

Strategic Suggestions on the Construction of a “No-Waste Xiong’an New Area”

Du Xiangwan¹, Liu Xiaolong², Ge Qin², Jiang Lingling², Yang Bo², Chen Shoushuang², Jiang Yuan², Xu Lin²

1. China Academy of Engineering Physics, Mianyang 621900, Sichuan, China

2. CAE Center for Strategic Studies, Beijing 100088, China

Abstract: Traditional urban construction and operations often produce large amounts of waste. If not handled properly, such waste exerts a negative impact on the environment, resources, and society. The construction of a “no-waste society” can achieve a win-win situation for energy, the environment, the economy, and society. A “no-waste society” is not only an important symbol but also an inevitable goal of social progress. The construction of the Xiong’an New Area is a national event that will bring long-term benefits for generations to come. The authors of this paper propose that we should take the lead in building a model for the planning and development of the Xiong’an New Area under the concept of “no waste,” so as to lay the foundation for the overall construction of a “no-waste society.” While analyzing the significance of building a “no-waste Xiong’an New Area,” this paper puts forward construction ideas for optimizing the layout of energy and industry facilities, constructing a system of solid waste classification and resource utilization, and establishing a social management system. It also makes a few strategic suggestions regarding the construction of a “no-waste Xiong’an New Area.”

Keywords: “no-waste Xiong’an New Area”; solid waste; resource utilization; distributed low-carbon energy

1 Introduction

The construction of the Xiong’an New Area is a national event that will bring long-term benefits for generations to come. We must firmly establish and implement a new development concept. Historical experiences show that in the construction and operation processes of a city or district, a large amount of waste is generated by production and life processes. It causes serious environmental problems, leads to resource waste, and has adverse effects on society [1]. Solid waste consists of misplaced resources that can be utilized. Therefore, this paper puts forward the concept of a “no-waste society,” where, by innovating production and lifestyles, constructing a system of solid waste classification and utilization, mobilizing all people to participate in the reduction and strict classification of waste at its source, and establishing a fine waste recycling system, we can finally achieve nearly zero waste emissions and realize a win-win situ-

ation for energy use, the environment, the economy, and society [2]. A “no-waste society” is not only an important symbol, but also the inevitable goal of social progress. The realization of a “no-waste society” requires long-term efforts. This can start with a “no-waste city pilot.” So, this paper proposes a “no-waste Xiong’an,” and takes the lead in building a model for the planning and development of Xiong’an under the concept of “no waste.”

2 The significance of constructing a “no-waste Xiong’an”

2.1 The construction of a “no-waste Xiong’an” would be an important embodiment of a new development concept

President Xi Jinping pointed out that we should firmly establish and implement a new development concept in building

Received date: June 16, 2017; **Revised date:** July 05, 2017

Corresponding author: Du Xiangwan, China Academy of Engineering Physics, Professor; Chinese Academy of Engineering, Academician. Major research fields include applied physics, strong laser technology, and energy strategy research. E-mail: duxw@cae.cn

Funding program: CAE Advisory Project “Several Strategic Issues on Eco-Civilization Construction (Phase II)” (2015-ZD-16)

Chinese version: Strategic Study of CAE 2017, 19 (4): 115–118

Cited item: Du Xiangwan et al. Strategic Suggestions on the Construction of a “No-Waste Xiong’an New Area”. *Strategic Study of CAE*, <https://doi.org/10.15302/J-SSCAE-2017.04.018>

the Xiong’an New Area. This demands that we create a plan, are led by the plan, design the city with the most advanced concepts and international standards, and try to build a benchmarking project and a model of urban construction at the same time. The construction of a “no-waste Xiong’an” demands full use of renewable energy according to local conditions to build a distributed low-carbon energy network and promote supply-side energy structure reform. It is also necessary to implement the development concept of “innovation, coordination, green, open, sharing,” to construct a system of solid waste recycling; encourage the participation of all people and constantly improve national civilization and responsibility; form a green, low-carbon consumption concept; and develop good living habits and natural awareness. The construction of a “no-waste new zone” is the embodiment of this new development concept. We should always highlight the global vision, lofty goals, ecological priorities, green development, and people-centric view, and pay attention to the protection and improvement of livelihood on the whole.

2.2 The construction of a “no-waste Xiong’an” and the highly consistent functions of the new area

The state has identified Xiong’an as a green, ecological, and livable new town; an innovation-driven development-leading town; a coordinated development demonstration town; and an open development pioneer town. It set “building a green smart New Town” and “creating a beautiful ecological environment” as key tasks. In contrast to the unbalanced, uncoordinated, and unsustainable economic and social development of the Beijing-Tianjin-Hebei region, an innovative life and production development model will be used to construct Xiong’an under the principle of “optimization of energy utilization, maximization of resource utilization, and minimization of environmental pollution.” In essence, this is consistent with the function orientation and task requirements of the new area and will have great practical significance in that it guarantees the economic and socially sustainable development of the new area.

2.3 The comprehensive benefits from constructing a “no-waste Xiong’an” are remarkable

The construction of a “no-waste Xiong’an” can significantly reduce the emission of polluting gases and greenhouse gases, and optimize water quality (including the protection of the Baiyangdian waters). It can mitigate the ecological damage caused by the exploitation and production of natural resources and the improper disposal of waste. It can also solve the “garbage siege” problem. So, the construction of a “no-waste Xiong’an” is not only an intrinsic requirement for constructing an ecological civilization, but is also an important part of the energy revolution. It will have significant environmental benefits. The construction

of a “no-waste new zone” can optimize the living environment of the new area, improving citizens’ health and satisfaction with the living environment; it will be conducive to social stability and enhance citizens’ trust in society and the government. It is advantageous to improve citizens’ quality of life; promoting green “social cells” and low carbonization will have remarkable social benefits. Meanwhile, the classification and utilization of solid waste and the construction of a distributed low-carbon energy network have the characteristics of a large intension span, long industrial chain, and deep social influence. They will be important means of energy conservation and energy structure optimization, an important engine to stimulate innovation, and an important pillar of the strategic new industry. They will provide fresh kinetic energy for economic growth and have remarkable economic benefits.

3 Thinking about the construction of a “no-waste Xiong’an”

3.1 The layout of energy and industrial facilities in the new area should help with source reduction of solid waste

The construction of a “no-waste Xiong’an” demands the innovative construction of a distributed low-carbon energy network that takes geothermal energy as its main source and combines it with solar energy, wind energy, biomass, and other clean energy sources that can complement each other. Local natural gas resources should be vigorously exploited, and the utilization ratio of natural gas through the national gas pipeline network should be increased. An energy gap can be achieved through the use of a convenient national centralized grid to increase the supply of electricity. Finally, an energy system without solid waste generation will be realized.

The construction of a “no-waste Xiong’an” demands the optimization of the industrial layout. In particular, we should pay attention to the principle of priority in reducing the circular economy; implement cleaner production and promote source reduction of solid waste in the industry; and promote the utilization of residual heat and pressure, waste exchanges between enterprises, and water recycling. We should promote the circulation of the industrial chain, centralization of pollution control, greening of the infrastructure, and standardization of operation and management.

3.2 Constructing a system for solid waste classification and utilization

The essence of a system of solid waste classification and utilization is the reduction of solid waste in production and life, its classification and recovery from the source, the utilization of classified resources, and finally proper disposal. Firstly, the amount of waste generated by energy production can be reduced

through the construction of a distributed low-carbon energy network and a centralized smart grid to reduce the amount of waste generated by industrial production and residents' lives through optimizing the layout of industries, leading to green, low-carbon lifestyles. Secondly, we should actively implement the rules and regulations of the *Implementation Plan for the Classification System for Domestic Waste* (GF [2017] No.26), construct a solid waste separation and recovery system for multi-channel domestic waste, promote recycling of renewable resources and a disposal system for domestic waste through the "fusion of two networks," and improve the level and efficiency of fine classification of solid waste, thus laying a good foundation for the subsequent utilization of resources. Thirdly, we should introduce different types of enterprises that can utilize solid waste resources by means of recovery, material conversion, and energy conversion. In this way, classified solid waste resources will be fully recycled and integrated. Finally, in order to prevent and reduce the pollution and environmental risks caused by solid waste, the small amount of solid waste that cannot be exploited due to technological restrictions and economic and environmental factors can be safely handled in an environmentally sound way that causes little damage.

3.3 Advocating the concept of "no waste" and establishing a corresponding social governance system

To encourage and guide residents to form green, low-carbon living habits and consumption patterns, reducing the production of waste from the source is an important part of the construction of a "no-waste Xiong'an." We must guide the residents to use green, low-carbon versions of basic necessities in daily life, to avoid excessive consumption. We also need to cultivate residents' green, low-carbon conceptualization to consciously resist habits that lead to energy consumption and heavy pollution. Leading a green, low-carbon lifestyle can meet one's self needs without harming the natural ecology, so as to achieve a higher standard of living with less waste. We must establish a social governance system to make clear the respective responsibilities in garbage classification and reduction by residents, governments, and enterprises to promote waste reduction and classification.

4 A number of strategic suggestions on the construction of a "no-waste Xiong'an"

In order to ensure the completion of a "no-waste Xiong'an," we propose that we should thoroughly implement and carry out the concept of "no waste" under the guideline of "top-level design, ecological priority, innovative guidance, institutional protection, coordinated development, and universal participation." Our detailed recommendations are as follows.

4.1 Conduct top-level design and strengthen ecological priority; carry out the concept of "no waste" in all aspects of planning and construction of the new area

We should strengthen the organization and leadership, integrate the concept of "no waste" into the design of the planning and construction of the new area, and innovate the construction and management mode of the new area. We should also strengthen our ecological priorities; the quantitative indexes such as the renewable energy utilization ratio and resource recycling utilization ratio are regarded as important strategic indicators and should be included in the evaluation of economic and social development and government performance in the new area. Let us encourage the maximum use of local geothermal, solar, wind, biomass, and other renewable energy sources, as well as natural gas and other relatively low-carbon energy sources; we should construct a multi-complementary distributed low-carbon energy network based on local conditions. It would be wise to construct a solid waste classification and recycling system for the whole new area, establish industrial systems for different types of solid waste resource, strive to achieve minimum energy consumption and maximization of resource utilization, and finally, build a "no-waste Xiong'an."

4.2 Adhering to innovation leading to and perfecting the system and putting the regulations, standards, and supervision into practice

The system is the cornerstone and guarantee of management; in order to achieve effective management, we must first establish a system of chapters. Making regulations entails establishing a strict and unified management system for the new area's construction, formulating related regulations that can regulate the industrial layout, ensuring energy is saved and consumption is reduced in the production process, promoting the circulation of resources, clarifying the legal liability and management requirements of source access control, recovering and comprehensively utilizing solid waste from industries, and promoting the construction of a responsibility extension system for enterprises and symbiosis and metabolism among enterprises. "Clear standards" means strengthening the technical standards of the new area including resources, the environment, safety, and others. We also need to improve the entrance threshold of the enterprises in the new area and prohibit high-energy-consuming and high-polluting enterprises in Xiong'an. We must establish an emission standard system for the energy utilization process; and establish and perfect a pollution control standard system for the solid waste resource utilization process, a comprehensive utilization product quality control standard system, and a key industrial equipment remanufacture technical specification and remanufacturing product standard system. It is important to establish an identification

standard and quality standard system for industrial by-products, control solid waste quality at the source, and promote the full utilization of solid waste. We need to strengthen supervision, which will involve paying attention to the construction of supervisory capacity; allocating reasonable administrative responsibility to different departments; forming a joint supervision working mechanism with a clear division of labor, mutual cohesion, and full cooperation; and strengthening environmental supervision in the whole process of solid waste disposal, collection, transfer, utilization, and relocation.

4.3 Promoting cooperative development, taking the enterprise as the main body, guiding the participation of all, and establishing the model of “no waste in Beijing-Tianjin-Hebei” and even a national “no-waste society”

We should strengthen the unified planning control of the new area and the surrounding area, and promote its integrated development with the neighboring cities. This will require adherence to the “blueprint of unity” during internal cooperation at the national planning level, Beijing-Tianjin-Hebei coordinated development planning level, and Beijing and Tianjin planning level (external cooperation). First, at the level of energy infrastructure construction, we should strengthen the cooperation and

integration with the surrounding areas relating to the construction of a distributed low-carbon energy network, and establish a cooperative energy development and supervision mechanism in the Beijing-Tianjin-Hebei area. Second, after an initial trial of a “no-waste Xiong’an,” we should sum up the experience of the production, life mode innovation, and solid waste classification and recycling system’s construction for the sake of a positive social demonstration. Finally, we can vigorously publicize and popularize the “no waste” concept to mobilize the new area and the entire Beijing-Tianjin-Hebei population to actively participate in the construction and decision making of a “no-waste Xiong’an”; innovate the social governance model; create an “iron triangle of enterprises, the public, and the government”; and lay a solid foundation for the construction of a “no-waste Xiong’an.”

References

- [1] Pan J H, Wei H K. City blue book: City development report of China No.8 [M]. Beijing: Social Sciences Academic Press, 2015. Chinese.
- [2] Du X W, Xie H P, Liu S J. Study on the significance of ecological civilization construction and energy change [M]. Beijing: China Science Publishing & Media Ltd., 2017. Chinese.