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Analysis of the Influence of Water Conservancy and Hydropower Projects on the Ecological Environment

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Abstract: The construction of a water conservancy project brings a lot of convenience to our life at the same time, it also brings a series of influences to our life. First of all, the increase in the number of water conservancy projects, and then the impact on the ecological environment is huge, it is easy to cause damage to the natural ecological environment and affect people's lives. The following is a brief analysis of the impact of the construction of water conservancy projects on the ecological environment, and some solutions to improve the existing situation.

Keywords: Water conservancy and hydropower engineering; Ecological environment; Environmental protection

Introduction

Water conservancy and hydropower engineering is the key engineering in our country, and now it is in a period of rapid growth. However, the development of water conservancy and hydropower projects will also lead to corresponding problems in the ecological environment. To avoid the destruction of the ecological environment caused by the construction of a large water conservancy and hydropower project, it is necessary to evaluate the work before the construction of the water conservancy and hydropower project, that is, to assess the possible impact on the environment after the construction. Nowadays our country's development strategy is sustainable development, higher gains can be obtained in the development of water conservancy and hydropower engineering, but the water conservancy and hydropower engineering construction will be damaging to the environment to a great extent, so the coordination of the environment and development should be achieved as far as possible. It is necessary to develop water conservancy and hydropower projects with as little impact on the ecological environment as possible so that the two can coexist. This paper will detail the impact of water conservancy and hydropower projects on the environment, the impact of water conservancy and hydropower projects on the social environment, and the countermeasures to solve these impacts.

1. Impact of water conservancy and hydropower project construction on the natural environment

1.1 Impact on natural climate

When the construction of water conservancy projects is completed, it will bring certain changes to the local ecological environment, which is manifested in great changes to the local temperature, climate, and precipitation. Animals and plants growing in the upper reaches will also have a series of impacts due to the rising water level, such as the migration of fish and the rampant growth of algae. In addition, the pollutants in the upper reaches will accumulate under the water conservancy project, and these nitrogen and phosphorus organic substances will seriously degrade the water quality and cause the death of animals in the upper reaches. The dead animals in the water will worsen the water quality.

1.2 Impact on the original hydrological conditions

Most water conservancy projects are built on natural river channels, which destroy the ecological environment that rivers have evolved into over a long period, make the local forms of rivers homogenized and discontinuous, and thus change the diversity of river ecological environment. The reservoir not only stores the flood in flood season, but also blocks the base flow in non-flood season, which often causes the water level of the downstream river to drop significantly or even cut off the flow, and causes the surrounding groundwater level to drop, resulting in a series of environmental and ecological problems: the downstream natural lakes or ponds cut off the source of water and dry up; The groundwater level of the downstream area declines; The decrease of river flow in estuaries leads to silting, resulting in seawater backfilling; Due to the reduction of river flow, the self-purification capacity of the river is reduced; Most of the reservoirs based on power generation serve as the peak load in the power system, and the daily variation of the discharge volume is large, resulting in greater changes in the water level of the downstream river, which has a greater impact on shipping, irrigation water diversion level and fish culture; When the water level of the downstream river of the reservoir drops significantly and even the flow is cut off, it is bound to cause the deterioration of water quality.

1.3 Impact on soil environment

The construction of water conservancy and hydropower projects will have a certain positive impact on local farmland irrigation, but the large-scale interception and flood control will also have a certain adverse impact on the water structure of local farmland and soil fertility, resulting in the decline of soil fertility, resulting in a large area of saline-alkali land. This damage to the soil is fatal, and it is difficult to improve the situation.

The construction of water conservancy and hydropower projects will also have a certain impact on the fish in the river. Generally, there are a large number of migratory fish in the river, and these fish need to reproduce in this way. Therefore, the construction of water conservancy projects will have a great impact on the reproduction of fish in the river, and it is very likely to reduce the number of fish in the river. For example, during the construction of the Gezhouba Hydropower Station, although the migration problem of Chinese sturgeon has been solved, different methods need to be adopted for transformation in different places, different regions, and different hydrological characteristics. All these problems need to be carefully calculated to avoid any impact on fish.

2. Influences on the human society

2.1 Impact on the surrounding living population

Water sources will bring a lot of infectious diseases, therefore, in the process of water conservancy and hydropower project construction, if the water source is not effectively protected and disease prevention, it is likely to cause water source pollution and bring a series of infectious diseases to the surrounding living population. These problems have a great impact on the surrounding people, so we should focus on these problems in the process of construction.

2.2 A large population of immigrants

China has limited farming land. The construction of the reservoir is bound to flood the local farmland land, and after the immigration, residents have to find resettlement, and distribute of land, in this process will inevitably be deforestation, which strengthens the contradiction between people and land in our country, not only that, if the disposal is not reasonable, will also lead to soil erosion and other problems in the moved land.

3. Some suggestions for the construction of water conservancy and hydropower project

3.1 Fully consider the impact on the ecological environment

To reduce the impact on the ecological environment in the process of water conservancy and hydropower construction. First of all, the protection of the ecological environment should be fully taken into account at the beginning of the construction. At the time of design, the surrounding environment of water conservancy and hydropower projects should be fully considered, and the unity of social benefits, environmental benefits, and economic benefits can be realized after the construction is completed. Water conservancy and hydropower projects should pay attention to the construction personnel and the surrounding people to carry out environmental protection publicity so that they can realize the importance of environmental protection, at the beginning of the construction should be public opinion collection, increase social awareness of participation, so that water conservancy and hydropower projects can serve people, but also give full consideration to environmental protection.

3.2 Establishment of an environmental impact assessment system

Environmental impact assessment system refers to the construction of a project that may affect the environment in a certain area, before planning or other activities, the possible impact on the surrounding environment is investigated, predicted, and evaluated, and the corresponding program is formulated. Before the construction of a water conservancy project, it is necessary to investigate the environmental situation first, to investigate the local climate, environment, hydrology, water quality, soil, aquatic organisms, population, etc. Secondly, according to the results of the investigation, environmental impact prediction is carried out to predict the possible impact of the proposed water conservancy project construction on the local environment and predict the degree of impact. Finally, the construction of the proposed water conservancy project is comprehensively evaluated, from the whole evaluation of the elements and processes of the proposed project may change the environment and social environment and the degree of change, to provide a basis for comparison and selection of schemes.

3.3 Protection during the construction process

In the process of construction, the construction of water conservancy and hydropower projects will also cause certain damage to the surrounding environment. Therefore, in the process of construction, we should protect the environment, pay attention to the changes in the environment, and test the aspects of noise control and water pollution to reduce environmental damage. In the construction process, once it is found to cause serious damage to the environment, timely stop, to avoid further damage to the environment. During the construction process, the waste gas and wastewater generated should be treated uniformly to reduce environmental pollution. In the process of construction, the

construction scheme should be rationally planned, as far as possible to meet the public's domestic water consumption during the construction process, taking into account irrigation and power generation, the balance of domestic water consumption, and providing scientific standards for the construction of water conservancy and hydropower projects. Finally, a perfect immigration policy should be established to reduce immigration disputes and ensure the completion of the project.

4. Conclusion

In the construction and operation of water conservancy and hydropower, we should conscientiously implement the relevant laws and regulations of the state on environmental protection, do a good job of environmental protection in the construction area, strictly implement the measures and requirements in the environmental assessment report and environmental protection design, and prevent and slow down the environmental pollution and ecological damage caused by the construction and operation of the project. With the development of environmental protection work and the strengthening of people's concept of environmental protection, people have realized the importance of protecting the environment and maintaining ecological balance for human survival and sustainable development. In the development and construction of water conservancy and hydropower projects, it is necessary to innovate the model, adhere to the scientific concept of development, and implement various environmental protection measures, so that water conservancy and hydropower projects can become a system project of saving resources, ecological protection, improving people's living standards and promoting the harmonious development of regional economy and society.

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