Impact of Water-Saving Renovation Projects on the Environment

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Abstract. Water is an important raw material for industrial and agricultural production, and it is also a precious natural resource for human survival. Without water, there is no life, there is no good natural environment, and social and economic sustainable development cannot be achieved. The world today has entered an era of water stress and a global water crisis has emerged. Compared with other countries in the world, China's water resources and water environment are more worrying. First, China's total water resources are seriously in short supply. China's per capita water volume in 1998 was 2251 cubic meters, which was only one quarter of the world's per capita level. It is predicted that when China's population increases to 1.6 billion in 2030, the per capita water resources will drop to 1760 cubic meters. Second, the spatial and temporal distribution of water resources in China is also very uneven. The absolute amount of water resources is less in the west and more in the east, while the per capita share is less in the east and in the west, and is distributed in two reverse degrees. Third, China's water environment is also deteriorating, resulting in a decrease in the availability of water resources. With economic development, population growth, and urbanization, China’s demand for water resources will increase further in the future. How to resolve the contradiction between insufficient water supply and increasing demand has become a major issue to be studied and resolved urgently.

1. Necessity of water-saving reconstruction project construction

1.1. Promote agricultural water-saving technologies

Agricultural water accounts for 80% of China's total water consumption, but the waste of agricultural water is also the most serious. Irrigation water accounts for 70% of agricultural water. More than half of the water is leaked in the middle of the irrigation process, and the use of diffuse irrigation will waste another 30 to 35%. In the future, we should vigorously develop water-saving irrigation technologies, transforming from traditional extensive irrigated agriculture and dryland rain-fed
agriculture to water-saving and efficient modern irrigation agriculture and modern dryland agriculture. For irrigated agricultural areas, water-saving irrigation technology should mainly improve ground irrigation [1-4], and promote ground-based irrigation water-saving technologies suitable for China's national conditions (such as flat land, furrow irrigation, intermittent irrigation, etc.). In the northern canal irrigation area, a combined irrigation method is implemented, and sprinkler irrigation and drip irrigation can be developed in areas where conditions permit. Water conservancy projects and agricultural technology should be coordinated to implement a water-saving rotation system to promote cultivation, fertilization, and drought-resistant high-yield and high-quality varieties. For dryland agricultural areas, modern dryland agricultural technologies such as rainwater harvesting, storage, and irrigation should be fully utilized in accordance with the principle of complementary floods and droughts, and basic farmland construction focusing on slope-to-ladder transformation should be carried out. Various measures should be taken to reduce ineffective evaporation and improve soil Organic matter, build soil reservoirs and increase water storage. At the same time, according to the water demand characteristics of different crops and local water resources conditions, adjust the crop layout, optimize the planting structure, and breed excellent varieties.

1.2. Promote industrial water-saving technologies
Industrial production is also a large user of water. At present, the water consumption per 10,000 yuan of industrial output value in China is 5-10 times that of developed countries. There is still a lot of potential to compress industrial water consumption. To reduce industrial water consumption, we can start from the following three aspects: (1) Reform the production water process to strive for less water. For example, the water consumption per unit of steel production in China is several times or even dozens of times higher than the advanced level abroad. If an oxygen converter is used instead of the old open hearth furnace, not only the steel output can be increased, but the water consumption can be reduced by 86 to 90%. (2) Improve the reuse rate of water resources. The water reuse rate of foreign advanced industrial enterprises is as high as over 90%, while most of the water used by Chinese enterprises is discharged as waste water after a single use. Although the industrial water reuse rate in some of China's water-deficient large cities is high, the regional differences are very large, and further tapping potential can save a lot of water. (3) Explore the technology of using seawater and brackish water. Due to the lack of fresh water resources, coastal cities can use seawater as industrial cooling water and toilet flushing water, and North China and Northwest China can develop brackish water resources.

1.3. Promote water-saving technologies for urban domestic water
Urban domestic water is an important aspect of water consumption and another important source of water pollution. According to the data of the Urban Water Resources Center of the Ministry of Construction, one third of China's urban domestic water has been lost in vain due to the phenomenon of running, running, dripping and leaking in the course of water supply and use. Due to the aging and inferior quality of tap water pipelines in many cities, the amount of water lost due to pipe leakage in China each year accounts for more than 20% of the water supply in the tap water pipeline network, reaching 6 billion cubic meters. Facing this situation, cities in China should transform water supply networks through water-saving technologies, develop and promote water-saving appliances, publicize and encourage water-saving, and create water-saving cities.

1.4. Develop, introduce and absorb advanced pollution control technologies
In addition to saving water in agricultural, industrial and domestic water use, the development and introduction of advanced pollution control technologies and the improvement of sewage treatment rates and reuse rates are also an important way to save water. Facing the increasingly serious problem of water environment pollution, China should first strategically change the "end-of-control" to "source control". Actively develop and introduce advanced foreign pollution control technologies, increase the depth of urban sewage treatment, and develop urban sewage as a "second source of water". This
reclaimed water can be used as city water, industrial cooling water, environmental water, ground washing water and farmland irrigation water. This is an inevitable requirement for protecting the quality of water supply and improving the water environment, and is also the fundamental way to achieve coordinated development of urban water resources and the water environment. Post-project evaluation refers to the project evaluation using the actual construction cost and operating cost-effectiveness of the project after the project has been completed, accepted and put into operation for a period of time. This evaluation compares the technical and economic requirements of project establishment and design with the technical and economic requirements of the project to analyze the achievements and problems in the decision-making, implementation and operation of the project, evaluate the actual effect, benefit, role and impact of the project, judge the degree of achievement of the project goals, and summarize experience lessons learned, proposed construction for guiding proposed projects, adjusting projects under construction, and improving existing projects, and for revising project policy guidelines to provide better support for future project decisions.

The project environmental impact assessment refers to a comprehensive assessment of the various impacts of the project's implementation and operation on the natural and social environment. It is to analyze the possible impact of the project on the environment on the basis of full investigation and research before project implementation, and then make a comprehensive scientific quantitative forecast, and finally use the results of various project environmental impact analysis to guide the decision-making and implementation of the project work. The impact of the project on the natural environment includes the impact on ecology, atmosphere, water, oceans, land, forests, grasslands, etc., and the impact of the project on the social environment includes the project on social culture, cultural relics, minority cultural customs, and scenic spots and other aspects. The impact assessment of the project on the natural environment is mainly to analyze and evaluate the environmental damage, such as wastewater, exhaust gas, solid waste, and noise, caused by various hazardous waste discharged to the natural natural environment due to the implementation and operation of the project. The impact assessment of the project on the social environment is mainly to analyze and evaluate the deterioration of the social and cultural atmosphere, the loss of cultural heritage, the destruction of minority cultures, and the unemployment, displacement, and moral loss caused by the implementation and operation of the project.

2. The adverse impact of the project on the environment

Every project has its own advantages and disadvantages in terms of environment. The project will have many adverse effects on the environment in the future, and even destroy the surrounding environment. Especially when the environmental damage exceeds its own resilience, it will in turn affect existing projects and even bring unpredictable disasters to humans. Therefore, in order to avoid or reduce the occurrence of such disasters, it is necessary to analyze the adverse impact of the project on the environment and take effective protective measures in a timely manner. The following is my analysis and introduction of the adverse impact of the project on the environment.

(1) The treatment of the solid waste after the project maintenance was not considered after the project transformation and operation. These solid wastes will occupy a lot of land, which will not only cause waste of arable land, but also cause certain environmental pollution.

(2) After the project transformation and operation, it was found that there is no drainage ditch beside the canal along the canal. During heavy rains during the flood season, mud will flow into the channel and cause silt deposition, which needs to be removed regularly, otherwise the river bed will be continuously improved.

(3) After the completion of the water-saving renovation project, it is bound to promote the development of local industries. Without effective water treatment measures, it will cause water pollution and worsen the local natural ecological environment.

(4) The project does not involve the classified use and treatment of water. The mixed use of industrial water, agricultural water and domestic water will have a certain impact on water quality.
(5) The necessary domestic waste treatment projects are not set up in the residential areas along the canal, which may lead to the blockage of the channel. Some harmful domestic waste will also cause water pollution, which will affect the ecological environment in this area.

(6) The project will cause climate change in the region, cause the spread of biotic and abiotic diseases, and affect the health of the population.

3. Safe maintenance of water conservancy projects
If the life cycle of the project can be long, the safety of water conservancy projects must be better maintained so that he is not severely polluted. The water-saving project was built to meet the needs of agricultural people in the area and protect the water resources to a certain extent, the sustainable development of the country will bring about huge social benefits, improve people's living standards, promote the development of the national economy, and promote the construction of socialist modernization. But how to ensure that the life cycle of the project is longer? This is not only a question of the quality of the project itself, but also the active maintenance of the relevant departments and the active cooperation of the residents, so as to maintain the safety of the water conservancy project and prevent it from being polluted. According to this project, the following suggestions are made:

(1) The afforestation work around the reservoirs should be strengthened to prevent soil erosion caused by soil erosion and maintain good water quality.

(2) After the project reconstruction and operation, it was found that there is no drainage ditch beside the canal along the canal. During heavy rains during the flood season, mud will flow into the canal and cause silt deposition, which needs to be cleaned regularly at a high cost. Therefore, it is recommended to improve the project later.

(3) Strengthen the publicity of water resources protection, formulate water-saving policies in irrigation districts, and increase the water-saving awareness of residents in irrigation districts.

(4) With the development of regional industrial and agricultural production, water pollution will be a major hidden danger in the future of the project. Therefore, the prevention and control of pollution of water resources should be mentioned on the work agenda. The irrigation district government should strengthen the control of domestic garbage and domestic and production sewage discharge by legislation.

(5) The project should increase the sewage separation treatment project, and treat the production, domestic and agricultural water to different degrees, so that water resources can be recycled and ensure the sustainable development of water resources.

(6) Strengthen business management, increase investment in modern management methods, and improve management. Therefore, in order to ensure the sustainable development of irrigation district management, it is recommended to use modern management equipment; establish an automatic hydrological observation and forecasting system; establish a computer network and database for institutions; improve the measurement level; carry out reservoir optimization dispatching, etc., and actively train personnel to bring management level greatly improved.

4. Conclusion
The construction of water-saving irrigation projects is a general trend and an inevitable trend of China's economic and social development. With the rapid development of the industrial economy, agricultural water consumption has always remained high, making the available water resources of our country unevenly distributed and affecting the production of various industries. The construction of high-standard farmland and water-saving irrigation projects is conducive to the further development of China's economy and society and the balance of water use in various industries. At the same time, it is necessary to strengthen environmental impact assessment and ensure environmental safety while constructing water-saving irrigation projects.
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