

Feasibility and Comprehensive Benefit Analysis of High-Standard Farmland Construction

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Abstract

Implementing the national food security strategy under the new situation, solidly promoting the storage of grain in the land and the storage of grain in technology, continuously improving the comprehensive grain production capacity and supply guarantee capacity, and sticking to the bottom line of the strategy of "basic self-sufficiency of grains and absolute security of rations are necessary for our country in the new era." Adhering to the mission, high-standard farmland construction has become an important way to increase grain production capacity and improve the quality of cultivated land.

Keywords

High-standard Farmland; Water-Saving Irrigation; Feasibility; Land Consolidation.

1. Introduction

China's grain harvests have been bumper year after year, but the foundation of food security is still unstable, and structural contradictions still exist. With the increase of population, the advancement of urbanization, and the upgrading of food consumption, the demand for food will maintain a rigid growth for a long time, and the supply of food production will face hard constraints of arable land and water resources, a large outflow of rural young and middle-aged labor, and increasing uncertainty in foreign imports. In the future, food supply and demand will remain in a tight balance for a long time.

Actively support the construction of high-standard farmland by new agricultural business entities, focusing on the construction of irrigation channels from the field to the end of the field, and mechanized production roads and other facilities that are urgently needed by small farmers. Promote small and large parcels of land. Vigorously develop high-efficiency water-saving irrigation. Provinces should develop high-efficiency water-saving irrigation according to the assigned tasks of high-efficiency water-saving irrigation area, combine high-standard farmland construction and adapt measures to local conditions, and specify the construction sites and areas for high-efficiency water-saving irrigation measures; adhere to the principles of government overall planning, multi-party construction, local conditions, and assessment and incentives , implement projects and funding sources for the development of high-efficiency water-saving irrigation, and encourage local governments to appropriately raise investment standards for the development of high-efficiency water-saving irrigation. It is necessary to actively cooperate with the comprehensive reform of agricultural water prices, and promote the realization of new high-efficiency water-saving irrigation areas that meet the measurement conditions and water-saving requirements.

2. Project Area Overview

The project area is located in Qishan County, with geographical coordinates between E107°33'–107°55', N34°07'–34°37', 53.0km long from north to south, 30.5km wide on average from east

to west, with a total area of 856.45km². The construction project area belongs to the continental monsoon climate in the warm temperate zone, semi-humid and semi-arid, with an average temperature of 12.0°C for many years. The project area has abundant sunlight and sufficient heat, with an average annual sunshine hours of 2064.8 hours, a sunshine rate of 47%, and an average frost-free period of 214 days. The annual average evaporation is 895.6mm, the drought index is 1.33, the permafrost depth is about 0.35m, and the frost-free period is 214 days. Most of the existing farmland water conservancy facilities in Qishan County were built in the 1960s and 1970s, which played a huge role in promoting agricultural production and rural economic development in Qishan County. The total population of the project area is 13,259, the total cultivated land area is 24,000 mu, and the planned and implemented cultivated land area is 24,000 mu. Currently, wheat, corn, cherries and apples are planted. The project area belongs to the category of basic farmland protection areas, with square fields and fertile land. However, due to the low supporting rate of farmland water conservancy infrastructure, serious aging and damage, and narrow roads, the potential of this piece of farmland is seriously restricted. There are some cash crops in the current situation. The main obstacles are the low matching rate of the internal irrigation system buildings, the old and aging buildings, the poor irrigation and drainage of some fields, and the inconvenience of mechanical operation. material resources, high-yield, high-efficiency and high-standard farmland can be built.

3. Project Area Infrastructure

3.1. Status Quo of Key Water Conservancy Projects

There are 36 wells in the project area, 10 of which need to be repaired and reconstructed, and the rest are in normal use, with a depth of 120-180m and a water output of 32-40m³/h. The current irrigation methods are mainly "well water-canal irrigation". The field canals in the project area have been constructed for a long time and the construction standards are low, most of which are earth canals. After decades of operation, the canal embankments have been severely hollowed out, diverted or even unusable. The canals lack unified management and deployment, resulting in serious siltation of the existing channels. Landfill, etc., resulting in channels unable to divert water normally and low water utilization efficiency. At present, the matching rate of ditch buildings is low, only about 40%, and they are aging and in disrepair, especially the lack of field water conservancy supporting projects. Most bridges, culverts, gates, and stations have become dangerous bridges, Dangerous culverts, the integrity rate of supporting buildings is low, and some crops often miss the water demand period, which can no longer meet the needs of modern and efficient agricultural production. In addition, the irrigation efficiency of the irrigated area is not good, resulting in low enthusiasm of farmers to irrigate, the channel gradually loses its function, the farmland is not irrigated, and the water productivity is low.

3.2. Current Status of Field Engineering

There are basically hard roads between the villages in the project area, so the external traffic in the project area is very convenient. In recent years, the project area has successively built sand and petrochemical field production roads, but the width of the field roads is only 2-3m, which cannot meet the needs of mechanical farming, and there are many dirt roads with poor road conditions, life is very inconvenient.

3.3. Status Quo of Farmland and Forest Network Greening

In the project area, villages, field roads, and trunk roads have been fully greened and afforestationed, and farmland and forest network have been basically realized. However, in recent years, the trees have begun to age and become infected with diseases and insect pests. The frequent occurrence of natural disasters directly affects the yield of crops. The forest

network is concentrated around the village, and the main tree species are willow, Chinese locust, etc.

4. Feasibility of Project Construction

The country's macro situation is conducive to the implementation of high-standard farmland construction projects. Every year, the Central No. 1 document places and emphasizes "strengthening the construction of agricultural water conservancy facilities" as an important task. The CPC Central Committee strengthened the policy of supporting and benefiting farmers, laying a solid foundation for the implementation of high-standard farmland construction projects in our county. At present, the scientific planting level of the masses in the project area is relatively high, which has laid a good foundation for the project area to further optimize the industrial structure and vigorously promote the construction of high-standard bases. Especially this year, some small science and technology demonstration sites have played a certain demonstration role, which has played a good driving role in the future planning and construction of the project area, and ignited the enthusiasm of the masses to participate in the development. In recent years, the construction practice of high-standard farmland in this area and the neighboring areas has made the majority of cadres fully realize that the high-standard farmland construction project is a "moral government project" and "people's heart project", which can significantly improve farmland production conditions. Develop, want to develop, voluntarily raise labor and funds, devote themselves to development and construction, the enthusiasm for development is unprecedentedly high, and the project construction has a good mass foundation. This planning mainly involves new drilling of machine wells, channel reconstruction, popularization of high-efficiency water-saving irrigation technology and construction of field machine farming roads, which will directly benefit farmers, increase grain output and increase farmers' income, which is in line with the actual situation of the project area. The main rural roads in the project area have been formed, and the external transportation is convenient; the rural network construction has basically been in place, and can be directly introduced, which can meet the demand for electricity, and the water supply and communication conditions are excellent; the supporting funds for farmers are labor instead of capital, which can fully meet the requirements of engineering construction, will not affect the construction progress of the project. The project area has always been dominated by agricultural production, with no industrial pollution and environmental pollution, and no industrial "three wastes" discharge. The project area has superior water conservancy conditions, excellent water quality and clean air, making it an ideal area for high-standard farmland construction projects

5. Benefit Analysis

After the completion of the project, the agricultural infrastructure in the project area will be significantly strengthened, and the agricultural production conditions will be further improved. The new pipe irrigation area will be 4,155 mu, the new sprinkler irrigation area will be 690 mu, the canal irrigation area will be improved by 19,155 mu, and the irrigation guarantee rate will reach 75%. , the comprehensive agricultural production capacity has been significantly improved, the total output of new crops is 3.936 million kilograms, the benefit has increased by 6.20 million yuan, the income of farmers has been greatly increased, the grain and farming in the project area have been protected, and the basic farmland has been improved. The social and economic development of the project area will play a powerful role in promoting, bringing about huge changes in the production conditions and living conditions of farmers in the project area, optimizing the agricultural industry structure in the project area, and improving the cultural quality of farmers and the level of scientific farming. , agricultural production efficiency

has been improved. The construction of roads and canal and culvert facilities has brought more convenience to the travel and life of local farmers.

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