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Study on the General Model and Main Thoughts of “Non-Waste City” Construction

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Abstract. Under the background of non-waste city construction policy and realistic restraining conditions, this paper combined with accumulated experience and methods during the process of “non-waste city” construction by the international community, thus explored its necessity and the feasibility. In this paper, the basic definition and key links of “non-waste city” are taken as preconditions, and based on the principles of “system integration and collaboration”. Finally, the basic component of “non-waste city” construction is established. The main train of thought and specific measures for the construction of non-waste cities are focused. The innovation thoughts and countermeasures for the construction of “non-waste cities” are expected to provide in China.

1. Introduction

The term of “city” is a comprehensive ecosystem. “Non-waste city” construction is an ecological civilization construction project that has been highly valued by Chinese government after National Environment Protection City, eco-city construction, low-carbon city construction and smart city construction. With the accelerated pace of urban development in China, the solid waste generation is also growing fast, especially some cities were caught in a trap of “garbage siege”^[1]. It is a general trend to promote the comprehensive management of solid waste through the construction of “non-waste city” and to promote the green evolution of urban construction. The construction of “non-waste city” has risen and developed in the world for nearly 20 years. The international community has accumulated and contributed its own experience and programs during the course of operation and management of “non-waste city” construction, such as basic programming and construction for recycling economic society in Japan^[2], “recycling economy package” in Europe^[3] and Singapore's national vision “towards zero waste”^[4]. It also provides an innovative perspective for China to promote the development model of “non-waste city” and the upgrading of urban governance concept. Based on Singapore's thought of ecological civilization in the new era^[5], China is committed to undertaking and answering fully in the field of global environmental pollution control. Through “non-waste city” construction to the improvement for all citizens' welfare, the intrinsic strong impetus embodied in the achievements of the construction of beautiful China and ecological civilization has been demonstrated. At present, the construction of “non-waste city” is in the initial stage of selection of pilot cities. The design of “non-waste city” construction should be cleared up. This is done to avoid the formalization of business cards and titles of “non-waste city” construction. There is still a gap between the mature and propagable construction mode of “non-waste city”.



2. The general model of "non-waste city" construction

2.1. The simple definitions of "non-waste city"

"Non-waste city" has no uniform, standard definitions through the world; "Non-waste league of nation" requires a higher definition of "non-waste cities". That is to say, "through responsible production, consumption and recycling activities, all wastes are recycled, and no wastes are burned, landfilled or discarded to open-air landfills, rivers, lakes and oceans, thus not threatening the ecological environment and human health"^[6]. Based on "pilot construction scheme of non-waste city", "non-waste city" is actually based on the development concept of innovation and coordination, green and open, sharing and sharing. The programme of work implements the urban development model of "non-waste society" through macro-government policies, green development of middle industry, clean production of micro-enterprises and "non-waste life" of community residents.

2.2. The general model of "non-waste city" construction

The construction of "non-waste city" is a complex and systematic project involving enterprise cleaner production, product green development, green community life and other fields. It needs the participation and cooperation of the government, social organization and the general public. A diversity group of "macroscopic government-led-social organizational coordination-public active participation" plays a synergic role in the governance of "non-waste city", so the new mode is formed. Its basic structure is shown in Figure 1.

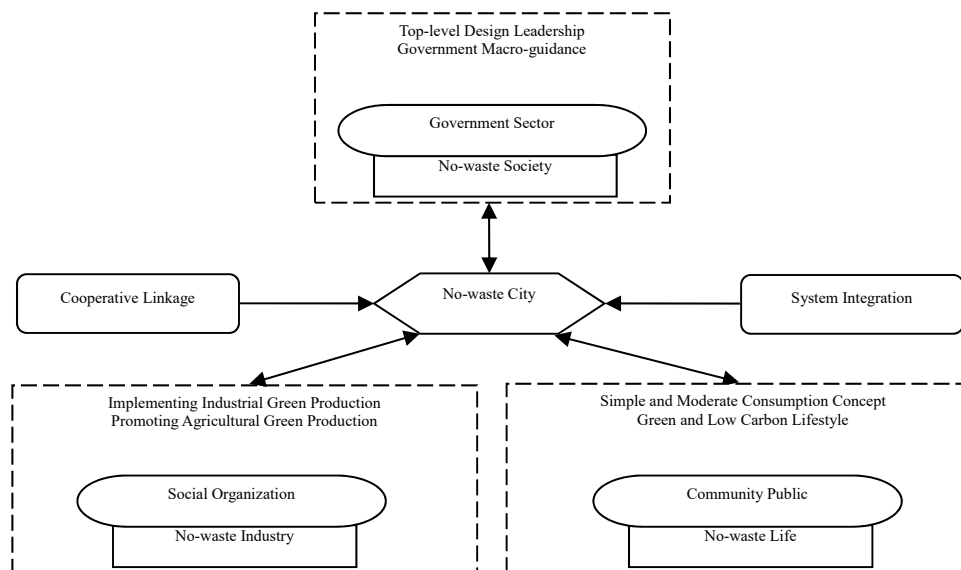


Figure 1. General model of "non-waste city" construction

3. The main thoughts of "non-waste city" construction

3.1. The innovative design of "non-waste city" industry and energy distribution based on the principle of solid waste reduction

In accordance with the priority principle of solid waste reduction required by the construction of "non-waste city", the structural reform of the industrial supply side of "non-waste city" should be promoted and the industrial structure layout of "non-waste city" also should be continuously optimized. Based on industrial ecology, the waste heat and pressure recovery between upriver and downriver affiliated enterprises of "non-waste city" industrial ecosystem is promoted. In addition, the efficient utilization of water cycle and solid waste can be interchanged and re-purposed between enterprises through the establishment of eco-industrial symbiosis network are realized. In the industrial park of "non-waste city", when the relevant enterprises implement pollution control, the enterprises take

specialization and marketization for the innovation development targets. The construction and operation of infrastructure is to achieve the goal of greening, low-carbon and standardization in the park. Distributed low carbon energy supply network of "non-waste city" should be innovatively developed. The above-mentioned specific approach is to realize the complementary advantages of urban energy structure by the coexistence of solar energy, wind energy, geothermal energy, biomass energy and other clean energy, and to form a sustainable utilization pattern of urban energy.

3.2. The intelligent management system of solid waste in "non-waste city" based on solid waste recycling principle

The construction should be based on the experience of "low carbon city" construction and the development foundation of "vein industry", as to the information internet system for "smart city" construction. The construction of "Internet +" solid waste comprehensive management information system is realized, and it will integrate the development concepts of industrial greening, agricultural greening and life greening into it. It covers five key inflection points: product design, intermediate production, process use, after-sales recovery and end-treatment. Moreover, it can improve the level of refinement management and intelligent operation of municipal solid waste classification, collection, recycling and reuse. Reduction of municipal solid waste sources, resource utilization and harmless disposal are supported by basic technical work. In a word, the construction of "non-waste city" should combine the continuously optimized concept of the structure distribution of urban industry and energy. It should also hold the principles of "integrated innovation" and "coordinated development". In order to meet the sustainable development of urban economy and society, the problems of management innovation based on material flow and solid waste management reform in the process of "non-waste city" construction should be solved as a whole.

3.3. The innovative governance model of "non-waste city" construction based on simple and moderate green life concept

Reducing the production of domestic waste from the source of living consumption in urban community is one of the important parts in the construction of "non-waste city". In order to avoid blind comparison and excessive consumption, it is necessary to guide urban community residents to choose green, low-carbon and recyclable goods in their daily consumption process and advocate the concept of simplicity and moderate life through public service advertisements and public media of community and residence. The innovation of urban governance is embodied in "non-waste". In this process, government agencies, social organizations and the community public constitute a pluralistic subject. Its responsibilities and obligations should be clearly defined in two aspects: the classification of municipal solid waste and the reduction of municipal solid waste. Correspondingly, the mechanism of rewards and punishments should be constantly being refined. The key point of building a "non-waste city" is to guide the community residents to pursue a happy life style, which can meet their daily needs without destroying the balanced development of nature.

4. Conclusion

The construction of "non-waste city" is a systematic project. This paper combined with the actual need and inner motivation of "non-waste city" construction to explore its necessity and urgency. Secondly, it took systematic thinking of "non-waste city" construction, correctly grasped the specific meaning of it to make clear the practical path of "non-waste city" construction. The extension for maturity and replicability construction of "non-waste city" with good support is expected to provide. Of course, the corresponding system design and legal protection for "non-waste city" construction are also important, and specific promotion strategies need to be explored.

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