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# Path Choice on Rural Industrial Upgrading in the Process of Rural-urban Integration in Binhai New Area

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**Abstract** With methods of reference research and field research, the current situations of rural industrialization in the process of rural-urban integration in Binhai new area are analyzed and some problems in the process of integration in the new area are pointed out, such as difficulties in breaking dual economic structure in urban and rural areas, imbalanced economic development in the area and inadequate development of the third industry. And relevant countermeasures are proposed: optimizing agriculture industrial structure and promoting agricultural industrialization to form urban agricultural model of Binhai new area focusing on facility agriculture, park agriculture and high-end agriculture and to realize the intensive growth of agriculture; rationally distributing rural industrial structure to form regional leading industry and playing the guiding role of industry to achieve industrial adjustment improvement; quickening the construction of the third industry centering on service to form the service system of modern countryside and the leading role of modern service industry so as to achieve rapid development of the third industry.

**Key words** Binhai new area, Rural-urban integration, Countryside, Industrial upgrading, China

As the test site of comprehensive coordinated reform in our country, Tianjin Binhai new area is strengthening the process of integration of the urban and rural areas. The essence of the process is an industrial revolution of rural modernization which is similar to the primitive Industrial Revolution in the west, which is a fundamental revolution from traditional agricultural society to modern industrial society. Therefore, how to promote the adjustment and upgrading of rural industrial structure is a primary research subject of Binhai new area in the process of integration of the urban and rural areas. The writer introduces the current situations of rural industrial development, analyzes the problems of rural industrial development and points out the method of rural industrial upgrading in the process of integration of the urban and rural areas in Binhai new area.

## 1 Current situations of rural industrial development in the process of integration of the urban and rural areas in Binhai new area

**1.1 Current situations of integration of the urban and rural area in Binhai new area** Tianjin Binhai new area is situated in the coastal area of eastern Tianjin, including three administrative regions, namely Tanggu District, Hangu District and Dagang District, Tianjin Economic and Technological Development Zone, Tianjin Port Free Trade Zone, Tianjin Port and some parts of Dongli District and Jinnan District. It has the planned area of 2 270 km<sup>2</sup> and the coastal line of 153 km. By the end of 2008, Binhai new area has the permanent residents of 2.028 8 million. Administrative institutions consist of 21 sub-district offices, 219 neighborhood committees, 9 town govern-

ments and 202 villagers' committees. Agricultural population reaches 265.4 thousand, which takes up 22.83% of the overall population.

Binhai new area is quickening the process of rural urbanization according to the requirements of "solving difficulties, promoting transformation and improving standards". As the test site of comprehensive coordinated reform, Tanggu, the core area of Binhai new area, took the lead in achieving the goal of integration of the urban and rural areas of "agriculture without peasants and farmland without countryside". 4 664 farmers in Tanggu have enjoyed the fruits of rural urbanization and become "residents" first till March, 2010<sup>[1]</sup>. Tanggu demolished Chenquan Village and Shanmenkou Village to build residential houses as the test site and imposed collective-owned land of 744 hm<sup>2</sup>. Agreement on compensation and relocation for removal of farmers' houses has been basically completed. Over 95% of agricultural population has become non-agricultural population. Social security of people with signed contracts in rural urbanization has been successfully achieved. Houses for removal of residents in the first pilot villages will possess entry conditions by the end of 2010. Removal of Huangquan Village and Hubei Village has started recently following Chenquan Village and Shanmenkou Village. Huangquan Village and Hubei Village have established transitional neighborhood committees and land collection, compensation and removal will begin soon.

At present, projects of landscape, committee service centers, and green seeding bases of Tengfei Road, Haixing Road and Tengyi Road in the west new city have been completed. Farmers' residential houses for removal of 810 thousand m<sup>2</sup> in the west new city have been put into construction. The construction schedule of 400 thousand m<sup>2</sup> of the first-stage project, including residential housing, has reached the level of "positive-negative-zero" on average. Flats for removal of some

farmers have been changed to into three-floor houses. The west new city will have the capacity of nearly 100 thousand people after the construction. Traditional production and living of farmers will be improved through the construction of rural urbanization. What's more, superior land for construction of 40 km<sup>2</sup> will be vacated for Binhai new area with the collective utilization of land, which provides precious land resources for quickening the exploitation and opening up of Binhai new area. Binhai new area will have started the construction of rural urbanization of the new town (the south new city) and 8 administrative villages in Hujiayuan District successively by the end of 2010. The construction of rural urbanization in 30 administrative villages of Tanggu in Binhai new area will be completed in 5 years<sup>[1]</sup>.

Integration of the urban and rural areas of other administrative regions in Binhai new area, like Dagang District and Hangu District, has been put into operation. Several villages and small towns have partially finished the pilot project of "merging villages into towns". However, generally speaking, integration of the urban and rural areas is a long-time project. There will be still considerable farmland and agricultural residents within Binhai new area for a certain time and agricultural population still occupies a considerable proportion of the overall population throughout the area.

**1.2 Current situations of rural industrialization in the process of integration of urban and rural areas in Binhai new area** With the quickening of integration of the urban and rural areas in Binhai new area, rural industrial structure is being adjusted with the following trend. Firstly, a great deal of land is vacated through rural urbanization construction of "merging villages into towns". Regional functions are reprogrammed and many town governments begin to consider problems of industrial layout and sustainable development from the strategic height. Yet rural industrial adjustment is far behind the object of harmonious urban and rural development. Secondly, agricultural proportion begins to drop in regional total output value. In 2009, proportion of the three industries of rural economy in Binhai new area was adjusted as 5:53:42. Taking Tanggu District as an example, agricultural proportion in GDP has decreased to 0.3% and proportion of traditional agricultural income in farmers' family income has decreased to 9.4%. Non-agricultural industries take up 91.9% of rural gross social output value<sup>[2]</sup>. Thirdly, the second industry which focuses on heavy industry, such as chemical engineering and assembly-type manufacturing, takes the largest percentage in non-agriculture and the third industry has relatively small scale and low proportion. Fourthly, there is no close connection between agriculture and non-agriculture as well as the second and third industry of non-agricultural industries. Lastly, regional development within the area is unbalanced and with big differences. Integration of the urban and rural areas starts from relatively developed areas, while underdeveloped areas will cause great barriers in the process.

## 2 Problems in rural industrial development in the process of integration of the urban and rural areas in Binhai new area

Integration of the urban and rural areas requires the entirety of industry and agriculture, cities and the countryside as well

as city residents and rural residents. Dual economic structure of urban and rural areas is to be broken with overall planning to optimize and coordinate the spatial distribution of industries, towns and the ecology and build the resource-conserving and environment-friendly society. Rural industrial development under the integration of urban and rural areas is no longer a merely economic growth problem. It must meet the requirements of overall developmental planning, complementation with towns and comprehensive improvement within the area. Analyzed from this point, there are many problems in the growth of rural industry during the process of integration of urban and rural areas in Binhai new area.

**2.1 Troubles still exist in breaking the dual structure of urban and rural areas** Dual economic structure of urban and rural areas is originally a structural problem which is not only the key point in structural adjustment but an adverse factor in structure adjustment and industrial upgrading. There are still many difficulties in breaking the dual economic structure of urban and rural areas during the integration of urban and rural areas in Binhai new area, such as traditional common problems like intersected mechanism of resources distribution and management as well as some regional problems.

**2.1.1 Significant influence by the environment.** Coastal urban developmental mode in Binhai new area causes relatively big influence of ecological resources in some parts in the integration of urban and rural areas.

**2.1.2 Imbalanced regional development.** Since Binhai new area is merged by 3 administrative regions, there is imbalanced regional development and great differences in economic development among villages and towns. There are both advanced areas that have been actively urbanized, such as well-known "Huaming Town" throughout the country and undeveloped areas waiting to be urbanized, which brings great difficulties in formulating policies of overall development of urban and rural areas and functional planning.

**2.1.3 Weak industrial complementarity of urban and rural areas.** First of all, industries are relatively concentrated in the down town of Binhai new area and weak in radiating to its surrounding areas geographically. Since 3 main functional regions of Tianjin Economic Development Zone, Tianjin Port Free Trade Zone and Tianjin Port are situated in the administrative jurisdiction of Tanggu District and relatively far from the countryside, economic aggregate of Tanggu District takes up over 70% of Binhai new area. In comparison, Dagang District and Hangu District which centralizes many administrative villages have relatively weak industry. Therefore, generally speaking, the function of industry driving rural industrial development is weak in Binhai new area. Besides, Binhai new area has planned 8 major leading industries, but industrial relevance within the area is weak and industrial chain is short and incomplete. For example, key accessories needed by high and new technology enterprises in Binhai new area are mostly import-dependent. Transactional relevance among enterprises and coordination between small and medium-sized industries and large enterprises are relatively weak. It is fairly difficult for small and

medium-sized industries to provide professional matching services for large enterprises in some industrial sections. For example, abilities to provide auxiliary items of automobile manufacture and mobile production in local places are 37.5% and 12.3% separately and it is natural to be difficult to lead rural industries.

**2.1.4 Difficulties in overall coordinating work.** There are difficulties in the comprehensive coordinating work of integration of urban and rural areas in Binhai new area. Binhai new area consists of 3 major administrative districts of Tanggu, Hangu and Dagang and several functional regions of economic and technological development zone, free trade zone and Tianjin Port. Though the management committee of Binhai new area is endowed with the obligations of planning, guiding and coordinating, it is not the first-level government and does not possess the executive power on each administrative district as well as functional economic zone. Planning, supervision and coordination in the new area lack authoritativeness and problems of "uncoordinated rights and obligations" and "obligations without rights" are quite serious, hence unsatisfying performance of duty.

## **2.2 Multiple difficulties of agricultural industrial upgrading**

Adjusting agricultural industrial structure and constructing modern agriculture are the crucial sections of integration of urban and rural areas. There are mountains of difficulties in upgrading and optimizing agricultural industry in Binhai new area. To be specific, agricultural land of Binhai new area is poor in quality with 33 thousand hm<sup>2</sup> of saline uncultivated land as well as shallows and wetland. Low and medium-yield land counts 70% of the overall area of cultivated land. Moreover, there is a growing demand of construction land with the quickening of urbanization, which will cause further compaction of agricultural development space. In addition, serious shortage of regional water resources, farmland water conservancy facilities with long-overdue maintenance and relatively serious environmental pollution in coastal waters bring strong influence to fishery production in coastal areas; qualities of labor forces are not high, and young people are seldom engaged in agriculture due to the big employment opportunities of non-agriculture and high incomes, therefore, the elderly and women play a crucial role in agricultural production; basically, agriculture in Binhai new area, especially crop farming, is still run by families with low agricultural industrialization and systematization and without dimensional advantages; relatively low scientific content of products and low acre-yield without competitive industries; products possess low comprehensive utilization as well as low added value and allied industries are underdeveloped with weak abilities of driving agriculture<sup>[3]</sup>; inadequate agricultural capital input attracts less capital abroad and at home and the long-acting mechanism of "industry nurturing agriculture" has not been formed. Inadequate capital is the key barrier of quick agricultural development. In the first half of 2010, Binhai new area achieved investment in the fixed assets of 148.563 billion yuan with a year-on-year growth rate of 37.3%, yet agricultural investment in the fixed assets takes up only 0.1% which is lower than average level throughout the city<sup>[4]</sup>.

**2.3 Rural industry does not play due leading role** There is imbalanced rural industrial development in Binhai new area. Neither developed area nor underdeveloped area plays due leading role. Some villages and towns introduced a certain number of industrial enterprises during the urbanization and formed relatively developed rural industry. However, relevance with rural industries is not strong because of lacking long-term strategic planning and neglecting industrial complementation between urban and rural areas during the introduction. In addition, the introduced short industrial chain can not form industrial clusters with complementary advantages and the leading role of industry can not be fully exerted.

Besides, generally speaking, industries coordinated with agriculture are relatively backward and small-scaled. Firstly, infrastructure of leading enterprises in agro-product processing is weak. Leading enterprises have unobvious "leading" role and weak driving force in developing agricultural industrial cluster. Secondly, agro-product processing has low scientific content and inadequate scientific investment, lack famous brands and strong market competitiveness. Thirdly, varieties of special agro-products suitable for processing are limited with small-scaled industrial production and a shortage of processing material, so further expanded reproduction of the industries is restricted.

## **2.4 The third industry has relatively small proportion with a decreasing rising speed**

The third industry in the countryside develops slowly with low proportion and irrational structure and has difficulties in supporting the first and second industry effectively. Development of economic organizations for specialized cooperation among farmers and industry associations is backward and socialized service platform for public interest has not been established. Agricultural comprehensive competitive edge of the integration of producing, processing and marketing is hard to be formed due to imbalanced development between urban and rural areas and among different regions. Traditional third industry takes up an excessively large proportion and the added value of traditional industries like transportation, warehousing, post and telecommunications, wholesaling, retailing, trading and catering takes up a relatively large percentage in the third industry. The proportion of newly-developing service industries, such as banking and insurance business as well as real estate, is relatively small and decreasing. Other newly-developing industries, such as culture, tourism, entertainment, education and training, are slightly increasing though still with a comparatively low proportion.

# **3 Approach selection of rural industrial upgrading during the integration of urban and rural areas in Binhai new area**

Optimizing rural industrial structure, promoting rural industrial upgrading and quickening the integration of urban and rural areas should abide by the following principles: firstly, interacting and complementary growth of urban and rural areas with overall planning and development; secondly, protecting and improving ecological environment with coordinating improvement; thirdly, developing according to local conditions and exerting

comparative advantages to perform regional distinctive; fourthly, interactive and competitive development of the first, second and third industry to form industrial build-up effect.

To be specific in the third major industries, methods are as the following: optimizing agricultural industrial structure and promoting agricultural industrialization to establish Binhai urban agricultural mode focusing on facility agriculture, park agriculture and high-tech agriculture and implement the intensive growth of agriculture; rationally distributing rural industrial structure and establishing regional leading industries to exert the leading role of the industry and realize industrial adjustment development; quickening the construction of the third industry centering on the service industry and forming modern rural service system to make modern service industry the leading industry and achieve rapid development of the third industry.

**3.1 Quickening the upgrading of agricultural industrial structure** Land in the countryside is to be redistributed through "merging villages into towns" during the integration of urban and rural areas with a further decrease of cultivated land. Agricultural intensive development has become a necessary trend. And industrialization and Binhai urban agricultural development model are the main measures of agricultural industrial upgrading.

**3.1.1** Rationally distributing Binhai urban agriculture according to the principle of functional zoning. According to the developmental planning of Binhai new area, emphasis should be put on 5 major industries, namely characteristic planting industry with high efficiency, extraverted agro-product processing, modern agro-product logistics, agriculture ecological tourism, as well as conservation-oriented and circular agricultural industries. Agricultural distribution in Binhai new area consists of "four zones" and "five belts" according to the differences of functional zoning, regional conditions and natural resources. "Four zones" refers to circular agriculture functional zone in the north, high-end agro-product processing in the central area, logistics functional zone, high-tech agriculture functional zone in the south and sea farming functional zone in the east. And "five belts" means creative agricultural industry zones of ecological art walks, Binhai charms, teahouse and fruity, ecological farmhouses and flavors in reservoir area.

Within each functional zone, administrative division should be broken and regional characteristics performed to further promote the formation of industrial cluster of urban high-end agriculture and the value chain, strengthen the production and economic function of agriculture, broaden the living, ecological and demonstration function of agriculture and improve the comprehensive strength of agriculture as well as agro-product qualities. For example, agriculture functional zone in eastern Binhai new area, the shallow and neritic area facing Bohai Gulf, mainly focuses on marine fishery farming at present with Binhai Marine Science Park, Marine Treasure Cultivation Base, Fish Port Trading Center in Pan-Bohai Sea Region, Tanggu Processing and Trading Center of Marine Products and two Increment Reserves of Shoal and Shallow Sea as the key enterprises. The specific measure is to build seedling raising plants, culturing

farms, breeding stations to conduct artificial breeding, culture, increment and releasing by taking the developmental road of standardization, ecology and industrialization with moderate dredging, high-efficient culture, intensive processing and normalized production so as to achieve the integration of ecological and economic objectives, stress the virtuous cycle of marine ecological system and economic system and realize the coordinated development of marine resources and environmental resources.

**3.1.2** Vigorously developing high-efficient ecological agriculture and high-tech agriculture. Facility agriculture with high technological content and green agriculture producing healthy products are the main production forms. And factory industry as well as sightseeing agriculture should be vigorously developed to gradually achieve the transformation of agriculture to the second and third industry and establish the production system of circular urban agriculture. Roles of institutions for higher learning and agricultural research institutions should be exerted to transform and improve agriculture with modern science and technology. With modern agriculture technological parks as the carrier, agriculture technological enterprises with favorable market prospects and strong leading abilities are to be cultivated and incubated to advance the standard and level of research and development of agriculture technology-intensive enterprises.

Agricultural development in Binhai new area has the innate disadvantages, such as high salinization of cultivated land, relatively low land productivity and low as well as unstable output. To ameliorate saline and alkaline land, improve agricultural productivity and develop sustainable agriculture, ecological agriculture and urban sightseeing agriculture with favorable economic benefits and ecological benefits are the developmental orientation of enhancing sustainable utilization level of cultivated land in this area. For example, the construction of Tianjin Sino-Singapore Eco-city has already made great achievement and the establishment and commencement of artificial wetland sightseeing project in Dagang District has been great attractive.

**3.1.3** Raising capital from multi channels and strengthening agricultural construction. Various methods should be adopted and various means like taxes, subsidies, stocks, discount interest and warrants, be comprehensively used to broaden capital sources of agricultural construction. Governmental capital investment is to be increased and a reasonable capital utilization plan formulated to gradually increase the yearly capital of investment in the fixed assets used in rural area and land grant income used in rural construction. The mechanism of agriculture science and technology input which emphasizes governmental investment, broadens industrial input and attracts foreign capital is to be established in order to gradually form a diversifying system of agriculture science and technology input, perfect rural financial system and increase financing channels.

**3.1.4** Improving the current agricultural operating pattern and exerting brand advantages. Agricultural industrial upgrading is to be promoted through transforming the current agricultural operation mode. Various types of rural cooperative economic organization are to be actively established to explore integration

and cooperation of multi-channel, multi-region and multi-level. Firstly, new modernized villages are to be re-planned and constructed during integration of urban and rural areas. Farmland is to be unified to promote scale-style development of agricultural production. Secondly, distinctive sub-districts are to be built with village as the unit and with the support of local governments as well as the guidance of leading enterprises to form the model of "rural household + distinctive sub-district + leading enterprise", develop "made-to-order" agriculture and make them production bases of agro-products with famous brands, export bases of advantageous agro-products and raw material supply bases of leading enterprises. Thirdly, "enterprise + rural household" mode is to be formed. Some villages set up companies or organize new companies with external investors and explore agricultural projects with farmers cooperatively, which brings large amounts of people, capital and information and quicken the development of modern agriculture.

Brands should be explored with further depth to continuously enrich the connotations of brands. The planting structure is to be further regulated, changing general planting to distinctive and high-efficient planting. 5 major distinctive crops, namely vegetables, grapes, flowers, jujubes and edible mushrooms, should be actively developed to gradually establish distinctive agricultural leading industries in Binhai new area. 5.33 thousand  $\text{hm}^2$  of vegetable production base has been built among which facility vegetables count 4 thousand  $\text{hm}^2$  with Gegu in southern Tianjin, Tanggu new city, Datian in Hangu and many others as the priorities. Emphasis should be laid on cultivating brand name products of green turnip in Gegu to form the advantageous industrial zone and industrial belt of distinctive vegetables in Binhai new area. 3.33 thousand  $\text{hm}^2$  of grape production base has been built with Chadian in Hangu as the priority to strengthen the brand advantages of muscat grape in Chadian. 6.67 thousand  $\text{hm}^2$  of jujube production base has been built with Zhongtang in Dagang, Taiping Village, Xiaowangzhuang as the priorities. Production and management should be strengthened to nurture famous brands of winter jujube in Dagang and golden silk jujube in Tianjin and create jujube production brands. Ten thousand mu of flower planting base has been built with Dashun in Dongli and Huatai as the priorities. Ten thousand mu of edible mushroom planting base has been built with Dongli military provision city and Huada in Tanggu as the priorities to mainly cultivate products with excellent qualities, produce distinctive species of mushrooms and broaden processing for export so as to achieve the coordinated process production from mushroom species to export, establish the industrial cluster of excellent edible mushrooms in Binhai new area and drive the mushroom production in a larger scale.

## **3.2 Strengthening rural industrial construction in Binhai new area**

**3.2.1** Rational regulating industrial layout to achieve the spatial integration of urban and rural industries. Industrial group, radiation and leading effect is to be exerted on the basis of perfect industrial zones in central area of Binhai new area with overall planning. Planning of rural industrial zones should be a

part of industrial planning in Binhai new area. Industries in downtown are to be guided to spread to the countryside for the gradual spatial integration of urban and rural industries<sup>[5]</sup>. Firstly, agriculture-related industries and labor-intensive industries are to be transferred to the countryside and township industries should regulate the developmental strategies to be integrated into the industrial value chain and perform matching and complementation well. For example, new high-tech textile requires a great number of labor forces. New area can be settled in the countryside besides Tianjin new high-tech textile industrial park to lead the improvement of the downstream garment industry in rural area and form a more complete industrial cluster. Secondly, on the basis of rural original industry, construction of the industrial park should be promoted to lead the assembling of distinctive advantageous industries and gradually form industrial clusters with certain regional characteristics. For example, Dengshangu Village in Hangu District has introduced LG, Kaiwei Chemical Industry and Wanwei Chemical industry during the process of urbanization. Chemical industrial zone can be established through introducing chemical industries.

**3.2.2** Strengthening the development of agriculture-related industries. With the development of modern agriculture in Binhai new area, based on the development of leading products in Binhai new area, such as facility vegetables, flowers and plants, edible mushrooms, grapes, winter jujubes and aquaculture, the further processing system of agro-products is to be built and 20 leading enterprises and production bases like Huada, Dashun, Huatai, Mengzhuangyuan and Cuiguo, are to be strengthened to expand the industrial chain, improve added value and form the distinctive industrial zone. Based on the current processing enterprises of agro-products, supported by large bio-tech companies and technical talents and linked by the cooperation mechanism of industry-university-research, the processing technological level and qualities of agro-products are to be improved with the developmental road of further and intensive processing. Innovative abilities are to be gradually enhanced and agricultural outgoing degree as well as foreign exchange earnings should be progressively increased through facing the oversea market while exploring middle and high-end market in China as well as taking the advantage of convenient modernized transportation in Binhai new area and the advanced information network throughout the country.

## **3.3 Vigorously developing the third industry in rural area**

**3.3.1** Perfecting modernized agricultural service system. Agriculture technological resources in Binhai new area should be integrated, research and development platform of agricultural technology is to be built and agriculture technology research center, incubator bases and agriculture high-tech demonstration parks are to be established to improve researching and developing abilities, application abilities as well as demonstration abilities of agricultural technology. Associated with information construction in Binhai new area, agriculture information service center should be established with the key of perfecting information service facilities to strengthen agricultural information communication with the outside, provide effective and convenient

information about production technology, policy and regulation as well as business markets according to different demands and offer on-line services matching with agro-product logistics in Binhai new area, such as on-line order, dispatching and clearing. Regional, transportation and industrial advantages in Binhai new area are to be exerted and the service system of agro-product logistics is to be established with the developmental concept of modern logistics and the support of infrastructure and operation mode of modern logistics in Binhai new area. The agro-product safety inspection system is to be established in Binhai new area. Inspection facilities in regional agricultural departments and key production bases of healthy agro-products, dispatching center and leading enterprises should be perfected to form an integrated inspection network and improve the industry-oriented and social inspecting abilities.

**3.3.2** Developing agriculture sightseeing tourism. Binhai new area is situated in the Jingjin City belt with burgeoning economy, growing residents' income, relatively high living qualities and great tourism demand, which provides abundant visitor source for developing the sightseeing agriculture. According to the characteristics of natural and humanity environment in the region and with the support of high and new technology, the construction of tourist attractions at the county and district level and agro-ecological sightseeing scenic spots should be quickened to build more distinctive tourist villages, such as improved variety cultivation techniques, soilless cultivation techniques, precious agriculture techniques and so on. Sightseeing vegetable parks and sightseeing fisheries should be constructed separately. Some relatively developed villages can also be developed into demonstration towns. For example, Huaming Town establishes a demonstration pavilion of its own developmental history and charges visiting fees, which can not only develop tourism in the town but decrease the reception pressure of the town caused by a large amount of foreign visitors.

**3.3.3** Perfecting rural financial service system. Rural industrial upgrading requires financial assistance, so rural banking business should be developed energetically to provide capital guarantee for rural industrial development. The formulation of overall reform program is to be quickened. Micro-credit institutions should be developed and farmers' funds mutual aid organ-

izations started to satisfy small but frequent financial demand of the vast farmers and provide low-interest business loan for agricultural development. Agricultural risk prevention mechanism is to be established and agricultural insurance developed vigorously. Agricultural policy insurance should be broadened to offer appropriate financial premium and subsidies to farmers participating agricultural insurance<sup>[6]</sup>.

**3.3.4** Stressing rural educational training system. The integration of industry, university and research in agriculture should be promoted and vocational technology training center for farmers in Binhai new area established to form rural educational training system in Binhai new area. Agricultural adult education and vocational education should be developed and combined with those frequent trainings, such as "351" farmers' qualification training and new farmers' technology training, to improve the skills and comprehensive qualities of vast farmers, educate a team of agricultural producers in Binhai new area with strong adaptability to the market economy, production capacity, management and operation abilities and promote the transference of rural labor forces in Binhai new area.

## References

- [1] SU XM, PANG XM. Tianjin: 30 administrative villages will change villages into city residential areas in 5 years[N]. Tianjin Daily, 2010-03-23. (in Chinese).
- [2] DING YN, HE YJ, MIAO ZT. Discussion on integrated urban-rural planning in core zone of Tianjin Binhai New Area[J]. Journal of Tianjin Institute of Urban Construction, 2009, 15(4): 248-248. (in Chinese).
- [3] MA ZX. SWOT analysis on the development of contemporary agriculture in Tianjin Binhai New Area[J]. Agricultural Economy, 2007(10): 42-43. (in Chinese).
- [4] Development and Reform Commission of Tianjin Binhai New Area. A briefing for the completion of fixed asset investment of Binhai New Area in the first half of 2010[EB/OL]. <http://113.31.27.36/ConInfoParticular.jsp?id=237>. (in Chinese).
- [5] TENG CH. Harmonious society from the perspective of research on integrated development of urban and rural industries[D]. Jinan: Shandong University, 2010. (in Chinese).
- [6] YE W, ZHU LM, LIU ZY. The spatial plan of contemporary agriculture in Tianjin Binhai New Area[J]. Urban Planning Forum, 2007(3): 72-75. (in Chinese).
- [3] Bureau of Statistics of Henan Province. Statistical yearbook-2010 of Henan Province[M]. Beijing: China Statistics Press, 2010. (in Chinese).
- [4] LIU SF, DANG YG, FANG ZG, *et al.* Grey system theory and its applications[M]. 3<sup>rd</sup> ed. Beijing: Science Press, 2004. (in Chinese).
- [5] YU D, WEI Y. A new method to determine the initial value of development index and forecast model[J]. Statistics and Decision, 2008(2): 42-44. (in Chinese).
- [6] MEN KP, JIANG LY, ZHU HT. Prediction of China macro-economic development based on the optimum grey model[J]. Statistics and Decision, 2008(17): 114-115. (in Chinese).
- [7] MEN KP, CHEN J. Application of unbiased gray model in forecasting the grain yield in China [J]. Journal of Anhui Agricultural Sciences, 2009, 37(11): 4841-4842. (in Chinese).
- [1] LIU XQ. Why are there so many successful news of grain production in Henan[N]. Guangming Daily, 2010-07-31. (in Chinese).
- [2] HUANG QB. Perspective on food security[J]. Grain Issues Research, 2009(3): 11-15. (in Chinese).

## References

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processing industry of agricultural products and byproducts, transform the advantage of grain into the advantage of industry, develop agricultural industrialization, promote the comparative profit of rice-cropping, further reinforce the activity of farmers' growing grain, and ensure the goods harvest and increased output of grain in order to provide powerful support for grain production.