

REVIEW ARTICLE

Strategic thinking on the new urbanization road in the era of ecological civilization

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ABSTRACT

The road of urbanization determines the fate of urbanization. New urbanization with Chinese characteristics must meet the requirements of the times for the construction of ecological civilization and take the Ecological Urbanization Road of beautiful ecology, developed production and beautiful life. In the process of new urbanization with Chinese characteristics, building an ecological city is the direction, improving people's happiness is the goal, building a "three oriented society" is the focus, developing ecological economy is the way, cultivating ecological culture is the engine, optimizing the "three living" space is the carrier, perfecting the "three living" system is the guarantee, and innovating the "three living" science and technology is the support. The research aims to provide new ideas for exploring a new urbanization road with Chinese characteristics.

Keywords: ecological civilization; new urbanization; development path

1. Introduction

The road determines fate. The path of urbanization is related to the future of urbanization and the prospect of the Chinese dream. Qiu Baoxing, Vice Minister of the Ministry of housing and urban rural development of the people's Republic of China, proposed that the new urbanization must follow the green urbanization path of resource conservation, environment-friendly and intensive^[1]. Wang Kai, a researcher of China Academy of urban planning and design, proposed that new urbanization must take the road of ecological civilization^[2]. Liu Sihua, a famous ecological economist, believes that, the new urbanization with Chinese characteristics is a green urbanization characterized by ecological civilization^[3].

The 2012 central economic work conference proposed that we should take a new urbanization path of intensive, intelligent, green and low-carbon^[4]. The national new urbanization plan (2014–2022) issued in 2014 proposes to take the "new urbanization road with Chinese characteristics of people-oriented, synchronization of four modernizations, optimized layout, ecological civilization and cultural inheritance"^[5]. Therefore, the author puts forward the following views: The new urbanization road with Chinese characteristics is the ecological civilization Road, and the new urbanization road from the perspective of ecological civilization is the Ecological Urbanization Road. Specifically, the new urbanization should take an Ecological Urbanization Road aimed at realizing ecological beauty, developed production and beautiful life. The author will conduct

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strategic analysis around the direction, objectives, key points, approaches, engines, carriers, support and support of this road.

2. Direction: Building an ecological city

Without direction and goal, the transformation from traditional urbanization to new urbanization cannot be realized. Only when the direction is clear and the goal is correct can we take the road of new urbanization. Due to the unclear development direction and inaccurate development orientation, the urbanization of industrial civilization has taken an extensive development path, resulting in urban diseases such as the depletion of natural resources and the destruction of ecological environment. Based on this, the international community has put forward the goal of building an ecological city, and building an ecological town has also become the direction of China's urbanization. From the perspective of ecology, a city is an ecosystem dominated by human beings. It is a composite ecosystem composed of three subsystems: environment, economy and society. Traditional cities are built because of the opposition between man and nature and follow the concept of industrial civilization. Their characteristics are that the environment, economy and society conflict with each other, and the ecology, production and life conflict with each other. Based on a deep understanding of the relationship between man and nature, eco city is built in accordance with the concept of ecological civilization and ecological principles. Its characteristic is to realize ecological beauty, developed production and beautiful life by establishing the concepts of ecological protection, ecological production and ecological life, and build a new city and beautiful home that can enable people to produce and live in a good ecological environment. Eco city has the characteristics of harmony, efficiency, sustainability and integrity. Ecological city is the result of urban ecology. Urban ecology is the process of ecological city development. The construction of ecological city should take the road of ecological urbanization.

To build an ecological city is to realize beautiful

ecology, developed production and beautiful life. The following are analyzed one by one: First, protect the ecological environment and realize ecological beauty. Traditional cities are deeply troubled by "urban disease" and face problems such as resource shortage, environmental pollution and ecological deterioration. Ecological cities realize resource conservation, environmental friendliness and good ecology. They are cities where people can drink clean water, breathe fresh air and eat safe food. Second, develop ecological production and realize developed production. Traditional cities have the problems of unreasonable economic development mode and industrial structure, while ecological cities have basically formed the production mode and industrial structure of saving natural resources and protecting the ecological environment. In other words, ecological cities have green production mode and ecological industrial structure, and can achieve highly developed production through the development of green production. Third, advocate green life and realize a better life. Traditional city pay attention to material life, and consumerism prevails, which leads to various ecological diseases and weakens the happiness of residents. Eco city pays attention to enriching the spiritual and cultural life of residents, advocates the lifestyle of saving resources and protecting the environment, makes ecological life and green consumption become residents' behavior habits and social fashion, and realizes a better life on this basis. In the "three lives", ecology is the premise, production is the means and life is the purpose. Eco city is a new type of city that adheres to the development concept of ecological priority, strives to achieve win-win results in ecology, production and life, and considers environmental, economic and social benefits.

China's urbanization has always been centered on economic construction to build an ecological city is to change from pursuing economic benefits to pursuing a better life and minimizing interference to nature^[6]. Building an ecological city with beautiful ecology, developed production and beautiful life is the goal of new urbanization with Chinese characteristics. In recent years, various central ministries and commissions have issued evaluation and assessment

standards for eco city construction. The national development and Reform Commission of the people's Republic of China proposes to build a low-carbon ecological city, the Ministry of environmental protection of the people's Republic of China requires to create an environmental protection model city and ecological civilization demonstration city, the Ministry of housing and urban rural development of the people's Republic of China proposes to build an ecological garden city, and the State Forestry Administration requires to build a forest city. There has been an upsurge of eco city construction all over the country. As of February 2011, 259 cities have proposed to build low-carbon cities and eco cities, accounting for 90.2% of prefecture level cities in China^[6]. Many local governments take the construction of ecological cities as the goal of urban development and begin to explore new models of urban development. By the end of 2012, 528 national ecological demonstration areas and 798 national ecological villages and towns have been built in China, and a number of successful models such as China Singapore Tianjin Ecological City, Wanzhuang ecological city, Tangshan Bay ecological city and Shanghai Chongming Island Dongtan ecological city have emerged, which have played a positive demonstration role in the promotion of this new and Sustainable Urbanization Model in China^[7]. These explorations fully show that eco city construction in China should be not only an ideal and goal, but also a specific practice in the process of vigorously promoting urbanization.

3. Purpose: To improve people's happiness

For whom is the city built? What is the purpose of building a city? These important issues must be clarified before taking the road of Ecological Urbanization with Chinese characteristics. Aristotle has long said: people come to cities to live; People live in cities for a better life. The Istanbul declaration issued by UN Habitat in 1996 emphasizes that our city must become a place where human beings can live a dignified, healthy, safe, happy and hopeful life^[8].

The theme of the 2010 Shanghai World Expo is "Better City, better life". There is no doubt that the city should be a place for people to enjoy a better life, and making people live a better and happier life is the fundamental purpose of urban development. Urbanization embodies human civilization and progress. It should not only promote the improvement of production efficiency, but also benefit the people, to comprehensively improve people's living standards and quality of life. Because of this, cities are yearned for by people all over the world. The people's pursuit of a better and happy life is the driving force for the rapid development of urbanization in China. Meeting the citizens' pursuit of a better life and making them live a happier life is the highest value pursuit of Ecological Urbanization with Chinese characteristics, and it is also the starting point and foothold of Ecological Urbanization with Chinese characteristics.

Since the reform and opening up, my country's urbanization has shown the characteristics of "low starting point and high speed". From 1978 to 2013, my country's urban resident population increased from 170 million to 730 million, the urbanization rate increased from 17.9% to 53.7%, an average annual increase of 1.02 percentage points, the number of cities increased from 193 to 658, and the number of townships increased from 2,173 to 20,113^[5]. Rapid urbanization has brought great changes to people's lives: on the one hand, urbanization has enriched people's material life and spiritual life. In particular, the rapid advancement of urbanization has enabled many surplus rural laborers to achieve transfer employment, and promoted the overall improvement of the living standards of urban and rural residents. On the other hand, the emergence of urban diseases and the increase of life pressure have weakened the happiness of urban residents. Some people began to flee the city, and a few chose to anti-urbanization. The research results show that in recent years, white-collar workers in China's first-tier cities have been secretly returning home. Many white-collar workers have thought of leaving the city, and it has become a social fashion to escape from Beijing, Shanghai and Guangzhou. In addition, it is difficult for many agri-

cultural migrants to integrate into cities, and the lagging process of urbanization of agricultural migrants is also a prominent problem at present. Although migrant workers have become the main body of industrial workers in my country, more than 200 million migrant workers and their families have not been able to enjoy basic public services for urban residents on an equal footing in education, employment, medical care, and elderly care. Agglomeration is not synchronized, and urbanization lags industrialization. The reason for the above problems is that we have taken a traditional road of urbanization based on things, officials and GDP.

The people-oriented and ecological happiness of the Chinese people must be the goal. Premier Li Keqiang pointed out that “the core of promoting urbanization is people’s urbanization. The key is to improve the quality of urbanization in order to benefit the people and rich farmers”^[9]. All localities have also fully implemented this concept in urban construction: Beijing proposes to let people live a happy and beautiful life, Chongqing says to make Chongqing the region with the strongest residents’ happiness by 2015, Xiamen City, Fujian Province proposes to turn the development process into a process of creating happiness, sharing happiness and improving happiness, and the Yangtze River Delta (Yangtze River Delta) Economic Zone proposes to build a “happy circle of urban life”. Since 2007, the selection of “the happiest city” sponsored by Outlook Oriental weekly of Xinhua news agency has become the focus of attention of all sectors of society every year. “China’s happiness city evaluation index system” is composed of 5 first-class indicators, 21 second-class indicators and 47 third-class indicators, including satisfaction index, quality of life index, ecological environment index, social civilization index and economic welfare index. The evaluation results show that the deterioration of ecological environment is an important factor affecting the well-being of urban residents. Therefore, to improve the urban ecological environment is to improve the lives of residents. We must “integrate the city into nature, let residents see mountains and water, and remember homesickness”, “put the city in nature and keep green waters and

mountains for urban residents”^[10]. Only living in an ecological town suitable for living, industry and business can people stay and live stably only by taking the road of ecological civilization can urbanization make life better and people happier.

4. Focus: Building a “three oriented society”

The national new urbanization plan (2014–2020) proposes that to build an ecological city, we should “save and intensively use land, water, energy and other resources, strengthen environmental protection and ecological restoration, and reduce interference and damage to nature”^[5]. That is to build a resource-saving, environment-friendly and ecologically sound society. At present, the speed of land urbanization in China is higher than that of population urbanization, the problem of extensive and inefficient utilization of construction land is prominent, and there is a serious shortage of water resources. Two thirds of more than 600 cities in China are short of water, more than 200 cities are seriously short of water and energy, and some cities have the phenomenon of switching off and limiting electricity. Therefore, we must speed up the construction of resource-saving society. First, we should “save land” Revitalize the stock of urban construction land, strengthen the disposal of idle land, deeply develop and utilize the aboveground and underground space, scientifically carry out land consolidation and reclamation, improve the efficiency of urban land use and increase the population density of urban built-up areas. The second is to “save water” Realize the recycling of water resources, promote the development and utilization of non-traditional water resources such as rainwater, reclaimed water, seawater and brackish water, and promote the construction of water-saving society from the aspects of production, life and ecology. The third is to “save energy”. Carry out energy conservation work in key areas such as industry, construction, transportation and key energy consuming industries, improve energy efficiency, reduce energy consumption intensity and carbon dioxide emission intensity, “accelerate the construction of renewable energy

system, promote the diversified and large-scale application of distributed solar energy, wind energy, biomass energy and geothermal energy, and improve the utilization ratio of new and renewable energy”^[5].

At present, the ambient air quality of most cities in China is not up to standard. According to the statistics of the environmental protection department in 2011, the number of haze days in some large cities accounts for about 1/2 of the total number of days in the whole year. The water pollution of rivers, lakes and other waters in most cities in China is very serious, and two-thirds of more than 600 large and medium-sized cities are surrounded by garbage. Therefore, urbanization must focus on strengthening pollution prevention and control and speed up the construction of an environment-friendly society. In view of air pollution, the State Council has issued the action plan for air pollution prevention and control. We should strive to promote the implementation of this plan, promote the air pollution control in key areas such as Beijing Tianjin Hebei, Yangtze River Delta and Pearl River Delta, and improve urban air quality through regional joint prevention, control and treatment. In view of the problem of water pollution, the state is preparing the action plan for water pollution prevention and control, and some cities will also issue corresponding action plans. In the next step, we should increase the prevention and control of water pollution in river basins and regions, and speed up the construction of sewage treatment and recycling facilities. In view of waste pollution, we should strengthen the construction of harmless treatment facilities for domestic waste, actively promote the classified treatment of food waste, comprehensively promote the pilot work of domestic waste classification, create a domestic waste classification demonstration city, realize the low-carbon treatment of waste such as waste, sewage and waste residue, improve the waste commodity recycling system and waste classification treatment system, and realize the recycling and harmless disposal of urban solid waste^[5].

Rapid urbanization has caused serious damage to China’s mountains, lakes and wetlands. Therefore, we must speed up the construction of an ecologically sound society. Green space is the “lung of the city”,

and realizing urban landscaping is the most important work of building an ecological city. Each city should adjust measures to local conditions and adopt various ways to “add green” and “supplement green” for cities and towns, and build a garden green space network integrating urban and suburban areas. Wetland is the “kidney of the city”. In order to reverse the reduction of wetland area and functional degradation, we must do a good job in the purification and activation of rivers, lakes, ponds and swamps. The park is an important place for citizens to relax, so the construction of the park should be strengthened. Shenzhen, Guangdong Province is the city with the largest number of parks in China. At present, a three-level park system (forest, country park–Urban Park–Community Park) has been preliminarily established, which realizes the functions of seeing the scenery through the window, seeing the green through the door and entering the park out of the door. As many cities are plagued by flood disasters, attention should be paid to enhancing the ability of cities to resist and mitigate natural disasters in the process of ecological urbanization. In short, we should pay attention to the protection, integration and restoration of various ecological elements and provide ecological services for the production and life of urban residents to meet their growing ecological needs.

5. Approach: Developing ecological economy

The development of ecological production and the realization of developed production are the basic contents of ecological urbanization. Ecological urbanization should be based on ecological economy, supported by ecological industry, and synchronized with the “five modernizations” (i.e. urbanization, industrialization, informatization, agricultural modernization and ecologicalization). Synchronous development) as the driving force. The prominent problem of traditional urbanization is that it emphasizes economic development and neglects environmental protection. The key to ecological urbanization is to properly handle the relationship between ecology and production, promote the green transformation of production methods, and make green production the

mainstream of urban economic life. Green economy, low-carbon economy, circular economy and other economic forms are the representatives of ecological economy, and the development of ecological economy is the fundamental way of ecological urbanization with Chinese characteristics. The circular economy is based on resource recovery and recycling. To realize the transformation from a linear economy (resources-products-waste) to a circular economy (resources-products-renewable resources) is to reduce the pressure on the ecological environment and ease the contradiction between production and ecology through the full utilization of resources. achieve sustainable economic development. We must vigorously develop the circular economy, do a good job in the national circular economy pilot work, and create a circular economy demonstration zone. It is necessary to speed up the construction of ecological industrial parks, improve the development model of circular economy, continuously extend the industrial chain, and realize the rational and effective utilization of resources, energy and waste.

Developing ecological industry is the material basis for realizing ecological urbanization in China. On the basis of limiting high consumption and high pollution industries, we should vigorously develop various industries with low consumption and low pollution. We should vigorously develop energy conservation and environmental protection, new generation information technology, biology, high-end equipment manufacturing, new energy, new materials, new energy vehicles and other strategic emerging industries. In addition, we should also develop the service industry that has little impact on resources and environment. Urbanization is closely related to the development of service industry. In the process of urbanization, population agglomeration, lifestyle change and improvement of living standards will expand the demand for living services, and the optimal allocation of production factors, linkage of three industries and refinement of social division of labor will expand the demand for productive services^[5]. We should promote the construction of an industrial structure dominated by service economy in

mega cities and big cities, which is of great significance to promote the development of China's service industry, enhance the coordination of three industries and enhance industrial competitiveness. At present, we should actively develop ecological agriculture, ecological industry and ecological service industry, build an ecological industrial system and build an urbanization model supported by ecological industry. We should vigorously develop ecological service industries such as ecological information, ecological management, ecological education, ecological health care and medical treatment, ecological consultation, supply of means of production, ecological technology research and so on^[11]. During the 12th Five Year Plan period, China's investment in ecological and environmental protection has greatly increased, which will effectively drive the development of energy-saving, environmental protection, green and low-carbon ecological industry, and make the ecological industry an important foundation for Ecological Urbanization with Chinese characteristics.

Eco-urbanization must realize the synchronization of the "five modernizations", and realize ecological urbanization, industrial ecologicalization, agricultural ecologicalization, and informatization ecologicalization. Xue believes that new-type industrialization is the leader, agricultural modernization is the foundation, and new-type urbanization is the key platform. Contains the content of new industrialization and agricultural modernization. This means that not only urban construction should take the green road, but also the new industrialization and agricultural modernization should take the green road^[12]. The synchronization of Ecological Urbanization and industrial ecology means that the leading industry in the process of urbanization in China is still industry. To solve the resource and environmental problems caused by the development of industry (especially heavy chemical industry), it is necessary to develop large-scale industry, adjust industrial structure, vigorously develop ecological industry, build ecological industrial Park and establish ecological civilization industrial system. The synchronization of Ecological Urbanization and agricultural ecology means that under the situation that traditional agriculture is

dominant, we should vigorously develop large-scale agriculture, adjust agricultural industrial structure, vigorously develop ecological agriculture, build ecological agricultural parks, and establish an agricultural production system in line with the concept of ecological civilization. The synchronization of Ecological Urbanization and information ecology means building a smart city. The specific methods are described in detail later.

6. Engine: Cultivate ecological culture

The factors that lead to the opposition between man and nature include both production mode and lifestyle. To build an ecological town, we should not only deal with the relationship between production and ecology, but also deal with the relationship between living consumption and ecological environment. This is because China has entered the development stage of consumption leading production. The lifestyle of urban residents not only directly affects the ecological environment, but also profoundly affects the mode of production. Therefore, we should advocate a green lifestyle and build a green consumption model to make green consumption the mainstream of urban life. Advocating green lifestyle and realizing a better life are the basic connotation of ecological urbanization. The driving force of China's economic and social development in the future should not be to expand consumption. Vigorously advocating green consumption should become the direction of China's future development. We should guide people to establish the concept of simplicity, moderation, green, low-carbon, civilization and conservation in terms of clothing, food, housing, transportation and tourism, encourage people to buy and use products conducive to building a resource-saving, environment-friendly and ecological society, make green consumption, green travel and green residence become people's conscious actions, and guide people to consciously implement the concept of saving natural resources and protecting the ecological environment in all aspects of life and consumption.

To promote the construction of ecological

towns and realize the transformation of economic development mode, we need the innovation of ideas^[13]. He also put forward the concept of ecological civilization that "green water and green mountains are also Jinshan and Yinshan, green water and green mountains are better than Jinshan and Yinshan, and green water and green mountains are the best Jinshan and Yinshan"^[14]. Green life and green consumption are brand-new life concepts, which need to be established by strengthening the publicity and education of ecological civilization, and the establishment of these concepts is an important basis for enhancing the national awareness of ecological protection, ecological production and ecological life, and forming a good atmosphere of saving resources and caring for the environment in the whole society. At present, China does not pay enough attention to ecological civilization education. There are a series of problems, such as single educational subject, unsystematic and incoherent educational content, monotonous educational methods and means, unclear educational objectives and so on. The government must use various means to widely carry out the publicity and education of ecological national conditions, ecological production, ecological life, ecological morality and ecological legal system by means of publicity, education and training for different groups. Only in this way can we cultivate green lifestyle, then cultivate green production mode, and finally realize the green development of the whole society.

Comrade Li Keqiang pointed out that in the process of urbanization, "how to promote green lifestyles and consumption patterns among urban residents" is a big article of overall significance^[15]. To promote green lifestyles and consumption patterns, we need not only to strengthen the publicity of the concept of ecological civilization, but also to strengthen the cultivation of ecological culture. As a special way of life, culture, once formed, will have an impact on the ecological environment. Behind the ecological crisis is the cultural crisis. In the era of industrial civilization, the culture of opposition between man and nature is the root of the ecological crisis. Ecological culture is a culture that emphasizes

the harmonious development between man and nature. It is a new and advanced culture that observes nature, studies society and deals with problems from the perspective of ecology. It is the sum of ideas and theories to solve the relationship between man and nature. Ecological philosophy, ecological economics, ecological politics, ecological sociology, ecological ethics, ecological law, ecological literature and art, and ecological aesthetics constitute the ecological culture system. The transformation from industrial culture to ecological culture is an all-round fundamental transformation of people's way of thinking. Only by vigorously cultivating ecological culture and gradually establishing people's ecological world outlook, ecological values, ecological outlook on life and ecological happiness can we truly realize the transformation of lifestyle and consumption mode.

7. Carrier: Optimize the “three living” space

Production space, living space and ecological space together constitute the external environment for human survival and development. A reasonable spatial structure is an important guarantee for Ecological Urbanization with Chinese characteristics. Due to the neglect of the rational utilization of the “three living” space, the production space occupies the living space and the production space and living space occupy the ecological space in the process of traditional urbanization. The layout of production space, living space and ecological space is extremely unreasonable. Yang pointed out that at present, China's urban spatial distribution and scale structure are unreasonable. In some cities, the carrying capacity of resources and environment is close to the limit^[16]. The construction of ecological towns must be arranged according to the concept of ecological civilization, that is, the spatial layout of urbanization and the scale structure of towns should be optimized according to the characteristics of land, water and atmospheric circulation and the carrying capacity of ecological environment. The national main functional area plan makes arrangements for the overall layout of China's urbanization and puts forward the urbanization strategic pattern of “two horizontal and

three vertical”. We should build a macro spatial pattern of urbanization according to the plan, take urban agglomeration as the main form, and promote the rational division of labor, complementary functions and coordinated development of large, medium and small cities and small towns, so as to realize the rationalization of the spatial layout of “three livings”

Following the path of Ecological Urbanization with Chinese characteristics is to “form a reasonable structure of production, living and ecological space in accordance with the overall requirements of promoting intensive and efficient production space, livable and appropriate living space and beautiful mountains and rivers in ecological space”^[10]. The so-called intensive and efficient production space refers to establishing the concept of intensive and efficient development, improving the level of economical and intensive utilization of land, fresh water, energy and mineral resources, accelerating the development of green economy, low-carbon economy and circular economy, vigorously developing eco industrial parks and promoting the efficient development of various industrial clusters. The so-called livable and moderate living space means to strive to solve the problems of resource shortage, environmental pollution, ecological deterioration, traffic congestion and so on, build a city with appropriate scale, eliminate the “pie” expansion of the city and prevent the rapid growth of population. Only by ensuring that the living space is livable and appropriate can we make life better and citizens happier. The so-called ecological space with beautiful mountains and rivers refers to efforts to build an ecological security barrier, reduce the negative impact of human beings on important ecological functional areas, build an ecological space with blue sky, green earth and beautiful mountains and rivers, provide residents with basic ecological products and services, and ensure that residents produce and live in a good ecological environment. The “three living” space is an organic whole. Ecological urbanization should pay attention to the scientific layout of the “three living” space, realize the organic combination of the three spaces and integrate the whole city into nature.

To realize the above ideas, we need to focus on

the following work. First, reduce production space. At present, “there are 41,500 square kilometers of independent industrial and mining areas in China, 8,721 square kilometers of industrial land in urban built-up areas and 9,949 square kilometers of land, mainly national and provincial development zones for industrial production”. China’s industrialization task has not been completed, but the focus of the next step should not be quantity expansion, but stock adjustment and industrial upgrading. Industrial land should not continue to expand at the past speed^[17]. We should strictly protect 1.8 billion mu of cultivated land and effectively protect agricultural production space such as cultivated land, garden land and vegetable land without increasing or reducing industrial land. Second, increase living space. China’s industrial production occupies too much space, and the urban living space is relatively insufficient. The ratio of residential land to industrial land in the three metropolitan areas of Japan is 6:1, that in Paris of France is 5:1, and the ratio of total urban residential land to industrial land in China is 1.5:1^[17]. In the future, it is necessary to appropriately increase living land (especially residential land) to ensure that residents have basic living space. Third, expand ecological space. Ecological space is the basis of survival. At present, we should “reasonably delimit the red line of ecological protection, expand urban ecological space, increase the area of forests, lakes and wetlands, convert rural wasteland, other polluted land and industrial and mining land into ecological land, and reasonably build a green ecological corridor in urbanized areas”^[5].

8. Guarantee: Improve the “three students” system

Following the path of Ecological Urbanization with Chinese characteristics must rely on systems. Resource and environmental protection system, green circular low-carbon development system, green life and green consumption system are the fundamental guarantee for the construction of ecological towns.

Conserving natural resources, protecting the

ecological environment, and realizing ecological beauty depend on institutions. The first is to improve the resource conservation system. Improve the economical and intensive land use system, deepen the reform of the system of paid use of state-owned construction land, and advance the reform of the rural land management system. Establish the most stringent water resources management system, and in accordance with the State Council’s “Opinions on Implementing the Most Strict Water Resources Management System”, speed up the establishment of the “three red lines” of water resources development and utilization control, water use efficiency control, and water function zones restricting pollution. In response to the problems of multiple management, unclear powers and responsibilities, and confusion in management in the field of natural resource management, improve the national natural resource asset management system, assign one department to control the use of all land and space within the territory, and implement unified protection and unified management of mountains, rivers, forests, fields and lakes. repair. The second is to improve the environmental protection system. To address issues such as water pollution and air pollution, improve relevant systems. Establish and improve an environmental protection system that strictly supervises the discharge of all pollutants, and support environmental protection departments to independently conduct environmental supervision and administrative law enforcement. Strengthen environmental protection law enforcement, strictly enforce the environmental impact assessment system, strengthen the construction of emergency response capacity for environmental emergencies, and improve the environmental risk management system focusing on prevention^[5]. The third is to improve the ecological restoration and protection system. Improve the spatial planning and layout of key ecosystems such as forests and wetlands, and establish corresponding ecological protection systems.

The development of the ecological economy, the expansion of the ecological industry, and the realization of developed production depend on the sys-

tem. The first is to improve the resource and environmental property rights transaction system. Take the excessive consumption of resources, environmental pollution, and ecological destruction generated in the process of production and consumption as products, clarify their property rights, and allow them to enter the market. Use market means to optimize the allocation of environmental resources. Develop the environmental protection market, “promote energy saving, carbon emission rights, pollution rights, and water rights trading systems”, establish a market-oriented mechanism to attract social capital to invest in ecological environmental protection, and earnestly implement the “General Office of the State Council on Promoting Third-Party Control of Environmental Pollution Opinions”^[5]. The second is to improve the ecological compensation system. According to the principles of “whoever damages will be compensated” and “whoever protects will benefit”, “establish a system of paid use of resources and an ecological compensation system that reflects market supply and demand and resource scarcity, and reflects ecological value and intergenerational compensation.” “Formulate and improve the policies and regulations on ecological compensation, effectively increase the investment in ecological compensation, expand the scope of ecological compensation, and improve the standard of ecological compensation”^[5]. The third is to improve the system related to the development of green economy and green industry. Improve the Circular Economy Law and the Cleaner Production Promotion Law. Improve the green tax system, green budget system, green appropriation system, and green financial system to provide policy support, economic incentives and financial guarantees for the development of a green economy. Improve the green GDP accounting method, implement the green assessment system, and take the green economic growth as the main assessment indicator.

Choosing a green lifestyle, cultivating green consumption habits, and realizing a better life depend on the system. One is to improve the system of paid use of resources. Accelerate the pace of price reform of natural resources and their products, estab-

lish a price mechanism that reflects the cost of resources and the environment, and let the market solve resource and environmental problems. Establish and improve the tiered pricing system for household electricity, water, and gas consumption, advocate green living, and encourage green consumption. The second is to improve the green consumption responsibility system. It is clearly stipulated that “consumers are the direct subjects of consumption behavior and should bear green responsibility for their consumption behavior”. Implement a differential tax rate and a consumption deposit system to make consumers bear the corresponding responsibility for excessive consumption and extravagant consumption, and implement a waste recycling responsibility system to make consumers bear the corresponding responsibility for the environmental pollution caused by consumption behavior^[18]. The third is to improve the ecological civilization publicity and education system. Although my country’s environmental protection publicity and education work has been carried out for many years, the effect is not significant. The main reason is that the ecological civilization publicity and education work has not been raised to the institutional level. Therefore, whether it is to carry out ecological civilization education for students, or to carry out ecological civilization training for leaders at all levels, or to carry out ecological civilization publicity for the public, institutional arrangements need to be made. In addition, it is necessary to continuously improve the green product labeling system and the government green procurement system.

9. Support: Innovate “Sansheng” technology

The construction of ecological towns must rely on scientific and technological innovation to protect the ecological environment and realize ecological beauty, especially scientific and technological innovation first, land saving, water saving and energy saving depend on scientific and technological innovation. The development of new energy such as wind energy, nuclear energy and solar energy depends on

scientific and technological innovation. The prevention and control of air pollution, water pollution and garbage pollution depend on scientific and technological innovation. The protection of forests, vegetation restoration and biodiversity also depend on scientific and technological innovation. Second, the development of ecological economy, the construction of ecological industrial system and the development of productive forces depend on scientific and technological innovation. The development of circular economy should take the efficient utilization and recycling of resources as the core and the principle of “reduction, reuse and recycling”. The core of the development of strategic emerging industries is the development and application of new technologies. The development of ecological agriculture depends on the innovation of modern agricultural science and technology, and the development of ecological industry depends on the innovation of cleaner production technology. Third, we should develop the habit of green life and green consumption, and realize a better life depends on scientific and technological innovation. Scientific and technological innovation has brought great changes to people’s lives: the mass production of organic food makes people eat safer, the production of environmentally friendly clothing makes people wear healthier, the arrival of the “green car era” makes people realize green travel, and the development of green buildings makes people live more comfortable. At present, we should concentrate our efforts to break through the core technologies of low-carbon ecological city construction such as low-carbon energy, low-carbon buildings, green buildings, green transportation and pollution reduction^[6], to provide scientific and technological support for ecological urbanization.

The integration of informatization and urbanization promotes the “smart city” to set sail in an all-round way. IBM describes the smart city as follows: make full use of information and communication technology means to sense, analyze and integrate various key information of the core system of urban operation, so as to make intelligent response to various needs including people’s livelihood, environmental protection, public safety, urban services and

industrial and commercial activities^[19]. Smart city can provide smart transportation, smart medical treatment, smart home and other services. For example, the latest intelligent parking system used in Taipei road public parking lot in Wuhan, Hubei Province shows the characteristics of convenient, fast and humanized service the car owner can book the parking space through the network and telephone. The card swiping identification system in the parking lot can accurately identify the vehicle information and guide the car owner to book the parking space through the intelligent guidance screen. At present, the construction of smart city has become the consensus of all countries, and more than 200 smart city construction projects are being implemented around the world China has also made some progress in the construction of smart cities. In December 2012, the Ministry of housing and urban rural development of the People’s Republic of China issued the notice of the general office of the Ministry of housing and urban rural development on carrying out the National Smart City pilot work. Subsequently, more than 100 cities (districts, counties and towns) including Beijing were identified as the National Smart City pilot in 2013. The organic combination of informatization and urbanization and the vigorous promotion of smart city construction provide strong support for ecological urbanization.

Taking the new urbanization road is inseparable from scientific and technological innovation. Innovating ecological science and technology should start from the following aspects^[20]. First is to determine the focus of ecological science and technology innovation. Second is to increase investment in ecological science and technology innovation Formulate relevant policies to support ecological science and technology innovation in terms of financial allocation, bond issuance, loans, listing financing, venture capital, etc. Third is to establish an ecological science and technology innovation system Coordinate the relationship between government departments, scientific research institutions, colleges and universities and private enterprises, handle the relationship between basic research, applied research, technology development and production application, establish a

scientific and technological innovation team, and solve the problems in the process of ecological urbanization through tackling key scientific and technological problems. Fourth, cultivate ecological science and technology innovation talents. Colleges and universities cultivate a group of ecological science and technology innovation talents by setting up relevant majors. Scientific research institutions improve the ecological quality of existing scientific and technological personnel by organizing training and investigation. By establishing an incentive mechanism, the government will reward advanced workers in ecological science and technology, heads of ecological science and technology projects and other outstanding contributors. Fifth, strengthen cooperation in ecological science and technology innovation track the development trend of international ecological science and technology, strengthen cooperation with European countries, the United States and Japan, and realize independent innovation of ecological science and technology because of introduction, digestion and absorption.

In conclusion, China must follow a path of ecological urbanization, a win-win road of “three lives” with beautiful ecology, developed production and beautiful life, which is a healthy road aimed at ensuring citizens’ production and life in a good ecological environment. The direction of Ecological Urbanization with Chinese characteristics is to build ecological towns with the purpose of improving people’s well-being. The focus is to build a “three oriented society”. The above research results are a systematic answer to the current problems of ecological urbanization construction, and have a certain reference value for exploring a new urbanization road with Chinese characteristics.

Conflict of interest

The author declares no conflict of interest.

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