

Analysis for the Policy of Reorganizing Rural residential patches in China and the Dilemma of Ecological Niche in China's Urban and Rural Areas

Yufeng Yue¹ Weiqiang Wang Jian Li²

Abstract: *With the rapid economic development and significant urbanization in China, dual-structure phenomenon, caused by the great gap of development level in urban and rural areas, has become increasingly prominent. Compared with the urban areas, the development in terms of social, economic and cultural aspects in rural areas has encountered underlying dilemma. To narrow the gap between urban and rural development, the Ministry of Land and Resources has proposed planning policy for reorganizing rural lands, trying to achieve integration of the population and land resources in agricultural areas and construction of modern intensive rural residential areas to promote the overall development in urban and rural areas, and realize the modernization goals for the benefit of rural areas, agriculture industry and peasants there. This paper is aimed to adopt the research perspective and method of ecological niche theory, establish the ecological niche expansion model and analyze the theory essence of the Reorganization of rural residential patches to summarize the internal change mechanisms of the ecological niche in urban and rural areas during the process of consolidation. Combined with author's planning and research in Henan Province, Chinese agricultural populous province, the empirical analysis could be conducted to determine the niche development trend in urban and rural areas during the course of the consolidation, so as to propose a value judgment orientation for China rural governance and planning policy development, as well as the discussions on the niche dilemma and path direction of the rural development in China.*

Key Words: planning policy, ecological niche theory, reorganization of rural residential patches

Introduction: the Reorganization of Rural Residential Patches under Urban-rural Dual Structure Background

With the rapid economic development and significant urbanization improvement in China, the social contradiction between urban and rural areas has become increasingly prominent. This has been vividly explained as the dual structure phenomenon to reflect the great difference in living standard in urban and rural areas. Moreover, it has also led to the severe imbalance in terms of social and economic development in urban and rural areas as well.

To enhance the development from the long-standing malpractice in China's backward rural areas, Chinese Land Administration and Planning Departments have proposed to conduct centralized planning and construction in rural areas through Reorganization of rural residential patches to optimize the land resource construction and explore the social and economic development potentials in rural areas, as well as improvement to the living environment and realization of the mutual development goal for both urban and rural areas.

Section 1: Theoretical Connotation of Reorganization of Rural Residential Patches

Reorganization of rural residential patches is an important measure to improve rural land use efficiency and intensification, as well as the proper, rational and scientific utilization (Baixin Qiu, 2003). It is mainly adopted with the engineering technology and land ownership adjustment measure

¹ Yufeng Yue, Department of Urban Planning, Tongji University, yueyufeng1335@gamil.com

² Weiqiang Wang & Jian Li, Department of Urban Planning, Tongji University, wwq@tongji.edu.cn

according to the readjustment to the residential land size, internal structure and spatial distribution based on the urban and rural planning.

1.1 Governance Objective of Reorganization of Rural Residential Patches

In urban and rural planning, the primary purpose to carry out Reorganization of rural residential patches is to improve the disorder that does not meet the requirement for sustainable development and inefficient land use in rural areas, so that a harmonious living environment could be built up to create conditions to promote the construction of the material and mental civilizations, as well as the development of urban and rural integration. Combined with rural collective land circulation, resource allocation of the collective construction land could be optimized not only to realize rural industrial structure adjustment and upgrading, but also to increase farmers income and emp

1.2 Governance Measures on Reorganization of Rural Residential Patches

Consolidation of rural residential patches is actually a kind of action program establishment and feasibility study on rural economic, social, ecological and other aspects of development. The study is consisted of technical feasibility, economic rationality and possible building plan. Through conducting technical analysis and argumentation to the planning program and risk assessment to the potential profit after the implementation of the Reorganization of rural residential patches, a reliable reference could be offered to investment decision to strive to achieve the best effect from the overall benefits of the consolidation of rural residential patches.

Section 2: Expanded Application of Ecological Niche Theory

From the *dual structure* feature of China's urban and rural perspective, the competition mechanism between urban and rural areas had similarity like the two species competing for the resources (Figure 1) and the differentiation of urban and rural functions led to the differences in development trend and production function in these two aspects, which reached a dynamic equilibrium in resource requirement. The author believes that from the research field of the urban ecology, the Reorganization of rural residential patches enjoys the significant ecological niche feature in changing the long-term harmonious resource competition trend in urban and rural areas, Therefore, the author attempts, from the theoretical perspective of the ecological niche and with the implementation case for the Reorganization of rural residential patches as the basis, to analyze the theoretical mechanism of the ecological niche and potential difficulties aroused from the implementation of this policy.

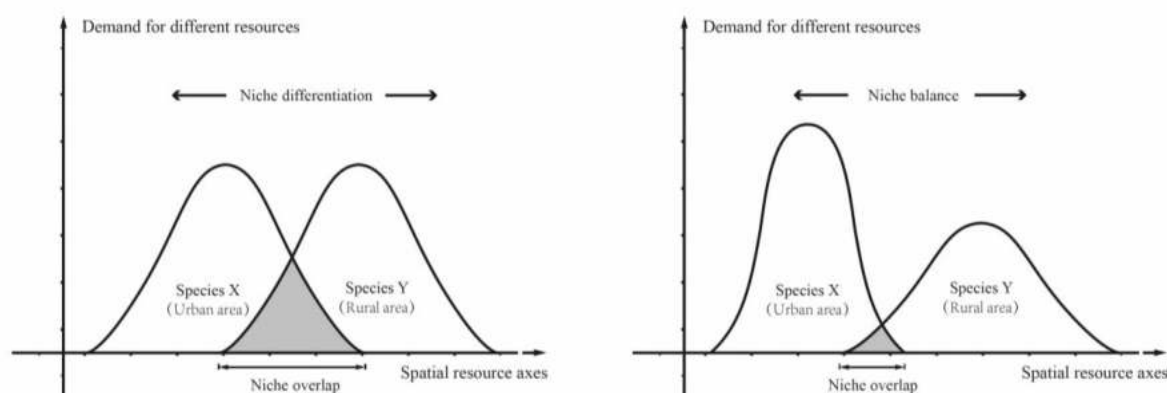


Figure 1. Urban and rural ecological niche expansion model

2.1 Differentiation and Analysis of Ecological Niche Concept

Ecological niche, initially put forward by J. Grinnel in 1917, refers to the basic living space that the biotic population occupied. It also mainly refers to the physical space. In general, the ecological niche belongs to the certain qualitative or quantitative description of the relationship between living organisms and the environment (Yuchang Shang, 1988).

It contains two meanings. Firstly, for individual organism or biotic population, it is a matter of the necessity for its survival or a collection of ecological factors or relationships for its use; secondly, for the organism's real living environment, it is a matter of the various ecological relationship to the suitability of biological species (Rusong Wang, 1988). After eighty years of development, the ecological niche concept and theory has gone beyond the biological category and has penetrated into the field of urban ecology as the research area.

2.2 Urban Ecological Niche and Rural Ecological Niche

Urban ecological niche (Rusong Wang, 1988) is defined as a combination to provide people living in urban area with a variety of ecological factors (such as water, food, land, buildings, transportation, etc.) and ecological relationship that can be utilized by people (such as productivity level, environmental capacity, living quality, etc.).

Urban ecological niche is directed to city's special organic *ecological element*. It essentially refers to the urban residents' living conditions and the quality of life satisfaction (Xiudong Wang, 2008). The major subject of the city and the urban development is in fact aimed to continuously improve people's living quality. This has become an important issue for urban development on how to improve the urban ecosystem and establish suitable living and ecological environment.

Furthermore, the concept of urban and rural ecological niche is, during the discussions on the urban and its surrounding countryside's development, the degree of satisfaction from residents in urban and rural areas on their living conditions and quality of life, namely the dynamic trend research on urban ecological element and rural ecological element.

2.3 Intervention Mechanism of Urban and Rural Ecological Niche

Urban ecological niche level, to some extent, is set to determine a city's sustainability. The gap between urban and rural ecological niches is a direct reflection of the competition between urban and rural areas. Survival, development, and constant improvement for the quality of life are the instinctive needs for urban and rural residents. From environmental ecological point of view, this instinct is also regarded as the ecological demand. Therefore, the urban and rural ecological niche suitability plays a decisive role for habitability in urban and rural areas.

Predictably, the planning and construction of rural residential patches, from social, economic, ecological and other aspects, could bring impact to urban and rural life appropriateness. This planning and governance policy based on rural development has become an important regulatory tool for the operational mechanism in urban and rural ecological niche. How to efficiently and harmoniously carry out a regional regulatory or the surrounding countryside's niche situation should be an important part of the urban ecological planning. The author will also combine the management of urban and rural planning in Xinmi City, Henan Province to conduct the empirical analytic theory for urban and rural ecological niche.

Section 3: Empirical Analytic Theory of Urban and Rural Ecological Niche

Over the years, population problem has become a major problem for urban development. The proportion of the city population is directly related to city's land use rate and it has also become a crucial constraint to impact the healthy development in social, natural ecological security aspects (Hualou Long, Yansui Liu, Xiuqin Wu, et al, 2009). Take Xinmi City of Henan Province as an example, it is located in Henan, China's most populous provinces and belongs under the jurisdiction of the provincial capital of Zhengzhou. It covers an area of 1,001 square kilometers and the residential population, according to the data in 2010, has reached above 800,000. Xinmi, as the key and centralized construction area called *Zhongyuan urban agglomeration* in central region of China, the regulation of its internal planning and rational development of the population hereby becomes more important.

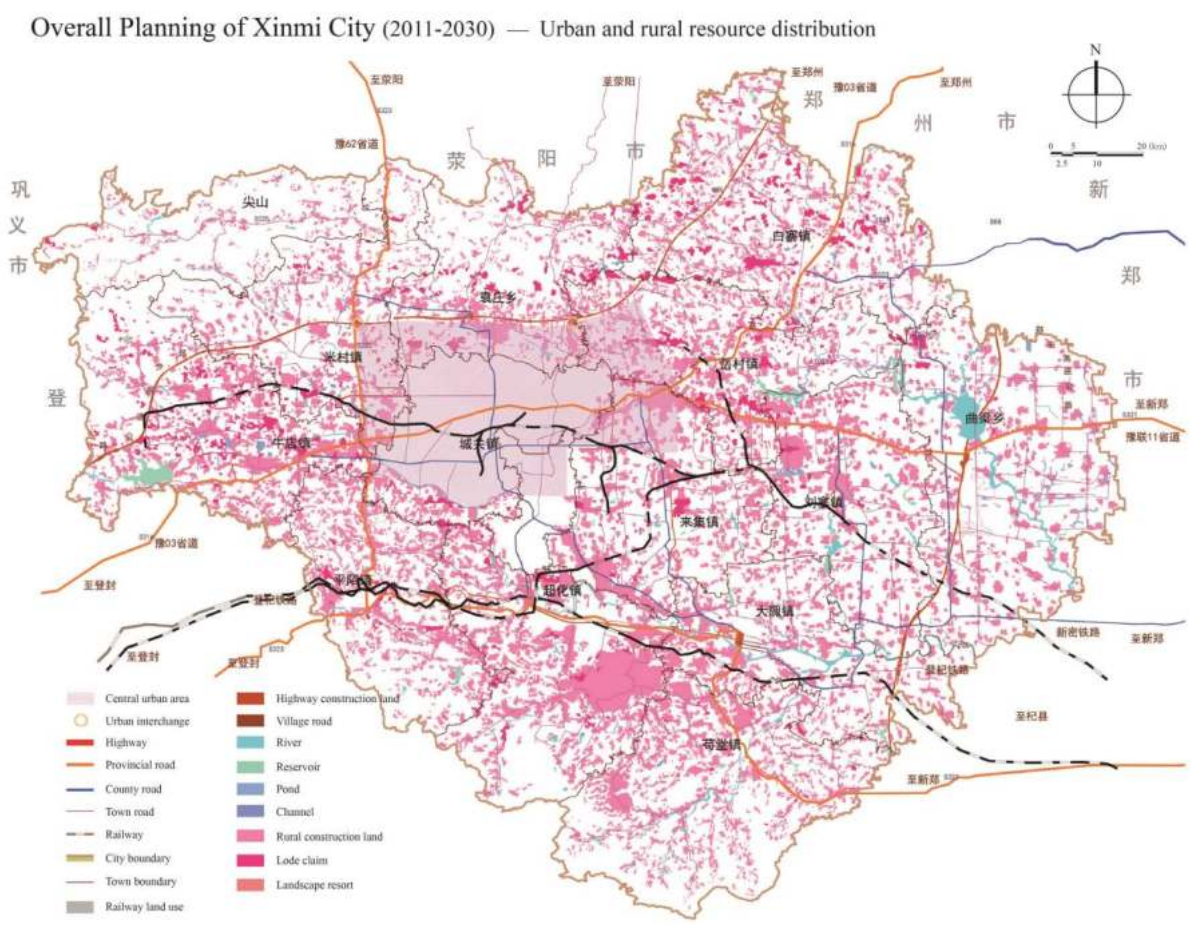


Figure 2. Urban and rural land resources distribution of Xinmi City

The agricultural population reaches 432,000 in Xinmi, representing the city's minimum half of total population in rural areas which has undoubtedly become a major issue for urban development. At present, Henan Province, with implementation of urbanization, industrialization and agricultural modernization as the development goals, is aiming to lead the entire optimization and adjustment of industrial structure and enhance economic vitality to reach the purpose of strengthening the overall competitiveness of the central plains urban cluster. Among them, the fundamental means for the so-called modernization of agriculture is to realize the population migration and the integration of

production resources through new rural residential patches consolidation, plan (Figure 2).

3.1 Reorganization of Rural Residential Patches and Planning Implementation in Xinmi City

3.1.1 Consolidation Principles for Rural Residential Patches

As for the current situations, the rural construction in Xinmi is reflected by dense building and disordered layout, which may cause potential safety hazards; village road grade is backward and non-systematical, which could bring inconvenient transport to the external areas, as well as the inadequate infrastructure, outdated municipal facilities and poor living environment. Therefore, the three principles for old villages renovation and new rural construction have been

1) Government-led and prior planning. To ensure that the village renovation could comply with the public interest, realize social justice in area households innovation process, innovation beneficiary to the majority of the villagers. Planning Departments are expected to shoulder the inevitable social responsibilities to strive to promote the mutual advancement of the rural special innovation and social reconstruction.

2) Urban-rural integration, one policy for one specific village. Under the guidance of the local policies, the villages at different regions and with various natures should be established by different innovation goals and strategies, so as to effectively carry out peasants survival, related other issues from planning perspective to achieve comprehensive rural and urban integration.

3) Remove the village and build residential area for nearest settlement. Develop control requirements for land use, building strength, green systems, road traffic, public and municipal infrastructures and others to focus on the innovation of residents lifestyle. Considering rural farmers feelings, resettlement should be completed by nearest settlement.

3.1.2 Thought Analysis of the Consolidation of New Rural Residential Patches

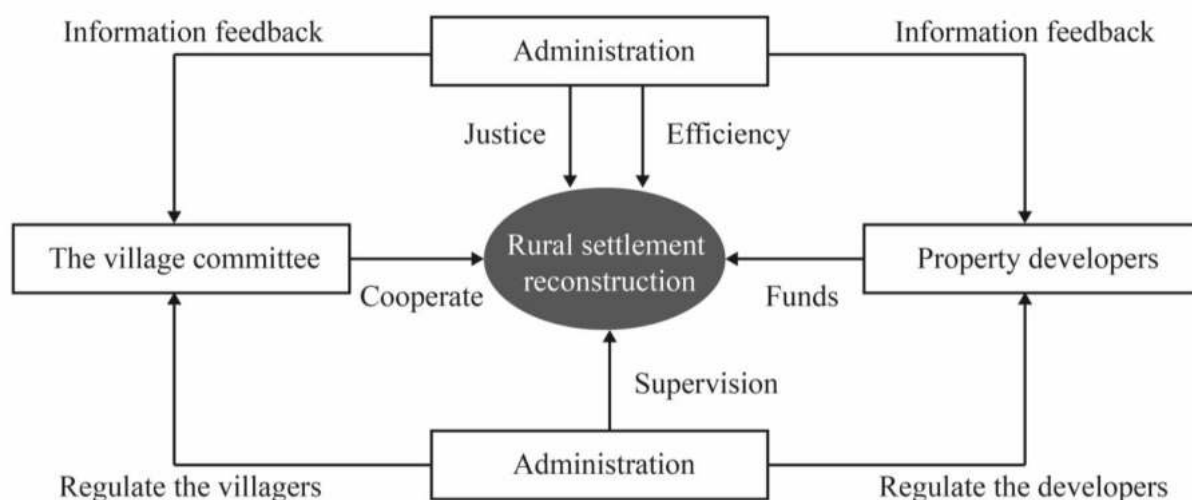


Figure 3. Collaboration mechanism between government - villagers - developers

1) Interest equalization system among the government, villagers and developers for innovation of the physical environment (Yong Liu, Cifang Wu, Zhirong Yang, 2008). Based on government's consideration for the interests of the villagers and development efficiency, farmers and developers could take part in the discussions on village innovation plan and government departments could be designated to monitor the implementation, supervision to standardize the whole process (Figure 3).

2) Diversified mode of function remodeling for village open space innovation. Remodeling can be considered at part of the villages to build up landscape with historical and cultural geographic features; besides, it can be set up as a platform to propagate the local cultural characteristics in Xinmi and plays a role for landscape enrichment to satisfy the cultural, recreational and leisure needs.

3.1.3 Planning and Construction Overview for Rural Residential Patches

In overall urban and rural development plan for Xinmi, the rural residential patches consolidation target could be conducted through consolidation of rural residential patches and great efforts for building new rural communities (44 comprehensive rural residential patches). Among these plans, the total population related with the plan reaches 150,000 and there are 3,000 to 5,000 people involved averagely in each community, representing 23 square kilometers for the total construction land.

The major innovation approach is to move and combine the remote areas and natural rural villages where the infrastructure is relatively backward; migrate and combine them into a large-scale village where is distributed along the main highway and with relatively more favorable and economically developed situation. In the meantime, the general idea for urban construction could be integrated to strengthen the construction in culture, education, business and other public service facilities and improve the overall living quality in rural communities (Figure 4).

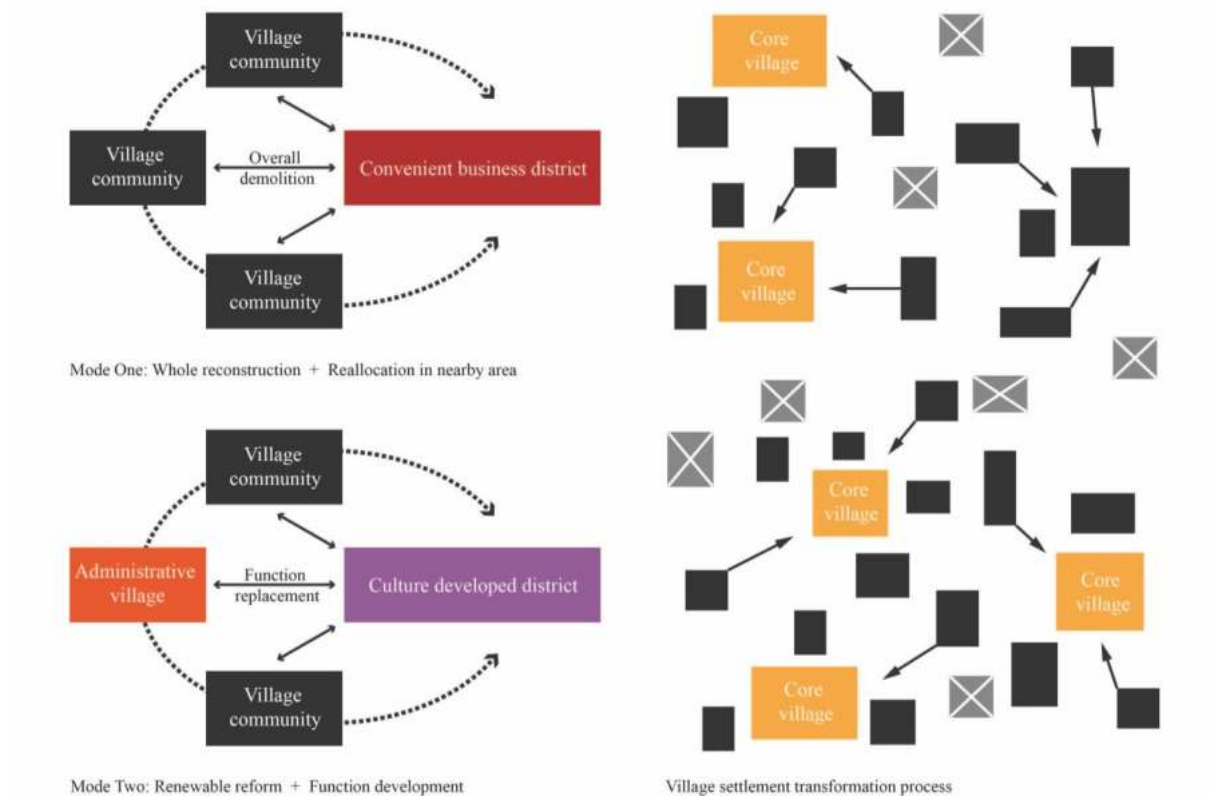


Figure 4. Rural residential renovation patterns

3.2 Analysis of the Ecological Mechanism of the Rural Residential Patches Construction

To adopt from analytical perspective of ecology and take ecological niche as an analysis tool to study the migrated population's nature under the rural residential patches consolidation provides a main analysis of the level of urban and rural niche in Xinmi rural geographic areas, among which resource niche, environment niche, economic and social niche are included to eventually come out a comprehensive regional population's niche systems, in order to achieve predicting and optimizing the layout of the population.

3.2.1 Niche Principles for Population Migration

Regional niche reflects the suitability that the regional status brings to all kinds of economic activity and human life activity. It also reflects the region's nature, function, position, function, population resources and environment's advantages and disadvantages, which could be used as an attractiveness and centrifugal force to various types of economic activities, occupations and age groups (Xianqiang Mao, Jingshan Yu, Xiurui Guo, 2005). Ecological factors and ecological relationships within urban areas consisting of respective niche which is different from each other and the differences of production and life caused in these areas are known as ecological potential. It is not difficult to see that the movement of the village and combination to the town and city trend in Xinmi, Henan Zhongyuan areas is theoretically a result reflection of chemotaxis principle and balance principle of human production and life activities brought to the urban niche in the following aspects:

1) Seek good niche is a common feature of human production and life activities. Such chemotaxis behavior includes not only the behaviors to adapt the environment, but also includes the behaviors to conduct environment invocation. The result could lead to an urban agglomeration with capital, population and other elements (Rutong Wang, Liang Chen, 2007).

2) Result caused from human's agglomeration into the high niche areas to have over-explored and utilized and thereby reduced the life niche, resulting in a weak niche or even a negative niche and the emergence of the stagnation of the population flow or back-flow (Mingli Chen, 2010). This balance maintains a relatively stable status for population migration between urban and rural areas, cities and communities. Urban ecosystem is always developed toward the direction of succession to reduce the ecological potential.

As to the current situation, these two eco-regulation regular patterns are realistically affecting the village relocation and combination project process. That is, to select new rural settlements, the advantage and disadvantage status of each niche will be taken into account.

3.2.2 Urban Ecological Essence in Rural Residential Patches Construction and Innovation

(1) Niche Analysis

Through the research on the township and rural settlement in Xinmi, the following findings can be discovered. Firstly, compared with the northern and southeastern mountainous regions, central and northeast hilly areas and towns near Zhengzhou have obvious advantages in business services facilities, culture and education, health care and other aspects; secondly, by analyzing and comparison the current situation in the coal mining towns with the planning model developed in earlier stage, on the

one hand, the original township was developed based on the coal industry and led the upgrade of the related industries, their living quality is further improved accordingly; on the other hand, there are less employment opportunities in the urban areas currently. Compared with the surrounding mining towns with rapid development, the labor demand here is expected to be increased greatly.

From the urban ecological perspective (Yang Liu, Jian Liu, Jianguang Xu, 2008), the living niche in some of the industrially developed towns is now not less than the old town. With the population saturation status of the land for construction in main urban area and the surrounding areas, especially with the bordering Quliang County's industrial construction agglomeration area and the living niche in the surrounding emerging towns will be further improved. However, life potential niche in the main city and surrounding towns will be significantly reduced. According to the chemotaxis principle of the human activity, township's population standing in the rapid development trend and it will conduct internal integration of the population first, namely the merging of the rural communities. This is not only to better mobilize the population resources and advantages, but also to intensively and effectively improve the niche in town areas, resulting in the development of the internal population agglomeration in each township.

On the other hand, due to the improvement of the traffic transportation conditions in the old town, the positive interaction between industry and the community at surrounding residential locations between the mode of production will make life a shift in some rural residents, namely and town flow. Thus, after the merger of rural land, it will be in favor of re-segmentation, development of agricultural modernization, mechanization of agricultural production and efficient labor to further enhance the economic and social niche in rural communities.

(2) Analysis of Ecological Benefits

By analyzing the relationship between population agglomeration and urban ecological system, the author found that the city's rapid population agglomeration could effectively improve residents' living space and enable them to use social traffic transportation for a short distance to go back and forth between communities and towns. Hence, this could effectively relieve the traffic burden for previous difficult trip to city. To make a relatively smooth trip for back and forth, the original route could be objectively improved to strengthen government regulation mechanisms to adapt to the future development of the growing traffic.

Obviously, population agglomeration means that the environment they lived has been changed. To adapt this change, it is bound for people to carry out a variety of activities, which the consequences arising from these activities will be responded back to the artificial environment in which new changes are occurred there. Feedback relationship between people and the artificial environment indicates that their individual elements are connected each other and any part of change will cause a chain reaction to the other sectors. Consequently, the entire system reacts and makes changes accordingly. Therefore, population agglomeration is not just a simple problem to only impact on individual, but a significant impact brought to the harmonious development of the whole city's ecosystem.

Firstly, population agglomeration could force the government departments at rural or county level to improve their overall regulatory capacity. From a merge case regarding to the rural residential integration, to achieve *urbanization, industrialization, agricultural modernization* in Xinmi, lag problem to hinder the rural development should be solved as priority. The major problem in rural areas is considered as the problem related with production, culture, education and social security. Integration of the population is essentially the integration of resources and environment. Government, by the most limited administrative resources, is expected to improve the living conditions in rural areas and

enhance the ties with various town centers to make a reasonable and efficient allocation for the nature, economy and social resources.

Secondly, the optimization of the industrial structure of the city will be implemented, namely the integration of the population to drive the booming development of the labor-intensive industries. Under the current situations that high-tech and high value-added industries are not suitable to be developed, push the labor-intensive industries to drive the city's comprehensive industrial structure. Industries that will be transformed from primary industry into the secondary industry or the tertiary industry will be considered as an effective safeguard mechanism, which also functions as a powerful catalyst for urban population's resources regulation.

In the meantime, to improve the social ecological environment also plays a pivotal role. The redistribution of land and natural resources could accelerate agricultural modernization, mechanization and efficiency, which marks the enhancement of urban development and production level. At the same time, from residential patches perspective for the long-term development of the community, linkage development with township and city, to a large extent, could accelerate urban development. According to the planning analysis, in the context of the development of the new rural construction and population agglomeration in township in Xinmi, the annual level of urbanization development will reach 2% averagely.

Conclusion: Analysis of Ecological Niche for Reorganization of Rural Residential Patches

(1) Regulatory Policy Analysis of the Village Relocation

Except the limited financial and material resources at this stage, government is also subject to land use conditions in urban areas and is unable to continue expand the population capacity in urban areas. Hence, it is necessary to alleviate the trend of urban agglomeration or outward migration. To achieve this goal, through explore city's internal and textural potentials, suburban development's functionality could be improved. By reducing the urban-rural ecological potential and reduce the floating population in urban areas, the urban infrastructure construction and development pressure could be largely lowered.

It is also worth noting that a single function of land use has a low internal diversity, weak symbiotic relationship and unproductive eco-efficiency. On the other hand, the diversity of the urban environment is a relatively more important symbol than the human environment in countryside. Therefore, the improved villages with strengthened internal diversity will not only improve the single relationship between the internal social culture and life in rural areas, but also promote symbiotic coordination with circular development mode to ensure the continued development in rural communities.

In summary, from the city's ecological regulation perspective, regional intensive human activities could save space, time and lower utility costs; meanwhile, it can also improve material and energy efficiency. The core theory of village relocation is to promote fundamentally an intensive and efficient ecological construction mode.

(2) The Niche Dilemma of Rural Development

However, the load capacity for human activities in urban and rural areas is limit. When population is surpassed a certain proportion, the ecological constraint will appear and urban ecological niche will be

reduced. Similarly, if overextended rural residential patch turns up to cause the mismatch between population and possession resources, this could also cause urban and rural niche imbalance, leading to urban and rural areas further competition for the resources. Village relocation under the governance of the Reorganization of rural residential patches is trying to enhance the niche in rural areas from economic, social and ecological dimensions, so as to change the status to avoid the rural resources from being plundered constantly by the urban development under the tide of urbanization.

Introspection is needed as competition aroused from urban-rural dual structure niche view that rural agglomeration essentially destroyed the original niche trend of urban-rural symbiosis and resulted in their niche overlapping with a deteriorated competitive relationship. In the long run, compared to urban areas, China's vast rural areas could always stand in a weak position for development. To use limited resources to conduct centralized development in rural areas and avoid competition for resources between rural and urban areas requires a different route from urban development in rural areas planning. Unfortunately, the current centralized construction method used for rural residential patch, from the perspective of the niche, has encountered plight of homogeneous competition.

Reference

- Baoxin Qiu. Coordinated Development of Cluster Structure and China's Urbanization [J]. *Urban Planning*. 2003(6), pp.5~10.
- Yuchang Shang, Ecology Niche Theory in Modern Ecology [J]. *Advances in Ecology*. 1988,5(2), pp.77~84.
- Rusong Wang, Urban Ecological Niche Potential to Discussion [J]. *Urban Environment and Urban Ecology*. 1988,1(1), pp.20~24.
- Xiudi Han. The Connotation of Urban Niche and its Regulate and Control [J]. *Urban Research*. 2002(2), pp.42~44.
- Hualou Long, Yansui Liu, Xiuqin Wu, et al. Spatio-temporal Dynamic Patterns of Farmland and Rural Settlements in Su-Xi-Chang Region: Implications for Building a New Countryside in Coastal China [J]. *Land Use Policy*. 2009,26, pp.322~333.
- Yong Liu, Cifang Wu, Zhirong Yang. Progress and Prospects about Chinese Rural Residential Land Reclamation [J]. *China Land Science*. 2008,22(3), pp.68~73.
- Xianqiang Mao, Jingshan Yu, Xiurui Guo. et al. Eco-vigor Niche: Theory, Method and Application [J]. *China Population, Resources and Environment*. 2005,15(5), pp.121~125.
- Rusong Wang, liang Chen. A Systematic Approach to Population Ecology and Its Spatial Pattern of Development in China [J]. *Population Research*. 2007,21(2), pp.1~14.
- Mingli Chen. Theoretical Basis for the Framework on the Population, Resources and Environmental Economics Discipline [J]. *Population and Development*. 2010,16(2), pp.58~66.
- Yang Liu, Jian Liu, Jiangang Xu. The Urban Population Capacity Research From the Perspective of Ecology [A]. In: *China Urban Planning Conference Proceedings [C]*. China: Urban Planning Society of China, 2008, pp.949~957.