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Study on the Development and Layout Mode of Oasis Small Town Based on Farmers' Willingness Survey: A Case Study of Zongzhai Town in China

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Abstract. The quality of urbanization development is closely related to the development and distribution mode in the process of urbanization development. Urbanization development and distribution mode determine the quality of regional urbanization strategy and planning, which will definitely affect the quality of urbanization development. Oasis city is a kind of widely distributed city with unique characteristics, and its development and layout mode will also affect the quality of its urbanization development. This study selects and analyzes Zongzhai Town of Jiuquan City, Gansu Province, China, which is the typical representative of oasis small town as the research object, and adopt the method of questionnaire survey and the method of the combination of qualitative and quantitative. This study is based on the investigation of farmers' urbanization willingness and understanding, and combined with the problems of fragile ecological environment, weak economic foundation, difficult construction guidance, lack of infrastructure and backward management system, and the development trend of rural economy, population and urbanization, village and town construction and land use proposes in the development of the town. And this study puts forward a mode suitable for oasis towns of "four modernizations" of "Ecological construction of oasis environment, Modernization of agricultural industry development, New community construction of rural construction and Rural gardening of human settlement environment". It can be used for reference to the urbanization development and layout mode of oasis cities.

1. Introduction

In recent years, with the rapid development of urbanization in China, the Chinese government attaches more and more importance to the quality of urbanization development, especially in the development and layout mode of urbanization. Scholars have done a lot of research from different angles and levels: some from the angle of the urbanization development history and the future of space and time[1,2], urban and rural integration[3], development mode of other country[4,5,6], population migration and reasonable layout[7], resources and environment carrying capacity[8,9], industrial development (convergence)[10,11], production integration perspective[12,13], urban and rural public services equalization[14,15,16]. These results enrich the theory of the development of Chinese urbanization. However, there are very few theories about the development of oasis cities, only from the perspective of the construction and development of the central urban area of oasis city[17,18,19,20]. According to literature search, the study of oasis city (town) as a special kind of city in the urban development and layout mode is less[17,20], due to the particularity of its development form, resources and environmental conditions, urban and rural construction and planning and its dynamic mechanism,



therefore the study of its development and layout mode has certain theoretical and practical significance. This study will conduct empirical research from the perspective of the development and layout mode of a special small town: oasis small town, aimed at establishing a mode suitable for the development and layout of oasis small town based on farmers' willingness.

2. Status and situation analysis of the research area

2.1 Overview of the research area

Zongzhai Town is located on the second-level terrace at the front of the diluvial fan formed by the north foot of Qilian Mountain, Beida River and Hongshui River in Hexi Corridor of China (Figure 1). It is 18 km away from Jiuquan City, with a total area of 155.25 square kilometers. The terrain is high in the south and low in the north, the slope is gentle, and the altitude is between 1300 m and 1500 m. Its climate belongs to the temperate arid climate zone. The annual average precipitation is 83.3 mm, the evaporation is 2148.8 mm, the annual average sunshine time is 3056.4 h. The main river in the town is Hongshui River, which belongs to the inland Heihe River basin. It originates from Qilian Mountain and is supplied by snow melt water and natural precipitation. In 2017, the total registered population of Zongzhai Town was 21,023, including 3,253 urban residents. The total economic volume of the town was about 100 million dollars, and the per capita disposable income of farmers was about 2,310 dollars. The following will combine the results of farmers' willingness survey with the current situation and trend of economic and social development to analyze the problems and situation.

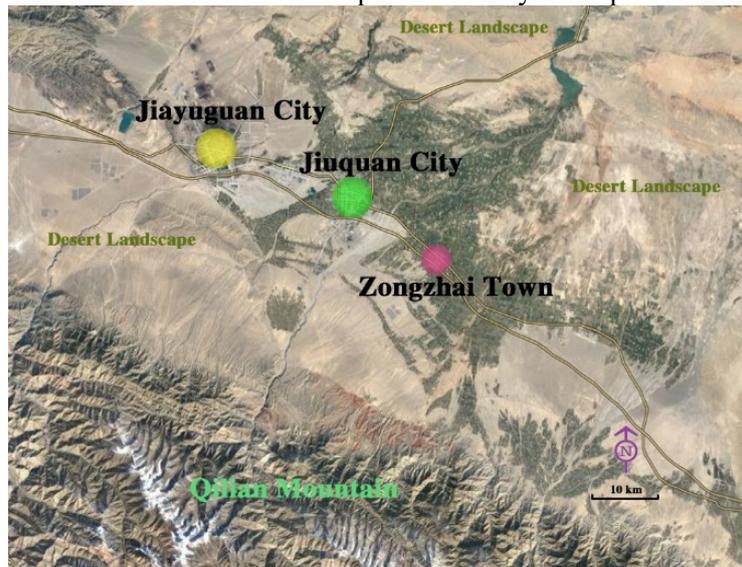


Figure 1. Schematic diagram of the location of the total village town

2.2 Farmers' willingness survey

In order to fully respect the wishes of farmers, a questionnaire survey was conducted among farmers in the study area. The contents of the survey mainly included six aspects: basic situation, population and household registration system, land transfer willingness, public service facilities demand, housing construction and understanding of development situation. In this survey, 520 questionnaires were issued, 513 were returned, and 448 valid questionnaires were obtained. Through the questionnaire analysis, the following key conclusions and understanding are drawn: first, farmers are very concerned about the reform of household registration and land system; second, hold a positive attitude towards the construction of new communities; third, actively support the agricultural development mode of land circulation and centralized management; fourth, there are higher requirements for public service facilities.

2.3 Analysis of development problems

2.3.1 Fragile ecological environment. Located in the Heihe River basin of the "northwest grassland desertification prevention and control zone" pointed out in the "western key ecological zone comprehensive control planning (2012-2020)", Zongzhai Town is an important part of China's grassland desertification prevention and control and the construction of three-north shelterbelt system. The restoration of ecological environment and the construction of ecological barriers are related to the overall development. Therefore, Zongzhai Town actively develops efficient and water-saving agriculture, reduces the proportion of agricultural water consumption, vigorously builds ecological forest belts, constantly increases the ecological water consumption, controls the total water consumption and limits the exploitation of groundwater, and vigorously improves the fragile ecological environment.

2.3.2 Weak economic foundation. In 2017, the total economic volume of Zongzhai Town was only about 100 million dollars, and the per capita disposable income was only about 2,310 dollars. Compared with other towns and villages of Jiuquan City in Gansu Province, the economic development of the town was relatively strong. However, compared with the development of the central and eastern regions of China, the economic development of the town was relatively backward. The basis of industrial development is very weak. In recent years, the development of agricultural industry in the town has taken the development of modern, efficient and water-saving agriculture and standardized large-scale breeding industry as the new trend. The development of industry and commercial logistics is also lagging behind, with insufficient investment in the construction of the industrial concentration area of Zongzhai, low added value of products, insufficient recycling and utilization of resources, and the commercial service industry only remaining in the provision of basic means of production and living.

2.3.3 Difficult construction space guidance. Although in recent years, Zongzhai Town has vigorously promoted the concept of "Planning First" in urban and rural construction, and the disorderly state of rural settlements and urban construction has been improved, the planning scheme cannot be implemented and the construction management is ineffective due to the relatively backward planning concept, inadequate analysis of regional development trend and other reasons. In addition, farmers' enthusiasm for planning participation is not strong, resulting in the illegal construction of farmers homestead occupation.

2.3.4 Inadequate infrastructure investment. Due to the limited financial payment capacity of the city, district and town and the relatively backward economic development of the town, infrastructure investment is seriously insufficient. The lack of investment in infrastructures, rural safe drinking water, collection and treatment of domestic sewage, collection and treatment of household garbage, cultural education, medical and health care, road system, public transportation and other aspects of insufficient investment, has seriously affected and restricted the economic, social and urbanization development of Zongzhai Town.

2.3.5 Slow management system reform. In recent years, the scale of land transfer in Zongzhai Town has become larger and larger, and the enthusiasm of farmers to participate has become higher and higher. However, the design of land transfer system is relatively backward, and some farmers and developers believe that the lack of relatively mature land transfer market and legal guarantee is one of the main factors restricting rural land transfer. In addition, the new community construction initiated by some farmers is increasingly recognized and accepted by more villagers (the survey results show that 80% of the respondents are willing to go upstairs to live; 58 percent of farmers are willing to transfer or withdraw idle homestead; only 42% were unwilling to quit, citing the imperfect compensation mechanism, guarantee system and transfer exit market). The land for new community construction

(especially the new community construction across administrative villages) was a limiting factor. In addition, because there is no good compensation mechanism, guarantee system, land replacement and transfer system as the guarantee, there are many difficulties in the orderly exit of the original homestead.

2.4 Study and judge the development trend

2.4.1 Trend of rural economic development. The centralized, cooperative, corporate, large-scale and park-like business models based on land transfer are being gradually promoted, and the business subjects of agricultural industry are also changing. The trend of non-arable land agricultural industry development is strong; It has a strong industrial development potential dominated by intensive processing of agricultural and sideline products (seed production, dehydrated vegetables, etc.). The commercial service industry aimed at serving the eastern Suzhou region is developing rapidly. In short, the industrial development of Zongzhai Town is moving towards the direction of "centralization and scale".

2.4.2 Trend of population and urbanization. With the further advancement of industrialization and the gradual reduction of the barriers for farmers to enter the city, the survey found that the actual situation of family members in rural areas moving to the county towns and towns has become more common. Then with the further development of the economy and society and the further reform of the household registration and land system, a certain amount of rural population will be promoted to the county towns and towns. The trend of population development in rural areas will surely be a gradual decline in population. The quality of the population has been greatly improved, and the labor force left in rural areas will be transformed into "industrial workers". The survey and analysis found that the total population of Zongzhai Town has been declining year by year, while the level and quality of urbanization have been continuously improved.

2.4.3 Trend of village and town construction. At present, farmers have spontaneously centralized "new community" construction. With the development of agricultural industrialization (centralized, cooperative, corporate and park management mode based on land transfer), it will further promote the centralized development of residential areas. Under this new situation, the two-level village and town hierarchy structure of "township -- new community" will be formed. In addition, with the advance of the new community construction mode, infrastructure supporting construction must consider the centrality of this development trend.

2.4.4 Trend of land use. The total land area of the town is 155.25 square kilometers, which is relatively rich in land resources compared with other towns of Gansu Province and the central and eastern part of China. With the further development of rural economy and the continuous improvement of farmers' consciousness, the change of land management mode and management subjects, as well as the construction of non-arable agricultural industrial parks and standardized farming communities, the development and utilization of land resources (especially arable land) in rural areas will show a strong trend of centralization. With the acceleration of "new community" construction, the orderly withdrawal of rural homestead has become an urgent task. In conclusion, the development and utilization of land resources in Zongzhai Town show a trend of centralized management with enterprises and cooperatives as the main body of cultivated land; The modern efficient and water-saving agricultural development of the tidal flat; Urban and rural construction land is the centralized development promoted by the construction of "new community"; Even of rural homestead orderly withdrawal.

3. Development and layout mode selection of the research area

Based on the analysis and research of the current situation and situation of the development of the research area, the paper summarizes the new model of urban development and forms a popularizing development model of small towns in the arid area, which is mainly manifested as "four modernizations": Ecological construction of oasis environment, Modernization of agricultural industry development, New community construction of rural construction, and Rural gardening of human settlement environment (Figure 2).

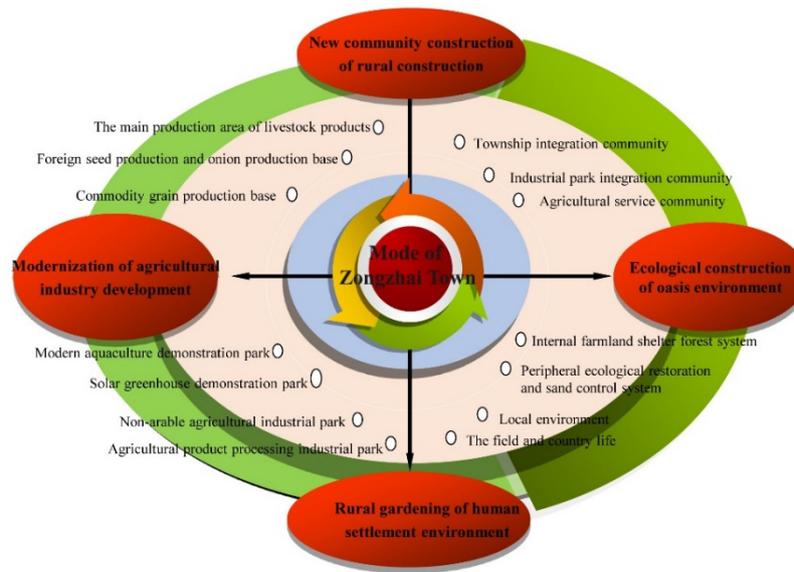


Figure 2. Schematic diagram of the development and layout mode of the research area

3.1 Ecological construction of oasis environment

Zongzhai Town is a typical arid area in northwest China, with fragile ecological environment. Ecological security is the basis of regional and national safety. Ecological security system must be built strongly, and it must be clear that the general idea of degraded ecosystem restoration and construction, determining the focus of the construction of ecological restoration engineering, strong policy measures, to ensure the ecological environment construction and economic and social development, maintaining the stable development of the industry, agriculture, urban oasis region. The construction of farmland shelter forest system inside oasis, ecological protection and restoration of desert area outside oasis and sand control system should be emphasized.

3.2 Modernization of agricultural industry development

New urbanization must be supported by agricultural modernization. Agricultural modernization not only provides a large number of agricultural products for urban population, but also mechanized and intensive agricultural production mode will lead to the emergence of a large number of surplus labor force in rural areas, thus providing sufficient labor resources for cities. In addition, the improvement of agricultural productivity has brought about an increase in the income level and consumption capacity of the agricultural population, and has also provided a driving force for sustainable development of urbanization.

3.3 New community construction of rural construction

The pace of new community construction in Zongzhai Town has been gradually accelerated, and all of them are equipped with perfect infrastructure, property management facilities and other facilities, greatly improving the living environment of farmers. The new community construction is different from that of other areas. Other area promoting the construction of a new type of community that is

dominated by the government to promote. The construction of the concentrated residential area of the villagers in zongzhai town is planned and constructed by the town government according to the wishes of farmers and combined with the local disharb reconstruction project. Meanwhile, the construction is promoted according to the principle of "overall planning and phased implementation". It can be said that the construction complies with the subjective demands of the development villagers, and thus can be implemented smoothly. Based on the differences of industrial support in the construction and development of new communities, the community types of Zongzhai Town are divided into three types: integrated community of town and district, integrated community of industrial park and agricultural service community.

3.4 Rural gardening of human settlement environment

There is an interactive relationship between the rural landscape environment and human behavior. In the new changes and opportunities, the spatial planning and design of new rural areas should respect ecological balance, local customs and local traditional culture, so as to make the new rural environment more natural, harmonious, beautiful and unique. In the construction of residential environment, the concept of rural life should be integrated into the planning, design and village construction as the guidance, the preservation of rural landscape and the combination of regional culture should be paid attention, and the rural villages with modern lifestyles should be constructed.

4. Discussions

Because oasis town and city is different from other types of town and cities in the process of development, the development and layout mode of the research area has certain guiding significance for the development and layout of oasis city. At the same time, it must be noted that its distribution is relatively broad for the oasis city in china and the world. Each area of each city has its particularity, therefore, the research for the development and layout mode of the oasis towns or urban still needs to continue to strengthen, while this paper discusses the characteristics and patterns of common which also must adhere to the principle of adjust measures to local conditions.

5. Conclusions

Based on the investigation and research of the urbanization development intention of farmers in the research area, as well as the analysis of the current problems and situation of the development, this paper proposes a new model suitable for the urbanization development and distribution of small towns in the research area. The conclusions are as follows:(1) Through the survey of farmers' willingness to urbanization, it is found that farmers are very concerned about the reform of household registration and land system, hold a positive attitude of supporting the new community construction and the agricultural development mode of centralized land circulation and management, and have higher requirements on public service facilities.(2) Through the analysis of the development status quo of the research area, it is concluded that the core factors restricting and influencing the development and layout mode of oasis small town are fragile ecological environment, weak economic foundation, difficult construction guidance, lack of infrastructure and backward management system.(3) Through the analysis of the development trend of the research area, it can be concluded that the rural economy, population, urbanization, rural construction and land use in the research area show a new trend, namely "concentration and scale".(4) The research area can establish the "four modernizations" development and layout mode with "ecological construction of oasis environment, modernization of agricultural industry development, new type of community construction of rural construction and per capita rural gardening".

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