

Feasibility Analysis of High-standard Farmland Construction Projects based on the Improvement of Cultivated Land Grades

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Abstract

High-standard farmland construction is an important measure to implement the strategy of “grain storage in land and technology”. According to local industrial conditions, focusing on farmland infrastructure construction, coordinating poverty alleviation tasks, improvement of rural living environment, and establishing a multi-faceted financing mechanism , increase capital investment, accelerate the construction of high-standard farmland, and simultaneously develop high-efficiency water-saving irrigation, laying a solid foundation for promoting rural revitalization and ensuring food security.

Keywords

High-standard Farmland; Arable Land Productivity; Food Security; Feasibility Analysis.

1. Introduction

General Secretary Xi Jinping pointed out: "It is necessary to build high-standard farmland to truly achieve drought and flood protection, high and stable yields." The "14th Five-Year Plan" and the outline of the long-term goals for 2035 proposed to build 1.075 billion mu of concentrated and contiguous high-standard farmland. This year's Central No. 1 document proposes to implement a new round of high-standard farmland construction plans, and to build 100 million mu of high-standard farmland with high yield and stable yield in 2021. According to Shaanxi Province's "Implementation Plan for Preventing "Non-grain Transformation" of Cultivated Land and Stabilizing Grain Production (Shaan Zheng Ban Fa [2020] No. 37), we must resolutely hold the red line of cultivated land, focus on the goals and tasks of grain production, and follow the guidelines of "Strengthening Supervision, Stabilizing the Foundation". , increase production capacity, and ensure supply”, implement the strictest cultivated land protection system, resolutely curb the “non-grain” increase of cultivated land, solidly promote the implementation of the “two Tibet” strategy, strengthen the construction of food production functional areas and high-standard farmland, strengthen Supported by scientific and technological equipment, the system of support and protection of grain production will be improved to ensure that grain planting area will not be reduced, production capacity will be increased, and output will not decline.

2. Project Area Overview

HY City is located in the junction of Qin, Jin, and Henan provinces, with a total area of 676 square kilometers. It has 2 streets, 4 towns, and 1 state-owned enterprise. Huayin City is located at the northern foot of the Qinling Mountains, with an average annual temperature of 13.7°C and an average annual rainfall of 596.5 mm. The topography is roughly divided into the Qinling Mountains, the piedmont alluvial fan group, the Weihe terrace and the loess plateau. The terrain is high in the south and low in the north, and the height difference between east and west is small. The project area has a total of 4 plots with a scale of 10,959 mu. It is located in Yuemiao Street, Huayin City, north of the

county seat and south of the Weihe River, belonging to the Weihe River Plain Area. In 2020, the GDP of HY City is 7.248 billion yuan, and the resident population is 205,119. The total output value of agriculture, forestry, animal husbandry and fishery in the whole year was 1,865.62 million yuan, and the total grain output was 114,904 tons. The area of agricultural arable land is 56,068 mu, including 25,167 mu of irrigated land, mainly for planting wheat, corn and cotton; 30,901 mu of dry land, mainly for planting pepper, persimmon, walnut and wheat and beans.

HY City is located in the lower reaches of the Weihe River in the Yellow River Basin, and the Weihe River runs through the city from west to east. The total length of the territory is 47.7 kilometers. The average annual runoff of the Wei River is 9.48 billion cubic meters, and the average flow rate is 253.6 cubic meters per second. Plot 2 of the project area is close to the Weihe River, and the furthest distance from the Weihe River is about 5 kilometers.

The city is rich in groundwater resources. The main source of groundwater recharge comes from plains and alluvial sectors, with an annual recharge of 116.531 million cubic meters. The groundwater in the project area is relatively rich, belonging to the loose rock pore water-bearing rock group with strong water richness, and the water level is buried at a depth of 5-10 meters. After investigation, it is found that the project area is not in the forbidden groundwater mining area, and shallow groundwater is mainly considered for irrigation in the later stage. There are 9 soil types in the city, mainly including brown soil, cinnamon soil, loess soil, silt soil, Lou soil, fluvo-aquic soil, meadow soil, paddy soil and swamp soil. According to the preliminary investigation, the soil type in the project area is mainly Lou soil.

3. Current Status of Land Use in the Project Area

In 2020, the agricultural map will be changed in HY City. The current land type in the project area is mainly cultivated land, covering an area of 10,315 mu (94%). The garden land is mainly jujube trees, walnut trees and persimmon trees. The poplar is the main one, the water surface of the pit is divided into abandoned fish ponds, and some are planted with lotus roots. The construction land is mainly used for abandoned management houses. Based on the 2017 cultivated land grade data in HY City, the national utilization grade of cultivated land in the city is between 6th grade and 10th grade, and the project category is between 6th grade and 7th grade. The cultivated land area in the project area is 10,315 mu (5,744 mu (56%) in the 6th-grade land, 4,571 mu (44%) in the 7th-grade land), and the highest grade around each block is the 6th-grade land. See Table 1 for a breakdown of the project areas by block.

Table 1. Statistics on the level of cultivated land for each plot in the project area Unit: mu

lot name	Farmland Level 6		Farmland Level 7		total
	paddy field	Irrigated land	dry land	Irrigated land	
Lot 1	0	0	0	2357	2357
Lot 2	0	1445	0	1284	2730
Lot 3	0	0	9	920	929
Lot 4	25	4274	0	0	4299
Subtotal	25	5719	9	4562	10315
total	5744(56%)		4571(44%)		

The cultivated land in the project area is mainly planted with staple grains (winter wheat, summer corn rotation), and some vegetables and fruit trees are planted. The agricultural industry structure is single, and the level of agricultural intensification and scale is low. The existing management level is relatively extensive and the degree of specialization is not high. , lack of anti-risk ability.

4. Project Construction Needs Analysis

The current cultivated land in the project area has problems such as the decline of cultivated land fertility, insufficient irrigation and power facilities, and low level of large-scale operation. After full communication with Rongtong Company, the problem-oriented, combined with the later planning industry needs and objectives, supporting relevant facilities, and carrying out the project in the project area. Comprehensive planning and layout. The natural endowment of the project area is similar to the surrounding area, but the quality of cultivated land is one grade lower than that of the surrounding area. In addition, the current inefficient and extensive decentralized flow transformation management method makes it difficult to achieve large-scale and intensive management. Quality improvement, transformation and large-scale operation have become the key points of Rongtong Company. Urgent needs.

The current industrial layout of the project area is extensive and traditional, and exists in the form of decentralized circulation and free planting. The agglomeration effect is poor, and the resource efficiency cannot be maximized. The importance of re-integrating the existing industrial layout and extending the industrial chain has become increasingly prominent.

Through the comprehensive improvement of the existing scattered cultivated land, large-scale, concentrated and contiguous high-quality cultivated land will be built, which will lay the foundation for the industrial layout of large-scale and intensive cultivation management. . By supporting straw and corn silage storage facilities, building livestock manure recycling facilities to realize the conversion of manure into green fields; through mechanized and intelligent farmland management, green and efficient planting and breeding combined with industrial layout and industrial chain are finally realized.

After the implementation of the project, the agricultural production structure will be optimized, which will increase farmers' income and employment, improve the rural production environment, and promote the economic development of the area. The project area is located in the eastern part of the Guanzhong Plain of Weihe River. It is the main grain producing area in Shaanxi Province. It has important location and functional advantages. Through project monitoring and relevant scientific and technological research, it provides scientific and technological support for regional development and promotes the implementation of the strategy of "grain storage in technology".

5. Project Capacity Improvement and Potential Analysis of New Arable Land

According to the "Regulations on the Quality Classification of Agricultural Land" (GB/T 28407-2012), "Technical Guidelines for the Evaluation of Cultivated Land Quality Classification for Land Remediation Projects in Shaanxi Province (Trial)" and other standards, According to the 8 evaluation indicators and the current value of each index of the 2019 grade library, combined with the actual situation of the project, after calculation and analysis (calculated by using the minimum land use coefficient of the 7th grade of the cultivated land grade library of the plot in 2019), the project is implemented through the implementation of land leveling, Irrigation, soil improvement and fertilization projects (after the project is completed, the effective soil layer thickness is more than 100cm, and the irrigation guarantee rate is basically satisfied), and the existing 4571 acres of 7-level land can be increased to 6-level land. According to relevant policies, combined with on-site survey and docking with Rongtong Company, the project area has a total of 225 mu of breeding pits, pits and ponds, ditches and non-agricultural land, which can theoretically be organized into arable land.

6. Conclusion

The economic benefits of the project come from two parts: newly added arable land and newly added production capacity. After the project is completed, it is estimated that 113 mu of new arable land will be added, and the income of the new arable land will be about 5.2 million yuan (calculated based on the adjustment of 46,000 yuan/mu in the city); it is estimated that the new production capacity will total 570,000 kilograms, and the income of the new production capacity indicator will be about 17.1

million yuan. Yuan, of which: the original 4,571 acres of 7-level land has been increased to 6-level land, the production capacity has increased by about 460,000 kilograms, and the production capacity income has been about 13.8 million yuan; 113 acres of new arable land have been added, the production capacity has increased by about 110,000 kilograms, and the production capacity income has been about 3.3 million yuan. The total project income is about 22.3 million yuan.

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