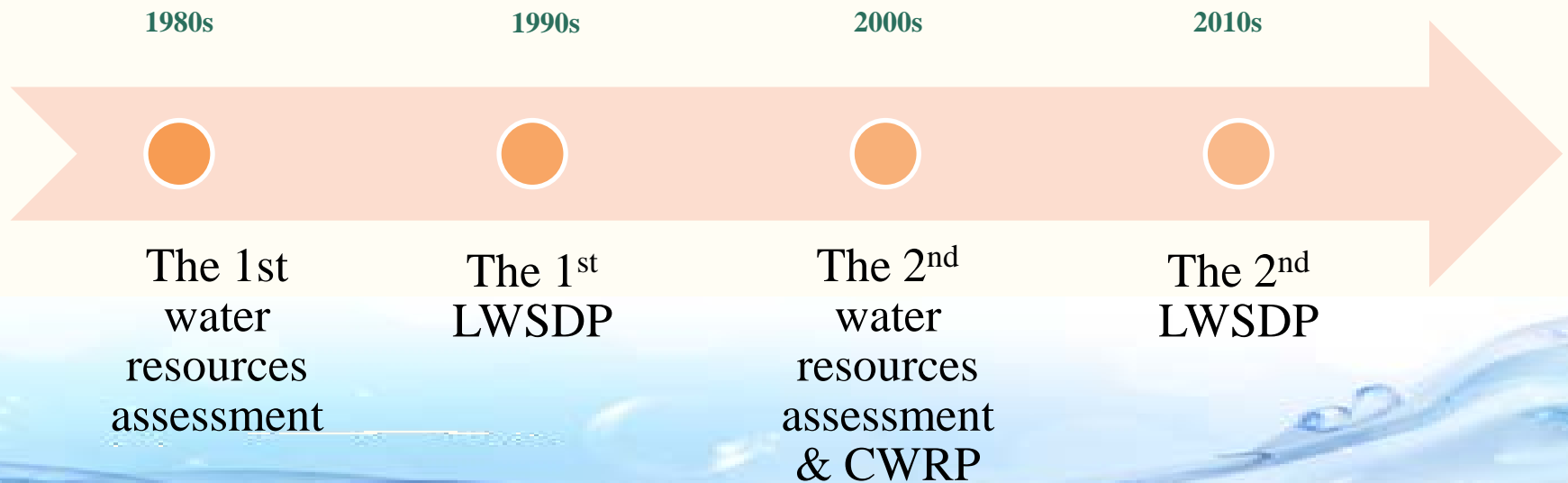
	National	Regional	Water basin
Comprehensive plan	√	√	√
Specific plan	√	√	√

Brief introduction on water resources planning in China

Types	Conception	Planning period	Revision cycle
Comprehensive Planning	According to the economic and social development needs, and the current situation of water resources development, making the comprehensive plan of the development, utilization, conservation and protection of water resources	15-20years	10years
Specific Planning	In the watershed and regional levels, making the specific plans about irrigation, water supply, water resources protections, and some other purpose.	15-20years	10years

Brief introduction on water resources planning in China


The most important water resources plannings: “The national comprehensive water resources planning” (CWRP) and “The national long-term water supply and demand planning”(LWSDP)





Brief introduction on water resources planning in China

**“The national comprehensive water resources planning”
(CWRP) :**

- ✓ **From 2002 to 2008, more than 300 departments, and 15 thousands people participated the planning production.**
 - ✓ **CWRP covers 31 provinces (autonomous regions and municipalities) in China, involving water, agriculture, industry, urban, environmental protection and many other fields.**
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Brief introduction on water resources planning in China

“The national long-term water supply and demand planning”(LWSDP):

- ✓ **The 1st LWSDP was made in the later 1990s, the 2nd one is currently under production.**
- ✓ **LWSDP is the implementation of CWRP, it contains more detailed information about the water allocation pattern, sustainable utilization of water resources, and major projects distribution**
- ✓ **The 2nd LWSDP will be completed and published in the next year.**

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The major actions of water resources management taken in China

- ✓ **River water allocation**
- ✓ **The most strict water resources management system**
- ✓ **Water resources argumentation**
- ✓ **National census for water resources**
- ✓ **Modernization construction for water resources**

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What is Water Allocation

Water allocation is to distribute water resources among different administrative regions at all levels in a river basin scale.

Water allocation plan should be developed under the guidance of scientific development concept while taking full consideration of maintaining rational function of WR.

Domestic use, economic use and eco-environmental use of water could be well tradeoff through water allocation, thus to gain sustainable use of water resources, speed up economic and social development and maintain ecological balance of river basin in a continuous and stable manner.

Necessity of water allocation

At present, water resources are overused in many river basins in China. The emergence of irrational use of water resources and eco-environmental problems in some river basins leads to the urgency of developing water allocation plans.

In the foreseeable future, China will keep its rapid economic growth and social development, while the construction of ecological civilization will be further strengthened. All these increase the demands of water resources, resulting in strong competitions on water allocation among water users.



Necessity of water allocation

1. Water allocation is necessary for rational distribution among domestic use, economic use and environmental use. Water allocation is also a key measure for water shortage alleviation, environmental protection and water conflict prevention.
2. Water allocation is essential to rationally exploit and effectively use water resources.
3. Water allocation is an inevitable choice for promoting the legalization of water administration and strengthening water management.
4. Water allocation plays a vital role to maintain river health, improve sustainable use of WR and ensure water demand for future socioeconomic development.



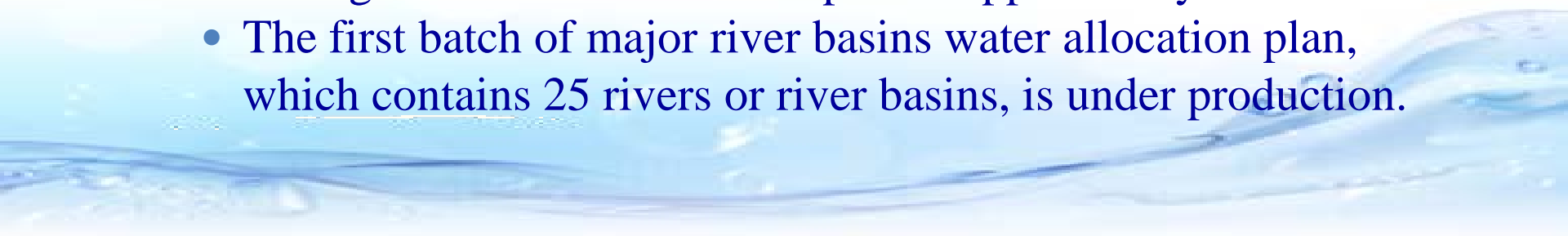


Progress in China

Laws and regulations

- ‘Water law’ : water allocation plan should be made on the basis of the comprehensive plans of river basins and medium- and long-term plan of water supply and demand, taking each river basin as a unit.
- Other regulations: Interim Measures for Water Quantity Allocation, Management Rules on water permit and collecting and deploying charge for water resources

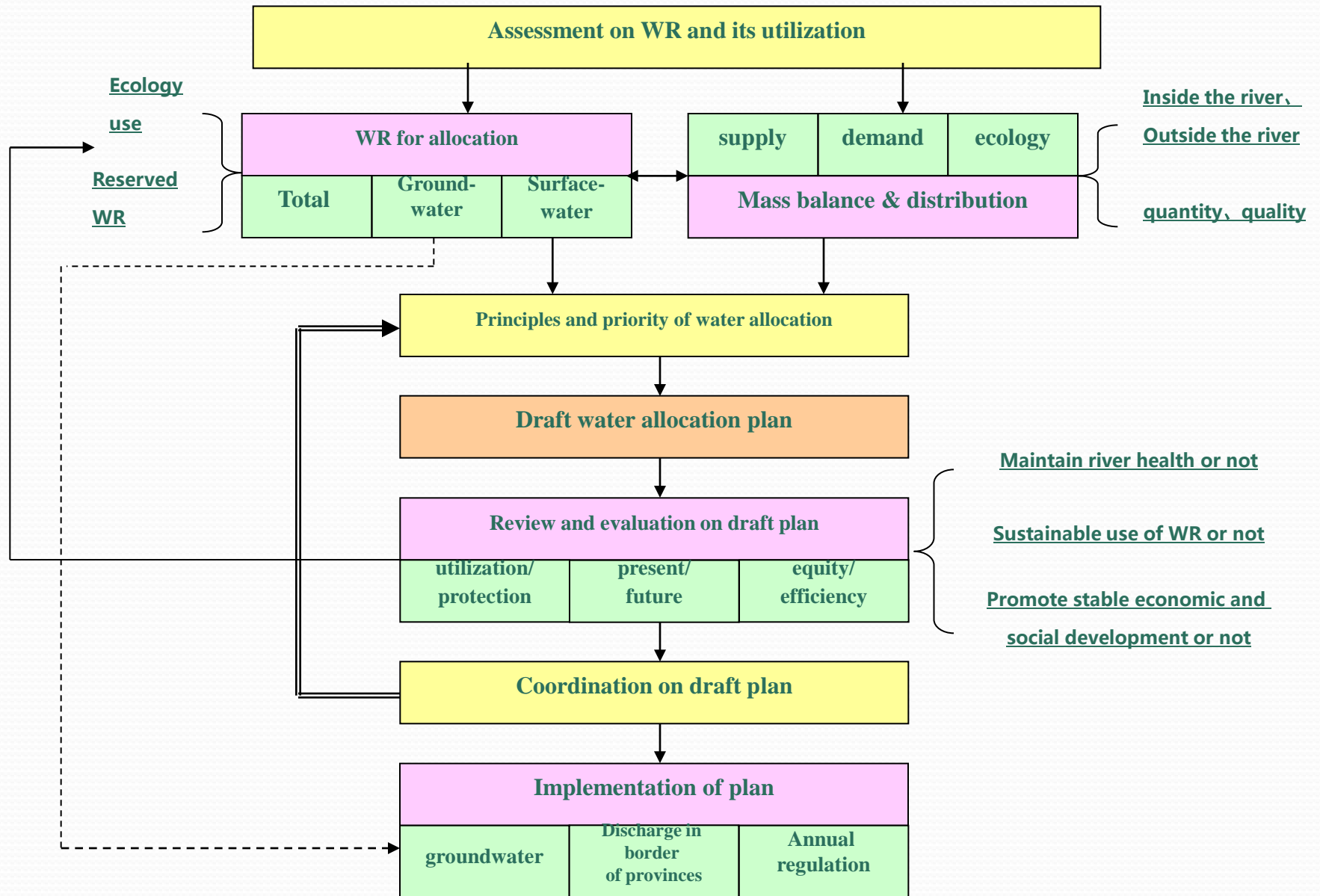
Practices

- Water allocation plans for Yellow River, Hehei River, Zhanghe River, Luanhe River and Yongding River are approved by the State Council.
 - Daling River water allocation plan is approved by MWR.
 - The first batch of major river basins water allocation plan, which contains 25 rivers or river basins, is under production.
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General approach & principles

- ✓ 分什么样的水？ (term of 'water' for allocation)
- ✓ 按什么准则分？ (principle for water allocation)
- ✓ 按什么方法分？ (methodology for allocation)
- ✓ 按什么办法评？ (evaluation on allocation plan)

General approach & principles



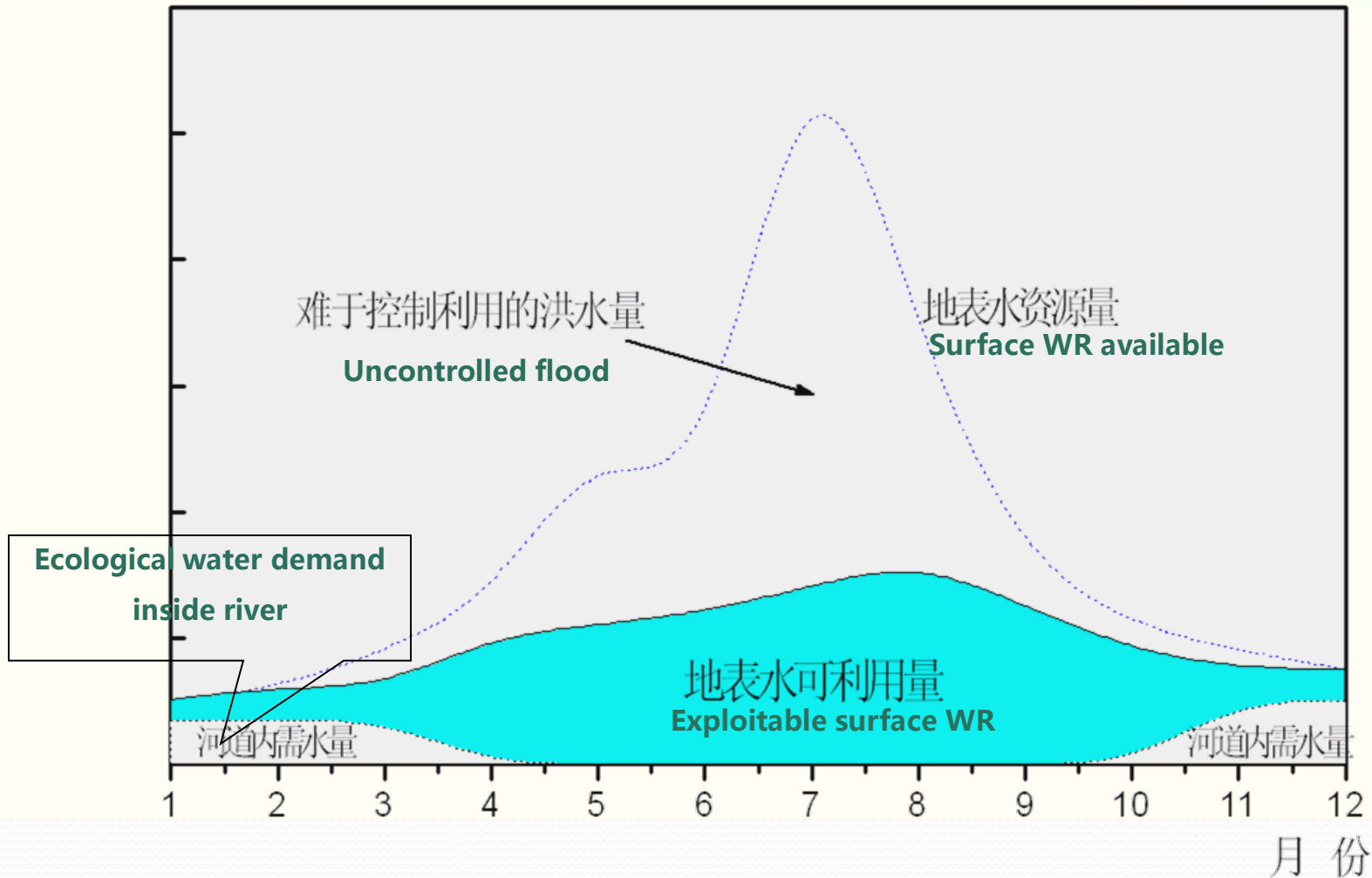
Key issue to be solved

关于可分配水量问题(term of 'water' for allocation)

- 可供分配的水量指标：水资源总量、地表水、地下水资源量，水资源可利用总量、地表水可利用量，地表水可供水量、地下水可开采量(term of WR for allocation on consideration, WR available, surface WR, ground water, exploitable WR, exploitable surface WR, potential supply of surface water, exploitable groundwater)
- 如何确定不同类型河流的可分配水量(How to identify term of WR for allocation for different category of river)
- 可分配水量的界限：全部参与分配、部分参与分配？
(The scale of WR available for allocation: whole or part?)

Key issue to be solved

可分配水量—地表水可利用量(options on term of WR for allocation-exploitable surface water resources)



Key issue to be solved



Key issue to be solved

预留水量(reserved water resources)

- 国家重大发展战略(major national development strategies)
 - 气候变化—水资源影响(impact of climate change on water resources)
 - 特殊紧急情况(emergencies)...
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- 如有需要，预留水量仍可按照一定比例分到各行政区域使用。遇特殊情况，上一级政府有权收回这部分水量的使用权，并进行再分配(Reserved water resources could be allocated to each administrative regions proportionally. But the higher-level government has the reserved right to reallocate water according to updated situations)

Key issue to be solved

关于分配方案的操作性(operation of water allocation plan)

- 水量分配的数量、质量与过程问题? (water quantity, water quality and flow process)
- 多年平均作为水量分配的基础条件, 丰增枯减(The average annual runoff is regarded as the baseline for water allocation, adjusting available WR of each region under the condition whether it is a wet year or a dry year)
 - 同比例丰增枯减, 如黄河(Adjustment in the same proportion, for example, Yellow River)
 - 不同比例丰增枯减, 如黑河。枯水年份, 中游比例高; 丰水年份, 下游比例高, 给居延海补给(Adjustment in different proportions. Take Hehei River as an example, in the dry year more water is allocated to the middle reach while in the wet year the lower reach gets more water for supplement of Juyan Lake as ecological user)

Key issue to be solved

关于地下水的问题(groundwater)

- 地下水与地表水相互转化关系复杂，特别是不同开发水平下，转化关系更为复杂，影响水量分配

(The interaction between surface water and groundwater is very complicated, especially when the development level of them is different. This will affect the process of water allocation)

- 地表水可利用量+地下水可开采量>水资源可利用总量，因此要用水资源可利用总量进行控制(The sum of exploitable surface water and groundwater is higher than total exploitable WR, so total exploitable WR should be used as ceiling of water allocation plan)

Key issue to be solved

关于水量分配方案合理性的评估(Rationality assessment on water allocation plan)

- 如何评估水量分配方案的合理性(how to assess the rationality)
- 如何评估水量分配方案的公平性(how to assess equity)
- 如何协调区域之间的水资源矛盾(how to coordinate water conflict among different regions)
- 如何建立科学合理评估指标体系(how to establish scientific and reasonable index systems for assessment)

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3. The major water resources management actions in China

Future Challenges in water resources planning and management of China

1、变化环境和不确定性条件下的水资源规划和管理

The quantitative research on the water planning and management based on uncertainty and transitional environment

2、生态文明建设理念下的流域水资源综合规划管理

River basin water resources planning and management based on the concept of Ecological Civilization

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Thanks!