

# A Model For Building A Rural Three Industries Integration Ecosystem In China - A Multi-Case Study Based On Four Representative Villages In Different Regions Of China

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**Abstract:** China has achieved rapid rural development by implementing the integration of three rural industries. It is of research significance how to further promote the implementation of the integration of the three rural industries. We selected representative villages in four regions of China for the study through a multi-case analysis approach. The case studies revealed that China's rural areas have successfully escaped from poverty while forming a relatively completed ecosystem for the integration of three industries. We define and build an operational model of the Three Industries Integration Ecosystem in rural China. The construction of a three industries integration ecosystem in rural China is a very important part of the study. The construction of a three industries integration ecosystem in China's rural areas can help promote the revitalization of China's rural villages. At the same time, China's experience can also be useful for other countries to develop rural industrial integration.

**Keywords:** Rural China, integration of three industries, industrial convergence, Rural revitalization.

## 1. Introduction

The entry into the digital information era has accelerated the process of modernization on a global scale. Population mobility has intensified, a large number of laborers have moved to cities, rural population and land resources have been

eroded by urban development, and agricultural and rural problems have become increasingly prominent. How to promote the development of rural secondary and tertiary industries on the basis of ensuring the stability of the primary industry has become an urgent problem for countries to

solve. Research on the integration of rural industries has become a hot spot for scholars in various countries. Along with the development of economy and technology, developed countries have transformed the traditional development model of rural areas by implementing the integration between rural primary, secondary and tertiary industries (hereinafter referred to as the integration of the three industries), thus realizing the new development of rural areas, which provides valuable experience for the integrated development of rural industries in China.

In 2022, China's No. 1 document "Opinions on the key work of comprehensively promoting rural revitalization in 2022" once again emphasized: "Continuously promote the integrated development of one, two, three industries in rural areas. Encourage localities to expand multiple functions of agriculture, tap the diversified values of the countryside, and focus on developing industries such as agricultural products processing, rural leisure tourism and rural electric business. Accelerate the implementation of the "Internet +" agricultural products out of the village into the city project, to promote the establishment of long-term stable production and marketing relations. Vigorously develop county enterprises, guide qualified central towns to develop specialized small and medium-sized enterprise clusters, and promote the development of rural workshops and family workshops in key villages." The Chinese government has issued documents for many consecutive years emphasizing the integrated development of rural industries, and the integrated development of the three industries has risen from being an important aspect of promoting the revitalization of rural industries to a major innovative system and fundamental path that concerns the achievement

of the goals of rural revitalization strategy.

In recent years, relevant departments and local governments at all levels have introduced systems and policies to support the integrated development of one, two, three industries in rural areas, and have comprehensively pushed forward the practice of industrial integration development and achieved better results. Various new agricultural business entities engaged in agricultural production, operation and services have sprung up and become the main force in promoting industrial integration. According to China Rural Development Report (2020), by the end of 2019, there were more than 700,000 family farms and 2.2 million legally registered farmers' cooperatives in China, with the rapid development of rural industrial integration subjects. 2019 national rural network retail sales reached 170 million yuan, realizing the rapid development of new rural industries and new business models. At the same time, cross-border allocation of agricultural and modern industrial elements, the development of "agriculture + forestry, animal husbandry and fishery", the formation of integrated farming and other cycle-type agriculture. By the end of 2020, China's integrated rice and fishery farming area reached 38 million mu. It has realized the deep cross-fertilization of industries and formed the development trend of "agriculture +" multi-industry (Cao Zhe, 2022). According to the Ministry of Agriculture and Rural Affairs, as of January 2021, more than 300,000 industrial bases have been built in 832 poor counties nationwide, and each poor county has more than two leading industries with special characteristics to alleviate poverty, benefiting 98% of poor households nationwide. The integrated development of rural primary, secondary and tertiary industries has

greatly improved the living standards of rural residents and achieved victory in China's poverty eradication efforts.

At the new beginning of consolidating the achievements of poverty eradication and rural revitalization, we also need to see that the role of long-standing positive factors promoting agricultural and rural development is decaying, while new problems and contradictions are gradually accumulating. The integration of rural industries shows vigorous vitality in the context of rural revitalization, but it also faces challenges such as lack of scientific and technological foundation, lack of professional talents and lack of financial guarantee (Meng Fanzhao et al.

However, it also faces challenges such as lack of science and technology, lack of professional talents and lack of financial guarantee (Meng Fanzhao et al., 2022). In the traditional category, rural areas are still "struggling" to maintain the most native agricultural production and supply functions, and need to strengthen the agricultural foundation through strengthening organizational leadership and selecting good industries. The key to successful integration of leisure industries is the "absorption" and "retention" of customer traffic, which requires the expansion of agricultural multi-functionality, digging deeper into rural ecological resources, local customs, farming culture and other humanistic and natural elements, highlighting the flavor of the countryside, wild taste and agricultural taste, and jumping out of the repeated construction of non-differentiated projects and homogeneous competition "strange circle" (Liu Jiansheng et al., 2022). Coupled with the vast size of China and the huge differences in resource endowments between the east and west, north and south regions, the development experiences that can be

learned from each other are prone to be copied. What are the implications of the rural development experiences of each region? Can the integration of three rural industries explore a sustainable development ecosystem? All rural areas in China have explored and reformed the development of the integration of three industries, and have achieved certain results and formed typical experiences on the development of rural industries. Therefore, this paper selects villages in four different provinces from various regions of China as the research objects to analyze their rural industrial development history and experiences. The selection of four typical cases for research can form a multi-level horizontal comparison among regions, provinces and industries, so as to deepen the understanding of rural industrial development in the context of resource endowment, and at the same time, according to the characteristics of typical villages, the current situation of rural industrial development and its comparative advantages in other regions can be compared, and suitable experiences can be selected for reference in a mobile manner, which may be more beneficial to the promotion of rural industrial revitalization in China. Summarize the development experience and try to build an ecosystem for the integration of three industries in China's rural areas. In order to accelerate the integration of three industries in China's rural areas, promote the upgrading of rural industrial structure, and help realize the revitalization of China's rural villages.

## 2. Literature Review

The integration of three industries is the application of the theory of convergence of industries in rural areas. As a systematic operation of factor concentration, it draws on the ideas and

methods of industrial economics, industrial cluster theory, division of labor theory, agricultural multifunctionality theory, spiral innovation theory, and six industrialization theories (Zhou Fang et al., 2021). The integration of the three rural industries is the multi-functional integration and spiral promotion of agriculture, processing industry, distribution service, leisure tourism, Internet, cultural and creative industries, etc. It is an agricultural economic form generated by the "synergistic effect", and through the extension, penetration, crossover and cooperation between the horizontal and vertical multi-functional industries, it can realize "economy of scope effect" (Li Yue, 2019). Rural industrial integration is both a mode of operation and a mode of production. It is the aggregation of new elements, new technologies and new business modes through the interconnection, interpenetration and integration of one, two and three industries, the extension of industrial chains, functional chain innovation and value chain reorganization, and the gradual integration of three industries, presenting new industrial forms and attributes of the aggregation - reorganization - innovation process (Yuan Zhong, 2022).

## 2.1 Development of industrial convergence theory

With the continuous innovation of industrial technology, industrial convergence began to appear as a new economic phenomenon. The study of technological convergence was the direction of the early research on the phenomenon of industrial convergence. Negro Ponte was the first to elaborate the normative theory of technological convergence, and he believed that the new fields resulting from the crossover of industrial convergence were innovative and fast-

growing fields. In 1997, the European Commission pointed out in its "Green Paper" that industrial convergence is the integration of technologies, industries, services and markets, and the technology is to build a public platform to enable. In 1997, the European Commission pointed out in its "Green Paper" that industrial convergence is the integration of technology, industry, service and market. In the same period, American scholars also proposed that industrial convergence is the integration of independent products after the adoption of digital technology, and it is the gradual blurring of industrial boundaries to accommodate the continuous development of the industry (Yoffie, 1997; Greenstein & Khanna, 1997). Subsequently, the Japanese scholar Ikusa (2001) proposed that industrial integration facilitates healthy competition and cooperation among enterprises, which presupposes the elimination or reduction of inter-industry barriers through relaxation of restrictions and continuous technological innovation. Japan is also the early country to apply industrial integration theory to the development of rural industrialization. Foreign research on industrial integration theory has focused on electronic information, biomedicine, food, tourism, etc. (Kim et al., 2015). Many scholars believe that convergence refers to the blurring of boundaries between industries through the convergence of elements such as value proposition, technology and market (Broring & Leker, 2007), or a trend in the evolution of technology services and industry structure. Overall, industrial convergence is an economic phenomenon in which different firms provide similar products or services along the same or related value chains and aggregate these products or services together. Industrial

convergence is actually a complex and variable long-term development process that does not depend on human consciousness (Xue, Jinxia et al., 2019).

## 2.2 The development practice of integration of three industries in rural areas abroad

The application of industrial integration theory in the process of rural development is conducive to promoting the benign development of rural primary, secondary and tertiary industries and has a positive impact on the balanced development of the whole society and economy. Due to the differences between the specific conditions of different countries, the focus of scholars in studying the integration of rural three industries is also different: European and American scholars focus on the primary industry assisted by science and technology, and the agricultural industrialization research of the integration of secondary and tertiary industries. Asian scholars focus on the role of endogenous forces in the countryside under the premise of fully emphasizing the multifunctionality of agriculture, i.e., ensuring the development of the original primary industry in the countryside and gradually expanding and extending to the secondary and tertiary industries.

European countries were the first to start the industrialization process and also the first to explore rural development, forming a wealth of advanced experience, with the Netherlands and France being the earlier European countries to carry out rural landscape planning (Zhao, Yongqi et al., 2017). The development of modern agriculture in France advocates the concept of green, environmental protection and sustainable development, and the basic experience of its short time and great effectiveness of agricultural

modernization lies in the importance of a high degree of specialization based on scientific planning, the important role of cooperatives as a fulcrum, the construction of an integrated system of "teaching, research and extension", and the importance of playing the role of regulation, guidance and support of various systems. In France, according to the local resource endowment and social needs, different villages give full play to their own advantages and achieve rural economic development by exploring special resources, developing special industries, accelerating the integration of one, two, and three industries, extending the agricultural industry chain, and increasing the added value of agricultural products to promote agricultural efficiency and farmers' income (Wang Mingyu et al., 2021).

Among the American countries, the United States has been promoting rural development for more than 80 years (Hu et al., 2019), and Canada has also experienced the rise and fall of rural construction (Peng, 2010), and achieved agricultural mechanization in the 1940s, and basically realized planting specialization, agricultural regionalization and industrialization in the early 1960s, becoming one of the countries with the highest level of agricultural modernization in the world (Li, Xiang, et al. It has become one of the countries with the highest level of agricultural modernization in the world (Li Xiang, 2020).

In terms of the specific practice of the integration of the three rural industries, foreign research on the integration of the three rural industries is concentrated in developed countries, while other countries do not explicitly put forward the integration of the three industries, but in practice, they also follow the path of the integration of the

three rural industries. Some countries with more developed industries mainly promote the development of rural three industries integration by formulating industrial integration development policies, improving infrastructure construction, establishing specialized management institutions, and providing capital and human resources support. Some developed agricultural countries have formed some more mature models and experiences in the process of long-term practice of rural industrial integration development, such as Japan's "six industrialization", South Korea's "sixth industrialization of agriculture", the Netherlands' "agricultural whole industry chain", "rural tourism" in France, etc. (Li Qian, 2017). Since 1992, the EU has provided income support and security mechanisms for agricultural producers, focused on building a knowledge-based agricultural industry, strengthened the training of agricultural operators, and improved the linkage and integration of environmental requirements with rural development (Tian Tian et al., 2019). For regions with high urbanization levels and rapid economic development to develop tourism agriculture, ecological agriculture, leisure agriculture, and experience agriculture, making a high degree of integration among the three rural industries (Wang Changxiong, 2016), Singapore has explored differentiated urban agriculture development models based on local conditions and formed a characteristic urban modern agriculture development model.

In addition, countries in developing countries are also exploring the integration model of the three industries suitable for their own development. For example, Brazil has promoted the effective integration of the three rural industries through the service system of agricultural

industrialization and the implementation of cooperative-based agricultural industrialization operation, which has driven the development of Brazil's characteristic economy (Li Hongtao, 2009). The Malaysian government has been actively promoting the integration of rural industries since the 1970s, mainly including the processing and export of agricultural raw materials mainly in rubber, cottage industries mainly in the form of preparation and carving, self-production and marketing, and repair of motor vehicles and electrical appliances (Liu Ying, 2014), as well as promoting the integrated development of agriculture, forestry and animal husbandry and rural tourism.

### 2.3 Practice and development of the integration of three industries in rural China

The integration of three industries is increasingly favored by the development of agricultural and rural industries due to its effects of reducing transaction costs, internalization of industrial division of labor, value sharing, etc. It can promote the integration of agriculture, handicrafts, cultural and creative industries, tourism services, digital economy industries, etc., promote the horizontal and vertical extension, crossover and penetration of industrial chains, form new development modes and business models, which are important for promoting agricultural farmers' income, improving ecological environment (Zhou Fang et al., 2021) At the primary stage of promoting the integration of three rural industries, the models of Japanese agro-industrial integration, American agro-business integration, and French agro-tourism integration have provided experience for China's rural industrial integration development. However, based on the differences

in institutional environment and macroeconomic development, China has gradually formed a three-industry integration model and business model with Chinese characteristics in practice (Jiang, Zelin, 2021). Foreign studies on the interaction and integrated development of rural industries are relatively early, and most of them explore the sustainable development of rural industries from a qualitative perspective (Tan et al., 2019; Singh et al., 2010; Ushachev et al., 2021), and less from a quantitative perspective; Chinese studies on the integrated development of rural industries started later and tend to be quantitative in nature, focusing on the use of integration (Ge, Xinquan et al., 2017). (Ge, Xinquan et al., 2017; Han, 2017; Sun, Jiangchao, 2020) Currently, promoting and facilitating the integrated development of the three rural industries has become an important means to promote the sustainable development of agriculture and rural areas, as well as a key link to further consolidate the achievements of poverty eradication and rural revitalization.

#### i. Development and connotation of the integration of three rural industries in China

With the enrichment of the practice of integration of the three rural industries in China, scholars began to try to define the integration of rural industries and the three industries. Su Yiqing et al. (2016) believe that the essence of the integration of rural three industries is the internalization of the division of labor among industries; Zhang Haipeng (2019) believes that the development of the integration of rural three industries aims to improve the comparative labor productivity of agriculture and rural areas; Zhao Xia et al. (2017) believe that the integration of rural three industries is a product of the development of

agricultural productivity to an advanced stage. In terms of the nature of the participating objects, the integration of rural industries is to make agriculture, rural areas and farmers compatible in parallel order, fully mobilize the production enthusiasm and creativity, form the basic support of agriculture, take the natural environment of rural areas as the development background, take crops as the production basis, take deep processing of agricultural products as the leader, take capital as the operation link, take three farmers as the operation main body, take market demand as the guide, and integrate heavy industry, agriculture and The scientific and organic integration of the service industry will ultimately achieve the national strategic development goal of strong agriculture, beautiful countryside, and rich farmers (Yuan Zhong, 2022). Through the study and definition of the connotation of the integration of the three rural industries, the academic community generally believes that the organic penetration integration and synergistic development between the rural primary, secondary and tertiary industries is an important way to achieve new rural development. By comparing the definitions of different scholars, this paper argues that the integration of agricultural industries refers to the integration of agricultural products and services and markets through integration with products and services and markets of other industries, which in turn liberates agricultural production factors and creates new values. On the basis of this connotation, the integration of three rural industries can be defined as the path of cross-penetration and integration among rural industries, the main expression of industrial function transformation, industrial scope expansion and industrial chain extension, and the

result of development mode transformation and industrial development, which drives the integration and optimal reorganization of resources, factors, technology and market demand in rural areas through the formation of new technologies, new business modes and new business models (He Lisheng and Li Shixin, 2005; Jiang Changyun, 2015).

#### ii. The mode of integration of three industries in rural China

As a large country, China's rural areas account for a large proportion of the population and objective conditions vary greatly, so the choice of specific three-industry integration models also varies. The integration of three industries in rural areas cannot be a simple superposition of three industries, and deep and high-quality integration should avoid "one side of a thousand villages" (Chen Xueyun et al., 2018). In the new development period, an ecological orientation should be established, based on the specific objective reality of the rural areas, and a three-industry integration model suitable for each region's own development should be selected.

Due to the different angles of research division, different scholars have differences in the division of China's rural three-products integration model. Tan Mingjiao has constructed a systematic theoretical framework in terms of connotation of integration, mechanism of integration and quality of integration. From three perspectives, including macroscopic resource allocation, meso-industrial laws and technological progress, and micro-market subjects (Tan Mingjiao, 2016), Li Zhi et al. (2017) proposed a driving force model for the integration of rural three industries, which focuses on the dominant and undertaking role of factors as the three-stage model proposed by Liu

Wei et al. (2019). Lei Peng and Zhou Li (2020) proposed that the "three new" working mechanisms of new industries, new business modes and new models should be built to promote the development of the integration of the three rural industries.

From the perspective of the span, direction and mode of industrial integration, the integration mode of rural three industries in China can be summarized as internal industrial integration mode, industrial chain extension mode, cross-integration mode of one, two and three industries, and high-tech penetration mode (Ma, 2015); from the perspective of the diversity of integration, the integration mode of rural three industries can be divided into two modes: binary integration and ternary integration (Wan, 2019); from the perspective of specific practical analysis: the rural three-products integration model is subdivided into regional synergistic integration model, brand core integration

#### 2.4 Summary

This chapter has found through compiling the literature on the integration of three rural industries at home and abroad that industrial integration is the trend of collaborative industrial development, and the integration of three rural industries is the application of industrial integration theory in the process of rural development. The United States, France, the Netherlands and other developed countries all reflect rural industrial integration in the process of agricultural development. The concept of rural industrial integration was first embodied in the "sixth industry" in Japan, where the integration of agriculture and industry, agriculture and commerce, and agriculture and tourism brought new development to traditional agriculture.



China's concept of integration of the three rural industries has been influenced by the experience of developed countries, and while learning from the experience, it has also been innovated in the light of China's national conditions. Although China's research on the integration of three rural industries started late, there is now a certain theoretical foundation and practical experience in the study of the connotation and mode of integration of three rural industries. Especially since the implementation of the strategy of precise poverty alleviation, rural industries have developed rapidly, and the practice of integration of the three industries has increased and the speed of integration has accelerated. However, at the same time, there are problems that the integration effect is not ideal and the integration mechanism is not perfect.

i. To realize high-quality rural integration of three industries and achieve the effect of increasing farmers' income, it requires the concerted efforts of endogenous forces, external forces and various influencing factors. It should further enrich the subjects of rural industrial development and establish a participatory mechanism of rural three-products integration with farmers as the main body under the guidance of the government, embedded participation of enterprises and synergistic development of other participating subjects.

ii. It is necessary to continue to deepen the research on the mechanism of integration of rural three industries. China is a vast country, and the level of rural development is inconsistent in different places, and the mechanism of integration of rural three industries also varies, so it is necessary to promote the representative experience of rural industrial integration. It is necessary to conduct in-depth research in typical

areas, obtain a large amount of first-hand data, analyze them, and then come up with replicable experiences.

In this paper, through multiple case studies, the descriptive research on the integration of three rural industries is shifted to the deepening research on the integration mechanism and deepening the research on the integration mode and the choice of interest linkage in the process of integration of three rural industries. We will try to construct an ecosystem for the integration of three rural industries in China.

### **3. Research Methodology and Design**

#### **3.1 Research Methodology**

The multi-case study method is mainly considered from the research object and research content of this paper. From the viewpoint of the research object, the representative villages of the integration of the three rural industries will not be unique, and China is a vast country with different development ideas in different regions, so multi-case study is a more appropriate research method, which can discover the unique causal relationship between variables through in-depth analysis of typical cases. In terms of research content, we focus on the internal logic of the integration of the three rural industries in each region. In addition, this study will also focus on the analysis of "How to promote the further development of the integration of rural industries in China?" "How to build an ecosystem for the integration of the three rural industries in China?" These two "how" questions, using a multi-case inductive and explanatory approach to case studies, follow the law of replication, where multiple cases can be compared with each other to confirm that new findings can be repeated by multiple cases

(Nordqvist et al., 2008; Sieger et al., 2011). ), which helps to understand how complex relationships interact to influence the integration of the three rural industries.

### 3.2 Introduction of theoretical sampling and case background

According to the technical requirements of the multi-case study method and the research purpose of this paper, four administrative villages in Jiangxi Huangxi Village, Guizhou Unity Village, Henan Tangwangqiao Village and Jilin Shanmen Village were selected as cases for this study nationwide. The case collection received strong support and cooperation from the leaders of the four villages, which made the data research go smoothly and obtained a large amount of first-hand data. From the content of the interviews, not all of them were complimentary, and village leaders as well as ordinary people from all over the world put forward their own personal views, making the interview data more realistic and meaningful for analysis.

In order to better fit the research questions and achieve the purpose of theoretical construction, we applied the following criteria to screen the cases: first, case typicality. The purpose of this paper is to construct a three-product integration ecosystem in rural China, and the selected cases must be representative. The four representative villages selected in this paper are all very typical in that they have achieved the purpose of poverty alleviation and income increase through the industrial upgrading and industrial integration development of their villages. In particular, the four villages were once relatively backward local villages, but now they have become representatives of local industrial wealth villages. They have received a lot of media attention and

reports. Therefore, the case selection of this paper is very representative for the study of the integration of three rural industries in China. Second, case diversity and contrast. The case selection takes into account both the logical replication of multiple case analysis and the differences between cases. The four villages selected for this paper are located in four provinces with different resource endowments in China, with large differences in climate, hydrological environment, human environment, and types of agricultural crops cultivated, but at the same time, the four villages also have their common points, and all of them rely on the integration and upgrading of their village industries to achieve the effect of poverty alleviation and wealth. Therefore, the cases have both their own characteristics and essential commonalities, which can summarize the rural industrial integration development model worthy of reference. Third, the integrity of the case. Make sure you can interview at least four people who are parties to the case, representing rural leaders, rural industry representatives, industry integration beneficiaries, and other relevant people. The interviewees all agreed to participate in multiple rounds of interviews and left their private and public contact information for further verification of the information to ensure triangulation.

### 3.3 Research process and interview subjects

#### 3.3.1. Interview outline preparation

Before the interviews, we designed questions for rural leaders, representatives of rural industries, representatives of rural industries, beneficiaries of industrial integration, and other related people, and prepared a more detailed interview outline. A paper-based informed consent form was also

prepared to clarify the specific application of the interviewed content to the writing of the paper. It was presented before each interviewee was interviewed, and if there were elderly people who could not easily read it, it would be read over by the interviewer to achieve informed consent.

This study is based on the process of rural industrial integration development to achieve poverty alleviation and wealth creation, so we drew on the narrative history approach in the interview process to guide the interviewees to give objective descriptions of their experiences: the interviews for rural leaders mainly focused on the development history of the village, the implementation of policies, the implementation of government funds, the state of industrial development in the village and the process of poverty alleviation for poor households; the interviews for representatives of everyone The interviews with the representatives mainly focus on the scale and development mode of the industry, the implementation of national policies, and the integration with other industries; the interviews with the beneficiaries of industrial integration mainly focus on the current income situation, the help from village leaders and enterprises in the process of poverty eradication, and the next income increase problems. In the research process, semi-structured interviews were mainly used, and the interview framework was used to control the pace and progress of the interviews, while interviewees were encouraged to conduct chatty narratives in a relaxed interview atmosphere to capture valuable information points. In response to the differentiation, we added a supplementary interview session in the form of visits to the field to ask proposed additional questions to the previously interviewed or other interviewees, which ensured that the

interview outline would not be too rigid and structured and disconnected from the reality of the research.

### 3.3.2. Data collection

In order to ensure the reliability and validity of the findings, we considered collecting relevant data from the following aspects during the research process in the case study design at the beginning of the research

- i. Secondary data. This included reports on the four villages in magazines, newspapers and the Internet, data on the development of the four villages in public affairs, and information from other scholars on research in the region.
- ii. Semi-structured interviews. This is an important channel for data collection in this paper. Since the four villages are geographically distant from each other and have different development patterns, we learned some new issues and perspectives not covered in previous theories during the actual interviews. The selection of interviewees also took into account diversity and mutual corroboration. We conducted several field studies in the four villages, and the audio files of the interviews we obtained were kept and later converted into transcripts for retention
- iii. On-site observation. In the process of interviewing enterprises, we conducted on-site observations of industrial bases in four rural areas, such as the agricultural machinery cooperative in Bailimiao village and the mulberry silkworm factory in Huangxi village, etc., and observed the industrial development in the field in a more intuitive way.

### 3.4 Data coding and data analysis

We integrated and cross-checked the data of the four villages selected as cases to ensure that the

data could truly reflect the evolutionary process of rural governance and the whole process of anti-poverty ecosystem construction in the process of poverty eradication in the villages. We first analyzed the interview transcripts by coding, i.e., "open coding - spindle coding - selective coding". In order to ensure the reliability and validity of the study, the coding process strictly followed the steps of induction and model construction of the root theory, and conceptualized and categorized the interview data. In the process of refining the main codes, we also switched between the data and the existing literature, using existing concepts and theories to explain our data, but at the same time maintaining a critical attitude to help us gain insight into the intrinsic meaning of the data, and revising and deleting the controversial concepts and categories based on the opinions of relevant experts to avoid the influence of the coder's subjective opinions on the coding results and to improve the objective coding. To avoid the influence of coders' subjective opinions on the coding results and to improve the objectivity of coding. Specifically, our analysis included the following four steps.

The first step, open coding-initial conceptualization. The purpose of open coding is to discover typical evidence from a large amount of disordered information, conceptualize it by primary coding, and continue to refine it on this basis so that it can be categorized. In order to avoid the influence of the coding process on the integrity of information, the sources of information for open coding are all interview data, media reports, government documents, etc.

The primary data are organized into textual data in the analysis, and the typical evidence is combed and analyzed to form the initial concept. Given that this part of the study is data mining

through existing textual information, paragraphs and sections that are not relevant to this study need to be excluded before coding. In addition, to reduce the influence of the researcher's personal selective perception, as much as possible, the original statements of the text and respondents were used as labels from which the initial concepts were then uncovered.

the second step, the main axis coding-primary category. Therefore, we need to analyze and refine the concepts in order to find out the relationship between them and distinguish them by type, so as to make the typical evidence which was fragmented and disordered more coherent and orderly.

The third step is selective coding. In open coding, the interrelationships among the main categories are analyzed to discover the core categories and refine the story line.

In the fourth step, comparative research analysis among cases. Based on the in-depth analysis of each main category, cross-case analysis is conducted in the case discovery section for the similarities and differences between different village-specific practices and continuous comparison with existing theories, and the whole process is faithful to the case data, helping to refine a robust and integrated theoretical framework.

#### **4. Research Findings**

The purpose of this study is: to analyze the current situation of the integration of three rural industries in China, and to analyze and construct a universal ecosystem for the integration of three industries by combining four typical cases. Through the field research, we summarized the existing literature and found that the three variables of national policy, infrastructure

construction, and industrial integration are the main variables that affect the integration of three rural industries. We found that there are many factors influencing the integration of rural three industries through field research in four rural areas. By organizing the research data, we extracted the data with more obvious manifestations and constructed through three-level coding: expertise and talent introduction are also variables that have a greater impact on the integration of rural three industries. At the same time, it is also found that, due to the difference of geographical differences, local particularities always exist, so the comparison between cases in this paper is explored based on such differences.

Thus, this paper will analyze four representative cases through five variables in five levels. An attempt is made to construct an ecosystem for the integration of three rural industries.

#### 4.1 The influence of national policy in the integration of rural three industries

In recent years, China has formed a policy and system system to strongly promote the integrated development of one, two, three industries in rural areas, and the No. 1 document of the central government in each year since 2015 has continuously strengthened the integrated development of rural industries. Relevant central departments and local governments at all levels have introduced systems and policies to support the integrated development of rural one, two and three industries, and comprehensively pushed forward the practice of industrial integration development. In particular, the implementation of the policy of precise poverty alleviation and the policy of sending the first secretary to villages in rural areas have provided a favorable grip for

targeted solutions for the rural poor. Each region has actively promoted the implementation of the policy in conjunction with local development to achieve the purpose of poverty alleviation and wealth creation.

Tangwangqiao Village has come out of a new way of development by seizing the national policy of industrial integration. Tangwangqiao village is the location of the water source protection zone and the head of the canal. After the water was opened in December 2014, the Henan provincial government had the 175th document in 2015, the management method of the South-North Water Transfer Water Source Protection Zone, and at the same time, the primary and secondary quasi-protected areas of the water source were clearly divided, and all industrial enterprises that did not meet the regulations within the protection zone were closed as long as they were protected. This policy brings very great resistance to the development of Tangwangqiao, both to protect the environment and wealthy industries is very difficult to develop, Tangwangqiao village struggled for a long time on the poor county. Until the introduction of the national policy of precise poverty alleviation and industrial integration development policy, Tang Wangqiao village well grasp this policy opportunity. Under the consultation led by leaders at all levels, 9,000 mu of arable land in the village, except for the 1,200 mu of forest land that cannot be cut down according to the policy, was contracted to Fusen Enterprises as a honeysuckle planting base and a raw material base for the production of Shuanghuanglian. The whole village was covered by the industry.

In the process of poverty eradication, Bailimiao Village actively studies and grasps the national poverty alleviation policies. The village has built

a file and card for the poor people left in the village, and actively helped the poor households to fight for national subsidies. Especially after the national implementation of the first secretary in the village, Bailimiao Village regularly holds policy interpretation seminars and asks the first secretary to explain to the village people the latest national policies to help farmers. The First Secretary will regularly visit villagers with mobility problems to explain favorable policies and help to get jobs. Through the study of the policy, the leaders of Bailimiao Village are the first to capture the industrial strategy that meets the actual development of the village, i.e. village led cooperatives, brick factories and cattle farms funded by the village, etc., to create a new model of industrial integration.

Unity Village attaches importance to the institutionalized establishment and improvement of poverty alleviation policies at the grassroots level so that villagers understand the advancement and superiority of poverty alleviation policies and enhance their endogenous motivation in wanting to participate in the practice of entrepreneurship and poverty reduction. "Now no one in the two village committees is home during the day drinking and gambling, either sitting in the village committee to solve the problems of the masses or managing the industrial development situation in the fields or factories." The higher government appointed Liu, an instructor from the forestry police station of the public security branch of the Xuzhou District, as the first secretary of the village in Unity Village, while the cadres and staff of the relevant units of Xuzhou District Communications and Transportation formed a village task force, which was a careful consideration of the actual situation of Unity

Village and a thorough plan to guarantee the smooth implementation of the work of poverty alleviation and to ensure that Unity Village would complete the difficult task of lifting its cap from poverty within the expected time. The village cadres work day and night, and the good policies of the country basically reach the hearts of the masses in a fair and timely manner. Everyone's satisfaction with the cadres has improved, ideas have been opened up, the concept has been updated, and the confidence and determination to work and start a business has been there." Shen Ping, a legal person of Green Run Kang professional cooperative of breeding, who has returned to his hometown, said. Under the leadership of village leaders, Taiyinshan, Qiheyuan, Green Run Kang and other professional cooperatives have been set up to drive the healthy development of the village's breeding industry, to achieve 8,300 pigs, 2,500 head of beef cattle, more than 1,000 boxes of Chinese bees, 450 mu of Chinese herbs (*Psidium guajava*), 1,800 mu of square bamboo, 5,650 mu of various fruits, as well as rice, pepper, sorghum and other industries 4,400 mu. Grasping the national policy of enriching the people and effectively implementing it into the village industrial development, Unity Village has achieved new development by relying on the national policy.

The case analysis and coding summary (Table 1) lead to the following propositions:

Proposition 1: The guidance of national policies is the basic guarantee that rural areas can realize industrial integration, and rural areas have realized industrial integration and rapid development by relying on the national policy of integration of three industries.

Table 1 Summary of coding of the impact of national policies on the integration of the three rural industries

Tertiary code	Secondary code	Primary code	Typical data cited
Policy Interpretation	Active study of policies	Proactive study of national policies in favor of agriculture	The village committee of Bailimiao Village regularly holds national policy study seminars to obtain the latest information on agricultural policies in a timely manner.
		Multi-channel access to agricultural policies	Unity Village obtains industrial development policies through various channels such as online and offline
	Proactive promotion of policies	Publicize agricultural policies at all levels	Huangxi Village mobilizes all sectors of the village to promote policies to help and enrich farmers
		Village leaders take the lead in explaining the policy of agricultural benefits	Bailimiao village leaders and the first secretary in the village go to the homes of poor households to publicize the policy of helping farmers
Policy Implementation	Precise implementation of policies	Policies keep pace with the times	Poverty alleviation policies have changed from county-based to individual-based, and the precision of the policies has helped poor households to escape from poverty quickly.
		Policy benefits people	Bailimiao Village has secured national medical exemptions for poor households in the village who are impoverished due to illness.
	Effective use of policies to develop industries	Integration of policies with local reality	Tangwangqiao Village cooperates with pharmaceutical enterprises to grow honeysuckle according to the actual situation of local water source protection, which protects the water source on one hand and achieves the effect of increasing income on the other hand
		Develop industry with the advantage of policy	Unity Village relies on Guizhou Province's poverty alleviation policy to reach in-depth cooperation with Zhongtian Financial Group

#### 4.2 The impact of infrastructure construction in the integration of three rural industries

Rural infrastructure construction includes the basic construction of farmland water conservancy, road construction, afforestation, comprehensive agricultural development, education and medical

and health care, etc. Due to the long construction period, the many fields involved and the wide scope, the government must take all aspects into consideration in the construction process, and give full play to its functions in the whole construction process to coordinate, coordinate

and manage the whole construction process in order to achieve rural In addition, based on the fact that rural infrastructure is a public good, the government must take into account all factors. In addition, based on the general nature of rural infrastructure as a public good and the specificity of the actual situation of each place, the government should undoubtedly play a leading role in the process of rural infrastructure construction. Thus, the government gives full play to its own functions, which is the key factor to ensure the effective supply of rural infrastructure.

Unity Village's geographical location is all steep slopes, making travel inconvenient, transportation of agricultural products difficult, and industry slow to develop. "Originally, there was only one road into the village from Pingzheng, which was narrow and bad, and the people were annoyed to travel and produce." Liu Fuyan, the first secretary in the village selected by the Forestry Bureau of Podocontrol to unite the village, said. After the start of the fight against poverty, the village general support on the project, the masses, to improve infrastructure, to create conditions for development. The village and township efforts to get the attention of the higher leadership, set up a special anti-poverty task force in the village, traffic, water conservancy, communications and other departments to send a person to squat and coordinate, what is missing to fill what, what is weak and what is strong. Over the past few years, unity village up and down coordination, access to all levels of investment 170 million yuan, completed the road hardening nearly 100 kilometers, the villagers group to achieve group group pass, into the household road hardening 80%. Other water, electricity full coverage, communication signal coverage of 90%,

for industrial development injected a strong impetus.

Tangwang Village has 2,680 people in the village, 11 natural villages and 16 villager groups. The arable land area is very small, so it is a difficult problem to make the villagers live together and give up their original house bases for industrial operation. After the discussion of the village joint committee, experts from Shanghai Fudan University were hired to prepare the construction plan of the model village of ecological civilization, so that all villagers who are willing to move to the community can move here and centralize water and electricity supply, lighting and greening, and waste and sewage treatment. After the land transfer, the collective land area increased, and the collective income of the village also increased. The village will be able to pay all the money to the people in the form of subsidies, in addition to the villagers to pay additional medical insurance, to provide free breakfast and dinner subsidies to the village elementary school. The construction of infrastructure has made the living environment of the villagers better, and the villagers are more willing to give up their home bases for land transfer, which has increased the scale of the village's industry. Today Tangwangqiao Village has improved its living environment through infrastructure construction. At the same time, it has achieved the purpose of land integration, and the whole contracted to Fusen enterprise to plant honeysuckle, becoming a grain-free township, solving the problem of full dependence on land, and young people can work outside without worry. Those who stay in the village can work in the industrial base to get income, and they can earn income from odd jobs at home.

In recent years, Huangxi Village has invested 5



million yuan to build a 1.2-kilometer-long, 14-meter-wide (hardened 9 meters) village road in accordance with the standards of secondary roads, opening up a fast channel with the provincial highway Kelong line to solve the problem of difficult travel for villagers; invested 7.5 million yuan to harden 9 kilometers of group-level roads, 9 kilometers of central village roads, 10 kilometers of machine farming roads, and 3 kilometers of new roads along the river to achieve the group and household access Concrete road. Huangxi Village built a two-way four-lane Huangxi Bridge to open up the fast track to Ke Long line, built a grid irrigation canal 5,000 meters, leveled 1600 mu of grid fields, and reconstructed 16 km of farming roads, a "field into a square, canal connected, road connected" scene. The road is open, for the village of Huangxi mulberry sericulture industry to provide convenient conditions. Huangxi Village adhere to the ecological resources as the basis, to tourism agriculture, leisure tourism as the goal, give full play to agriculture, ecology, humanities, nature and folk culture and other resources, highlighting folk customs, dining and entertainment, special industries, small farmhouses, greenhouse planting and other rural features, integration of farming scenery and rural agriculture, and gradually become a set of leisure, sightseeing,

sightseeing, entertainment as one of the comprehensive tourism village.

Bailimiao Village has established a mechanism for mass participation, incorporated village environmental sanitation into the village rules and regulations, and established institutional mechanisms for rural garbage classification and reduction, environmental sanitation cleaning and sanitation, and "three bags in front of the door" for farmers in each village. The positive incentive mechanism of "exchanging labor for points and points for goods" and mass spiritual civilization creation activities such as star-rated civilized households and the most beautiful courtyard are carried out to bring a sense of happiness to the people with real "internal and external cooperation". The beautiful living environment attracts college students to return to their hometowns to start their own businesses and inject fresh blood into Bailimiao Village.

Through the analysis of the above cases and coding summary (Table 2), the following propositions can be drawn:

Proposition 2: Infrastructure construction is the basis for the integration of three rural industries, and the development of rural industries and the overall development of rural areas are dependent on the construction of rural infrastructure.

Table 2 Summary of coding of the impact of infrastructure development on the integration of the three rural industries

Tertiary code	Secondary codes	Primary code	Typical data cited
Infrastructu re constructio	Construction of transportatio	Construction of bridges according to the geographical	The Huangxi Bridge was built in Huangxi Village, creating a development scenario where "fields are squared, drains are connected, and roads are connected".

n	n	environment	
	environment	Rural road hardening	In Unity Village, nearly 100 kilometers of roads have been hardened to facilitate the transportation of agricultural products.
	Construction of Human Living Environment	Collective housing promotes land transfer	Tangwangqiao Village has realized land transfer and promoted industrial development by building an ecological civilization model village.
		Change of rural living environment	Bailimiao village is now a "beautiful countryside construction pilot village" in Jilin Province

#### 4.3 The influence of industrial integration in the integration of three rural industries

According to Allen N. Berger, an American economist, industrial integration can occur through inter-organizational mergers and acquisitions, self-organized scale expansion, and reorganization of production and distribution systems, or it can occur in conjunction with industrial restructuring. In the primary stage of rural industrial integration, industries achieve initial development through integration with various resources in the village, expansion of their own scale, and reorganization of production and division of labor within the industry. It lays the foundation for the later stage of rural industrial integration development.

Bailimiao Village has gone the way of development by exploring a new mode of industrial integration. The implementation of the village party organization and the new economic organizations in rural areas "integrated development" model, the village party organization and the new economic organizations in rural areas to build a party organization, to take investment, cooperation and other ways to promote the development of rural collective economy to achieve scale, industrialization. For

example, the village party branch of Kangping Street in Lishu County and Lu Wei agricultural machinery farmers professional cooperative through the implementation of fusion development, the village will be 6 hectares of land into the cooperative, to carry out cooperative management, the annual guaranteed dividends of 60,000 yuan, fusion development model has begun to bear fruit. Through the organization of the cooperative, Bailimiao village basically realized the scale of land management, better solve the problem of 'who to plant'; realize the whole mechanization operation, not only improve the production efficiency, but also reduce the production cost, each hectare can save cost 1000 yuan, through the 'pear tree model' farming, so that the straw back to the maximum protection of organic matter in the soil, while the reduction in the number of tillage, the protection of soil biology played a considerable role, which in turn solved the 'how to plant land' problem; land concentration up, the level of agricultural mechanization and production efficiency has been greatly improved. In addition to land dividends, the community members have also freed farmers from the land and increased their income by developing planting and breeding and

working outside.

Bailimiao Village has created a rural ecological model known as the "four-in-one" model. The temperature in the greenhouse ensures that the digester does not freeze in winter and produces gas normally; the digestate and digestate can be used to fertilize the fields; pig manure and human manure can be used to produce biogas; the greenhouse raises pigs quickly, saves feed and reduces costs. We have accumulated rich experience in industrial integration. At the same time, the project of electric business service station in Bailimiao village was built, and it is planned to build an electric business service station integrating online and offline in Bailimiao village, so that high-quality products can be stationed in online stores and develop and grow the collective income of the village.

Huangxi Village has gradually worked out the experience of industrial integration in the development. The village according to local conditions, find the "point" of industrial poverty alleviation, by taking the company + base + professional cooperatives + poor households, industrial households + poor households model, drive poor households together to open the door to wealth. The village to develop sericulture, vegetables, flowers and seedlings, organic grapes, tea five leading industries for poverty alleviation, the formation of sericulture, flowers and seedlings, tea, vegetables, grapes five farmers' professional cooperatives, the company + base + professional cooperatives + poor households model, and actively sing the main theme of industrial poverty alleviation, the formation of "a village a product" It has formed the industrial pattern of "one village, one product" and was awarded "National One Village, One Product Demonstration Village" by the state. Mulberry

planting is the leading industry of Huangxi Village, and it is also a special industry of the village. Mulberry planting is the leading industry of Huangxi Village, which is also a special industry of the village. In recent years, the village to take the "company + cooperative + farmers" business road, effectively extend and improve the industrial chain, but also fully stimulate the enthusiasm of the villagers to join the sericulture industry. Currently has planted 800 mu of high-yield mulberry, the new more than 4,000 square meters of small sericulture factory, more than 20,000 square meters of sericulture greenhouse, more than 2,000 square meters of semi-mechanized sericulture room, the implementation of "small sericulture factory, large sericulture labor-saving" production and management model, the founding of the mulberry company, the new cocoon collection and drying station, the implementation of production and marketing of a one-stop services. The introduction of the provincial sericulture seed factory seeds, Huangxi Village, under the development and construction of the Mulberry field sericulture under the sericulture shed, small silkworm breeding plant and cocoon collection and drying company in Xiushui County has played a demonstration role, Huangxi Village has also become an important base of Xiushui County sericulture. On this basis, the introduction of settled Huangxi secondary hydroelectric power station, gold cherry wine industry and other eight enterprises, the introduction of capital of hundreds of millions of dollars, the arrangement of surplus labor force employment of nearly 800 people.

Unity Village has achieved leading industrial integration through the all-round presence of local well-known enterprise Zhongtian Finance, which has re-established the planting and

breeding industrial structure system with ecological pigs, Chinese bees, ecological rice, ecological crabs, organic vegetables, high-quality fruits and other agricultural products as the main products in Unity Village. It also extends the related industrial chain, such as ecological pig deep processing plant, Chinese bee production and packaging plant, rapeseed oil extraction workshop, rice processing plant, etc. At the beginning of building the "Lekeng Sweet" agricultural tourism brand, Zhongtian Finance clearly set the long-term goal of "urban-rural co-benefit" by upgrading the industrial structure of Unity Village and constructing a solid and stable industrial system, so that the primary, secondary and tertiary industries can be integrated efficiently and complement each other. The goal is to upgrade the industrial structure of Unity Village and build a solid and stable industrial system, so that the primary, secondary and tertiary industries can be efficiently integrated and complement each other, and be adapted to the actual needs of Guiyang and other surrounding cities.

Tang Wangqiao has achieved rapid development of the industry through the model of integrating the entire village land together and signing contracts with honeysuckle planting enterprises. The village has an overall area of about 10,000 mu, with full coverage of the production industry, 9,000 mu of honeysuckle planting, except for the current 1,200 mu of forest land, which cannot be cut down according to the policy requirements, the rest of all the land transferred to the county's leading enterprise, Fusen, as a honeysuckle planting base, the production of raw materials base of double yellow Lian, since 2003, from small to large, from nothing to achieve full coverage of the village production, bringing the

people The industry is clear, the virtuous cycle of the industry, the liberation of the labor force, before the traditional agriculture income is small, bad planting also have to lose money, the net benefit of an acre of land is not more than 400 yuan when the wind and rain, after the implementation of ecological industry, income diversification, land transfer to get rental income, Kang Wangqiao farmers before called traditional farmers, now called industrial workers farmers, also handed three gold farmers, the first land transfer is the first gold. First, land transfer is the first payment, temporary employment is the salary, and the land is valued as a share of the stock to get a share of the stock.

According to the case analysis and coding summary (Table 3), the following proposition is derived:

Proposition 3: Industrial integration is the main mode of integrated development of the three rural industries. Combining with the actual development of the village, a variety of industrial

integration modes can be carried out to achieve the effect of integrated development of the three industries.

Table 3 Summary of codes for the impact of industrial integration on the integration of the three rural industries

Tertiary code	Secondary code	Primary code	Typical data cited
	Village Leading Industry Integration	Land transfer is a prerequisite for the development of rural industries	Huangxi Village continues to deepen the reform of land "three rights and separation", implement "confirming rights and shares but not land", and establish four professional cooperatives of sericulture, tea, vegetables and seedlings according to the development mode of "land + labor + cooperative". The village has established four professional cooperatives, including sericulture, tea, vegetables and seedlings.
Industrial integration		Village leaders build industrial cooperatives can benefit villagers to the greatest extent	Bali Miao village initiative to give up the village land, the village leader of the cooperative, the villagers as managers, villagers can enjoy the cooperative harvest dividends, but also work in the cooperative to earn wages.
	Enterprise led industry integration	Village enterprise cooperation for industrial integration and development Enterprise led the integration of rural industries	Tangwangqiao Village cooperates with the local famous enterprise Fusen Pharmaceutical, and adopts the development mode of "company+base+farmers". Unity Village's own industry is weak, the "foreign" enterprise Zhongtian Group embedded in Unity Village to provide strong support to lead the industrial integration development of Unity Village in all aspects
4.4	The impact of professional technology in the integration of rural three industries	In the age of science and technology, the development of rural areas is also inseparable	from science and technology. Scientific planting, scientific production, the development of industry relies on the development of technology. In particular, the introduction of high-tech

monitoring technology in the process of rural industrial integration development, online live sales technology, including the supporting services of the tertiary industry all need the guidance of professional technology.

In 2020, the disposable income of villagers in Unity Village will reach 10,795 yuan, and all 455 poor households and 1,762 people will be lifted out of poverty, with a per capita income of mostly More than 5,000 yuan; the total accumulation of the village collective economy reached 21.89 million yuan. The poverty alleviation industry has realized the benefit linkage with all poor households through cultivation subsidies, land transfer, labor employment, and dividends of the village collective economy.

Huangxi Village for the lack of mulberry sericulture technology to organize learning, village leaders Xu Wannian led village cadres and several party members to Zhejiang to learn, they first learned the technology to start a successful business and then guide the people. Mulberry field sericulture introduced the province in the sericulture industry has the technical advantage of Jiangxi Jinggang Sericulture Technology Co., Ltd. for technical support, arranged a technical staff stationed in the village, and the detailed development of technical staff to provide technical guidance work program. In this way, the villagers soon raised the technical level of mulberry sericulture, can produce excellent quality cocoons. Mulberry field sericulture in the early layout of the sericulture development park at the same time, actively enhance the scientific and technological content of the sericulture industry, on top of the original mulberry sericulture technology, promote the popularization of labor-saving mulberry sericulture new technology, so that villagers in the

participation of sericulture industry entrepreneurial employment to obtain the second-order learning opportunities to further enhance product competitiveness.

The researcher also installed an unmanned system for the farm machinery, which has many functions such as precise sowing and automatic harvesting, realizing remote control from seed to harvest. The high zoom camera monitors the field management in all directions and without dead angle, the temperature and humidity sensor observes the meteorological data in real time, and the land monitoring situation is clearly visible on the big screen of the "intelligent agriculture" command platform, and the data is transmitted to the farmers in real time through cell phones. "Temperature, humidity, sunlight, rainfall, air pressure, wind speed, etc., based on the 5G network monitoring system, every corner of the field can be seen, like a weather whistle, who would have thought that one day planting can be so easy!" Eight Miao Village villagers Yang Jingtong exclaimed, through big data analysis, the spring to choose the appropriate temperature sowing, summer observation of pests and diseases for field management, the fall according to the fullness of the grain harvest in real time, now planting food, really picked up the "golden stretcher". Cell phones have become a new farming tool, "fingertip planting" has become possible. With the help of satellite positioning system, the big farm machine does the "embroidery work", can control the monopoly distance without any difference, a monopoly seedling planting down, as straight as a ruler drawing line, the standardization of farm machinery operations significantly improved. At present, the cooperative has realized the whole process of mechanization. When the harvester

operates, it can directly produce seeds and grains, and one harvester can harvest more than 150 mu of land a day. At the same time, the production efficiency is improved, and the cost of one land can be saved by more than 1000 yuan. At the same time, Bailimiao village also joint farming selenium-rich agricultural products with selenium-rich food companies, and the spraying of selenium-rich crops is carried out by professional technicians from the city to the countryside. The professional production technology has injected momentum for the rapid development of rural industries.

Tangwangqiao village is now the overall honeysuckle planting base of Fusen Pharmaceuticals, and the company signs contracts with the growers to provide seedlings,

as well as technical guidance on planting by the company's professional technicians. Thanks to the technical guidance from the large company, the honeysuckle in Tangwangqiao is able to deliver quality and quantity every year, steadily generating income for the farmers, and an integrated industrial chain from honeysuckle planting, acquisition and processing has now been formed.

The above case analysis and coding summary (Table 4) leads to the following propositions.

Proposition 4 Professional technology is the core support for the integration of the three rural industries. Technical guidance from internal and external cooperative enterprises in rural areas provides a guarantee for the development of rural industries.

Table 4 Summary of codes for the impact of expertise on the integration of the three rural industries

Tertiary code	Secondary codes	Primary codes	Typical data cited
Professional technology	Internal technical learning	The village specializes in training technicians	Huangxi village leader Xu Wannian personally leads the public to learn mulberry cultivation techniques
		Hire technical staff internally	Bailimiao Village Cooperative hired technicians to guide this cooperative in planting technology
	External technical guidance	Enterprise guidance from industrial development	Zhongtian Group provides guidance and assistance to Unity Village in all aspects of industrial development
		Guidance from enterprises on relevant industrial knowledge	Fusen Pharmaceuticals provided technical guidance to the honeysuckle planting industry in Tangwangqiao Village

4.5 the introduction of talent can promote the sustainable development of rural industries

The development of rural industries, the focus is on people, industrial production needs people, leading the development of people, only talent thriving, rural industries can thrive. Therefore, we should vigorously implement the "gathering

project" of modern agricultural talents, strengthen the training of new professional farmers, and cultivate rich rural leaders. The introduction of foreign talents, the input of fresh blood, to attract a large number of talents to return to their hometowns to start a business, in order to promote the sustainable development of rural industries.

Unity Village takes advantage of the governance of the villagers. The old villager Huang Dafa plays the coordination mechanism of villager governance, coordinating the contradictions between the participating subjects in the practice of entrepreneurship and poverty reduction. We also use the "Dafa spirit" as an entry point to cultivate a new group of villagers and accumulate human capital for entrepreneurship and poverty reduction and rural governance. In order to interrupt the intergenerational transmission of poverty, CTSF also cooperates with the grassroots government of Unity Village to develop education, carry out the "Siyuan Plan" and "QingYang Action", strengthen the construction of local education infrastructures and the provision of superior teachers, and ensure that Unity Village The program is designed to ensure that school-age children and teenagers receive a high standard of compulsory education.

A typical representative of this is Shen, a veteran from Unity Village. After he returned home from the military, he set up a "veteran's cooperative", driving other villagers in the village, especially poor households to participate in the common road out of poverty through their own hands. Industry leaders like Shen Mou are called "new villagers". These "new villagers" have become an important accumulation of human capital in Unity Village, and have become the key targets of the Zhongtian Finance and Unity Village governments.

Xu Wannian, the secretary of Huangxi Village, is a wealthy person who went out of Huangxi Village and started his own company. For the development of Huangxi Village, the villagers invited Xu Wannian back to the village to lead Huangxi Village out of poverty and into prosperity. Xu Wannian played a personal

outstanding leadership ability, brought a great change for Huangxi Village, on the one hand, he fought for a number of county policy support, on the other hand, help villagers to find a wealthy industry. From households to raise mulberry silkworms, to the new small silkworm factory and large silkworm workshop, Huangxi village sericulture industry continues to grow, the village has become a well-known base for silkworm seed production Xiushui County. From the muddy dirt road to the Bridge Avenue today, five leading agricultural industries such as vegetables and tea are driving side by side, and five professional production cooperatives have been established. 2020, the villagers' per capita net income exceeded 20,000 yuan. 2021, Xu Wannian was awarded the honor of national poverty alleviation individual by the state, which is a recognition of his personal leadership in leading Huangxi Village out of poverty and into wealth.

Bailimiao Village actively guides the village's college students to return to their hometown to start their own businesses, and employs college students in the village committee to carry out networked office and other work. At the same time, the village cooperative also recruits professionals for technical guidance and management.

The villagers of Tangwangqiao Village used to work outside the village, but now that the village's honeysuckle industry has developed, a large number of farmers have returned to their hometown to join the development of the village's industry, promoting the development of industrial integration in Tangwangqiao Village.

The above case analysis and coding summary (Table 5) yielded the following propositions.

Proposition 5 The introduction of talents is the facilitator of the integration of the three rural



industries. Only when the talents flourish can the rural industries flourish and the integration of the three rural industries can be carried out continuously and deeply.

Table 5 Summary of codes for the impact of talent introduction on the integration of the three rural industries

Tertiary code	Secondary code	Primary code	Typical data cited
Talent introduction	Cultivating talents of the village	Talent with prestige in the village	Huangxi Village is making efforts to cultivate new villagers to become capable people for the development of the village
		Returning talents from the village	In Tangwangqiao Village, most of the workers who were away from home have returned to their hometowns to participate in the honeysuckle planting industry.
	Attracting foreign talents	Recruiting graduated college students	By recruiting college students to work for the village committee, Bailimiao Village has improved the office capacity of the village network.
		Attracting foreign entrepreneurial talent	Unity Village attracts foreign investors to start businesses in the village.

## 5. Conclusions, recommendations and the construction of the integrated ecosystem of three industries

### 5.1 Conclusion

Industrial integration is a stage in the evolution of industrial structure and a major adjustment of industrial structure, representing the blurring of industrial boundaries, the effective allocation of resources and factors, and the trend of economic services, with the aim of establishing new competitive synergies between industries and generating greater compound economic effects (Zhou Zhenhua, 2004). It can promote the integration of agriculture, handicraft industry, cultural and creative industry, tourism service industry, digital economy industry, etc., promote the horizontal and vertical extension, cross and penetration of industrial chain, and form new development mode and business model, which is important to promote agricultural farmers' income and improve ecological environment (Zhou Fang, 2021).

The four case villages constructed, reorganized, and upgraded the industries in their villages by following the development model of integrating the three industries. With the support of national policies, the construction of technical facilities in the four case villages has been improved to a great extent. Under the leadership of village leaders and the first secretary in the village, all four villages have developed industries with local characteristics. At the same time, they actively cooperate with powerful local enterprises and obtain technical support from them. The integrated development of rural industries has led to the formation of a multi-modal integrated industrial chain of rural primary, secondary and tertiary industries, which has provided a large number of jobs for villagers and promoted farmers' income growth. As seen from the case analysis, the integration of rural three industries is an important mode of rural development towards new development, and policy support, infrastructure construction, industrial integration, professional technology and talent introduction

are the factors that have a greater impact on the development of rural three industries integration.

## 5.2 Construction of a Three Industries Integration Ecosystem

From the case study, we can find that the village has formed a relatively completed integration ecosystem of three industries while successfully escaping from poverty. In the integration ecosystem of three industries, the elements of rural integration include: national policy, infrastructure, industrial integration, professional technology, and talent introduction; the elements of rural development include: broadening income increasing channels, common construction and sharing, endogenous development power, improving rural governance, new rural construction, and industrial prosperity development; the main bodies of rural integration of three industries include: governments at all levels, entrepreneurial enterprises, village teams, various social organizations Other factors of participation are: rural system, mechanism to stop returning to poverty, multi-party cooperation, social protection, self-adaptive innovation, public platform services, etc.

The elements of the integration of the three rural industries and the elements of rural development form a mutually synergistic development relationship around the main body of integration. From both theoretical and practical perspectives,

the " three industries integration ecosystem" can be regarded as a product of China's rural industry development to a more advanced stage. This is because the long-term and complex nature of rural industrial development requires the construction of a dynamic integration system of three industries with exogenous guidance, endogenous development and co-evolutionary repair mechanisms, which requires the participation and symbiosis of multiple subjects in all aspects to achieve a common vision (i.e. rural revitalization), and focuses on social integration and multifaceted synergy. Therefore, the paradigm of " three industries integration ecosystem" can be adopted for theoretical and practical innovation.

In the light of the above analysis, this paper defines the " three industries integration ecosystem" as an organizational system with the participation of multiple subjects with a common vision, and multiple elements working together to form an interdependent, shared and win-win system with a certain degree of synergy, diversity, stability, dynamism and openness. This system can ensure the healthy and sustainable development of industries and form a sustainable and deep integration of three industries, thus realizing rural revitalization. The composition, characteristics and specific operation of the integration ecosystem of three industries are shown in Figure 1

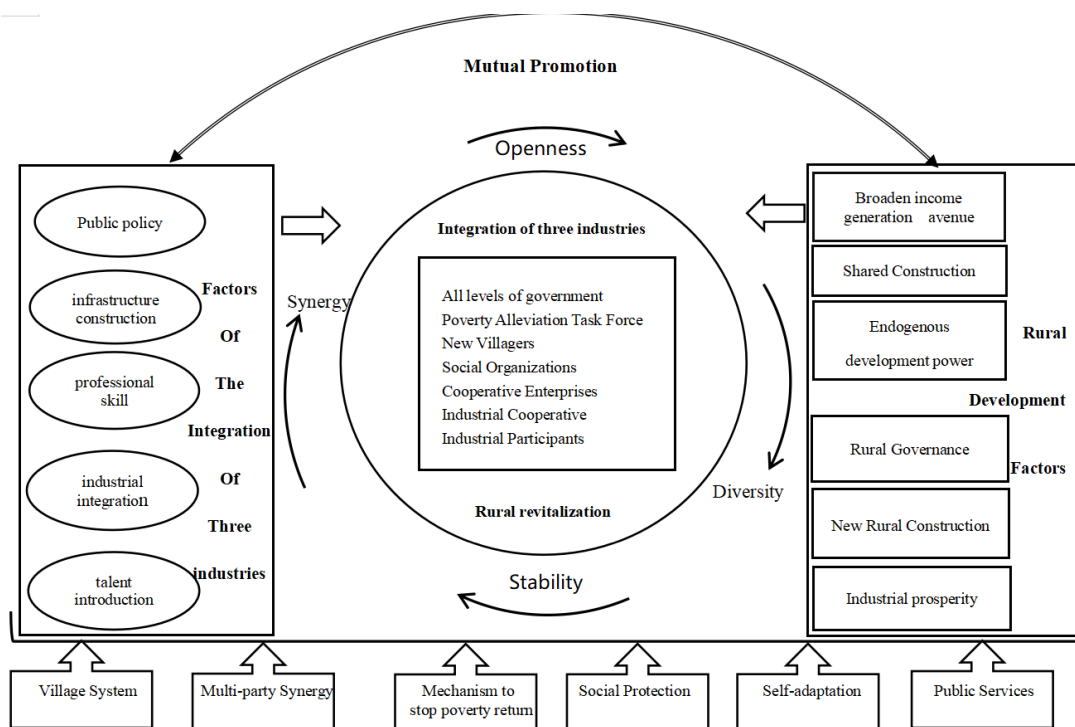


Figure 1

5.3 Recommendations

5.3.1 Promote policy refinement and precision

The integration development of three rural industries has become an important development mode of the current rural industrial development. In theoretical and policy research and policy documents, the elements of the three rural industries should be mentioned in a unified and standardized way to prevent the concept from being similar and confused. For example, the official definition of the connotation of the integration of the three rural industries and the definition of the business entity after the integration of the development of rural industries. To refine the policy protection content as well as the responsible unit, such as the expansion of rural cooperatives, responsible for the cooperative county and municipal departments do not have decision-making power, but also need the head of the cooperative to many departments to coordinate various matters, resulting in

slowing down the development of rural industries.

A special department for rural industrial development should be set up as soon as possible.

5.3.2 Continue to strengthen the construction of rural infrastructure

Increase the investment in rural infrastructure construction, especially road transportation and production-related infrastructure construction. At the same time, strengthen the new rural construction, not only in the model villages, but also in all villages to improve the living environment and production environment. At the same time, we should avoid the problems of "rigid construction" and "aesthetic curing", and should not build a uniform model of rural areas with a uniform aesthetic "identical" look. New rural areas with characteristics.

5.3.3 Continuously promote industrial integration

Based on resource endowment and location conditions, rural areas should strengthen the selection of special agricultural industries and

production capacity of agricultural products according to market locality and advantageous agricultural products, so as to promote the integration of agriculture into agricultural products processing and rural service industry on the basis of solid agriculture, and put more prominence on strengthening and expanding the multifunctionality of agriculture. Improve the linkage mechanism by "mutual benefit and win-win". Based on exploring the construction of a management mechanism that can maintain the lowest level of rural "subjectivity" and fully mobilize the enthusiasm of enterprises to participate in the integration of the three rural industries, and the core of the interest linkage mechanism that guarantees farmers a greater share of the benefits of the integration of the three industries, we will clarify the shares and links of farmers, village collectives and enterprises in the industrial chain and the interest chain, and promote The chain of interests of farmers, the industrial chain of enterprises and the win-win chain of cooperation are integrated.

#### 5.3.4 Improve the level of science and technology in the integration of three rural industries

The current rapid development of science and technology, the development of rural industries should focus on the introduction of high technology, create a digital development model, further technology to increase income, reduce the dependence on the land area and the number of people working in agriculture, and improve the level of land revenue. Accelerate the quality improvement project of agricultural products, deeply implement the quality of agricultural products, strong brand agriculture, and promote the integration of agricultural three industries can be integrated with high standard and high quality. Increase the subsidies for science and technology-

based services to guide the development of rural science and technology.

#### 5.3.5 Combine the training of local talents with the introduction of talents

The development of rural areas should not depend on "outsiders" because of the high mobility of foreign talents. We should focus on cultivating internal talents, developing capable people and focusing on organizational training. Combine the introduction of foreign talents with the training of local talents to jointly promote rural development. Improve the villagers' self-governance mechanism, improve the channels for expressing interests, make full use of internal communication and consultation platforms such as councils, supervisory boards and self-management committees to pool the wisdom of the people and public opinion, and enhance farmers' knowledge and ability literacy by strengthening education and training in the agricultural industry so that the majority of farmers will take the initiative and have the ability to take on more responsibility for the main integration of the three industries.

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