

Comprehensive Benefit Analysis of High Standard Farmland Construction Project Implementation

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Abstract

Cultivated land is the foundation for human survival and development. Keeping the red line of cultivated land is a strategic measure to ensure national food security and a long-term plan for benefiting future generations and sustainable development. Through the implementation of comprehensive facilities for fields, soil, water, roads, forests, electricity, technology and management, the focus is on land leveling, soil improvement, irrigation and drainage, field roads, farmland protection and ecological environment conservation, farmland power transmission and distribution, scientific and technological services and construction. After the management and protection and other aspects to increase construction efforts to effectively improve the soil fertility and quality of cultivated land, research shows that high-standard farmland construction can produce better social, ecological and economic benefits.

Keywords

High-Standard Farmland; Social Benefit; Ecological Benefit; Economic Benefit.

1. Introduction

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 young and middle-aged rural labor, and increasing uncertainty in foreign imports. In the future, food supply and demand will remain in a tight balance for a long time. It is necessary to thoroughly implement the spirit of General Secretary Xi Jinping's important speech and important instructions, implement the national food security strategy under the new situation, solidly promote the storage of grain in the land and technology, continue to improve the comprehensive grain production capacity and supply guarantee capacity, and adhere to the "basic grain" The bottom line of the strategy of self-sufficiency and absolute security of food rations provides strong support for the realization of the second centenary goal. Actively build high-standard farmland, improve irrigation channels, mechanical farming production roads and other facilities. Farmland construction, guide and promote small and large land plots. According to the assigned task of high-efficiency water-saving irrigation area, combined with high-standard farmland construction, develop high-efficiency water-saving irrigation according to local conditions, and clarify the construction site and area of high-efficiency water-saving irrigation measures.

2. Main Construction Content

Through land development, unified planning, and rational layout, we hope to effectively increase the area of arable land and improve the quality of arable land, turn the existing slopes in the project area into terraced fields, complete the construction of terraced fields in the project area, and improve the foundations such as field roads and farmland protection. facilities,

control soil erosion, improve agricultural production conditions and ecological environment, achieve coordinated development of cultivated land quantity, quality and ecology, and finally build the project area into a middle-class terrace suitable for cultivation. At the same time, through the development of other grasslands, the project realizes intensive agricultural production and large-scale operation and development, which can accelerate the increase of agricultural production and the income of the masses.

The main tasks and objectives of the project construction are: to complete the construction tasks of land leveling, field roads, farmland protection and ecological environment maintenance within the scope of the project area, specifically:

(1) Change the sloping land to horizontal terraced fields, rationally plan the fields, carry out land leveling, make the field level, increase the effective cultivated land area, minimize the amount of earthwork, and save investment; the land remediation area is 19.5077hm², and the newly increased cultivated land is 17.6961hm²; 119 fields were leveled, the amount of topsoil stripping was 39015m³, the amount of pushing earth was 61088m³, the amount of topsoil backfilling was 39015m³, the amount of sill compaction was 32369m³, the length of the ridge was 16740m, and the ridge was 2511m³;

(2) Plan the roads in the project area, plan and construct field roads between the project area and the residential areas, so as to facilitate access to the project area, and plan and construct production roads between fields to achieve the goal of interconnecting the fields. Facilitate agricultural production. The designed road width is 3.0m, the plain soil pavement is adopted, the compaction thickness is 30cm, the subgrade is compacted in layers, the compaction coefficient of the rolled soil reaches 0.94, the subgrade is arched, and the lateral slope is 3%. The project area plans to build a production road (Sutu Road) of 2475m.

(3) Determine the layout, tree species and quantity of farmland shelterbelts. A total of 975 red-leaf plum trees will be planted along both sides of the existing road entering the project area, and 9754m² of grass seeds will be sown on the slopes of the fields.

Through the comprehensive development of fields, water, roads and forests, the agricultural production conditions have been greatly improved; the rational allocation of land resources will promote the adjustment of agricultural structure and increase the income of farmers; through the project construction, the arbor forest land and shrub forest land will be transformed into cultivated land, and finally the productivity of the land will be achieved. Overall improvement, the ecological environment has been significantly improved.

3. Benefit Analysis

3.1. Social Benefit Evaluation

Through the implementation of this project, the first is to build terraced fields and develop the original waste sloping land into terraced fields, which increases the area of arable land, promotes the level of agricultural mechanization, and promotes the increase of local crop production and farmers' income, thereby improving the living standards of local farmers; second, through farmland The protection and ecological environment maintenance project improves the ecological environment of the area and effectively curbs soil erosion in the project area.

At the same time, through the implementation of this project, the land use structure will be transformed, which is bound to increase farmers' income, which is conducive to promoting agricultural development, speeding up the process of agricultural modernization, improving farmers' living standards, and playing a significant role in building a new socialist countryside. After the implementation of the project, the masses of the people in the villages and towns involved in the project, the governments at all levels and the land administration departments

have enhanced their awareness of rational use of land and effective protection of cultivated land.

3.2. Ecological Benefit Evaluation

After the development of cultivated land in the project area, a protective forest net of farmland is arranged along the road to form a protective forest belt, conserve water sources, and increase the vegetation coverage rate. The invasion of crops by hot wind has great resistance to natural disasters, the ecological benefits can be fully exerted, and the regional ecological environment has been improved. After land remediation, the existing barren sloping land can be improved into high-quality dry cultivated land, the barren land area will be greatly reduced, the land in the project area will be protected, and the soil quality will be improved. Cultivated land classification and production capacity verification

3.3. Economic Benefit Analysis

After the implementation of the project, the newly increased cultivated land area is 17.6961hm², and the corn yield per hectare of dry land is 7500kg. The benefit calculation of one crop per year is shown in the table below.

Table 1. Benefit Calculation Table

crop	Multiplan ting ratio	Multiple cropping index	Newly added arable land(hm ²)	dryland yield(kg/hm ²)	unit price(yuan/kg)	output value (million yuan)
corn	90%	0.90	17.6961	7500	2.2	26.28

After the project is completed, choose to plant corn, the multiple cropping index is 0.90, and the annual output value of the project area increases by 262,800 yuan during the normal production period. The cost of planting corn is 6,000 yuan/hm², and the annual operating cost of the project area during normal production is 95,600 yuan. The implementation of land remediation and field supporting projects in this project has transformed the barren sloping land into dry land, improved the land grade, and added 17.6961hm² of dry land. After the implementation of the project is completed, choose to plant corn, and the annual average net income of the crop is 167,200 yuan. Calculated based on the static benefit of agricultural output value, the annual investment rate of return and payback period are as follows:

After the project is constructed and put into production, the relevant benefit indicators are shown in formulas (1) to (3).

$$\text{Payback period} = \text{total project investment} / \text{new net income} \tag{1}$$

$$\text{Static investment rate of return} = \frac{\text{annual new net output value of the project}}{\text{total project investment}} \tag{2}$$

$$\text{Number of new cultivated land invested per 10,000 yuan} = \frac{\text{total area of new cultivated land}}{\text{total project investment}} \tag{3}$$

The investment and construction period of this project is 3 months, and the total investment is 1.5268 million yuan. According to the above formula, the benefit index of corn is calculated as shown in Table 2.

Table 2. Benefit analysis of newly added cultivated land in the project area

project	crop	Payback period (years)	static return on investment(%)	The number of new cultivated land per 10,000 yuan investment(mu)
Add dry land	corn	10	10.95	1.74

It can be seen from Table 2 that the investment recovery period is 10 years, the static investment rate of return is 10.95%, and the new arable land is 1.74 mu per 10,000 yuan investment.

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