

A Model of Cooperative Governance of Zero-Waste City Construction Based on Multi-subject

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Abstract: Building the Zero-Waste City is not only a powerful action to implement the reform of comprehensive management of urban solid waste, but also a significant move to build a beautiful China. Firstly, the starting is the basic meaning of Zero-Waste City construction. The intrinsic requirement of Zero-Waste City construction in it is clarified which is collaborative governance. Then, the characteristics of collaborative governance in Zero-Waste City construction are systematically considered, and the multi-subject characteristics are grasped. Consequently, the sustainability and dynamics of the construction are clearly defined. Based on the above research, this paper carried out model design and policy-thinking on the multi-subject collaborative governance model of Zero-Waste City construction. The win-win pattern of multi-subject participating in the co-governance of Zero-Waste City is expected to be realized.

1. Introduction

Zero-Waste City construction is an ecological civilization construction project that has been highly valued by Chinese government after ecology city construction, low-carbon city construction and intelligent city construction[1]. In the implementation of the 2030 sustainable development goals, China still has problems such as the urban sustainable development (SDG11) to be badly in need of improvement and the transition of residents' consumption and production patterns (SDG12)[2]. The process of environmental protection is itself a process of diversity and complication[3]. City, as a compound ecosystem of society-economy-nature, often lead to city disease such as garbage siege, the waste of natural resources and so on[4]. And it is worth considering if the idea and pattern of Zero-Waste City could be applied to solve the problem. With the development of collaborative governance, single governance mode of the traditional city construction system is short of meeting the governance requirements of Zero-Waste City construction in the new era of ecological civilization in recent years. Furthermore, it seeks other stakeholders besides the government to cooperate in the governance of Zero-Waste City in order to achieve a multi-win pattern.

2. The Collaborative Governance of Zero-Waste City Construction

There is no uniform definition of Zero-Waste City on the international^[567]. According to "Pilot Program of Zero-Waste City" in China, Zero-Waste City is a development concept which is based

on innovation and coordination, green and open, share and share. The sustainable development mode of Zero-Waste City could be realized through guide of the government's macro policy, green growth of medium industry, cleaner production of microscopic enterprise and living without waste of community members[8].

The substance of Zero-Waste City construction is to solve the problem of the urban production of domestic waste treatment, which involves in some fields such as enterprise clean production, industrial green development and green community life. The dilemma of waste management is hard to overcome if we simply rely on the power of government, enterprises or other social organizations. One of the reason is that it is hard to implement urban waste management model which is dominated by a single subject such as the government, enterprises or social groups in the real-life context and to realize the goals and tasks of Zero-Waste City construction. Therefore, it is practical requests of Zero-Waste City construction to apply the collaborative governance in this construction. And the other is China's Zero-Waste City construction, which has the characteristics of diversity, sustainability and dynamics of participating subjects, is similar to collaborative governance requirements. Therefore, from the point of view of combining theory with practice, collaborative governance is the inherent requirement of Zero-Waste City construction.

3. The Feature of Zero-Waste City Construction and Collaborative Governance

3.1.The Diversity of Construction Bodies

The feature of diversity of construction bodies is embodied in that government is not the sole governing body, which also need other organizations such as social and business organization, community members and mass internet media to compete synergistically and game dynamically. In order to reach a situation that multi-subject collaborative govern Zero-Waste City, all these organizations participate the public affairs management of this construction. From the perspective of participating governance bodies of Zero-Waste City construction, the government should play a macro leading and leading role; in addition, social enterprises, community members and mass internet media are the concrete practitioners of the construction. It is needed to activate Zero-Waste City that sharing the technology and experience and playing to competitive advantages of each participant. The key of Zero-Waste City construction is how to coordinate and balance the relationship between multiple participants.

The competent department of this project will lead multiple participants in the process of collaborative governance to realize the integration and cooperative linkage between each participant subsystem, which is in line with the self-organizing theory of collaborative governance. So collaborative governance system of Zero-Waste City construction is regarded as a self-organizing system, that synergies of management system are achieved by combing through complex relationships within government, project operators and mass media.

3.2. Sustainability and Dynamics

From the view of project operation management process of Zero-Waste City construction, it will go through complex dynamic processes, which includes practical exploration, planning design and sustainable development. Zero-Waste City construction is the important mission of urban sustainable development and the vital component of China's ecological civilization project. Collaborative governance is the study of how to achieve the goal of Zero-Waste City construction through sustainable and effective governance among multiple subjects. Meanwhile, because of public and economic attributes which exist in corporate governance system, it will be a long and continuous process.

In the process of system self-organization evolution, the role of each participating governance body is not fixed. It means that any situation in which a participant is in a dominant position is temporary. On the contrary, at different stages of the project, the governance body which is the most resource advantages will lead the construction of Zero-Waste City and other participants will submit to behavior strategy and form system force. In the process of self-organization evolution of collaborative governance system, each participant plays different roles in different stages of development and evolution which reflects dynamics of collaborative governance.

4. Multi-subject Collaborative Governance Model of Zero-Waste City Construction

4.1. The Diversity of Construction Bodies

The definition of multi-subject collaborative governance model of Zero-Waste City construction is a process of realizing the task and goal of the construction and management. Multiple subjects are request to participate this process and give full play to the synergistic and interactive effects among multiple subjects when face public affairs of operation management system and project management, and then form an operable governance scheme and gain effect of Zero-Waste City construction.

4.2. Sustainability and Dynamics

Zero-Waste City construction is to achieve a stable and orderly state through overall coordination of the composite system of urban economy-environment-society, which is zero-waste of urban economy, environment and society. Therefore, multi-subject collaborative governance of Zero-Waste City is a collaborative governance system with a government-led business organization and the participation of multi-subject. Schematic diagram of multi-subject collaborative governance of Zero-Waste City is shown in Figure 1.

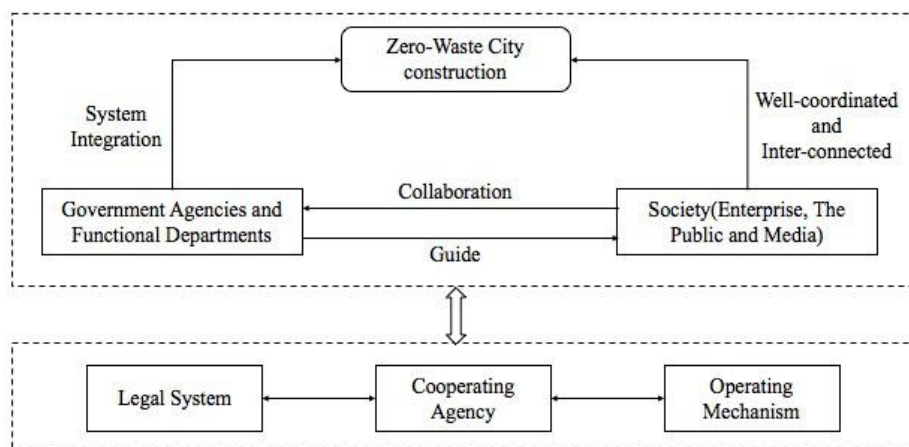


Figure 1: Schematic diagram of multi-subject collaborative governance of Zero-Waste City.

There is basic orientation of multi-subject responsibility in the collaborative governance system: The government plays a leading role; Enterprises, non-governmental organizations and community public is the main force to promote the construction of Zero-Waste City, which take some responsibility for governance; Non-governmental environmental protection organizations play coordinating role of Zero-Waste City construction management through participating the

construction; The Internet and the news media supervise and participate in the governance of Zero-Waste City construction based on the means of public opinion.

4.3. Sustainability and Dynamics

The operation mode of collaborative governance is not fixed, but it is necessary to make corresponding adjustments flexibly with the change of external variables and inherent uncertainty of collaborative governance. In the practice process of collaborative governance, it is impossible for a single agent to solve all the problems in the construction of Zero-Waste City, so it is necessary to mobilize multiple governance subjects to participate and focus on the positive role of social forces in the process of the construction. Consequently, it is suggested to give play to the leading role of third-party market players and explore principal-agent pattern of collaborative governance. Its theoretical framework is shown in Figure 2.

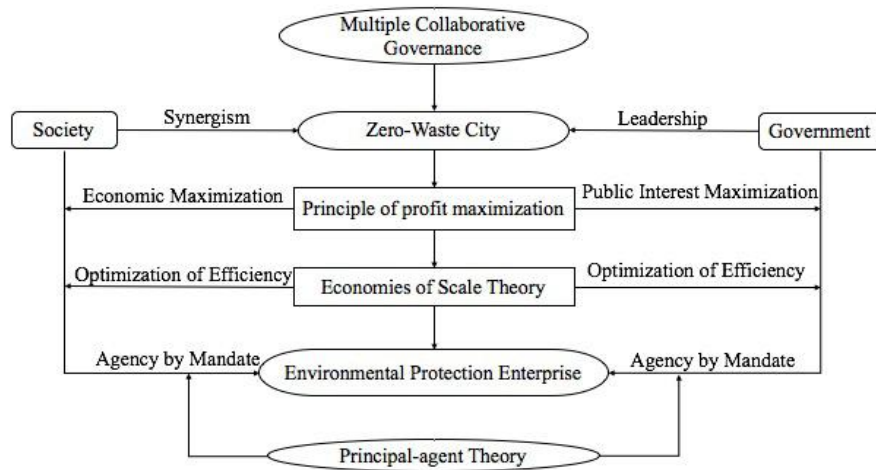


Figure 2: Principal-Agent Pattern of Collaborative Governance.

In the principal-agent model of collaborative governance, it is necessary to give play to the leading role of third-party market entities in the construction, and introduce third party social capital to participate in the process of collaborative governance through the investment and financing means of project. Furthermore, through the multi-subject collaborative governance model, a waste trading market is established between the upstream and downstream associated enterprises of Zero-Waste City, the third party principal-agent service model of Zero-Waste City construction is implemented, third-party professional environmental protection service companies are accelerated to grow. For the waste recycling and recycling industry involved in the Zero-Waste City construction, in order to meet the health and sustainable development of city's economy, society and environment and to form a new pattern of collaborative governance with the participation of multi-subjects which is designed and led by government, cooperated by social organization and the public participate actively, various types of capital are attracted to participate in project investment financing, building construction and operations management based on the theory of collaborative governance and promote the diversification of investment entities according to the innovative ways of cooperation which is guided by government policies and supported by social capital and enterprise technology.

5. Conclusions

The Zero-Waste City is an important means for China to achieve sustainable development and economic transformation under the construction of ecological civilization in the new era. It is a higher level of construction needs after meeting the needs of urban economy and social needs. This paper, firstly, expounds that collaborative governance is the intrinsic callings of the Zero-Waste City construction. Next, it analyzes characteristics of multi-subject attribute of collaborative governance. And then, put forward the multi-subject collaborative governance model and make policy thinking. In the face of the relative complexity and diversity of natural resources and ecological environment of China's cities, we should implement a strong government guidance policy and mobilize social organizations and community members to participate in the construction in many ways, accelerate collaborative governance, provide an innovative perspective for the development pattern of Zero-Waste City construction and the promotion of urban governance concept, and promote the transformation of governance into more scientific, legal, systematic and refined, so that the construction becomes a part of urban waste management, sustainable development and ecological conservation.

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