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Rural vitalization promoted by industrial transformation under globalization: The case of Tengtou village in China

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Abstract

Globalization has deeply changed the rural socio-economic form and spatial pattern, and caused a comprehensive and profound transformation of rural industries. By establishing a theoretical analysis framework for industrial transformation, this paper firstly reveals the internal mechanism of industrial transformation to promote the diversified development and comprehensive vitalization of rural areas. Taking Tengtou, a developed coastal village in southeast China, as the study area, we try to analyze its developing stages and the process of industrial transformation since 1965, and provide implications for China's rural vitalization towards globalization. Driven by external forces of globalization, rural development elements interact with each other for restructuring and combine with the internal development needs of rural areas to jointly promote the transformation of rural industries, with a major transformation path of "factor flow-structure adjustment-function expansion". The sound leadership of rural cadres and the growth of the collective economy are important catalysts for Tengtou's industrial transformation. The restructuring of village-owned enterprises has endowed Tengtou with the vitality for industries development, the ability to participate in global market competition, and the development resilience for overcoming obstacles. The great practice of industrial transformation in Tengtou has important enlightenment for China or even the developing world's rural vitalization: strengthening the building of village level party organization and the leadership of cadres; innovating the governance model of village level to develop the collective economy; promoting the integrated development of the industries to support the rural vitalization; and protecting the ecological environment to promote the rural harmonious development. Developing the global rural with Chinese characteristics is still in preliminary stage, the valuable Tengtou spirit of "plowing to the end, innovating never ends" deserves to be continuously carried forward to promote the rural industry development and comprehensive rural vitalization via innovation.

1. Introduction

Globalization refers to the complex multi-dimensional process of increased global social, economic and cultural interdependence and communication (Steger, 2003; Woods, 2011). With the deepening of globalization, the relationship between rural and urban areas is getting

closer which caused the boundary between urban and rural areas getting blurred (McGee, 1991; Davoudi and Stead, 2002). In this process, rural areas were affected by trade, investment, immigration, culture, custom and other factors, thus the economic and social structures were constantly changing and being reshaped, and rural functions were mutating and evolving accordingly (Hoggart and Paniagua, 2001; Tu and Long, 2017; Fahmi and Sari, 2020). However, rural areas are mostly in the marginal places compared with the cities and have been neglected for a long time in lots of countries (Long, 2020), so the rural development lags obviously behind and is more vulnerable to external influences. As a matter of fact, rural decline has become a global problem, and rural vitalization needs to be urgently attended to (Woods, 2005; Markey et al., 2008; Wood, 2008; Carr and Kefalas, 2009; Liu and Li, 2017).

The studies on globalization by both eastern and western scholars used to focus on the "global urban" compared with the rural. In order to change the research tendency of being dominated by cities, the concept of "global rural" was put forward, calling for more studies based on typical regions to focus on the reconstruction of rural areas under globalization (Woods, 2007). In recent years, burgeoning literatures have been exploring how globalization shaped rural areas from the perspectives of global industrial chain, local institutional reform, migration, land restructuring and cultural landscape changing (Echanove, 2005; Woods, 2018; Long and Woods, 2011; Castro et al., 2016; Fountain et al., 2020; Qian et al., 2016; Chen et al., 2019). Current literature has showed significant differences in the effects of globalization on rural development. On the one hand, globalization, as a key process of continuous adaptation of the human-land system, has led to the active adjustment of population, information, technology, capital and other factors in urban and rural areas, causing positive impact on rural development (Liu et al., 2021). In the case of Ecuadorian region, the development of integrated fresh-cut flower enterprises has deepened the social differentiation within farmers, and some flower farmers have created their own marketing channels for export or national sales, thus avoiding dependence on large capitalist florists and exporters (Latorre et al., 2022). Latin America has established a more localized food system through innovating territorial development policies which made the countryside more resilient when facing economic crisis (Kato et al., 2022). On the other hand, globalization has exacerbated unbalanced development within national regions, especially in relatively low-income developing countries, where the rural areas bear most of the costs of globalization while the social welfare has not increased significantly (Jones et al., 2022; Beckert et al.,

2021; Turcu and Urbatsch, 2020). The improvement of communication technology and transportation conditions not only provide opportunities for rural areas, but also facilitate illegal activities, such as people trafficking, drug dealing, environmental crime and unregulated food production imposing threats to the safety and security of rural areas (Ceccato and Yarwood, 2022; Stenbacka, 2022). Therefore, it is worthwhile to carry on deep analysis of the effects of globalization on rural development. Notably, the rural industry, as the foundation and key to rural development, is deeply embedded in the global production network under the double regulation of policy and market. For example, Australia and New Zealand have carried out radical agricultural deregulation through neoliberal reform, forcing agriculture companies to engage in transnational operations in the global market, thus the agriculture companies expanding rapidly, but at the same time, it also led to the continuous decline of individual farmers (Dibden et al., 2009; Cheshire et al., 2013). In terms of developing countries, traditional villages in China, through online trading platform, have greatly promoted the commercialization of rural cultural heritage and driven the revival of traditional industries, meanwhile, the social structure and cultural identity are changing too, which all together enable the traditional villages to be embedded in the global network with new economic characteristics (Fois et al., 2019). Affected by both global and regional factors, Cambodia's fast growing mining industry caused fighting for rural land resources among local artisanal miners, migrant miners and foreign companies, which could be regarded as the negative influence of globalization (Spiegel, 2014). In general, most of the studies on "global rural" focus on rural areas in western developed countries, such as UK, the United States, Australia, and so on, however, there is relatively less attention to the rural participation in the process of globalization in developing countries.

The rural industries of China are conceived originally from the local society and culture, and have been seriously constrained by the urban-rural dual development system (rural sacrificed a lot in order to support the better development of urban areas) for a long time (Fu, 2018). With the advancement of "Rural Vitalization Strategy" (Jiang et al., 2022), the slow developing situation in some poor rural areas in China is ameliorating characterized by the decline of traditional agriculture production and the emergence of manufacturing, eco-tourism and other kinds of industries and accompanied by transforming from agriculture-producing function to multi-function to take part in global production network (Long et al., 2011, 2022). Thus, scholars carried on a list of rural researches focusing on the connotation of rural industrial transformation (Fang and Liu, 2015; Liu et al., 2011), rural classification

and evaluation (Wandl et al., 2014), spatial pattern (Long et al., 2022), driving mechanism (Billig et al., 2022) and evolution law of rural development (Long et al., 2012), in order to analyze the differentiation and reintegration of rural production, living and ecological functions, and reveal the process of rural transformation.

Globalization continues to affect and reshape the rural areas, causing rural industries to respond and adjust actively or passively, then changing the rural functions. Finally, rural industries are being transformed and embedded in multiple economic, political and social processes. The rural restructuring in China is not only driven by macro globalization which resonates with the forces powering the rural reconfiguration in contemporary developed countries, especially in the European region, but also strongly affected by domestic urbanization and industrialization to realize the consumption potential of rural areas. Various of driving forces are involved in this process, with progressive reforms adopted and related national strategies developed to provide guidance for China's rural transformation, and local governments and rural elites played an important intermediary role in shaping the new rural landscape (Li et al., 2019; Long and Qu, 2018). Although the rural development of China has made big progress since the reform and opening up, the rural industries especially the secondary and tertiary industries are generally lagged behind, and it is difficult to make effective adjustments during the process of rapid industrialization and urbanization, therefore falling into a vicious circle of "population loss-economic recession-living quality decline-continued population loss" (Li et al., 2019). How to take the opportunity of globalization to reverse the long-term rural recession and promote the comprehensive vitalization of rural areas is becoming a top priority of China's rural industrial transformation. Tengtou village, located in the developed area of southeast coast of China, not only has experienced successful industrial transformations for many times similar to the development process of villages in the world, but also hasfound a different transformation road with unique Chinese developing characteristics. Therefore, this paper attempts to theoretically reveal the internal logic of rural industrial transformation promoting rural vitalization under globalization, then by telling the "Tengtou story" and carrying on empirical analysis, we try to clarify its industry development stages and transformation process under globalization. Finally, by putting forward enlightenment based on the successful industrial transformation of Tengtou village to enrich the global rural research on industry development especially in socialist developing countries, and hopefully to provide useful reference for rural development and vitalization of China even the developing world.

1.1 Theoretical analysis framework of industrial transformation promoting rural vitalization

The dilemma due to the contradiction between the people's ever-growing need for a better life and current unbalanced and insufficient development pushed the Communist Party of China (CPC) to put forward and implement the "rural vitalization" strategy to address these issues. The strategy of rural vitalization aims at realizing the comprehensive renaissance in rural China by systematically allocating and efficiently managing diversified developmental elements, and overall building the countryside from the aspects of economy, ecology, culture, politics, and people's well-being, which is not only reflected in the improvement of the living environment and public services and other material aspects, but also in the in-depth rejuvenation of a vibrant industry, a unique culture, and an orderly governance system (Long et al., 2019).

Rural area is in a relatively "weak" position in the process of participating in global competition, with limited employment positions, low agricultural added value, serious ageing problems of farmers and deterioration of resources and environment as its common problems. Rural vitalization should be constructed based on prosperous industries, so analyzing the logical relationship between industrial transformation and rural vitalization has become an important theoretical breakthrough point to promote rural vitalization when facing the impacts and un certainties brought by globalization. Thus, this paper proposes a theoretical analysis framework of rural industrial transformation promoting rural vitalization to analyze the key factors of rural development and their interactions, attempting to find out the internal mechanism of industrial transformation in the context of globalization to promote the diversified development of rural industries and realize comprehensive vitalization (Figure 1).

Generally, the transformation of rural industries is the result of the cooperative effect of endogenous and exogenous factors. From the perspective of the internal rural area, rural industry is embedded in a four-fold system with specific natural, social, economic and ecological characteristics, and composed of several interrelated and interactive development elements with certain structure and function, such as capital, land, labor and policy (Petrescu-Mag et al., 2022). Endogenous factors mainly refer to the natural conditions, resource, location and industry foundation (Long et al., 2011), which determine the background of rural industry before transformation, while the coexisted risks and opportunities caused by changes

in foreign markets together constitute the exogenous factors of rural industrial transformation, mainly including population migration, foreign investment, cultural conflict and integration, ecological crisis, etc. Actually, globalization is an expression of interactions within and between assemblages mentioned above (Woods et al., 2021). Exogenous factors drive the interaction and reorganization of rural endogenous development factors, and then leading the change and transformation of rural industries. Specifically, migration is mainly represented by the international and domestic labor mobility between urban and rural or different areas. Both immigration and emigration have important impacts on the choice of agricultural activities, such as the planting area and structure. In terms of foreign investment, the native people who have accumulated amount of capital and migration experience prefer to increase investment in high-value and capital-intensive industries, and would accelerate the transformation of rural industries structure from a labor-intensive production to a more commercial and professional pro duction (Woods, 2018). The ownership of rural industries would be impacted and begins to develop various forms such as collective, individual, and mixed ownership. The rural and pastoral orientation of tourism engenders continuous conflict and integration between foreign culture and rural local traditional culture, spawning new forms of tourism patterns especially in rural areas with a certain development foundation. Besides, the ecological and environmental problems such as climate change, pollution spread and transfer caused by globalization and urbanization undoubtedly have significant impacts on the future development trajectories of rural areas (Woods, 2011; Knickel, 2016). The above-mentioned challenges and opportunities urge rural industries to improve the technological threshold, innovate production methods, and respond to the challenges of global rural recession and ecological environment deterioration with a clean, environment-friendly, green and circular development model (Lowe and Ward, 2009; Shen et al., 2012).

Under the combined action of endogenous and exogenous factors, the transformation of rural industry follows the path of "factor flow-structure adjustment-function expansion". Rural industries rely on the input of production factors such as labor, land, capital, technology and information as mentioned, and gradually the structure of industry is changed correspondingly, including the production, operation and management structure, and finally realize the multi-functional transformation from single function of agriculture production to multi-functions with ecological service, cultural inheritance and social stability. However, since the key factors affecting rural development cannot exist in isolation (Long et al., 2011), the process of rural industrial transformation will also drive other key factors to change, so the

transformation paths are characterized by multi-dimensional intersections: with the improvement of traffic conditions, the mobility of labor force between urban and rural areas is more convenient; the transformation of rural industry promotes the change of the employment structure of rural labor force, and sets new and higher demands for the quantity and quality of labor force. Especially, the rural elite as a key role (Li et al., 2020), has both the general farmer's common pursuit of a better life and also their own particular promotion by self-development, commonly, with strong ability of development, personal and social network, and they are separated from the ordinary farmer groups, strongly promoting the accelerated development of rural industries; the specific changes of industrial transformation could be also reflected in land use change. For example, the demand of industrial transformation drives the change of land use pattern and structure, and sometimes through the coupling of land consolidation and transfer to excavate the inherent land use potential, so as to transform the land use from extensive and inefficient utilization to intensive and economical utilization, and provide more development space for the industry (Long, 2022); as an important support for the development of rural industries, capital provides solid financial support for the construction of collective economy, such as the infrastructure construction and ecological environment protection. In practical operation in China, villages mainly attract the investment of external capital through the special rural supporting policies, for example the much cheaper land costs policy. Under the effective organization and operation of labor, land and capital factors, rural industries could form a new coupling and coordinated development pattern, which then work together to promote the transformation and realize the flourish of rural industries. The characteristics of prosperous industries, such as well structured, newly developed, distinctively characterized, green oriented and developing integrated, could highly accord with the multi-dimensional goals of China's rural vitalization by taking measures with Chinese characteristics, such as the party's guiding, ecological protection, personnel training and integration of industries. Thus, the transformation of rural industries is essentially a process by combining the external forces of globalization and the internal development needs of rural areas, aiming to get rid of the inertial tendency of global rural recession and realize the vitalization of rural areas by improving the market competitiveness and the persistence of rural development.

2. Methodology

2.1 Study Area

Tengtou village, located in Ningbo city, Zhejiang province, on the southeast coast of China (Figure 2), has been experiencing more significant changes compared with the central and western villages in China. Its industrial transformation caused by globalization is based on a certain foundation accumulated by agriculture development. However, due to the lack of land resource and bad agricultural conditions, it was once a well-known poor village. In the early 1960s, there was a folk song widely spread nearby: "The farmland is rough, the road is bumpy, the harvest is little, and the parents don't want to marry their daughters to Tengtou males". However, through the unremitting efforts, Tengtou has eliminated hunger and poverty and become a renowned rich village in China. In particular, the successful transformation of a variety of industries has brought a sustainable rural development mode to Tengtou, which is characterized by endogenous development, bottom-up innovation and integrated development. In 1982, the Tengtou group was established and has been expanding its business domain to many fields, such as clothing, real estate, ecological restaurant, circular economy and new energy. At present, Tengtou group has more than 80 companies, such as AIYIMEI clothing, Tengtou garden, etc., and the products are exported to Japan, the United States, UK, Italy and many other countries. In 2020, Tengtou had 12.29 billion RMB¥ of gross social product value, 1.17 billion RMB¥ of tax revenue and 189 million RMB¥ of tourism income. The average annual income of Tengtou villagers also increased from 1712 RMB¥ in 1991–69000 RMB¥ in 2020, an increase of more than 40 times that of 1991. Meanwhile, Tengtou village has received great honors both from home and abroad, such as the "top 500 global ecological villages" and "top 10 harmonious villages in the world" issued by the United Nations. It also has more than 70 national titles and honors, including the national advanced grass-roots party organizations, the first batch of national civilized villages and the national eco-tourism demonstration areas, etc..

2.2 Data Collection

The data sources of this paper are from field investigation, relative literatures, policy documents, press articles, reports, company publicities and other documents. The geographic information data are obtained from the high-resolution remote sensing image of Tengtou village obtained by Google Earth data platform. Specifically, in order to acquire a deeper understanding of the basic situation of Tengtou village and the process of industrial transformation and development, the research group went to Tengtou to carry on face-to-face interviews in October 2017, March 2020 and July 2021. The interviewees included local village cadres, villagers, farmers, and workers. The content of these interviews mainly

includes the basic situation of the village, economic and industrial development history, land use, etc., based on which a comprehensive understanding of the basic situation and the transformation process of industries of Tengtou village is formed.

3. Development stage and transformation process of Tengtou's industries under globalization

3.1 Agriculture Transformation

3.1.1 Division of agriculture development stages

(1) Subsistence agriculture period (1965–1981)

The original agricultural planting condition of Tengtou village was very poor in the early 1960s, with only 54.5 ha of farmland which mostly located in low terrain, lots of sand dunes, abandoned canals, wild grass and graves. Besides, the poor soil quality and frequent disasters especially floods and typhoons in summer led to the low yield with an average output only about 2250 kg/ha, which was not enough to eat for the people, whom lived in extreme poverty. In 1965, Tengtou village took the first step in improving the planting condition of agriculture in response to the national movement of "Learning from Dazhai in Agriculture" (Dazhai village is in Shanxi province, China, famous for its successful land consolidation and agriculture development). Under the leadership of Jialiang Fu, the first secretary of Tengtou CPC branch, the villagers leveled the rugged land, removed tombs and sand dunes, built tractor roads and excavated water diversion channels, transformed the farmland into 200 pieces of high standard farmland with irrigation and drainage channels to ensure a good harvest even confronted with the bad weather. Besides, about 3.5 ha of farmland was increased via carrying out land consolidation. By 1981, the agricultural production condition had been ameliorated and the "relying on heaven" barren land had been turned into fertile "high-yield field", and finally ended the poverty and hunger in Tengtou (Figure 3a).

(2) Scale agriculture period (1982–1992)

The household contract responsibility system, a basic economic policy in rural China, could realize the flexible operation of agricultural land and mobilizes the enthusiasm of farmers through distributing the farmland to households directly. In the early 1980s, this policy began

to be implemented in Tengtou which could be regarded as the first-round agricultural reform. Villagers were allowed to have the independent choice of actively arranging their own agriculture planting according to their own conditions. The adjustment of production mode greatly released the agricultural productivity of Tengtou (Chai, 2018). However, the development policy of rural areas supporting the cities due to the urban-rural dual structure system of China led to the income gap between urban and rural people widened, and the villagers' desire to work in the cities was becoming much stronger. Consequently, the loss of farmers and the abandonment of farmland were increasing quickly. In order to resolve these problems, Tengtou launched the second-round agricultural reform in 1986, encouraging villagers to rent farmland by signing formal contracts and advancing farmland use at an appropriate scale. As a result, the grain output was increasing dramatically on the basis of employing less farmers. In 1990, following the successful operation of grain production at a larger scale, Tengtou decided to implement specialized management of the other agriculture domains, the farmland used to plant grain was divided into grain land, husbandry land, vegetable and fruit land, and horticultural land, etc. (Figure 3b). From then on, Tengtou began to operate the agriculture in a more efficient and professional way by carrying out the enterprise management mode.

(3) Ecological agriculture period (1993–2017)

The large-scale management of farmland increased the villagers' income, but the profit of agricultural production is still at a low level because of the low grain price. In the early 1990s, Tengtou set up a strategic goal of rural economic development driven by ecological agriculture, and built the National Agricultural Comprehensive Development Demonstration Zone in 1998 (Figure 3c), aiming to improve the scientific and technological development, demonstrate and promote the agricultural production. In 2003, unprecedently in Ningbo, Tengtou cooperated with a famous Japanese bio-engineering enterprise and established a seedling base to breed high-quality seeds of fruits and vegetables by introducing advanced agricultural technology in the demonstration park, which then exported the seeds abroad. Thereafter, the village also cooperated with famous scientific research universities and institutions such as Zhejiang University and Zhejiang Academy of Agricultural Sciences to establish the "Tengtou Plant Tissue Foster Center" to improve the quality of special agricultural products and flowers, such as Fenghua taro, Japanese orchid and Gerbera. By 2017, Tengtou has preliminarily formed a modern development pattern of ecological

agriculture to export high-quality agriculture products based on efficient operation and advanced agricultural technology.

(4) Urban agriculture period (since 2018)

In 2018, Tengtou village officially opened the prelude to develop urban agriculture by holding the first agricultural carnival. Urban agriculture is actually a compound agriculture with the integration of the primary, secondary and tertiary industries, which include facility agriculture, sightseeing agriculture, leisure agriculture, tourism agriculture and ecological agriculture etc. Tengtou actively responded to the fast urbanization demands for green ecological products, and provided sightseeing flowers and trees nationwide by setting up 6 planting bases in Zhejiang, Shandong, Anhui, Hubei, Shanxi and Fujian provinces, giving full play to the advantages of seedling cultivation technology accumulated previously. By 2018, Tengtou Landscape Company has established more than 660 ha of seedling base (Figure 3d). According to its statistics, the comprehensive profits of farmland in Tengtou are more than 150 times that of traditional agriculture in other rural areas of China.

3.1.2 Analysis of agriculture transformation

From the above analysis, we can see the agriculture transformation in Tengtou is mainly characterized by the changes of production and management mode, crop types and planting area at different stages and the attribute of collective economy has always been retained (Figure 4). The major crop type was grain in the early 1960s, and the planting area of rice had reached to 132 ha via land consolidation, providing a stable food supply for the whole village. The rural household contract responsibility system in the 1980s had mobilized the enthusiasm of in dividual farmers for a short while, but at the same time exposed the limitations of small scale of planting area, so Tengtou made corresponding adjustment and entered the next stage of family-based scale management. In this stage, the planting area of grain grew fast, and economic crops such as rapeseed, barley and soybean reached to a relatively large scale. During 1976–1986, the planting area of fruits increased rapidly, such as the citrus and peach increased from 3.3 ha to 9.4 ha. With the development of ecology consciousness, the introduction of ecological technology of agriculture had become an important support for carrying out high quality seed production. In 2000, Tengtou planted flowers and trees at a large scale by innovating planting with multi-level in space and multi-sequence in time, which effectively increased the agricultural added value. At the same time, the planting area of grain crops had reduced to only 50 ha. Then in 2003, Tengtou began to

operate in a corporation way and adjusted its agricultural structure by giving up food crops and took the seedling base as the core of Tengtou agriculture. With the development of urbanization and the continuous investment of modern production factors such as technology, management and institution, Tengtou gradually transformed from ecological agriculture to urban agriculture. Flower and tree seedling began to sell to other provinces in China and a number of trans-provincial plantation bases have been built, forming a new pattern of diversified agricultural development.

In general, the agricultural development process influenced by globalization in Tengtou village was relatively limited, which was mainly reflected in the cooperation with international well-known agricultural biological enterprises and the introduction of foreign advanced technology to establish seedling R & D base, but unfortunately not forming international import and export agricultural trade pattern with large-scale. Actually, agriculture in Tengtou is more affected by the domestic economy and local policies, and actively participates in the domestic market, especially in the plantation of high-profit cash crops. At present, the major goal of China's agriculture represented by Tengtou is still to adapt to and support the development of the secondary industry although the governments have made great efforts to encourage the industry to give more support for agriculture. Constrained by the regional farmland area, labor quality and other factors, it is difficult to form a fully free flowing global market and participate in it (Cao, 2021).

3.2 Industry Transformation

3.2.1 Division of industry development stages

(1) Initial stage of village industry (1978–1993)

Due to the primitive accumulation of agriculture, Tengtou people who have gained adequate food were no longer satisfied with the low-income from agricultural production, and their desire for more prosper life was increasing. Taking the advantage of being located in the birthplace of "Hong Bang Tailors", a group of tailors specialized at producing western-style suits and had made the first suit in China, Tengtou village established the first village owned enterprise-Tengtou garment factory (the predecessor of Ningbo Aiyimei Garment Co., Ltd.) in a modified chicken farm, with only 10 household sewing machines and about 1000 RMB¥, which has become the milestone of Tengtou industry. Like many other towns and villages in the eastern coastal China, Tengtou village started the first wave of globalization and urbanization by undertaking the third international industrial transfer and developing the

labor-intensive industries. In 1988, there were 3 industry enterprises in Tengtou, with an industrial output value of 14.74 million RMB¥, about 12 times that of the agricultural output value. During this period, the operation mode of Tengtou was mainly dominated by the collective enterprises, and the investment on village enterprises was continuously increasing. In 1992, Tengtou village established “Ningbo Xingfeng company”, which is the predecessor of Ningbo Tengtou Group Co., Ltd (Figure 5a). From then on, Tengtou collective industry grew rapidly.

(2) Enterprise restructuring and running-in period (1994–2003)

In order to earn more profits, Tengtou people tried to take the advantage of low-price labor and land to expand the production scale, so as to strive for bigger market share. However, with the deepening of social specialization, the traditional collective industrial mode was difficult to meet the development requirements of market-oriented economy, and the original mode had lost the traditional advantageous condition and foundation for further development. In 1995, the Tengtou CPC branch determined to reform the management mode of collective economy after investigating many developed towns and villages, so as to further release the vitality of development: the key enterprises with large scale and high efficiency were transformed into shareholding or shareholding co-operative system; small and medium scale enterprises were planned to be merged or leased out; agriculture and tourism companies with strong land dependence were subject to the enterprise oriented management. Through the restructuring reform of village owed enterprises and running-in period, most companies had quickly entered the track of rapid development. In 2003, all the former collective enterprises in Tengtou had completed the restructuring, and transformed into a mixed industrial ownership and development pattern in which collective, shareholding, solely foreign investing, joint venture, and individual enterprises coexisted.

(3) Market-oriented expansion period (2004–2010)

Since China’s entry into WTO, the open market environment has provided great opportunities for Chinese villages to obtain more global advanced production factors so as to expand the international market. The Aiyimei garment company of Tengtou entered the international garment market as early as in 1994, but at this stage, it mainly provided long-term Original Equipment Manufacturer (OEM) production for international well-known companies, but could not obtain good market reputation and big share (Figure 5b). Since 2004, Aiyimei company carried out independent brand building of its own by opening a

franchise store on the 40th street, 5th Avenue, New York, setting up a sale branch in Paris, registering the trademark “AYIMEI” in 20 countries such as the United States, Japan, Germany and Italy, and had exported top quality of cashmere coats and suits to about 30 countries and regions. Aiyimei company has completed the transformation from long-term OEM production to building its own international brand, and continuously integrated into the international high-end garment market.

(4) New development pattern innovation period (since 2011)

Confined by the limited developing space of the village itself, Tengtou firstly explored the development pattern of “Chain of Tengtou” in China. Chain operation is a modern form of management widely used in many countries in the world. It mainly implements large-scale operation, standardized service and scientific management by means of “combination, unification, specialization and standardization”, so as to improve the coordinated operation of the management system and the efficiency of large-scale operation. Based on the local rural cultural and ecological advantages, Tengtou planned to develop ecological hotels and farms by using the industrial pattern in the suburbs of Ningbo at the beginning, trying to construct microform of Tengtou village to “replicate” the successful industrial development of Tengtou. In 2011, the first Tengtou ecological hotel was officially opened in Beilun, Ningbo. Relying on the established renown of Tengtou and the natural resources of Beilun agricultural park, the ecological hotel has been one of the most popular hotels in Ningbo. Subsequently, the “Chain of Tengtou” pattern continued to expand its territory and successively opened branches in Jiangbei, Cixi and Fenghua of Ningbo, beginning the expansion of industrial development.

3.2.2 Analysis of industry transformation

The essence of Tengtou’s industry transformation is the process of synchronously realizing the reform of ownership structure and the spatial transfer of industrial development under the impact of globalization and the policy support from local governments (Figure 6). In the early stages of China’s reform and opening up, the original capital accumulated in agriculture laid important foundation for the development of village owned enterprises. The garment and electronic accessories factory founded in Tengtou in this period were all located within village, mainly labor-intensive factories, which completely changed the economic structure of Tengtou previously dominated by agriculture. With the increase of village owned enterprises, collective economies gradually developed toward large-scale management, while the

individual private economy was also admitted by the government and society at the same time, which promoted the reform of the industrial management and ownership, and finally formed a mixed ownership structure dominated by Tengtou collective enterprises after the successful reform in 2003. With the increasingly frequent flow of economic development factors between urban and rural areas, the advantages of rural low-cost competition gradually disappeared, the enterprises began to transfer to surrounding rural areas or cities to explore more suitable developing space. Entering the 21st century, the international market was gradually opening up with China's entry into WTO. In order to better expand the international market, especially the high-end consumer market in western developed countries, Tengtou industry, represented by Aiyimei company, adopted the development strategy of separating the enterprise headquarters from the production base, i.e., the headquarters and sales center moved to international cities to better obtain the city's advantages of being an information, talent and technology center, while the production base would stay in rural areas to maintain relatively low price production factors. By acting in this way, both rural and urban areas could give full play to the respective production advantages. Through the above analysis, we can see that Tengtou industry has successfully accomplished the industry transformation from scratch, and the proportion of total industrial output value was rapidly increasing. In 2020, the total industrial output value of Tengtou accounted for 50.3% of the total output value of the village, exceeding the sum of the agriculture and tourism. In addition, as the pillar industry, Tengtou industry, while developing itself in expanding the global market, had continuously driven and led the accelerated development and expansion of agriculture and tourism, forming an interactive and common industry development pattern. Although the foreign trade enterprises represented by clothing have a relatively high degree of participation in globalization, they are nevertheless mainly labor-intensive industries, i.e., the enterprise's popularity, brand and profit are relatively low, which has become one of the most difficult problems that must be confronted and solved in the process of internationalization of Tengtou industry.

3.3 Tourism Transformation

3.3.1 Division of tourism development stages

(1) Free sightseeing based on reception (before 1999)

Tengtou never stopped on the road of independent development and constantly tried the tertiary industries, such as the real estate construction, landscaping greening and tourism,

among which the tourism conformed to the development trend has gradually become a new and important highlight of Tengtou's economic growth. In 1993, Tengtou village was awarded the title of "Top 500 Global Ecological Villages" by the United Nations and its popularity both at home and abroad increased rapidly in a short time, which brought about an endless stream of visitors flooded into Tengtou. However, Tengtou spent a lot of time and money to receive visitors for free, making it a huge and exhausting work for villagers in that period. How to change this free reception work into a sustainable income? Jialiang Fu changed the perspective of dealing with these tremendous visitors and took it as a valuable opportunity and tried to turn the passive reception to active welcome, i.e., developing rural tourism by charging money for adimission. Subsequently, Tengtou made great efforts to transform village tourist attractions such as developing the Grandma Creek project and combining with the flower and tree seedling base to continuously improve the village environment, and the thought of promoting village development with eco-tourism became much clearer (Figure 7a). In 1998, Tengtou built a social practice base mainly for primary and middle school students to develop agricultural sightseeing and popular science tourism. Tengtou village has gradually transformed from free sightseeing reception to the market-oriented tourism.

(2) Eco-oriented tourism stage (1999–2013)

With the establishment of social practice base, Tengtou became one of the first batch of Chinese villages to charge money for admission in 1999, turning rural ecological environment into a tourism resource that can produce economic benefits, and vividly practicing the development idea of "Lucid waters and lush mountains are invaluable assets" with real actions. In 2002, following the trend of "eco-tourism", Tengtou established the Tengtou tourism company. In 2003, Tengtou focused on the theme of rural tourism, making full use of village resources including pastoral scene, folk custom, ecological environment, daily rural life, etc. At the same time, the tourism mode had also transformed from pure sightseeing to the integration of sightseeing, leisure and entertainment, and successfully ranked among the first batch of national 4A scenic spots. In 2008, Tengtou became the only village selected from 113 declared cases around the world to attend the Shanghai World Expo (Figure 7b). During the Expo, Tengtou received about 3000 foreign tourists with a tourism turnover of 3.5 million RMB¥. All the villagers tried to learn simple English, also the professional English tour guides were arranged to well greet tourists from all over the world, which demonstrated the internationalization characteristics of Tengtou. In 2010, Tengtou

together with Xikou, a tourism town nearby famous for former residence of Chiang Kai-shek, successfully established a national 5A tourist attraction. In the process of tourism development, Tengtou had always adhered to the tourism idea of "scenery in the village and village is the scenery", and had embarked on a sustainable development path of mutual supporting between protecting ecological environment and developing tourism.

(3) Holistic rural tourism stage (since 2014)

In 2015, Tengtou integrated the idle land and collective funds of surrounding poor villages, by following the development concept of "destiny community" and common prosperity to improve the tourist attractions and supporting service facilities, such as Tengtou folk agricultural innovation center and home accommodation service, and shared the tourism income in the form of quantification of stock right which could provide a stable source of collective economic income for the nearby villages. By the end of 2019, Tengtou cancelled the entrance fee of the scenic spots and switched into developing the holistic rural tourism. As a star village of national demonstration area of common prosperity in China, Tengtou accurately grasped the development trend of tourism to develop the holistic rural tourism in advance, constructing the ecological leisure tourism entity and the cluster of rural pastoral industry by integrating the natural and cultural elements of surrounding villages into one whole tourism industry, turning villages into scenic spots, and continuously injecting new elements into the development of rural tourism.

3.3.2 Analysis of tourism transformation

The transformation of Tengtou tourism industry is mainly reflected in the change of tourism consumption pattern and the improvement supporting facilities (Figure 8). From the above analysis, it can be clearly seen that the honor of "Top 500 Global Ecological Villages" awarded by the United Nations could be attributed to its long-term persistence in ecological and environmental protection work, providing a valuable opportunity for the development of Tengtou especially the tourism. However, due to the limited number of scenic spots, scattered distribution and serious shortage of tourism supporting facilities in the early stages, a large flux of tourists caused big reception pressure to Tengtou. In addition, during the tourism period of charging entrance ticket of scenic spot, Tengtou made a tourism alliance with the surrounding villages to expand the tourism scale, also the scenic spot expanded from land to water, doubling the area and number of scenic spots in a short period. The fast-increasing of tourists and expanding of scenic spots aggravated the shortage of tourism service supporting

facilities, so the tourism industry as a whole remained in the primary tourism stage of "walking and seeing". In recent years, following the development trend of global rural tourism, Tengtou was continuously enriching its high-quality tourism resources such as premium hotel, ecological restaurant, rural home stay and folk agricultural innovation center to upgrade the tourism quality. Driven by Tengtou rural industry and supported by the national and local holistic tourism policies, the trend of rural integrated development of industrialization, urbanization, informatization and agricultural modernization is looming. In addition, by improving the intelligent facilities of tourism service and convenient transportation network, Tengtou enhanced the sharing of tourism resource with Xikou scenic spot, such as the tourist, information, propaganda etc., aiming to improve the quality of holistic tourism while expanding the tourism scale.

Through the above analysis, the transformation process of Tengtou tourism is characterized by the upgrading from the original primary tourism mode based on selling ticket to a higher-level of multi-functional consumption mode focusing on tourist experiences by providing domestic and foreign tourists with richer scenic spot resources and more complete infrastructure. In 1999, the ticket revenue was a new growth point of Tengtou economy, but in 2019, it became a bottleneck restricting the sustainable development of Tengtou tourism. Tengtou tourism has completed the transformation from charging tickets to canceling tickets, which represents the whole rural tourism developing process, i.e., started the tourism from scratch of free reception to a primary stage of charging ticket, then to a relatively advanced stage of holistic rural tourism. At present, the tourists to Tengtou mainly came from Zhejiang province and some other domestic cities. Unfortunately, the number of foreign tourists has not increased significantly compared with the improvement of its international popularity. The essence of the transformation of tourism industry is actually the continuous upgrading process of the quality of tourism products. As the leader of rural tourism in China, further excavating the rural history, folk culture and traditional farming culture to improve the regional characteristics of rural tourism and its popularity abroad should be the focus of the future development of Tengtou tourism under the background of globalization.

3.4 Comprehensive Transformation of Rural Industries

3.4.1 Division of industries development stages

Based on the analysis of development stages of each industry type, the comprehensive development process of Tengtou industries can be divided into 5 stages (Figure 9). (1) 1965–

1978: the foundation stage of modifying agricultural production conditions. While most farmers in China were still in the stage of "depending on nature for a livelihood", Tengtou village has taken the lead in carrying out land consolidation project to improve the farmland conditions in order to suit the agricultural production under the leadership of the first-generation secretary of Tengtou CPC branch. However, due to the uniqueness of agriculture production pattern, Tengtou developed slowly at this stage. (2) 1979–1992: the initial development stage of setting up collective enterprises. During this period, while most villages in China were still engaged in agricultural production on the fixed farmland for each household, Tengtou had transformed from subsistence agriculture to large-scale agriculture, and established village owned collective enterprises based on solving the basic food supply. Also, owning to the implementation of land scale management and the modification of old houses, the agricultural production efficiency, living environment and conditions had been significantly improved, creating a good foundation for the following up ecological construction. (3) 1993–2005: the rapid upgrading stage guided by ecological construction. The 9th Five-Year Plan of China proposed to accelerate the development of urbanization and deepen the rural economic system reform. So, Tengtou began to develop the tertiary industry especially the tourism guided by the concept of ecological construction and protection, and comprehensively reformed the management mode of village owned enterprises which then successfully stimulated the development vitality of enterprises. (4) 2006–2012: the stable development stage of eco-tourism. Tengtou took the lead in establishing the village level scenic spots to sell tickets when rural tourism was not popular, by focusing on the development of eco-tourism and sightseeing agriculture, and practicing the development idea of "Lucid waters and lush mountains are invaluable assets". (5) 2013–2020: the stage of pursuing for common prosperity. At this stage, the "Rural Vitalization Strategy" was put forward by Chinese government to deal with the loss of internal development factors and rural decline. In 2020, when China fully completed the historical task of poverty alleviation, Tengtou village planned to implement regional co-ordinated development and common prosperity in advance by building a "destiny community" and modern rural industry system.

3.4.2 Analysis of comprehensive industrial transformation

Striving to develop industries has been proven to be a common choice in the process of rural modernization all over the world, also it is one of the most urgent and difficult tasks faced in the process of rural industrial transformation especially in the developing countries. The development of global rural industries has mostly experienced a long development process

based on traditional agriculture production, while the transformation process in Tengtou village summarized as “prospering industry by agriculture, feeding agriculture with industry and integrating three-dimension industries (primary, secondary and tertiary industries)” shows the distinctive characteristics of rural development in socialist developing countries.

First of all, the correct leadership of rural cadres and the growth of collective economy played a catalytic role in accelerating Tengtou’s participation in globalization and promoting the development of industrialization. The early farmland consolidation improved the agricultural production conditions and promoted traditional subsistence agriculture to become the leading industry in the primary stage of development, and opened the prelude to the transformation of agricultural modernization in Tengtou. With the opening up of the domestic market and the reform of the economic system in rural areas, Tengtou village cadres with a forward-looking sense of development led the villagers to establish village owned enterprises trying to improve the overall economic situation. Relying on the original accumulation of agriculture and collective enterprises, Tengtou’s economy was expanding quickly. In addition, after the ownership restructuring of collective enterprises in the 1990s, Tengtou got refreshed and acquired the passport to enter the global market which enabled it to actively participate in regional and global production networks, also the developing capacity and resilience of Tengtou had continuously improved (Li et al., 2019).

Secondly, accompanied with each industrial transformation, Tengtou gradually changed from focusing on economic growth to rural sustainable development. To achieve rural vitalization, it is not enough to rely on the single industrial prosperity, more attentions need to be paid to the overall progress of the village (Robert et al., 2021; Mahmoud and Vogt, 2021). Collectivism is the soul of Chinese village, and the collective economic achievements created by Tengtou industry finally return through improving village infrastructure and villagers’ livelihood and welfare. Taking Tengtou for example, the villagers receive a subsidy of 1500 RMB¥ per month since their birth from the collective economy. Besides, they can also receive housing subsidies, retirement pension benefits and various medical subsidies. In addition, an education fund was also set up to reward excellent students, teachers and parents. The villager’s good welfare and high-quality livelihood in Tengtou had been envied by other villages nearby. The sustainable development of Tengtou promoted by advanced developing concept, mechanism and infrastructure has continuously narrowed the gap between urban and rural areas in an all-round way, and the concept of “rural makes the city more yearning for” has been really implementing in Tengtou.

However, there are unpredictable uncertainties in the process of participating in globalization. For example, in late 2019, novel coronavirus broke the normal transformation rhythm of Tengtou industries. On the one hand, closed management, suspension of operating and other prevention and control measures had put Tengtou's industries especially the secondary industry, which relies heavily on importing raw materials and exporting products, into great trouble and the interruption of the supply chain also posed a challenge to the co-operation partnership. On the other hand, due to the traffic blocking caused by epidemic control, the construction of rural tourism project and infrastructure in Tengtou stopped and the tourism industry stagnated. Therefore, Tengtou urgently needs to transform to new types of industry with new patterns and modes to alleviate the adverse impacts of the global epidemic. In summary, adhering to the correct leadership of rural cadres, maintaining the moderate flexibility, diversity and forward-looking of the collective economy, and forming a coordinated development mode of economic growth and ecological protection are the key factors and internal requirements for Tengtou to realize the transformation from an agricultural productive village to a multi-functional and global village, and it is also a unique and right way explored by Tengtou in the process of achieving comprehensive rural vitalization.

4. Discussion

Rural vitalization is a systematic work and the kernel lies in the sustainable development of rural economy, the restoration of social vitality, the optimization of ecological environment and the inheritance of local culture. The Tengtou village, regarded as the "evergreen tree" and a model of rural development in China, fully shows the great transformation process of rural industries with Chinese characteristics from scratch under the wave of globalization. The successful experience has important reference value and enlightenment for promoting the rural vitalization in China and even the developing world.

4.1 The implications of Tengtou industrial transformation for rural vitalization

4.1.1 Strengthening the building of village level party organization and the leadership of cadres

As the traditional Chinese saying goes "whether the village is rich or not depends on the party branch; whether the party branch is good or not depends on the 'leading goat'", it indicates the elites of rural especially the cadres, are an important and even decisive force driving rural development. Tengtou cadres with firm ambitions and outstanding abilities, based on the

judgment of the development conditions of the village and relying on the collective efforts of the villagers, have realized the efficient governance of the village. It should be emphasized that rural cadres have more advanced consciousness of self-development and could properly deal with the problems and contradictions among villagers (Sotarauta and Beer, 2017). Jialiang Fu, first secretary of Tengtou CPC branch, led the villagers to consolidate the barren and bumpy land in the early stage of development when the production and living conditions were extremely poor, and established solid foundation for agricultural modernization. When most villages across the country were still exploring the way to assign the farmland to individual household, he led the villagers to carry on large-scale and intensive land use attempting to find a new way for efficient ecological agriculture. Qiping Fu, the second secretary of Tengtou CPC branch, learning his business lessons in the market competition, constantly adjusting the industrial structure to adapt to the market economy, had successfully developed and expanded village owned enterprises. Especially, the advanced idea of ecological protection established in the process of industrialization was well implemented in the whole process of Tengtou industrial development. Pingjun Fu, the third secretary of Tengtou CPC branch, decisively put forward innovative measures based on his long-term grass-roots work experience, such as canceling the tickets for Tengtou scenic spots at the end of 2019 to develop a higher-quality tourism by focusing on tourist experience for the future development of Tengtou. With the successive unremitting efforts of the three-generation rural cadres, Tengtou village has successfully embarked on a rural vitalization path of sustainable development and realized the great achievements from extreme poverty to common prosperity via multiple transformations of rural industries.

The advantage of human resources in China's rural areas is diminishing caused by population aging, poor education etc., which seriously restricts the upgrading of traditional industries and the cultivation of new industries in the countryside. The successful experience of elite leadership in Tengtou shows that backward regions should strengthen the selection of local cadres who are courageous and creative, and enhance farmers' self-development ability. At the same time, less-developed rural areas should strengthen the infrastructure construction and improve the living environment so as to attract college students, entrepreneurs and retired military personnel etc. to return to their hometown and contribute to its development.

4.1.2 Innovating the governance mode of village level to develop the collective economy

Industry development is a vital premise for rural vitalization and innovating grass-roots governance could be an efficient way to prompt the rural economy development. Tengtou takes multiple measures to develop the collective economy through innovating the modern rural governance pattern by combining governance of moral, law, and intelligence on the basis of self-governance (Zang et al., 2020). In terms of the self-governance, Tengtou has formulated a set of village rules, including the villagers' welfare, village civilization, respecting education and protecting the environment, etc. Meanwhile, it furtherly formed an effective mechanism of village governance, i.e., under the leadership of rural cadres, the villagers' committee takes the full responsibility of governance based on the active participation of the villagers, which has greatly inspired the enthusiasm of Tengtou people to participate in the economic development. In terms of moral governance, Tengtou has set up a villagers' affair room to deal with the contradictions and disputes, also receive opinions and suggestions on the development of the village. Self-governance and moral governance together have created a good rural social atmosphere for Tengtou to develop the collective economy. In terms of the law governance, the rapid development of Tengtou has led to obvious social differentiation, and the nature of collective economy and its corresponding benefits distribution become the important economic link among villagers, which need to be strictly protected and guided by the laws. In addition, the well operation and management of the subordinate enterprises of Tengtou group also need to be protected by strong legal guarantee. In terms of intelligence governance, Tengtou complies with the transformation trend of switching traditional agriculture to smart agriculture, to build the digital village and rural intelligent platform by using modern means such as internet of things and big data, and forms an intact e-commerce chain of agricultural products to release the potential of collective economy, which helps to transform and upgrade the rural industries. The innovation and optimization of rural governance systems are of great importance for rural development. The focus of rural governance in many poor areas is ambiguous and the governance is chaotic or even missing. Referring to the village governance mode implemented in Tengtou, the formulation of village rules helps to deepen villagers' democratic consciousness, promote their enthusiasm to participate in village governance, and realize efficient self-governance. In addition, the legal awareness of villagers can be improved through combination of online and offline legal propaganda making autonomy and moral governance more effective. Based on the continuous improvement of the governance level of villagers' organizations and social organizations, the less-developed rural areas are able to improve their governance ability and achieve rapid rural development gradually.

4.1.3 Promoting integrated development of the industries to support rural vitalization

Industrial integration is a new idea of modern rural development aiming to expand the industrial chain of agriculture, improve agricultural added value and increase farmers' income, also is an effective way to vitalize rural industry (Lupi et al., 2017). Similar to the Chinese early relationship between industry and agriculture, Tengtou experienced a long-term development process of prospering industry with agriculture firstly and then promoting agriculture fed back by industry, which caused the separation of primary industry, secondary industry and tertiary industry, and seriously restricted the coordinated development of rural industries within limited space. Breaking the boundaries among the three could give full play to the comprehensive advantages of the rural areas. In 2018, Tengtou built a folk agricultural innovation center by integrating rural culture, tourism, customs and delicious food. This tourism entity furtherly activates rural production factors through innovative mechanism and scientific plan so as to enhance the value of industrial chain relying on Tengtou national 5A scenic spot, and to promote the integrated development of the three-dimension industries and provide a new development platform for local economic upgrading. As the core content of rural sustainable development, building a modern industrial system by integrating different industries according to local conditions could not only avoid the uncertain impacts brought by globalization and potential risks in the fierce competing market, such as high dependence on grain imports, multi-national giants controlling the local market, turbulence of the international political environment, etc., but it could also maintain the agricultural and ecological advantage in rural development, forming a coordinated development pattern of ecological agriculture, low-carbon industry and holistic tourism to further improve the competitiveness of rural industries.

Many villages in less developed rural areas are facing unclear goals of industrial development. It is a long and tough journey to initiate rural industries especially for those villages lacking of inherent development advantages and conditions as we can clearly see from the transformation process of Tengtou. Drawing on its successful experience of industrial transformation, the key is to find out and develop the comparative advantages of the villages even if they don't have any at the first place, then make corresponding goals based on the bearing capacity of resources and environment and development potential in order to make scientific and workable plans to develop local industries with distinct characteristics gradually.

4.1.4 Protecting the ecological environment to promote rural harmonious development

In the transformation process of rural industries, Tengtou village not only has advanced idea of ecological protection, but also has practical wisdom to solve the contradictions between industry development and environment protection. During the period of subsistence agriculture, the villagers completed the land consolidation by using the primitive tools and methods to reorganize their farmlands. In the process of transforming from single agricultural production to develop industry at the same time, Tengtou firmly insisted on giving priority to the environment protection and rejected any projects that might pollute the environment. As for environmental governance, Tengtou tried to divert the rain and sewage water in 2007 and accomplished the fully collection and procession of rural domestic garbage in the whole village in 2011, and implemented waste classification in 2015. The environmental protection practice in Tengtou village has always been in the forefront of China's rural development and could be compatible with the industrial development which achieved a win-win situation, mainly due to the following reasons: (1) relying on its increasing popularity, it has obtained support from pilot policies in the aspects of environment governance and ecology protection. As a model of China's new countryside construction, Tengtou is a key area for the implementation of national policies and pilot projects, and has a comparative advantage of policy support. (2) The growing collective economy provided strong economic support for ecology protection, environment governance and restoration. The benefits brought by the virtuous circle between industry development and ecology protection are increasing. (3) Rural cadres' attention to the environmental protection and the villagers' full support. In the process of taking environmental protection as the foundation of the village development, the villagers gradually realized that economic development and ecological priority are not contradictory, but can benefit from each other based on the good interactions of economy, society and ecology, which furtherly strengthen the determination of implementing the idea of "Lucid waters and lush mountains are invaluable assets". At present, Tengtou is exploring the transformation from "party building community" to "destiny community", with the purpose of leading the surrounding villages to realize the endogenous common prosperity via developing the ecological industries.

The lack of resource endowments and endogenous development force is common in most rural areas which both severely hinder the industrial development. The typical practice of land consolidation in the early 1960s just as Tengtou adopted still has important implications today. Actually, it is the embryonic form of the theory of rural comprehensive land

consolidation which was widely practiced in present Zhejiang province. Furthermore, it should become a top priority for most rural areas in China in the future as it could improve the poor situations such as the inefficient utilization of rural construction land, the poor living environment which are challenging the rural develop for such a long time. It is also important to modify villagers' behavior by improving the awareness of environment protection, and strengthening ecological propaganda so as to promote the construction of beautiful villages.

4.2 Prospect

Rural residents make up 45 percent of the world's population but bear a disproportionate burden of poverty, malnutrition, and poor quality of life (Steiner and Fan, 2019). Rural areas are declining and in crisis, but actually they are the source of human civilization. What should we do to revitalize our rural areas should be on the research forefront of human geography, social science, economics, environmental science, etc. In the lengthy course of more than half a century, Tengtou village has accomplished a great reverse from poverty to prosperity on the barren land, which could be seen as the miracle of rural development in China and even the developing world. Dedicated to build a model for China's rural vitalization, Tengtou village has carried out great practical explorations in many fields such as agriculture, industry, tourism, ecological protection and grass-roots governance, which are the best interpretation of the Tengtou spirit, i.e., "plowing to the end, innovating never ends". However, the brilliant achievements made in the past can't cover up the problems existing in the current development of Tengtou. For example, the degree of global participation in agriculture and tourism is low, and the impacts of globalization on them are minor. In terms of agriculture, with the accelerated market competition and the increased cost of agricultural input, agriculture industry may face more keen challenges in the global market in the future. Compared with the high international popularity of Tengtou, its tourism industry can hardly conform to its reputation as can be seen from the small proportion of foreign tourists over the years, so further excavation of rural history and folk culture, expanding the sphere of tourism by unifying neighboring villages to improve the quality of rural tourism should be the focus of the future development of tourism in the context of globalization. In addition, foreign trade enterprises represented by clothing industry have a relatively high degree of participation in globalization, but it is the mainly labor-intensive industry with low profits. In order to better participate in globalization, the transformation of rural industries needs to accurately grasp the development essence of rural industry and set reasonable goals for the future development. As a typical representative of China's developed rural areas, Tengtou village

should further pursue the integrated development of rural industries based on developing modern agriculture in order to consolidate the domestic market, and more importantly expand the international market and improve its international competitiveness. In the long run, the village needs to transform from labor-intensive industries such as clothing and pack aging, which account for the highest proportion of output, to capital and technology intensive industries; in the short term, to overcome the impact of the global epidemic, and turn difficulties into opportunities to prepare for the next round of industry expansion in the future.

In order to effectively deal with the global rural recession and crisis, villages around the world may grasp the opportunity of globalization and choose the suitable industry types and development modes for each country based on the differences in regional resource endowment, institutional environment and market condition. Rural development in different parts of China also appears diversity, heterogeneity and hierarchy, which needs to be classified and guided according to the local conditions. Under the background of globalization, how to merge with Chinese elements to develop a “global village” with Chinese characteristics is the ultimate topic faced by the developed countryside represented by Tengtou. The answer may return to the Tengtou’s spirit mentioned above, that is adhering to the innovation persistently in village management, enterprise mode and party construction to realize the sustainable rural industry development, village comprehensive vitalization and the building of a “global village” with Chinese characteristics. In the future, further research should explore the impact of industrial transformation on rural vitalization caused by globalization from a quantitative perspective in order to promote a more comprehensive understanding of rural vitalization.

5. Conclusion

By analyzing the successful industrial transformation process of Tengtou village, a model of rural vitalization in developed southeast coastal China, this paper attempts to reveal the internal mechanism of rural industrial transformation promoting the rural diversified development and comprehensive vitalization, and provide implications for rural vitalization under the background of globalization.

The combined action of external forces of globalization and internal development needs of rural areas works together to prompt the transformation of rural industries in the global rural context, which is extremely crucial to the rural vitalization. On the one hand, the natural

background of rural areas determines the ability of rural endogenous development and the degree of industrial participation in globalization. Rural areas with higher intensity of global interaction and connection have more power to become global villages. On the other hand, the process of globalization gradually affects the transformation of rural industries and constantly modifies the interface between the rural and globe, causing rural industries been integrated and embedded into the global market. The positive and negative effects of migration, investment, culture and ecology accompanied by globalization drive the interactions among rural development factors, and promote the corresponding transformation of rural industries, so as to reverse the habitual tendency of global rural recession and realize the transformation of rural industry and global rural vitalization.

The transformation process of Tengtou rural industries could be divided into 5 stages: the foundation stage of modifying agricultural production conditions, the initial development stage of setting up collective enterprises, the rapid upgrading stage guided by ecological construction, the stable development stage of eco-tourism and the stage of pursuing for common prosperity. The correct leadership of rural cadres and the growth of collective economy are the important catalysts for Tengtou to participate in globalization and realize the transformation of industries. The early restructuring of village-owned enterprises endows Tengtou industry with vitality to participate in regional and global production networks, and the ability of global competition and development resilience has been continuously improved. In order to avoid the tendency of homogenization towards globalization, maintaining the locality of villages and the innovation of rural industry based on the ecology protection are the core of Tengtou industrial transformation, which are also the key to realize the transformation from productive villages to multi-functional and global villages, and finally the rural vitalization.

Tengtou village shows the great transformation process of rural industries with Chinese characteristics from scratch under the wave of globalization. Its successful experience of industrial transformation has important implications for China and even the developing world to comprehensively promote rural vitalization: strengthening the building of rural party organization and the leadership of rural elites, innovating the governance mode of village level to develop the collective economy, promoting integrated development of the industries to support rural vitalization and protecting the ecological environment to promote rural harmonious development.

Globalization is changing the rural areas, but it cannot erase the rural characteristics. On the contrary, in the context of globalization, the transformation of rural industries may accurately grasp the essence of rural industry development, integrating the production network, resources, information and actors brought by globalization into the rural areas, and form a global village with local characteristics. For China's rural development, there are huge differences between different regions, urban and rural areas, and the overall international level is low. Therefore, it is critical to coordinate a balanced development, involve more Chinese elements, and develop a "global village" with Chinese characteristics, gradually getting out of the curse of rural recession and realizing rural vitalization.

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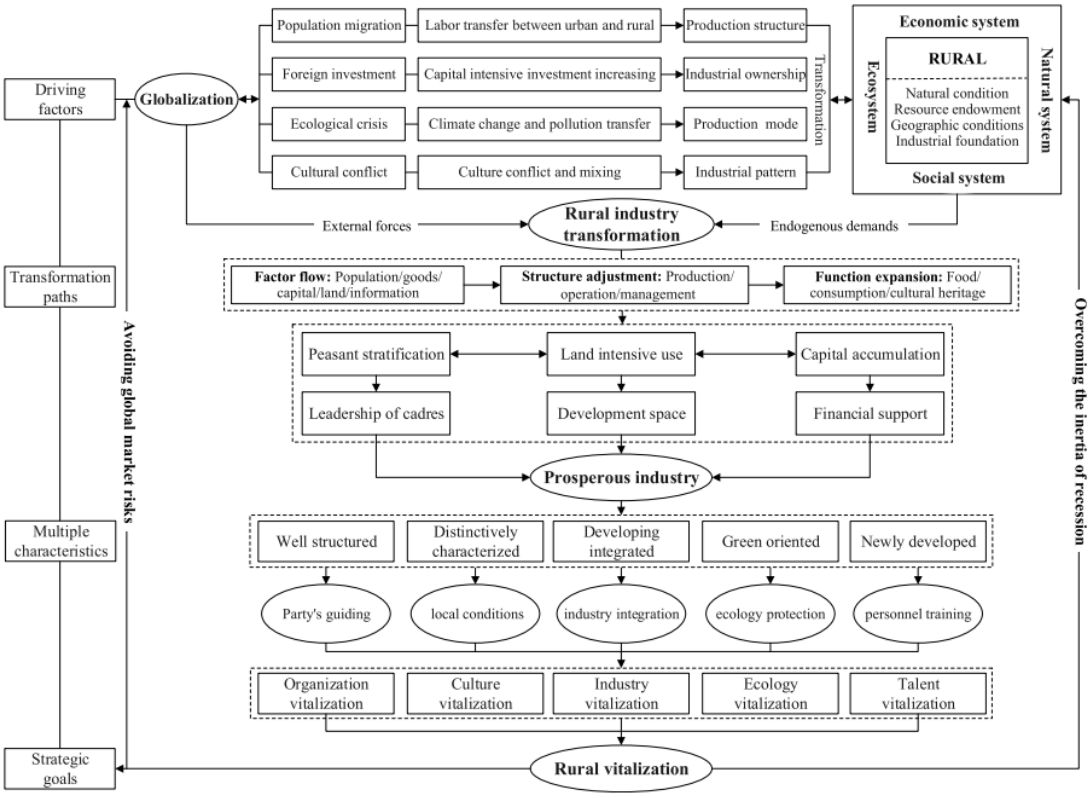

Figure 1: The internal mechanism of industrial transformation promoting rural vitalization under globalization.

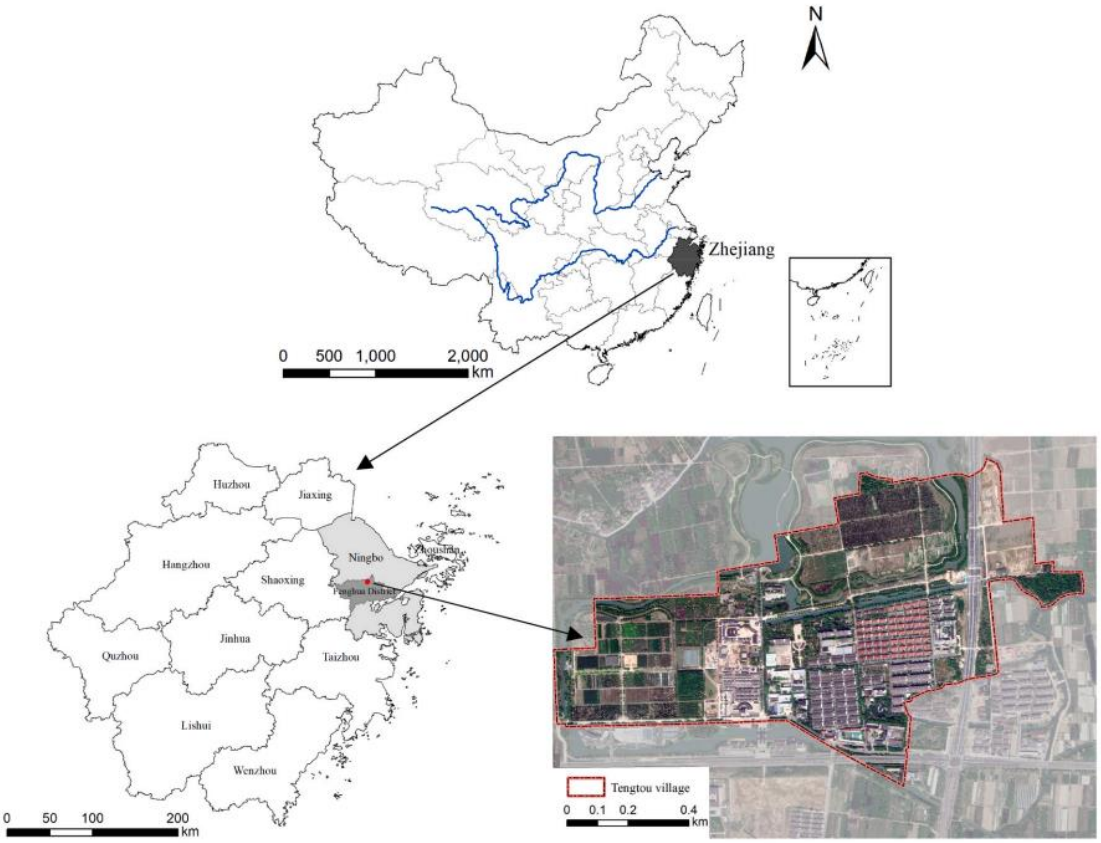

Figure 2: Location of the study area

(a)

(b)

(c)

(d)

Figure 3: The epitomes of agriculture transformation process in Tengtou Village. Note: a shows the 15-year land consolidation project; b shows the three-dimensional agriculture, grapes are planted at the top, birds are raised in the middle and fish are raised in the pond below; c shows the National Agricultural Comprehensive Development Demonstration Zone built in 1998; and d shows the seedling base in Tengtou village.

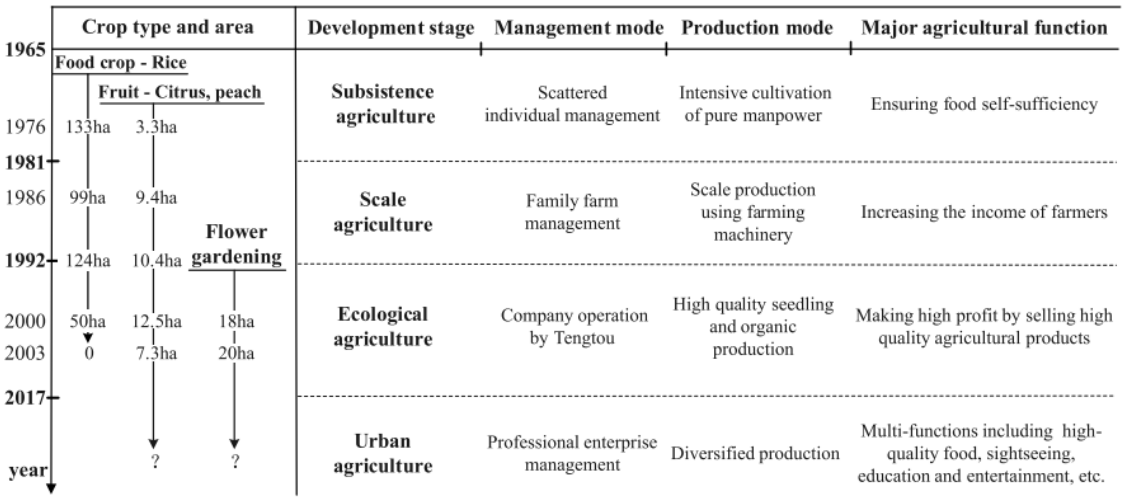

Figure 4: Stages and characteristics of agriculture transformation in Tengtou village. Note: The difference values of the total cropland area among different years are due to some croplands were changed to village infrastructure land, rural housing land, or tourism facilities land, etc., and the original data was from Chai (2018, pp.63-65).

(a)

(b)

Figure 5: Tengtou Group Co., Ltd. and production line of Ningbo AIYIMEI Garment Co., Ltd.

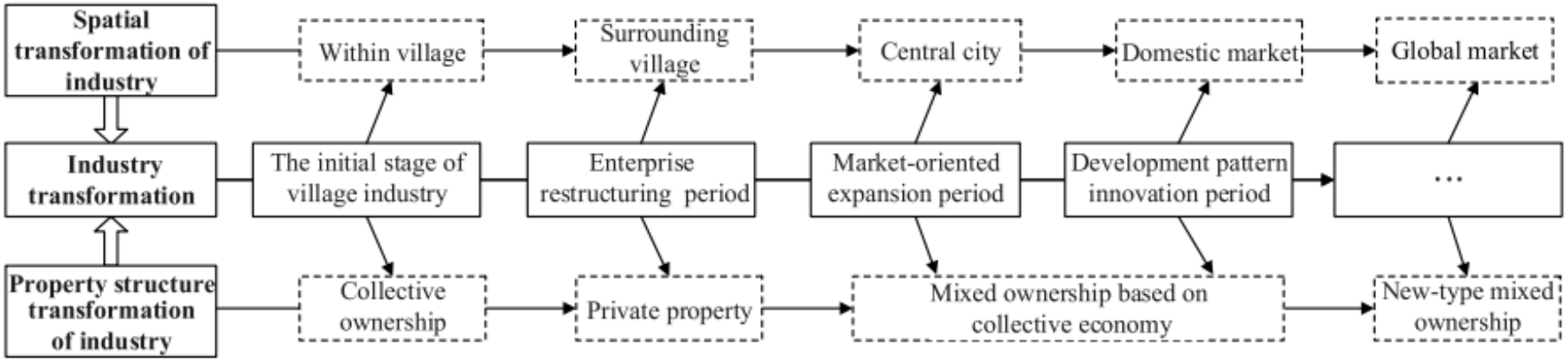

Figure 6: The process and characteristics of industry transformation of Tengtou Village

(a)

(b)

Figure 7: Tourist scenic spots in Tengtou Village. Note: a is the Grandma Creek; b is the Tengtou Pavilion of the World Expo moved back from Shanghai in 2014.

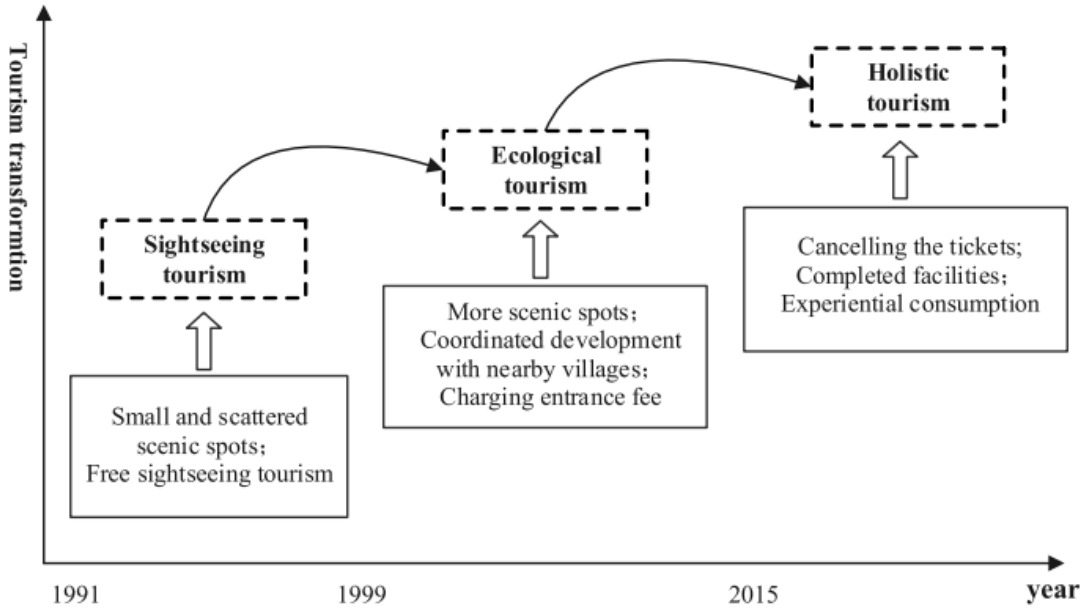

Figure 8: Tourism transformation process of Tengtou village.

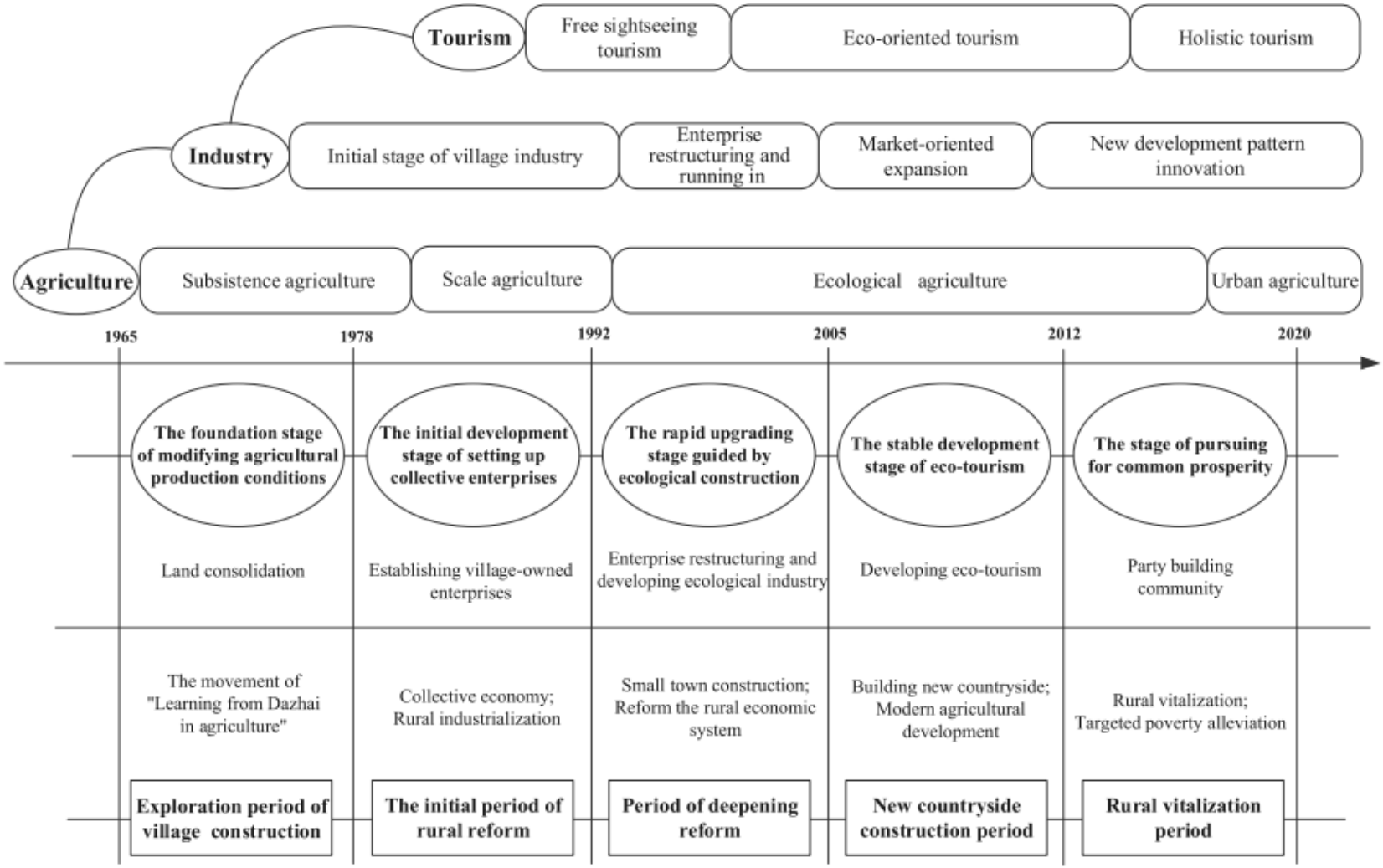

Figure 9: Comparison between the industries development of Tengtou village and rural development policies in China.