

## Research on the Construction of "Waste-free city"

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**Abstract:** *With the development of the world today, more and more attention is paid to environmental protection issues. The proposal of a "waste-free city" is in line with the general trend of the world's environmental protection development. For some countries, the development of "waste-free cities" is already a new type of urban development system that is under construction and will soon be completed; but for many countries, the development of "waste-free cities" has a long way to go. In the future, constantly changing ideas, building and developing "waste-free cities", focusing on municipal solid waste treatment, and insisting on sustainable development and recycling, will inevitably become an important step in the development of all countries in the world.*

**Keywords:** *waste-free city; recycling; new city*

Cities are the foundation and support of economic development, and the urban environment is an important proof of economic development. Excessive urban domestic garbage and solid waste generated in the production process often lead to "urban diseases" such as "garbage siege". Therefore, urban garbage and waste have become a major obstacle to the modernization of all countries in the world, and accelerating the development of urban waste-free has become an important direction.

### **1. The background of "waste-free City"**

From a global perspective, "waste-free cities" have emerged in the past 20 years. With the sustained and healthy development of the economy, the needs of the public are constantly changing. First of all, the public is demanding higher and higher living standards and a better living environment. With the continuous improvement of the level of economic development and the enhancement of international environmental protection awareness, urban waste has increasingly become a major obstacle restricting the country's economic development. In terms of the production of urban waste, the development of urban economy and the production of urban waste are positively related; from the perspective of atmospheric control, the gas generated during the decomposition of waste will continue to diffuse with the help of conditions such as temperature and wind, causing damage to the atmosphere. In severe cases, it may even cause irreparable damage to human life. Therefore, measures must be taken to change the urban development mode and carry out overall waste recycling and development. From this point of view, it is imperative to implement a "waste-free city".

"Waste-free cities are through responsible production, consumption, and recycling, so that all waste is reused, no waste is burned, landfilled, or discarded to open dumps or the ocean, so as not to threaten the environment and human health." From the standpoint of the gradual spread of globalization, countries have different political stances, and their development visions, levels of development, and economic foundations will also vary greatly. Correspondingly, the measures and policies adopted naturally have their own characteristics,

and everything is centered on promoting the economic development of the country. Among them, what we should pay attention to is that "waste-free city" does not mean that no waste is produced in the city, but refers to the use of a series of technologies or new methods to promote the secondary use of urban waste. As long as a city is engaged in industrial activities, it will inevitably produce more or less pollution. With the current level of scientific research and technology not up to standard, we can only do our best to reduce the pollution of solid waste. Future generations will leave behind a production and living environment with blue sky, green ground and clear water.

## **2. The world's advanced experience in the construction of a "waste-free city"**

Environmental protection has always been an important issue of general concern to the international community. Many practical explorations have been carried out on the construction of "waste-free cities" in Europe, Japan, Australia, and New Zealand. At the Fourth United Nations Conference on the Environment held in March 2019, "Waste-free Cities" has become a topic of general concern to all countries. In the resolution of the Conference on the "Environmentally Sound Management of Chemicals and Wastes", representatives of all countries are also unanimous. Agree to support innovative waste management measures, such as zero-waste mass activities in some countries or regions, minimize urban domestic waste and develop appropriate waste management infrastructure and other related industries and government support for the treatment of municipal waste Enterprises and other similar waste management initiatives are written into resolutions and passed and implemented.

### **2.1 Experience of "Zero Waste Activities" in Capannori, Italy**

In 2007, the Tuscan town of Capannori, Italy, signed the EU Zero Waste Strategy Agreement, becoming the first town to sign this agreement. Since the Industrial Revolution, Italy's industrial level and solid waste generation have increased almost simultaneously, facing increasingly serious environmental problems. Under the leadership of the city government, small town residents have begun to take spontaneous environmental protection actions, such as actively using recyclable storage. We will consciously dispose of domestic garbage and carry out "zero waste activities" that residents spontaneously participate in. Through the joint action of the municipal government and urban residents, the high-quality recycling and recycling of waste in Capannori has become a new model of urban development for the entire Italian construction, and the Tuscan town has also become a famous "zero waste". Small town. Its experience mainly includes: First, collect garbage from house to house. According to reports, in Capannori, approximately 82% of the sorted household waste is processed into renewable resources, and the remaining 18% is sent to landfills. "Second, the polluter pays principle is implemented. Through the daily scanning and disposal of garbage bags, the environmental protection costs that each resident should bear are determined, the responsible person is clarified, and the whole society is concerned about environmental protection. Third, shorten Production links. For example, the government promotes a "short production chain", which directly supplies milk to milk stations through herders, saving retailer's product packaging waste during the process of repacking milk. Under the demonstration and drive of Capannori City, now A large number of cities have joined the team of the "zero waste" strategy. For example, cities such as Roubaix in France and Malmö in Sweden are building waste-free cities based on the development model of Capannori.

## 2.2 The "Zero Food Waste" strategy in Bruges, Belgium

Bruges is an important participating member of the European Food Project. In 2015, Bruges decided to start the sustainable food plan, which aims to achieve a coordinated and environmentally friendly food system to reduce the burden of garbage on the city in terms of residents' lives. In the view of the local government, reducing food waste is not only conducive to reducing carbon dioxide emissions, but also conducive to promoting the realization of climate change goals. The specific measures are as follows: First, solve the problem of food waste. As an important city in Belgium, in Bruges, many foods are wasted every day in various ways, such as food outdated, substandard production, packaging problems, etc., and these wasted foods will be mixed with other domestic garbage. Enter the municipal solid waste treatment system. A large amount of food waste not only causes the loss of funds, but also consumes the city's manpower, material resources, and financial resources to deal with the large amount of food waste generated every day. The Bruges government calculated based on analysis that "for every euro invested in the food waste reduction program, the city can save 8 euros". Therefore, in response to the problem of waste, the Bruges government began to analyze the causes of food waste, and put forward relevant penalties based on the degree of food waste, thus setting off a trend of conservation in society. Second, establish a committee for sustainable food development. According to the consumption level and economic development of different groups of people in the city and different regions, different foods will be sold in a targeted manner, and corresponding adjustments will be made in terms of price and output. For example, the coastal area of Bruges is a typical port city. Fish is a frequent customer on the table of urban residents. In view of the problem of fish products, according to the characteristics of the port city, the daily catch, the unavailable for sale or the incomplete sale The fish undergoes secondary processing. "In 2015, the Bruges government estimated that 179 tons of fish were not sold, and they processed these unsold food into animal food. The main measures taken by the government are: first, for consumers create an online store to sell less popular fish through online platforms; second, they collaborate with local cooking schools so that schools can use some discarded fish for teaching. Third, use less popular fish to develop new fish burgers."

In general, Bruges' new "waste-free city" mainly focuses on the daily lives of residents, and gradually reduces the generation of urban garbage by controlling the most fundamental dietary problems that restrict residents, but this approach also has certain risks. For areas with reasonable control, this method can effectively avoid wasting food and reduce unnecessary garbage production; but on the other hand, too strict control of residents' food consumption may lead to residents' dissatisfaction and threaten the stability of the city.

## 2.3 Ljubljana's experience in the construction of the "Green City"

Ljubljana is the capital and political and cultural center of the Republic of Slovenia, and is known as the "Green Capital" of Europe. In 2004, the Republic of Slovenia formally joined the European Union. As its capital, Ljubljana has also begun to increase the implementation of urban waste management plans in accordance with EU standards. Its biggest feature is the authorized commission. From 2004 to 2018, the amount of garbage collected in Ljubljana has increased tenfold in 14 years. By 2018, 68% of the waste generated by each resident was collected. Recycling; and the amount of waste sent to landfills has been reduced by 96%, and the total amount of waste has been reduced by 15%." The main experience is as follows: First, separate and collect garbage according to different uses. Separate recycling of recyclable

garbage such as paper, and different recycling methods for some more difficult to recycle garbage. Second, distinguish the frequency of garbage collection. According to the population density of different areas in the city, different methods and frequencies of garbage collection are adopted. For example, for areas with low population density, it can be collected once every three days, and for areas with high population density, it can be collected once or twice a day. This can effectively save labor costs. Third, pay attention to the recycling and utilization of garbage. The Ljubljana government has set up "secondary recycling centers" in different communities. Residents can put outdated or useless items in their homes in the "secondary recycling centers", and they can also exchange them for their usefulness in the recycling centers. The goods can be exchanged and used within the community, subtly changing the living habits of residents, and fostering environmental protection awareness.

### **3. Countermeasures to strengthen the construction of a "waste-free city"**

#### **3.1 Enhance the sense of responsibility of the construction subject**

The government must vigorously develop science and technology. The government insists on innovation-driven, increases investment in scientific research and technology, researches and develops new technologies, promotes institutional innovation, explores new models for handling solid waste, establishes long-term The establishment of "city" provides a solid foundation and institutional guarantee.

As the main body of responsibility in the production process, the producer plays an important role in maintaining the responsibility in the production process. Therefore, it is necessary to clearly stipulate the responsibility of producers in environmental protection, strengthen the construction of corporate culture, and standardize the behavior of producers.

In the information age of the 21st century, plastic products and disposable tableware are sweeping the market crazily. The government should do a good job of publicity and management, promote the use of green products, and reduce the use of plastic products. Organize groups at all levels to study the "No-Waste City" document, convene people to conduct green environmental protection promotion activities, formulate and strictly implement the reward and punishment system for the classification and treatment of household waste and enterprise-produced waste, and improve the public's environmental awareness and awareness of the "No-Waste City" understand.

#### **3.2 Strengthen supervision and strictly control the source of garbage**

Strictly control the source of garbage. This is not only the starting point for the construction of a "waste-free city", but also the top priority of the construction of a "waste-free city". Environmental issues and urban construction are closely related to everyone. Therefore, listening to more public opinions and working together can not only enhance the scientific and democratic decision-making, but also enable more people to support the decision-making plan and reduce the resistance in the construction of a "waste-free city". In addition, for different industries and different products, it is necessary to stipulate different discharge standards for production waste and conduct frequent supervision and inspection to ensure that production waste is strictly controlled from the source.

Strictly supervise the production process. If an enterprise chooses low-quality production materials during production, a huge amount of production waste will be generated, and it will also cause serious resource consumption in the production process. This requires us to strictly supervise the production process, conduct regular inspections, compare production residues,

inspect some invisible pollution generated during the production process, such as noise pollution, etc., and strictly control from the source of production.

### 3.3 Improve relevant laws and regulations

In addition to the joint efforts of all sectors of society, the construction of a "waste-free city" requires government departments to issue corresponding laws and regulations to strengthen the top-level design guidance of the "waste-free city" so that the construction of "waste-free city" can be followed by law. Therefore, countries should strengthen legislation, improve relevant laws and regulations, and control the activities of all parties within a reasonable and legal scope, so that relevant departments can strictly control and restrict all parties in accordance with laws and regulations, so that the activities of all parties are clearly defined. Legal basis. At the same time, there must be a clear legal basis for the rewards or punishments of each subject's behavior, so that relevant personnel can clarify the bottom line of work, and have a restrictive and stimulating effect on the whole society, and avoid favoritism caused by unclear government orders.

According to the list of responsibilities for the construction of a "waste-free city", the scope of supervisory powers for the "waste-free city" is stipulated, and the supervisory powers and obligations of each unit should be clarified. The most fundamental way is to strengthen the legislative work of supervision and bring the activities of various departments under the strict control of the law. The main bodies of supervision are government departments and social organizations as well as the public. Effective supervision can enable all departments to exercise their powers in accordance with the law. "Clear responsibility for the treatment and classification of urban waste; through the construction of urban "Internet + waste" intelligent management The system connects all government departments, social enterprises, and residential communities related to waste classification, collection, treatment, resource utilization, and charging in the city, so as to carry out effective control and supervision; extensively mobilize social forces and call on the society The public supervises the construction process of a "waste-free city" and further expands the main body of supervision.

### 3.4 Increase publicity

The government is the forerunner and leader in the process of urban construction. Building a "waste-free city" is an important task that needs to be carried out for a long time. Therefore, the government must be more aware of the construction of a "waste-free city". It is necessary to organize government staff at all levels to conduct in-depth study on the construction of "no-waste city", strengthen everyone's understanding and support for the construction of "no-waste city", increase the consciousness of government members, and take the initiative to propose that it is beneficial to the construction of "no-waste city". The development of new plans to avoid formalism within the government hindering the construction of a "waste-free city".

## **Conclusion**

The construction of a "waste-free city" is not only about garbage disposal and classification, but more importantly, the recycling and development of urban garbage. For environmental protection, the construction of a "waste-free city" can provide us with a bright future with green mountains, green water, blue sky and white clouds; for economic development, the construction of a "waste-free city" can reduce unnecessary capital consumption for economic development and provide Continuous power support. Under the development of the

new era, in the general development of waste sorting activities, the construction of "waste-free cities" will inevitably become a universal model for new urban development.

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