

# Investigation and Analysis of Farmers' Livelihood Capitals in Ecological Development Area of Northern Guangdong Province: A Case Study of Yangshan County

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**Abstract** Investigation and analysis of the current status of farmers' livelihood capital and promptly discovering and solving problems in farmers' livelihood development are of great practical significance for optimizing farmers' livelihood strategies and enhancing farmers' livelihood sustainable development capability. Based on the framework of sustainable livelihood analysis, taking Yangshan County as an example, this paper uses field surveys, questionnaires and interviews to summarize and analyze the current status and characteristics and main problems of local farmers' livelihood capitals on the basis of the data of 628 farmer samples. It proposes countermeasures for future development of farmers' livelihoods. Implementing these strategies will be helpful for improving the livelihoods capital structure of farmers' and enhancing their sustainable development capability.

**Key words** Livelihood capitals, Investigation and analysis, Future development strategy, Ecological development area of Northern Guangdong Province

## 0 Introduction

The northern Guangdong ecological development area, as an important part of the "One Core, One Belt, and One Area" regional development pattern planning in Guangdong Province, is located at the intersection of Guangdong, Jiangxi, Hunan and Guangxi provinces (regions), including the Shaoguan, Heyuan, Meizhou, Qingyuan and Yunfu cities<sup>[1]</sup>. The land area is 76 800 km<sup>2</sup>, accounting for about 42.71% of the total area of the Guangdong province. It serves as a vital ecological safety barrier for Guangdong and is a key and challenging area in the implementation of "Green and Beautiful Guangdong" ecological construction strategy.

In recent years, with the orderly promotion of ecological protection strategies, many sloping farmlands and forest lands have been included in the protection scope. This has led to varying degrees of restrictions on agricultural production and farmers' livelihood activities. Measures such as returning farmland to forests and protecting natural forests have significantly impacted farmers' livelihood capital and its composition<sup>[2]</sup>. Therefore, understanding the current situation of farmers' livelihood capital, accurately grasping the difficulties and problems faced by the coordinated development of ecological protection and farmers' livelihoods, are of great theoretical and practical significance for consolidating the existing achievements of ecological construction and promoting the sustainable development of farmers' livelihoods.

## 1 Questionnaire design and survey

To better understand the current situation of farmers' livelihood capital, our project team conducted a stratified random sampling survey in Yangshan County. Firstly, sample villages were selected from each town, and then 20 to 30 farmers in each sample village were randomly surveyed through questionnaires and interviews.

The questionnaire is mainly divided into two parts, the first is the basic information of farmers, including their gender, age, family size, livelihood type, *etc.*; the second is about the five types of livelihood capital of farmers. Human capital includes the overall labor capacity of the family, the education level and health status of family members, *etc.* Natural capital includes the actual cultivated land and forest area and quality of households. Material capital includes the housing conditions of farmers, the quantity of durable goods, the number of large production tools, the number of household livestock, and satisfaction with infrastructure. Financial capital includes household annual income, difficulty in obtaining cash credit, and access to government subsidies or assistance. Social capital includes the social relationships of farmers, whether they participate in professional cooperatives or associations, *etc.*

Our team conducted a field survey in 25 villages of 13 towns (townships) in Yangshan County from March to April 2025, distributed 693 copies of questionnaires, and finally obtained 628 valid ones, with a 90.62% effective rate. The basic information of the surveyed households is shown in Table 1.

## 2 Analysis of the current status of farmers' livelihood capitals

### 2.1 Human capitals

Human capital represents the overall la-

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bor capacity, the educational status, and the health status of family members of the rural household<sup>[3]</sup>. According to the data, the age of rural households is mainly concentrated above 45 years old, and the educational level is generally at the primary school to junior middle school stage. Among them, primary school and below account for 52.60%, junior high school accounts for 30.35%, and the total proportion of the two is 82.95%. In terms of health status, 9.24% of the surveyed farmers chose good physical

Table 1 Basic information of the survey samples

Variable	Proportion//%
Gender	Male (38.15%) ; Female (61.85%)
Age	Under 35 years old (6.07%) ; 35 – 45years old (21.38%) ; 45 – 65 years old (61.69%) ; over 65 years old (10.86%)
Education level	Primary school and below (52.60%) ; junior high school (30.35%) ; high school and above (17.05%)
Family size	1 – 2 persons (17.15%) ; 3 – 5 persons (63.32%) ; more than 5 persons (19.53%)
Annual household income	Less than 20 000 yuan (20.36%) ; 20 000 – 50 000 yuan (50.18%) ; 50 000 – 80 000yuan (21.25%) ; more than 80 000 yuan (8.21%)

**2.2 Natural capital** The natural capital of farmers mainly refers to the natural resources owned or available for long-term use by farmers, such as arable land resources, water resources, and biological resources. Survey shows that the natural capital of the surveyed households is generally scarce. Firstly, the amount of arable land resources is small, with the average arable land area per household being only 0.317 ha. Secondly, most of the arable land owned by farmers is fragmented and scattered, about 43.62% of the households own about five plots of paddy fields, and 28.57% of the households have six to ten plots of paddy fields. Thirdly, the proportion of sloping farmland is large, and the quality of farmland is not high, only 3.98% of the surveyed farmers considered the quality of cultivated land to be very good, 15.29% considered it to be above average, 40.61% considered it to be average, 28.50% considered it to be below average, and 11.62% considered it to be very poor.

**2.3 Physical capital** Physical capital mainly refers to the material resources and related infrastructure needed for rural households to carry out their livelihood activities<sup>[4]</sup>. The survey found that after targeted poverty alleviation and rural revitalization, the self-owned material capital of most farmers, such as housing, household appliances, and agricultural production tools, has been greatly improved, the housing area of most farmers is over 200 m<sup>2</sup>, and 79.07% of the sample have more than 7 pieces of durable goods, among them, 20.22% of the households have more than 11 pieces of durable goods. In terms of infrastructure, 40.28% of farmers are dissatisfied with transportation conditions, 46.83% with medical conditions, 42.62% with education conditions, and 56.35% with communication conditions, which indicates that the basic living and public service facilities needed for farmers to carry out livelihood activities are remain relatively underdeveloped.

**2.4 Financial capital** Financial capital mainly refers to various financial resources used by farmers to achieve their livelihood goals, including annual household income, loans obtained from financial institution, various government subsidies. Survey data shows that most farmers’ household income mainly comes from planting, breeding and working outside. Specifically, 20.36% of

health, 31.37% chose relatively good, 45.22% chose moderate physical health, 12.42% chose relatively poor, and 1.75% chose very poor. From this, it can be seen that the human capital of the surveyed farmers is at a relatively low level mainly because most young and middle-aged laborers with higher educational levels choose to work outside, resulting in relatively low quality of rural left behind personnel.

farming households earn less than 20 000 yuan annually, 50.18% earn between 20 000 and 50 000 yuan annually, 21.25% earn between 50 000 and 80 000 yuan annually, and 8.21% earn over 80 000 yuan annually. Farmers’ evaluation of the difficulty of obtaining cash credit is at a moderate level (Table 2), and nearly 70% of farmers say that they are more inclined to borrow money from relatives and friends when they face the problem of shortage of funds<sup>[5]</sup>. In addition, most farmers have received one or more types of subsidies, such as agricultural machinery, forestry, relocation, and housing renovation subsidies, but the amount of subsidies is small, and it accounts for a very small proportion of its financial capital.

Table 2 Statistics on the difficulty of obtaining loans from interviewed farmers

Difficulty level	Very easy	Easier	Easy	Difficult	More difficult
Family member	89	96	190	188	65
Proportion//%	14.17	15.29	30.25	29.94	10.35

**2.5 Social capital** Social capital refers to social resources used by farmers in order to pursue various livelihood goals, such as social relations networks and social organizations<sup>[6]</sup>. From the survey results, the social capital of the interviewed farmers has the following characteristics.

(i) The social relationship network of farmers is mainly based on narrow and closed geographical and kinship relationships, and the scope of communication is mostly limited to the same village and family. (ii) The number of supporting carriers for the development of social capital is limited, and the number of rural cooperative organizations such as various rural professional cooperatives and professional breeding associations is small, and the level of development is low, which restricts the formation of farmers’ social capital<sup>[7]</sup>. Among the surveyed households, only 45.6% of households have joined cooperatives or associations, while another 18.32% of households stated that there are no specialized cooperatives or associations in their villages. (iii) With a large number of young and middle-aged laborers going out for work, the ability of

remaining farmers to expand their social capital is limited, and the stock and quality of social capital in some rural communities have shown a significant downward trend.

### 3 Suggestions on the development of farmers' livelihood

**3.1 Enhancing the stock of livelihood capital and empowering farmers' self-development capabilities** Enhancing the capital stock of livelihood is the main means to enhance the stability of farmers' livelihood, and also an important way to enhance farmers' self-development ability. In view of the overall fragile livelihood capital of farmers in the ecological development area of northern Guangdong<sup>[2]</sup>, it is imperative to implement strategic interventions.

(i) Enhancing the human capital of farmers through initiatives such as multi-channel, multi-level and multi-form practical agricultural technology training and vocational skills training. (ii) Augmenting the natural capital of farmers through initiatives such as medium and low-yield fields reconstruction and agricultural infrastructure construction. (iii) Bolstering the material capital of farmers through improving the lagging situation of public services such as road traffic, electricity, and communication. (iv) Increasing the financial capital of farmers through broadening channels for increasing income, improving the financial service system, innovating financial products, and improving the quality and level of financial services. (v) Cultivating and enhancing the social capital of farmers through strengthening village-level organization construction, improving farmers' self-organization level, guiding the establishment of rural professional cooperatives or professional associations, and improving rural information service platforms.

**3.2 Broadening the income channels and realizing the diversification of farmers' income** Eliminating bottlenecks for increasing income, broadening channels for increasing income, and achieving diversification of farmers' income are important guarantees to reduce the vulnerability of farmers' livelihoods. According to the actual situation of the ecological development area in northern Guangdong, expanding the channels for farmers to increase income can be approached from the following aspects: Firstly, providing targeted and practical skills training for farmers, guiding and supporting them to continuously and stably increase income through livelihood combinations such as "planting + breeding + employment" or "planting + breeding + agricultural product processing". The second is to develop characteristic industries according to local resource endowments and market demand, and drive the sustained and stable growth of farmers' operating income through the radiation of leading enterprises and professional cooperatives. The third is to fully utilize the advantages of local resources, create a number of rural industrial development projects with complete industrial chains, good market prospects, strong driving capabilities, and wide radiation coverage<sup>[9]</sup>, increase non-agricultural employment opportunities for farmers, and drive the sustained and stable growth of farmers' wage income through local employment. The fourth is to establish a land transfer mechanism tailored to local conditions, activate assets, and manifest the market value of land assets such as contracted land, homestead land, and barren hills and slopes of farmers. Through the transformation of farmers into shareholders

and resources into assets, it can drive the sustained and stable growth of farmers' property income<sup>[10]</sup>.

**3.3 Improving the level of industrial development and consolidation the foundation for the sustainable and stable development of farmers' livelihoods** The industrial development is the most realistic, quickest, and stable way to enhance the level of farmers' livelihood capital, and it is also the prerequisite and guarantee for promoting agricultural quality and increasing farmers' income. The foundation of industrial development in the ecological development area of northern Guangdong is weak. In the future, the focus of work should be on establishing a long-term mechanism for industrial development, and consolidating the foundation for the sustainable and stable development of farmers' livelihoods through the improvement of industrial development level. Firstly, the government departments should increase their support for industrial development, improve infrastructure and market system construction, and create conditions for the long-term development of industries. Secondly, based on the local advantageous and characteristic resources, we will deepen the integrated development model of the primary, secondary, and tertiary industries, develop characteristic advantageous industries that can bring stable income to farmers in the long run, establish business models such as "leading enterprises + farmers", "leading enterprises + bases + farmers", "companies + cooperatives + farmers"<sup>[2]</sup>, and form a characteristic industrial pattern of "one county, one specialty", "one town, one industry", and "one village, one product", promote industry to promote employment, employment to increase income, and thus promote the sustainable and stable development of farmers' livelihoods.

**3.4 Expanding livelihood space and promoting the transformation of farmers' livelihoods** At present, the production methods of most farmers in the northern Guangdong ecological development area are still mainly traditional planting and breeding industries, with single channels for increasing income and limited livelihood space. With the continuous development of social economy, traditional agricultural production methods can no longer meet the diversified and modern livelihood needs of farmers. Therefore, expanding the livelihood space of farmers and promoting the livelihood transformation of farmers can enable farmers to take the initiative to emerge from the traditional livelihood methods, thereby reducing livelihood vulnerability and enhancing their ability to resist livelihood risks.

To achieve this goal, firstly, measures such as organizing practical skills training and market guidance should be taken to help farmers explore non-agricultural employment channels and enhance their ability to transfer employment. Besides, utilizing local characteristic resources to develop and strengthen characteristic industries such as animal husbandry and economic forestry and fruit, and creating more employment opportunities through new formats such as agricultural product processing and rural e-commerce to attract farmers to transfer employment. In addition, it is recommended to utilize the abundant tourism resources in the local area to develop rural tourism, actively explore new forms of integration between agriculture, culture, and tourism, to achieve the transformation from traditional agriculture to modern agriculture, thereby ex-

panding the livelihood space of farmers and promoting the gradual transformation of their livelihoods.

**3.5 Strengthening livelihood risk warning management and improving the stability of farmers' livelihoods** The ecological environment in the ecological development area of northern Guangdong is fragile, and its economic development is lagging behind. The livelihoods of farmers are highly vulnerable to various risks such as natural risks, health risks, market risks, and policy risks, and their livelihood stability is relatively poor. Against this backdrop, preventing livelihood risks, strengthening livelihood risk early warning management, and enhancing the stability of farmers' livelihoods are crucial for ensuring the sustainable development of farmers' livelihoods.

In the future, it is necessary to strengthen the monitoring of farmers' livelihood risks, establish a dynamic monitoring and prevention mechanism for farmers' livelihood risks, conduct dynamic monitoring of farmers' production and living conditions, income sources, and household income and expenditure situations, accurately identify the risk points of different types of farmers' livelihoods, and take timely measures to eliminate them. In addition, it is necessary to strengthen livelihood risk early warning management, classify and intensify follow-up support and assistance work based on the early warning results, establish a livelihood risk prevention system, and enhance farmers' ability to cope with livelihood risks, ensuring the stable and sustainable development of farmers' livelihoods.

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