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# A Research to Village Combination and the Analysis of the Influences of Which Having on Social Economy During the Urbanization Process of Yantai City

YU Hui-lu<sup>1\*</sup>, XIA Yan-ling<sup>1</sup>, LU Qing-shui<sup>2</sup>

1. School of Geography and Planning, Ludong University, Yantai 264025, China; 2. Yantai Institute of Coastal Zone Research for Sustainable Development, Yantai 264003, China

**Abstract** With the rapid development of urbanization of our country, serious conflicts on land using appear. Village combination in rural areas is an important way to increase cultivated land, promote the development of urbanization and effectively solve conflicts on land using, which plays an significant role in solving agriculture problems, countryside problems and peasant problems, assuring foods safety and constructing social new countryside. Taking Yantai City as example, the paper firstly makes analyses on the necessities and the feasibility of village combination. And then based on the mode GM (1,1) of grey theory, the paper forecasts the urbanization ratio, the proportion of urban and rural areas to the whole population and finally programs the rational scale of central villages and towns of Yantai City. At last, the paper conducts a detailed analysis on the social economic influence of village combination of Yantai City, pointing out that village combination affords carriers to farmers citizenization and it is beneficial to explore the new mode of rural urbanization, which is the engine of economic development in China.

**Key words** Village combination, Urbanization, Reclamation, China

With the rapid development of urbanization of our country, serious conflicts on land using appear. Village combination carried out in rural areas is an important way to increase farmland, accelerate the development of urbanization and solve the conflicts. Village combination is also significant in solving agricultural problems, peasants problems and countryside problems, assuring the foods safety and constructing new countryside. Taking Yantai City as example, researches on programming problems of village combination and influences of which bringing may afford some theoretical references to the governmental or related departments carrying out the similar projects.

## 1 Index selection, data resources and research methods

### 1.1 Index selection

(1) The total area of reclamation of village combination programming is  $s = s_c - s_z - s_t$ , among which  $s_c$  is the area of rural villages at the primary phase of programming (including the area of construction of town region),  $s_z$  is the area of total area of construction at the final phase,  $s_t$  is the total area of central villages at the final phase of programming; (2)  $s = s_c \times r$ , among which  $r$  is the non-occupation of houses in rural areas

at the final phase of programming; (3) the total rural population at the final phase of programming is  $p_n = p_t(1 - r)$ , among which  $p_t$  is the total population of Yantai City at the final stage,  $r$  is the urbanization level at the final stage of programming; (4) dividing the urban population into downtown population and town population and the downtown population adopting street committee population, the total population of town at the final stage is  $p_z = p_u - p_c$ . Among which,  $p_u$  is the total population of urbanization,  $p_c$  is the downtown population at the final stage; (5) the rational construction scale at the final stage of programming is  $s_z = p_z s_a$ , among which  $p_z$  is the total population of town at the final stage,  $s_a$  is the reasonable construction scale per capita. (6) the total scale of land using of central village at the final stage is  $s_t = p_n s_o$ , among which,  $p_n$  is the rural population at the final stage and  $s_o$  is the construction area of land using per capita in rural areas.

**1.2 Data resources** Remote sensing data is MSS in 1978 (with the resolution 80 meters), in 2000 and 2006 which is TM (with resolution 30 meters); the topographic data are 1:100 000 and 1:250 000; the administrative programming charter is 1:100 000 of Shandong Province; *Statistical Yearbook of Yantai City* from 2002 to 2009 is also involved.

**1.3 Research methods** By correcting and stretching the three remote sensing images and combining the geographic images and field images, the paper constructs the land using interpretation symbol library. Based on this library, interpreting the three sensing images visibly and referring to the geographic pictures, data of the three kinds of land using types are gained. With the spatial analyses function of GIS, analyzing the three interpretation results in terms of space and statistics, situations and changes of all kinds of land using can be concluded (char-

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Supported by Scientific Development Plans of Yantai City; Researches on Ecological Effects and Remediation of Land Using in and Around Yantai(2008323) and Scientific Research Development Fund of Lu Dong University; the Temporary Gains by Carrying out Rural Land Construction to Promote the Construction of New Countryside—Taking Yantai City as Example (L20083202).

\* Corresponding author. E-mail: yuluous@yahoo.com.cn

ter 1). The paper forecasts the ratio of urbanization of Yantai City at the final stage, the proportion of urban population and rural population to the total one with GM(1,1) in Grey Theory.

## 2 Necessities and feasibilities of Yantai City carrying out village combination

**2.1 Necessities of village combination** Village combination is a programming activity which requires the small – scaled, rather backward developed villages to be moved into a relatively better central villages or towns, reclaiming the natural villages according to the natural current situations in a certain period in a certain area<sup>[1]</sup>. Yantai City is rapid in urbanization which

makes peasants transferring to citizens, making them moving to urban areas. As a result, 2 abrupt conflicts appear which needs village combination to play a part in finding out solutions.

**2.1.1 Conflicts on land using between urban areas and rural areas.** According to the land using classification systems of land resources ministry and the practical land using situation in Yantai, the research area is divided into 6 types, such as farmland, orchards, forest, city, villages, watery and bare land. among which, villages includes natural villages, administrative villages and construction areas of towns. Urban land using refers to the construction land using of urban area of Yantai City, the subordinate counties and the governmental construction land using.

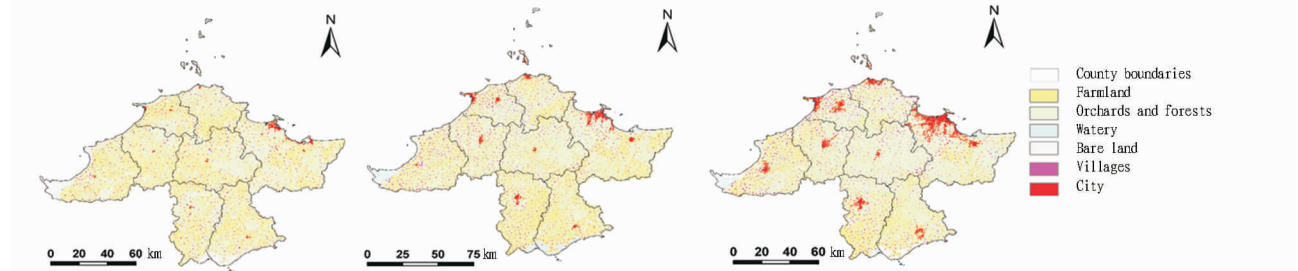


Fig.1 land utilization structure of Yantai City in the year of 1978, 2000 and 2006

With the policy of reform and opening up, land using structures of Yantai City have changed obviously (Fig.1). Firstly, the cultivation land area reduces gradually faster and faster. The total area has reduced from 586 429 hm<sup>2</sup> in 1978 to 446 166 hm<sup>2</sup> in 2006, declining by 25%. Especially from 2000 to 2006, the cultivation land reduced at a even faster rapid, equal to which reduced from 1978 to 2000; secondly, forest land (including orchids) increases steadily. It increases from 488 732 hm<sup>2</sup> in 1978 to 643 298 hm<sup>2</sup> in 2006, reflecting excellent effects on ecological environment construction of Yantai City with higher and higher ratio of forest covering. Cultivation land and forest land (including orchids), as the bases of agricultural development, showing a trend which increases and then reduces in total area and declining from 1 157 578 hm<sup>2</sup> in 2000 to 1 089 464 hm<sup>2</sup> in 2006 reflect that the economic development and broadening of urban have threatened farmland, the bases of agricultural development. Thirdly, the total area of bare land reduces largely, while in recent years, it increases. In 1978, it has an area of 240 927 hm<sup>2</sup>, in 2000, it is 112 558 hm<sup>2</sup> and in 2006 it is 119 776 hm<sup>2</sup>, which declines abundantly in primary and increases in later period, reflecting a fact that the potential land resources of Yantai City is not abundant. Fourthly, rural land using (including town areas) increases steadily and urban land coverage enlarges rapidly. From 1978 to 2000, the rural land using increases by 34%, with 1.33% increment a year. In the later 6 years, it has broadened by 54%, 7.41% a year with obvious rapid in increment; in the same period, urban construction area has enlarged by 2.22 times, 5.47% a year. From 2000 to 2006, urban construction area has increased by 2.09 times, 20.71% a year with a rapid increment.

The analysis shows that the enlargement of urban construction land using and village construction land using, espe-

cially the former, has already threatened cultivation land which is the basis of agricultural development.

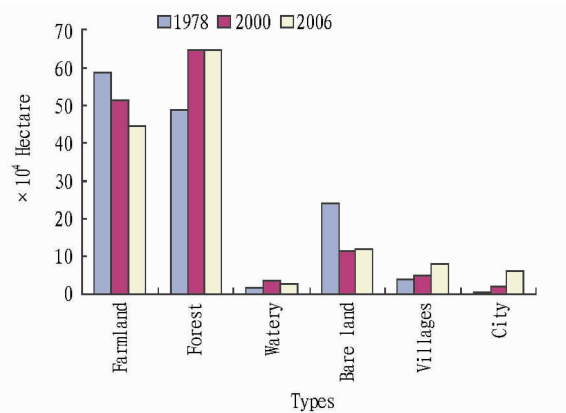


Fig.2 Changes of the land utilization structure on Yantai City after the year of 1978

**2.1.2 Abrupt phenomenon of no-occupation villages.** The already existed houses could not be destroyed with the moving to urban areas of its owners in rural areas. These houses will be no occupied for a long time. According to the statistics of the fifth census, the ratio of urbanization of Yantai City in 2000 is 45.76%, the total population of rural areas is 3.502 8 million; in 2010, the ratio of urbanization reaches to 61.70% (Fig. 1) and the total population of rural areas is 2.501 4 million with increasing houses and rapid declining of population in rural areas. Ignoring the variances of houses owned by the migrants and those who still live in villages and viewing the ratio of the differences of rural areas between the year of 2000 and the year of 2010 (that is 1.001 4 million) to the rural population in 2000 as the proportion of no-occupied houses, then the paper

can conclude like this: the ratio of no-occupation houses of Yantai City in 2010 reaches to 28.59%. The results show that the empty villages become more and more serious which in fact is a waste of land.

## 2.2 The feasibility of village combination

**2.2.1 Saving land enormously.** There are 13 101 natural and administrative villages of Yantai City in 2006. It is forecasted that there would be 1 380 169 people living in countryside in 2020. If there were 500 people living in central villages, there would need 2 760 central villages to be programmed. In this case, there would require 10 341 natural or administrative villages to be combined. And the reclamation of old countries would become an enormous land resource. According to the current principles of the land using per capita in rural areas and based on index 1, the paper forecasts by the end of the final stage of programming, a total area of 40 198 to 46 650  $\text{hm}^2$  could be reclaimed through combining old villages. Ignoring the variances of land using per capita before and after village combination and taking the ratio of no-occupied houses as standard, based on index 2, the paper forecasts that in 2020 there would have a ratio of 60.59% of houses which are not occupied. By the end of programming, there would have a total area of 39 697  $\text{hm}^2$  land reclaimed by combining and destroying old villages. Through these 2 ways of calculation, amounts of land saving are very close which proves that village combination can save land enormously.

**2.2.2 Financial security.** According to the regional experience of village combination, the early period of the project needs large investment of capital. Such as constructing the returning houses and infrastructures, establishing living securities of peasants who lose land, solving problems of the difficult groups and so on. Only those local governments who are strong in finance are capable of carrying out this kind of complicated social economic exploration. Yantai City is high in economic development and in 2008, the financial incomes per capita of Yantai City has reached to 2 550 Yuan, investment on social fixed assets per capita is 30 102 Yuan, pure income of peasants per capita is 7 935 Yuan which are far higher than the early period of Baodi region of Tianjin city where succeeded in carrying out village combination. Therefore, Yantai is equipped with financial security.

**2.2.3 Requirements security.** Yantai City is fast in development of urbanization and industrialization. Stretching of urbanization and industrial land using result in unbalanced needs and demands on land. Land supplying will be largely satisfied to urbanization and industrialization through village combination. On the other hand, urbanization and industrialization will also realize the extra value of land saving during the process of village combination, affording capital security to the construction of new countryside and urbanization.

**2.2.4 The practical experience.** In order to assure the needs of economic development for land resources, in 2005, ministry of land resources published the opinions on combining the increment of urban construction land using and reducing of rural construction land and some other relative policies too. Since the year of 2006, ministry of land resources has successively

carried out the combining experiment in 21 provinces (cities and regions), among which many places have adopted village combination. Such as Tianjin City, Shandong Province and so on. All of which provide precious practical experience to Yantai City in the project of village combination.

**2.2.5 Strong urbanization awareness of rural citizens.** Yantai City is one of the first 14 coastal cities opening to the world. Excellent location and developed economy make urbanization revived early. There would be no unsurpassed gaps between urban and rural life and weak homesick of peasants to villages. Under this circumstances, the early propagation involved in the programming and practising of village combination and the activating of peasants are much easier to be conducted.

## 3 Conclusions and Analysis

**3.1 Reasonable scale of central villages and towns of Yantai City** The ratio of urbanization from 2000 to 2004 of Yantai City are 45.76%, 46.85%, 47.94%, 49.04% and 51.00%. the paper calculates the ratio of urbanization in 2015 and 2020 will have reached to 69.01% and 79.34% with grey forecast methods<sup>[2]</sup> and indexes 3 to 6, realizing the process of urbanization basically. The population of rural areas will stay at a steady level. Carrying out village combination with the ratio and rural population in 2020, the total population of Yantai City will be 6 680 393 people with the proportion 37.955% of rural or town areas to the whole (Table 1).

Conclusions suggest that by the end of 2020, the rural population of Yantai City will have reached to 1 380 169 people. Calculation on this circumstances that the number of the current natural and administrative villages is 13 101 with averaging 105 people per village, it is appropriate to carry out village combination in hilly areas where are smaller than 200 people<sup>[3]</sup>. In 2020, the urban population of Yantai will reach to 5 300 224, with 1 155 374 town citizens. In 2005, the area per capita in town construction land using is 167 square meters, which is higher than the highest of the fifth 140 square meters per capita constrained by the State town planning standards of the People's Republic. Concerning with the practical situation of Yantai City, the averaging land using area is modified to an area from 120 square meters to 140 square meters. Using index 5, the paper comes to a conclusion that the scale of town construction land using at the final stage is about 13 864 to 16 175  $\text{hm}^2$ . In 2005, the averaging area of construction land using in rural areas of Yantai City is 212  $\text{m}^2$ , which is larger than that of the subordinated index that are larger than 120  $\text{m}^2$  but smaller than 150  $\text{m}^2$  according to the norms of villages and towns during the period of programming central villages. Taking the practical situations of Yantai City into concern, the rational area of land construction is adjusted to 120 to 150  $\text{m}^2$ . Using index 6, the paper programmed the scale of land construction at the final stage is about 16 562 to 20 703  $\text{m}^2$ .

## 4 The social economic influences brought by village combination

**4.1 Affording carriers to farmers becoming citizens** Mi-

grant workers are not the terminal who might become citizens or just go back to rural areas. According to some statistics, only 13.0% migrant workers are willing to return to their hometown in future<sup>[4]</sup>. It is predictable that most of them would become citizens in future. While migrant workers becoming citizens vary in routines, such as employment, birth place and migration. According to the surveys done by the State Council in 2006, about 60% of migrant workers are clustering big cities with a population of 3 million people. Migrant workers in metropolis have 2 difficulties in becoming citizens: on one hand, high price of house and materials are much heavier to migrant workers. On the other hand, the employment mode is not sustainable supported by industries export-guided. Big cities are difficult in satisfying the demands of migrant workers, such as housing and becoming citizens. Becoming citizens in terms of

birth place and migration becomes important routines to migrant workers in medium or small sized cities.

Village combination afford opportunities to migrant workers becoming citizens. During the process of village combination, the construction of central villages and towns, including the construction of new countryside and the development of towns are the important components of urbanization in our country. Through scientific programming, social propagation, the project of village combination which is government led, combining the efforts of local peasants and migrant workers not only affords the carriers to migrant workers becoming citizens, but also on the other hand, some migrant workers who are scientific and creative enter the construction of new countryside and the development of towns as new blood.

**Table 1 The Grey forecasting results of relative variables at the end of programming period of Yantai City**

Year	2002	2003	2004	2005	2020 *
Population	6 467 217	6 458 232	6 468 228	6 477 820	6 680 393
Proportion of villages and towns	0.640 04	0.619 99	0.603 56	0.585 12	0.379 55

Note: Population forecasting mode  $x(t+1) = 3\ 221\ 739\ 759.106\ 979e^{0.002\ 002\ t} - 3\ 215\ 272\ 542.106\ 979$ , parameter  $a = -0.002\ 002$ ,  $u = 6\ 437\ 432.692\ 786$ ,  $c = 0.187\ 7$  excellent,  $p = 1.000$  excellent; proportion forecasting mode:  $x(t+1) = -21.776\ 508e^{-0.028\ 901t} + 22.416\ 548$ . among which, mode parameter:  $a = 0.028\ 901$ ,  $u = 0.647\ 860$ ,  $c = 0.029\ 2$  very good;  $p = 1.000$  very good; data comes from *Statistical yearbook of Yantai City* from 2002 to 2006.

## 4.2 Benefiting in exploring the new mode of urbanization

There are 7 cities and 1 county in Yantai City. Among which, Longkou, Laizhou, Zhaoyuan and Penglai are topped in the list of 100 strongest counties in the whole country. Strong economy insure the financial security of carrying out village combination; at the same time, Yantai is not balanced in regional economic development. Laiyang, Haiyang and Qixia are relatively weaker. These situations afford spatial exploration on the mode of village combination which is beneficial to the exploration of urbanization.

## 4.3 The engine of economic development

Our country has relied on capital investment as the economic development mode since reform and opening up which results in the long existence of high investment and low consumption<sup>[5]</sup>. The huge production ability generated by high investment results in high dependence on international markets of our economy. East Asia Financial Crisis in 1998 and the international financial crisis since 2008 have proved the fact. In order to change the unbalanced structure of economic development, a series of policies has been published. In fact, there is a potential factor which can activate the rural market in economic area, that is village combination. The project of village combination involves many social economic problems, such as the construction of infrastructure, real estate development, the adjustment of economic structure and population density and so on. All of which may generate huge multiple effects, explore the rural markets largely and increase the consumption at home. Real estate, for example, which is a pillar industry, plays an important role in the rapid development of economy in the past years. While, the excessive high price of houses becomes a unsteady factor in the development of economy which also deeply influences the healthy development of economy in China. The development of economy needs fresh blood and the village combination is

doomed to be the fresh one in the development of real estate. And real estate is strong in generating relative effects which can activate developments of building materials industry, iron and steel industry, household equipment industry and furnitures and so on. Village combination will continuously activate the rapid development of economy for ten years.

## 5 Conclusion

Village combination is a road which is must be taken in the development of rural economy. It will increase effectively the land resources needed by the urban construction and will increase largely the cultivation land, insuring the foods security. Village combination is beneficial to solve problems of migrant workers becoming citizens; it is beneficial to explore the new road in urbanization and creating new platform for constructing new countryside; in a long term, village combination is the potential engine to enlarge the rural consumption market, optimize the economic structure and activate the development of economy. Whether village combination resulting in good or bad depends on many factors. For example, in capital collection, how to handle the relations between peasants' self-reliance and government's investment; from a perspective of real estate exploration, how to handle the relation between government subsidies and marketing operation which makes peasants are capable of paying for the costs of housing; how to propagate to activate peasants and cut down the social costs to the greatest extent and so on. If the project was carried out blindly with subjective judgement, it would bring large negative effect on the development of rural economy. Therefore, the programming and operation of village combination must adopt scientific attitude, following principles just like overall planning, step by step, the easy coming first and then difficulties, developed areas coming first and then backward, government-guided and

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