

Analysis of Ecological New-town Planning and Implementation of Our Country

—A Case Study of Sino-german Eco-park

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Abstract. In view of the current ecological new-town construction boom in China, We analyzes the problems in the new town construction in our country by reviewing ecological history of urban development and construction practices, and explore where the main points of the ecological new town planning and design in our country from the aspects of culture, economy, science and technology. At last, we clarify the ecological new town planning ideas and design methods from the perspective of natural, social, economic in the example of the Sino-german eco-park.

Introduction

Today, our country has stepped into the stage of urbanization, while the urban environment and human living, working and leisure demand is growing, the negative impact of urban development is concerned, such as population and economic activities, environmental degradation, resource constraints, traffic is not smooth and so on. ease of urban population growth, expanding new urban development space, and creating a harmonious human settlement have become key issues in urban planning.

Under such background and situation, ecological new-town emerged, and has become the main direction of urban development in the world. The "ecological new-town" mentioned is defined that in suburbs of big cities, it has the comprehensive urban functions and can be used to set out the population and industry of the large cities^[1], it is a kind of residential morphology, in which its society is harmonious, economy efficient, ecosystem circular, man and nature symbiotic.

Practice of ecological new-town in China

The practice of agricultural sustainable development in the late 1970s is the earliest practice of ecological city in China^[2]. In 1985, Yichun, a leading agricultural city, where the first official announcement of the city's ecological city project was launched, and in 1992, the construction index system of ecological city was put forward firstly^[3]. In 1994, < China twenty-first Century agenda > was released in China, which was modeled by Yichun. In 1995, State Environmental Protection Administration carried out creating work about ecological province, city and county. According to incomplete statistics, before 2003, the number of ecological cities amounted to 88^[4], the first wave of the ecological city appeared in China. There were some limitations in the practice of that period, because it preferred for environmental protection and greening, which was lack of careful planning and urban development goals. With the advance of new urbanization, urban problems were becoming increasingly prominent, the theory and practice of ecological city would also usher in a new upsurge, such as ecological new-town in Tianjin, Tangshan Caofeidian ecological city, Taihu new-town in Wuxi, Jiangsu, Guangming New District in Shenzhen, Sino-german eco-park in Qingdao and so on. Every new town had its own characteristics, although the problems were not the same in the concept, system,

policy, capital, technology and other aspects, which provided valuable experience for the construction of ecological new-town in China.

Key points in the implementation of ecological new-town planning

Nowadays, the development and construction of ecological new-town is the main direction of the development of healthy urbanization, but also one of the important ways to improve the quality of life. This article will start from four angles of economy, science and technology, policy, public participation, and put forward the main points of the plan implementation in view of many problems in the construction of ecological new-town.

Economic development is the center of the ecological new-town construction

In a sense, the scientific development is the consumption of resources, it brings pollution while producing GDP. Of course, the less consumption of resources, the smaller the pollution, the better, the best is to achieve zero emissions, and achieve resource conservation, environmental friendly purposes. Therefore, it is not only for the economic development, but also the protection of the environment to protect the environment, and the environment protection has the function of protection, promotion and optimization.

So, we should not only take the regional environmental carrying capacity as the basis, the reasonable adjustment of industrial structure and the layout of the productive forces, but also change the traditional "high consumption, low output" of the extensive economic development model fundamentally, and abide by the principle of "3R"^[5] in order to fully achieve primary or secondary resources recycling^[6]. However, when a viable economic development model is established, a reasonable set of statistical methods is also very important. It could not measure the extent of the pollution of the environment traditionally, even prompted many departments to pursue a high GDP growth without thinking of the use of natural resources, this is clearly wrong. So a new GDP method should be adopted, namely, the green GDP, this method is to deduct the loss of environmental pollution, that is to say, the impact of the environment will be included in the impact of the GDP, thus, the result can be a comprehensive measure of a country or a region's real progress^[7].

Technology is an important guarantee for the ecological new-town construction

Science and technology play a pivotal role in the construction of ecological new-town. Without the support of science and technology, even the good environmental protection ideas are blank. To solve environmental problems, we still have to rely on science and technology. Therefore, the construction of ecological new-town in China should develop science and technology, reduce the damage to the environment and achieve sustainable development. However, we should recognize that science and technology is a double-edged sword, and we should prevent the abuse of science and technology. In order to accelerate the development of social, economic and environmental integration, we also should make full use of the ability of science and technology to solve environmental problems.

Government decision-making is the leading power of building ecological new-town

In real society, a lot of ecological construction gist, such as scientific and technological innovation, which often have no advantage in the economy, will not be adopted by the production department, resulting in being shelved and no effect of environmental protection. Therefore, as a unified leader, ecological city construction manager, coordinator, the government should strengthen its comprehensive decision-making and macro management skills. Also, the government should use laws, administrative, publicity and education and other means to promote the development and utilization of environmental protection, incorporating the concept of environmental protection into the ecological new-town construction. Such as setting a certain reward system to mobilize units or individuals to participate in environmental protection initiative fully and efficiently, moreover, for those who violate the provisions of the state and the environmental protection act of the project must be resolutely investigated, and environmental protection system should be fully implemented.

Public participation is the construction of ecological new-town Heirlooms

It is not enough to just have the leadership of the higher authorities, but also the power of the public. Public is an important force and protection to promote the construction of ecological new-town, and also the social foundation to strengthen the construction of ecological new-town. As long as the enthusiasm of the public is mobilized, you will be able to create a good atmosphere for the whole society to build ecological new-town. So, a certain environmental education should be set up, in order to make the relevant knowledge be universal, the awareness of environmental protection be improved. Another important factor is to expand the right to know to ensure the transparency of environmental information, and enhance the enthusiasm of participating in environmental protection, then do what they can to protect the environment.

Application of ecological idea and design method in Sino-german eco-park

In July 16, 2010, Germany determined to establish Sino-german eco-park in Qingdao economic and Technological Development Zone. Over the next few years, Shandong provincial government held a number of meetings of the Sino-german eco-park Construction in Qingdao, accelerating the construction of the Sino-german eco-park. As China's first DGNB^[8] project, Sino-german eco-park will become another innovative practice of ecological new-town construction in China. Its success is not only the establishment of a quantitative index system, but also the concern about whether to achieve a good demonstration, then promoted and copied in the vast areas of our country. It is based on the development of the German DGNB certification system^[9], forming three pillars - the ecological environment value, economic value and social cultural value. Here are the three pillars of interpretation.

The embodiment of the value of ecological environment

Sino-german eco-park focus on the protection of natural ecology, and give priority to the natural ecological conditions. In order to reduce the negative impact on the natural environment, it takes the bearing capacity of the natural environment as the premise of social development, and accords to the development of DGNB standards, protecting the natural environment to the maximum extent.

For example, for the protection of original landform and texture, in the early stage, in order to determine the ecological protection area, the basic data of local landform and texture are collected, and the comprehensive ecological sensitivity is analyzed by means of GIS. In the planning stage, in order to facilitate the operation in the late stages of strict implementation, a reasonable layout on the basis of the original landscape texture of the park is carried out and corresponding laws, regulations and policies are formulated. At the same time, the park's ecological sensitivity to change early warning mechanism is established to better protect the base of the landscape and texture. Another important embodiment is the protection of biological diversity, it determines the birds' needs of different tree species through field investigation and data collection, and prepared the report. basing on the data, coupled with the biological characteristics and economic cost considerations, the ecological garden birds feed source tree species database are determined finally. At the same time, a scientific evaluation system is developed to do a certain provisions towards the species determined, including drought resistance, carbon sequestration capacity, etc., which has the significance of the epoch.

The embodiment of social cultural value

In terms of social development indicators, the Sino-german eco-park uses the "happiness" as the center of the new model to replace the traditional GDP oriented economic model. It is based on the happiness index, ensuring that the economy, society and environment can be developed steadily, and then creating a livable Ecological Demonstration Park. In order to provide the basic living security to the people, the relevant departments of the state launched a social insurance system, making that the old can be depended on and supported. Secondly, the park improves the District, residential district, residential district level matching according to Qingdao city public service facilities standard actively. And strengthen supervision during the construction phase, ensuring the quality of facilities, types and accessibility. At the same time, it also puts forward the green intelligent travel plan, not only creating a

pleasant environment for the slow line network, but also improving the operating efficiency of the transportation system.

The embodiment of economic value

Sino-german eco-park used the intensity of carbon emissions per unit of GDP to measure the extent of carbon emissions. It involves all aspects of the surface, and through the reduction of building energy, transportation, municipal facilities energy consumption, enhancing carbon sink function and other paths to reduce carbon dioxide emissions to improve the GDP accounting system. Meanwhile, the park satisfy the needs of sustainable development by enhancing the supply of renewable energy. It is considered from the source, and use certain technical means to enhance the supply of energy, at the same time, the energy distribution system is formed by using "1 drag N" universal energy station, which can be used for the external access of the park, energy storage and other systems for efficient integration. In the whole production process, the use of cleaner production is used. By raising the threshold for the use of energy in the enterprises in the park, the enterprises in the park have high standards of energy consumption and energy utilization, meanwhile, enterprises are encouraged to carry out cleaner production audit and acceptance, and forced to take measures, such as "energy saving, pollution reduction, efficiency" to improve enterprise implementation of cleaner production audit pass rate.

Conclusion

Ecological new-town contains the connotation of natural ecology, human ecology, and so on, which is a scientific and completed system engineering. The ecological development of new-town is the inevitable choice in twenty-first Century, however, as a developing country, we still have a certain gap between the developed countries in scientific and technological level, the quality of the population, the consciousness of the concept, and so on. Therefore, we should combine our own conditions, and actively absorb advanced ecological philosophy in western developed countries, to develop a characteristic ecological new-town construction and development way to accord with China's national conditions. Sino-german eco-park construction provides a sample of the ideal city, and also will become the international ecological demonstration zone.

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