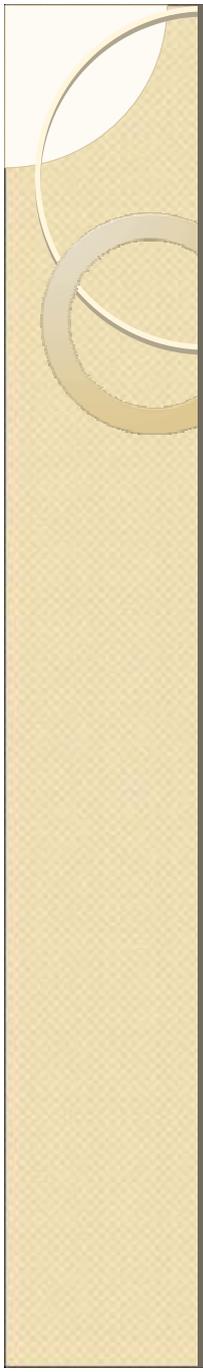




Current situation and management of water source in Beijing

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Introduction of PRCEE

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 - General Affairs Division
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 - Environmental Law Division
 - Environmental Policy Division
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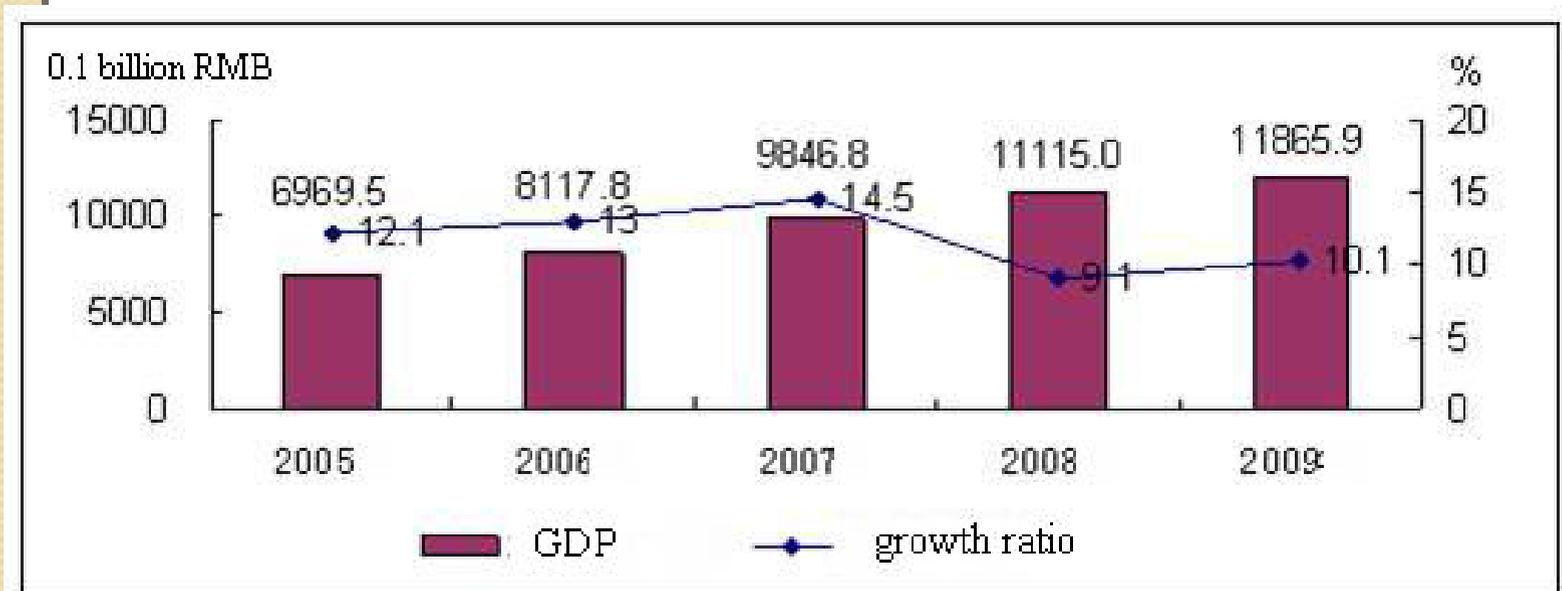
Social-economical condition

- In the past 30 years, the urbanization progress of Beijing is very fast. The population had increased several times that of 1978. The population density has increased to 1069 people per Km².

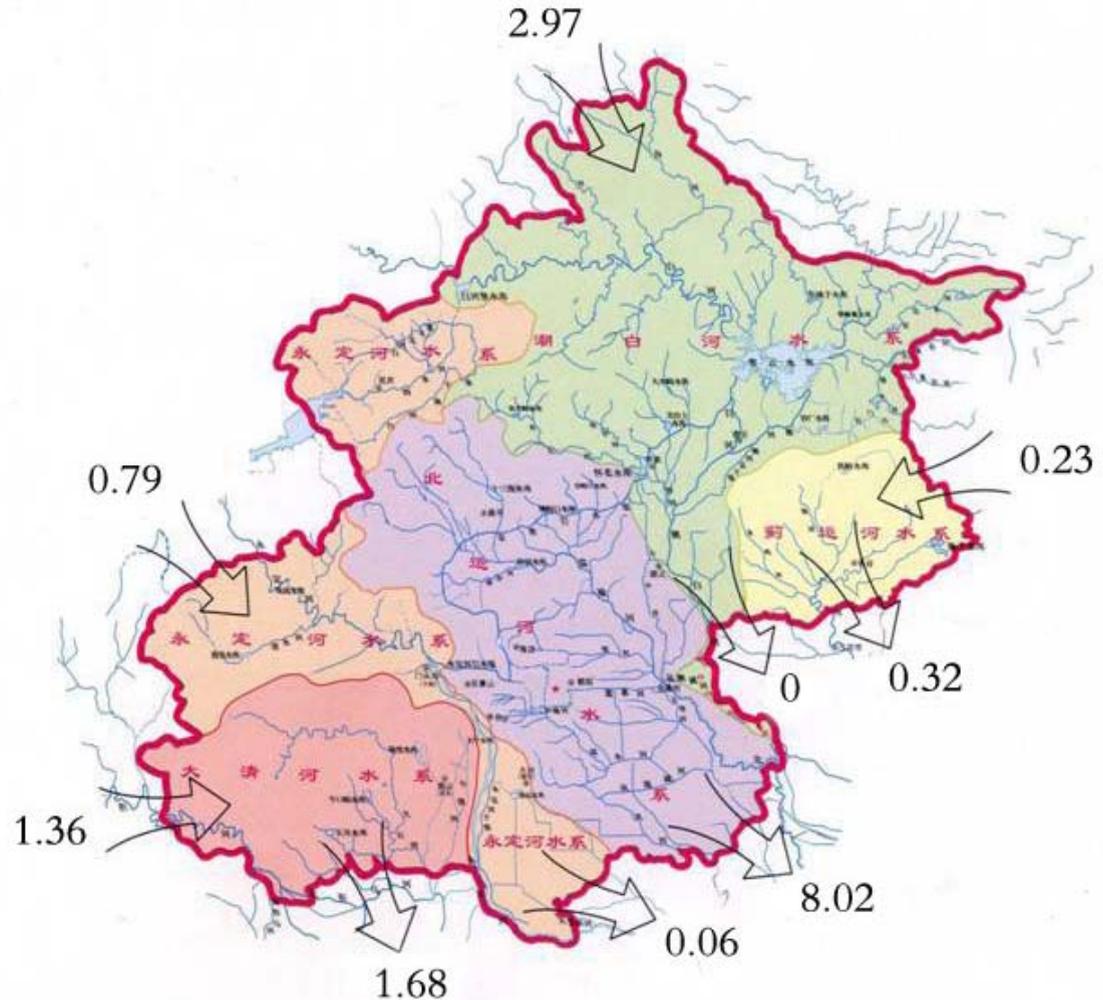
	1980	1990	2000	2009
Population (10000)	904.3	1086	1363.6	1755

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- The GDP is also continue increased for many years and keep the growth rate above 9%. The GDP of 2009 is estimated to be RMB 1186 billion(nearly US\$169 billion). The GDP per capita is about US\$ 10070. The industry structure is 1 : 23.2 : 75.8 which indicated that the third (serving) industry is the major sector in Beijing.

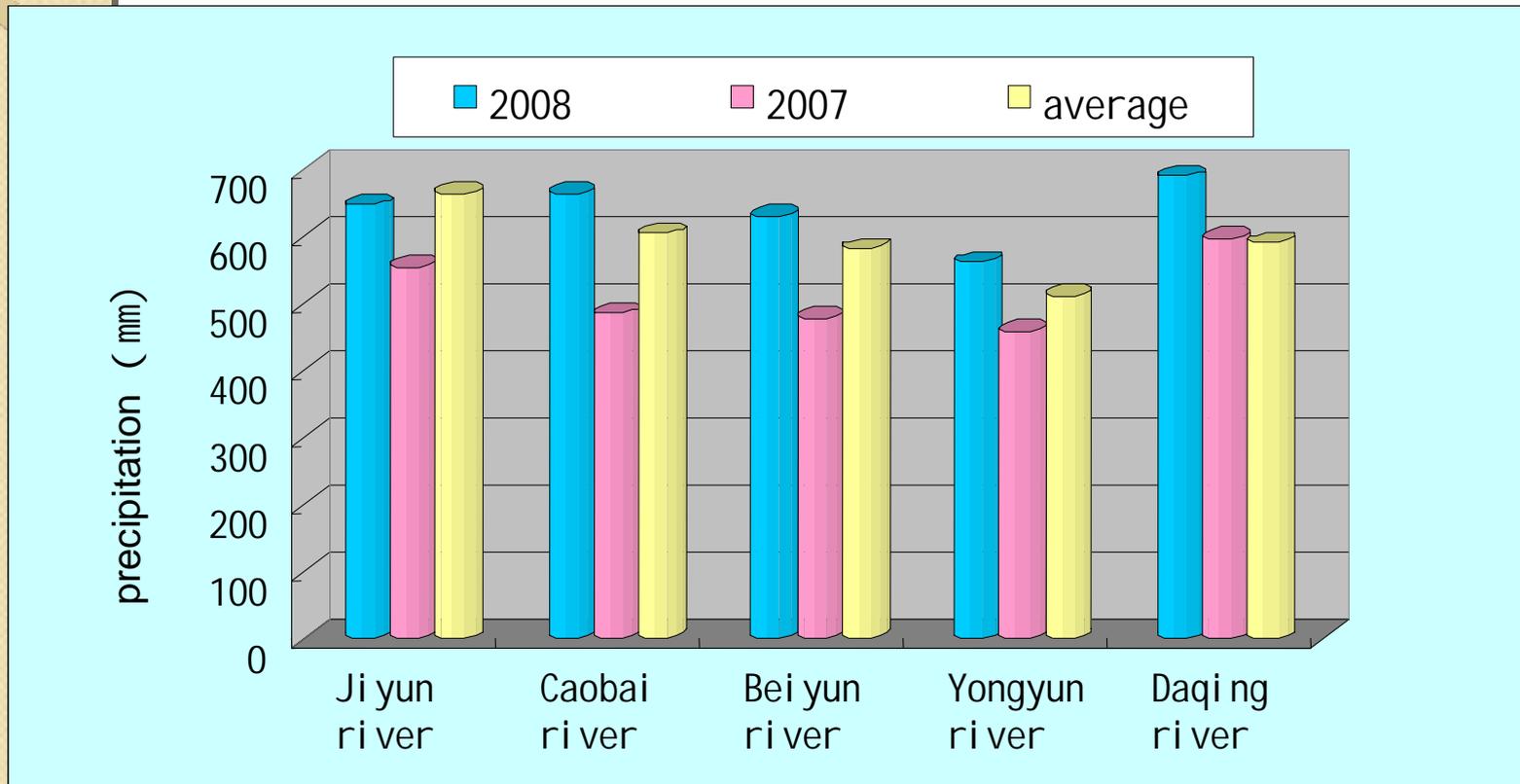
- Figure 1 GDP and growth rate of 2005-2009 in Beijing



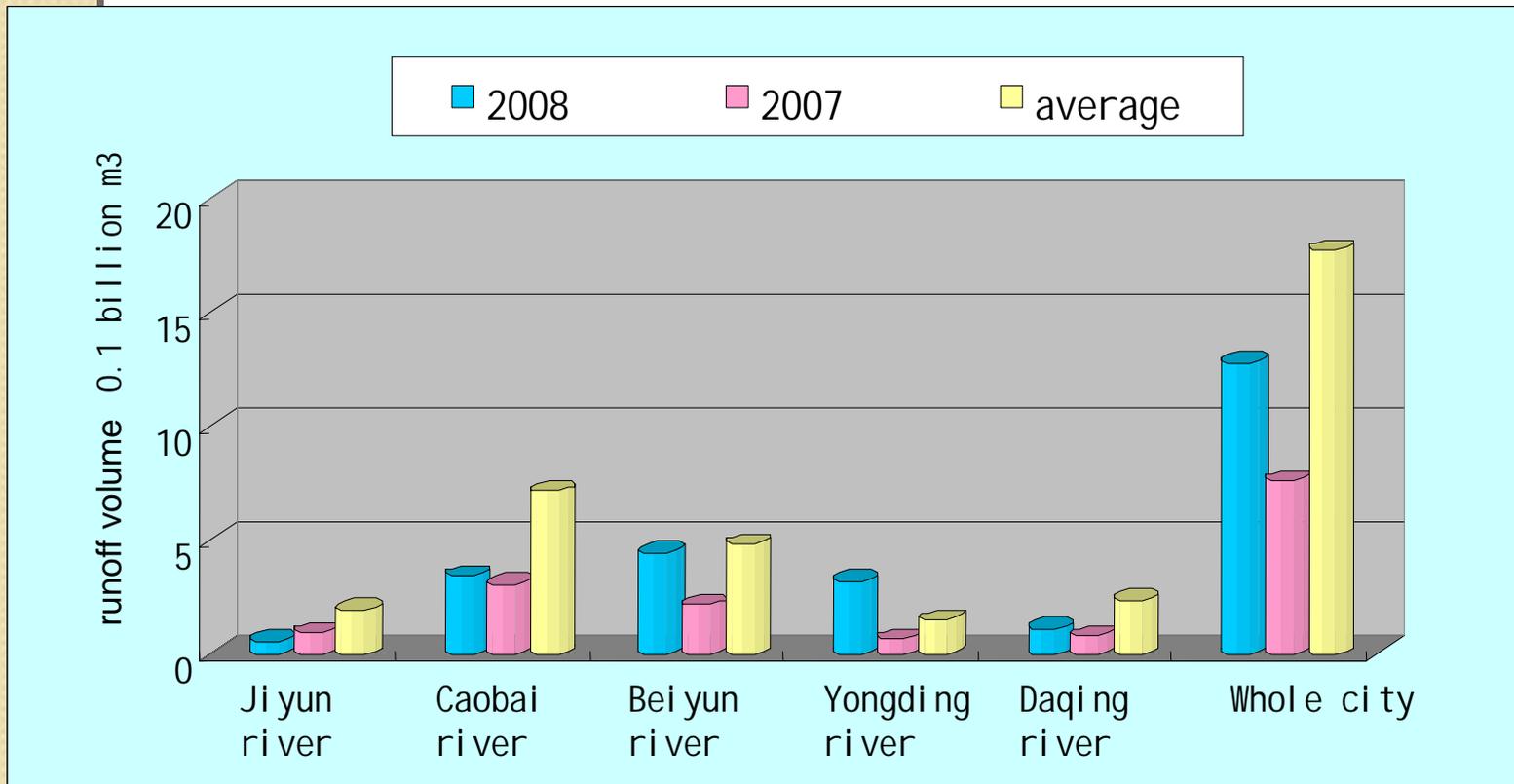
- There are five river systems across Beijing which is Jiyun river, Caobai river, Beiyun river, Yongding river and Daqing river.



The annual average precipitation is 638mm.



The surface water quantity is about 1.279 billion m³. From the river system, Beiyun river has the largest runoff volume which is 0.446 billion m³ and Jiyun river has the lowest precipitation which is 0.053 m³.



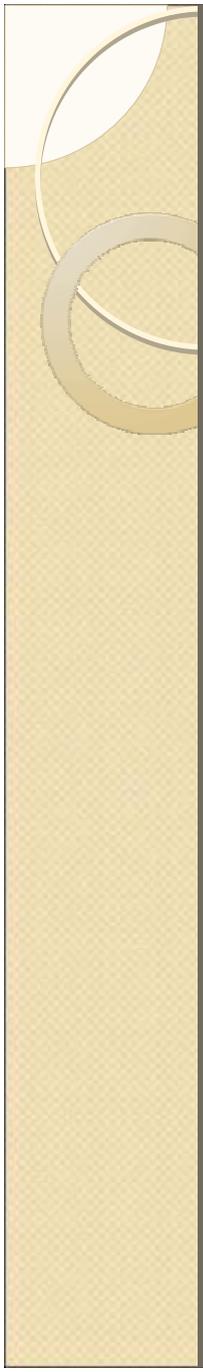
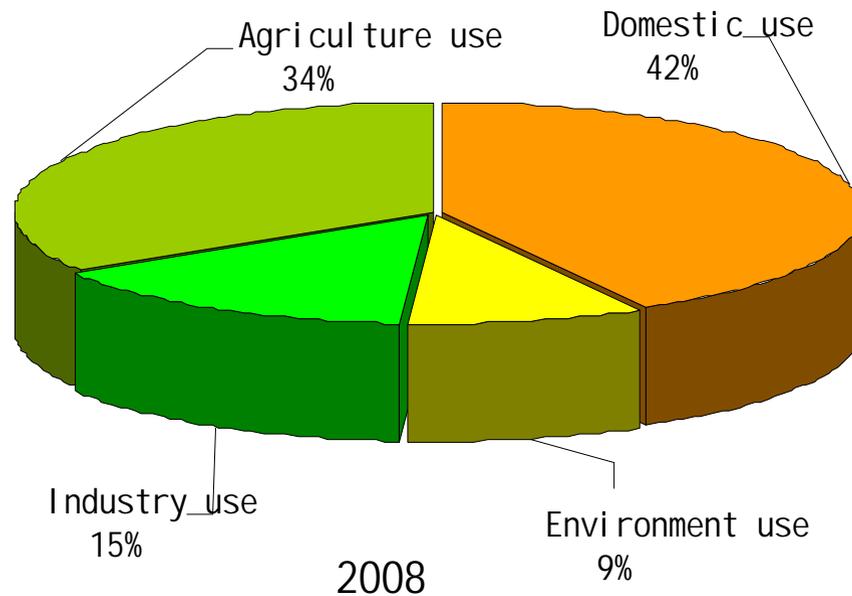
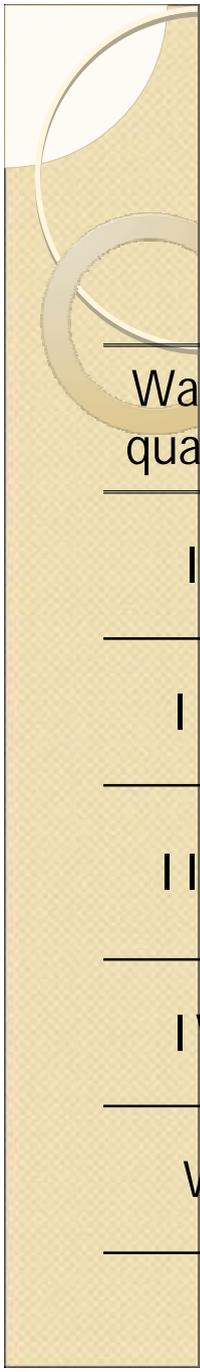
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- The volume of available water of 18 medium and large reservoirs in 2008 is 0.755 billion m³. Miyun and Guangting reservoir are the two important water sources for Beijing. The available water volume of Miyun reservoir is 0.468 billion m³ and that of Guangting is 0.08 billion m³.
 - The volume of groundwater is 2.142 billion m³.

Table 1 total quantity of water resource of Beijing in 2008(0.1 billion m³)

River system	Area (km ²)	annual precipitation	Surface water	groundwater	Total amount
Jiyun river	1300	8.42	0.53	3.02	3.55
Caobai river	5510	36.61	3.44	3.01	6.45
Beiyun river	4250	26.83	4.46	7.61	12.07
Yongding river	3210	18.07	3.22	3.52	6.74
Daqing river	2140	14.77	1.14	4.26	5.40
City	16410	104.70	12.79	21.42	34.21

For the water resource use, the total amount is 3.51 billion m³ which includes the 1.47 billion m³ for domestic use, 0.52 billion m³ for industry use, 1.2 billion m³ for agriculture use and 0.32 billion m³ for environment use.





Water
quality

scope

I

source water, national nature protection area

II

first level conservation zone of surface water source area for centralized living drinking water

III

second level conservation zone of surface water source area for centralized living drinking water, fishery water, swimming area

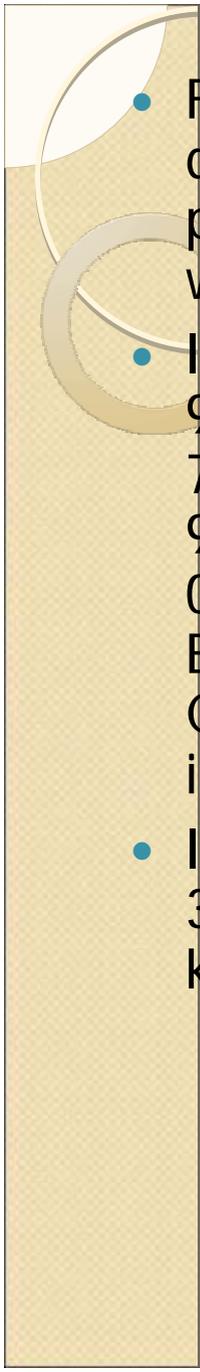
IV

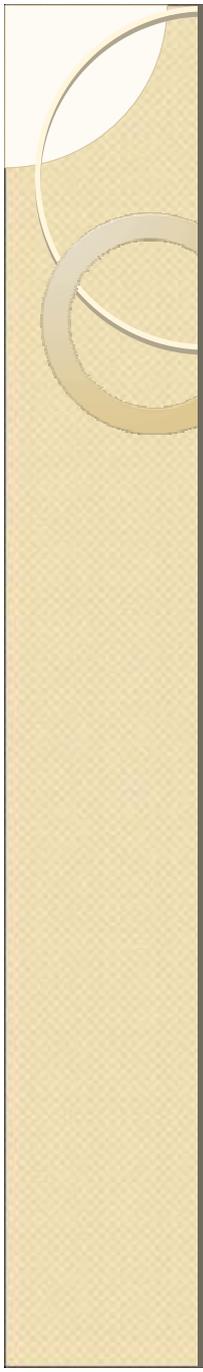
water for general industry, entertainment which is not touched directly by human body

V

water for agriculture, and landscape

- 
- The water quality of river is still needed to be improved. 43% river water has reached the level II water quality standard, 8% river reached the level III standard, 3% river reached the level IV standard, 1% river reached the level V standard, and 45% river water quality is under the level V standard in 2008.
 - The water quality of reservoir is relatively better. Only Guangting reservoir's water quality reach the level IV standard, the other reservoir reached the level II or III.
 - For the groundwater, we have divided to two categories. The 57% shallow seated groundwater quality reached the level III and the other is between level IV and level V. for the deep seated groundwater, 80% of that reached level III.

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- From the above basic information, we can see that the water quality in Beijing should continue to be improved. Of course, the pressure of urbanization has made it more difficult to improve the water quality.
 - In 2007, the total amount of industry wastewater discharged is 91.32 million ton and COD discharged in industry wastewater is 7000 ton. The total amount of domestic wastewater discharged is 986.82 million ton and COD discharged in domestic wastewater is 0.1 million ton. The domestic wastewater amount discharged of Beijing was relative high compared with that of most provinces in China. Beijing has done a lot of work such as developing infrastructure to improve the wastewater treatment ratio.
 - In 2008, the treatment capacity of wastewater has increased to be 3294 thousand m³ per day, the length of sewage pipeline was 4458 km and the wastewater treatment ratio was 78.9%.



measures to prevent the pollution and control the water quality of water source

Water quality standard

- “Discharge standard of water pollutant” issued by Beijing environmental protection Bureau included maximum concentration discharged of 75 pollutant.
- “Environmental quality standards for surface water” issued by Ministry of Environmental Protection includes 24 basic items of surface water environmental quality standard, 5 supplement items and 80 specific items for surface water source area for centralized living drinking water.
- “Quality standard for ground water” includes classify, monitoring method, assessment of ground water.

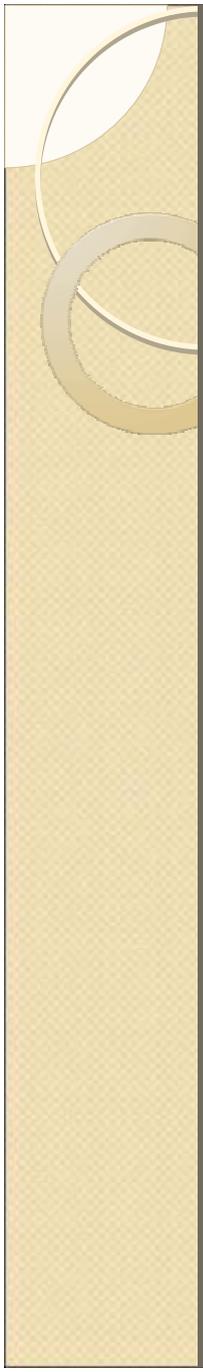
water quality monitoring

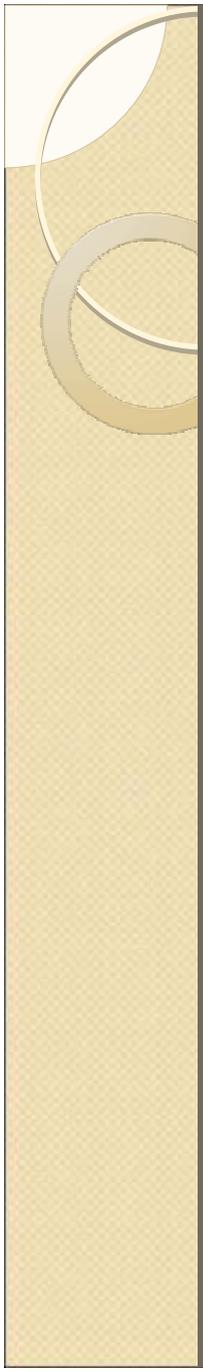
- “Technical specifications for environmental monitoring of groundwater” issued by Ministry of Environmental Protection includes monitoring net design, monitoring items, analysis methods and so on.
- In 2008, the number of water quality monitoring site of surface water is 221, which will monitor 104 river segment, 22 lakes and 18 reservoirs. The assessment of water quality will be based on “Environmental quality standards for surface water”.
- In 2008, Beijing government set up 307 monitoring well to assess groundwater and monitor twice. 181 monitoring well was used for shallow seated groundwater and the rest monitoring well was used for deep seated groundwater. The assessment of water quality will be based on “Quality standard for ground water”.

Other measures

- According to the use of water source, the water source function district was established. For example, the Yongding river system was be divided to many segments and every segment will be put a class which would be the evaluation standard in future.

water body name	Function of water body	Water quality
Guangting reservoir	first level conservation zone of surface water source area for drinking water	
shanxi segment of yongding river	first level conservation zone of surface water source area for drinking water	
Pingyuan segment of yongding river	Supply region for groundwater source	

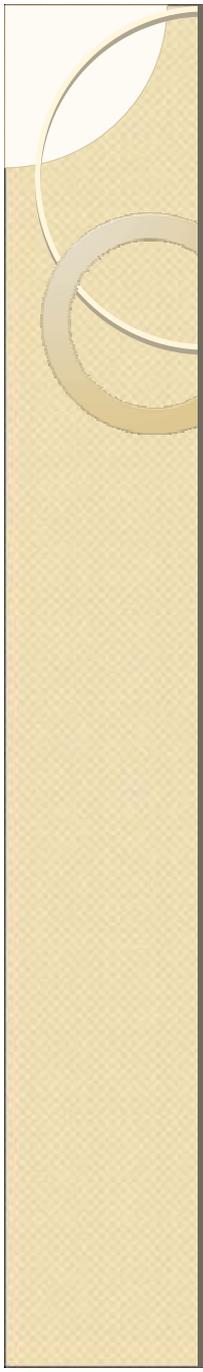
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- Set up the regulation on drinking water source protection area pollution prevention and control. With the regulation, the government could set water source protection area and water quality of protection area. At the same time, the forbidden behavior in the protection area was also defined in this file.
 - The Prevention of water source problem was considered as a major measure. “ecologic restore, ecologic control and ecologic conservation” was implemented at the mountain land of reservoir upstream. And the government also controlled wastewater, solid waste, toilet, environment and river course at the same time. The ecologic clean small river was expected to be constructed.



issues of drinking water source protection

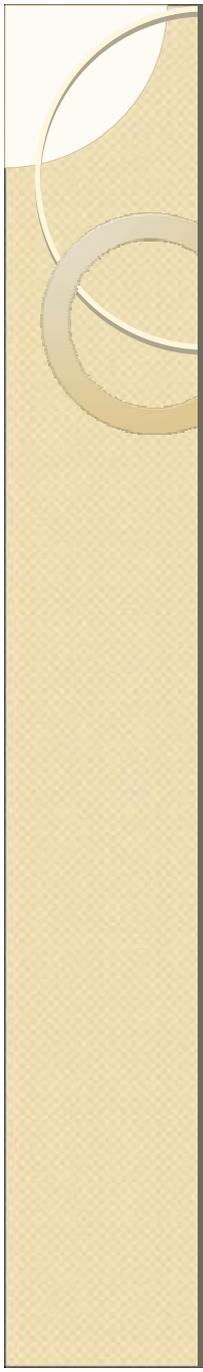
Management mechanism

- The management of water source involved with department of environment protection, water service, city construction, sanitation and so on. in China. So it lead the management problem on water source. Each department has part power to manage water source, which made there was not a systematic mechanism.



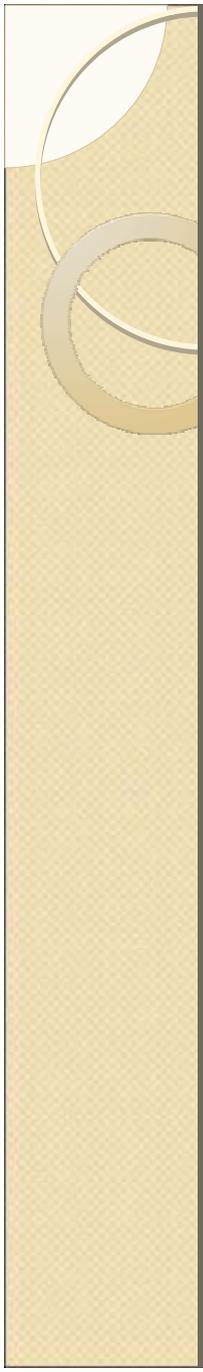
village pollution

- From the supply water information above, we could see that the suburb is the key area to provide drinking water in Beijing. Due to the mass use of chemical fertilizer and pesticide in the upstream region of water source protection area and mass discharge of excrement of animals, the self-restraint capacity of water source is insufficiency.



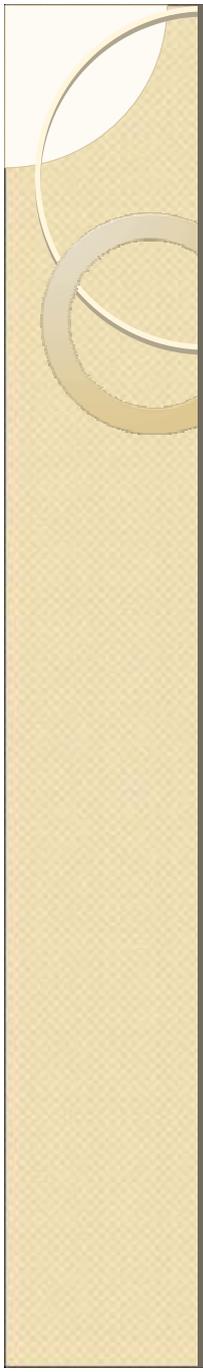
Infrastructure construction

- The discharge and collection system of wastewater and rain water is not perfect. The surface flow is the major drain mode of village water. The sewage treatment ratio is low and the wastewater affected the surface and groundwater source by entering the canals and river course.



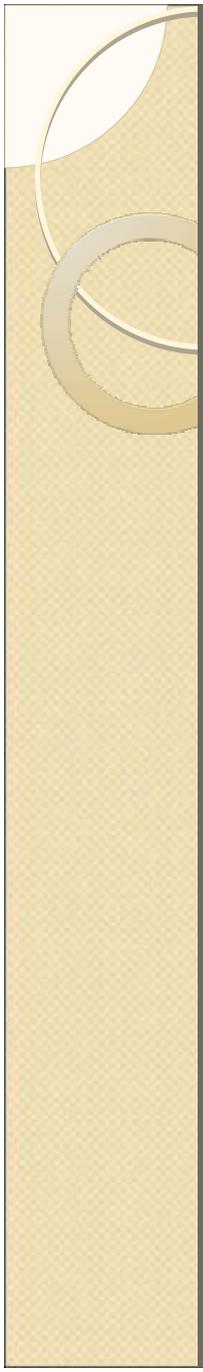
Policy and legislation

- The supervision and management should be strengthened by policy and legislation. At current stage, because lack of powerful regulation, the illegal phenomena such as dumping solid waste and discharging waste water to protection area often appear. Many wastewater treatment equipments run just for some time. The major reason is that the illegal cost is lower than treatment cost.



Environmental awareness

- In Beijing, most citizen have has good environmental awareness. But in village, some people still thought that the environment has no relation with him. So they construct toilet near the water source and do something to pollute water. We should improve their awareness through different activities by government, media and other department.



Thanks for *your* attention!