Domestic Waste Management in Chengdu from the Perspective of Environmental Governance

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Abstract. Classification, recovery and disposal of domestic garbage at source has become an international popular garbage disposal method. Domestic waste classification management has become an important part of urban environmental governance, and improving domestic waste classification management is also an important prerequisite for building a green ecological city. Based on the investigation of domestic waste classification management in Chengdu in recent years, this paper recognizes the understanding and practice of domestic waste classification in Chengdu residents. Therefore, it is known that there are some problems in Chengdu's domestic waste classification management, such as limited coverage, unclear classification standards, disunity of classification collection containers, insufficient publicity and guidance, and weak awareness of domestic waste classification among citizens. According to the existing problems in the management of domestic waste classification in Chengdu, some measures are put forward, such as perfecting the system design, clarifying the standard of waste classification, strengthening publicity and improving the enthusiasm and initiative of people to participate in waste classification.

Keywords: Environmental governance, Domestic garbage, Garbage classification management

1. Classification management of domestic waste in Chengdu

The classification management of domestic waste in Chengdu is mainly obtained through websites of Chengdu Urban Management Committee and Chengdu People's Government. Including the way of garbage classification, the configuration of garbage classification facilities, the role of secondary sorting of cleaning staff in garbage classification, and the public's views on garbage classification.

From the way of garbage classification, according to the investigation report of Chengdu municipal garbage classification in 2018, Qingyang District, Wuhou District, chenghua district and High-tech Zone mainly divide domestic garbage into four categories: "recyclables, kitchen garbage (kitchen waste), toxic harmful waste and other garbage". According to whether it can be recycled, Jinjiang District divides domestic garbage into two categories: "recyclable and non-recyclable", and classifies kitchen garbage, toxic harmful waste and other garbage as non-recyclable garbage. According to the moisture content of garbage in jinniu district, domestic garbage can be divided into two categories: "dry and wet", recyclable garbage, toxic harmful waste and other garbage can be classified as dry...
garbage, and kitchen garbage can be classified as wet garbage.

From the configuration of garbage sorting facilities, some pilot communities in Chengdu are equipped with special sorting garbage bins, which are marked by characters and separated by colors according to the different types of garbage received, so as to ensure the accuracy of garbage sorting [2]. However, due to different capital investment and community area, different communities have different settings for classified trash cans. Some communities simply set up "recyclable garbage" and "non recyclable garbage", while others add "hazardous waste" and "kitchen waste" garbage bins to further subdivide the garbage, but the latter is less. In addition, some communities also have recycling bins for old clothes, which not only promotes waste sorting, but also helps the development of public welfare undertakings.

From the secondary sorting of domestic waste by cleaning personnel, street scavengers or cleaners will spontaneously further subdivide the domestic waste when they clean up the municipal solid waste. Because they will screen out the recyclable items mixed in the trash can and subdivide them into metal, plastic, paper, glass, etc., which is of positive significance to promote the classification of domestic waste to a certain extent.

The public's views on garbage sorting. First of all, some communities have implemented the reward policy for garbage classification. For example, in early 2019, Tongzitingyuan Community, Shengping Community, Taisheng Road Street, Qingyang District began to implement the "point reward mechanism" for garbage classification, that is, residents can get corresponding points for garbage classification and delivery, and can exchange rewards through points. These incentives play a positive role in mobilizing residents to carry out waste sorting and delivery. Secondly, there is still a problem of insufficient understanding of garbage classification in Chengdu. Although most residents have heard of the pilot work of garbage classification in Chengdu, they do not recognize the promotion efforts and effects of publicity and education. The publicity work of each pilot area of waste classification is mainly carried out by the urban management departments and property companies of each district, mainly by printing and distributing publicity materials, setting up publicity columns and posters. The content of publicity in each district is mainly based on simple classification, and there is not much publicity on the necessity and benefits of classification. In addition, although we can find some opinions on the implementation of garbage classification in each district from the government websites such as Chengdu City Management Committee, the citizens are not fully aware of the specific provisions.

2. Problems in classified management of domestic waste in Chengdu
(1) Limited coverage of waste classification

In this paper, the classification information of domestic garbage in Chengdu in recent years is statistically analyzed, and the details are shown in Table 1.

At the beginning of 2020, the resident population of Chengdu was 16.581 million, of which the registered population was 15.007 million. Since the total number of registered households in Chengdu at the beginning of 2020 is not available. According to the statistics of the Bureau of Statistics in 2014, if the average number of households is 2.59, there will be about 5,791,776 households in Chengdu at the beginning of 2020. Even if the average household population increases after the liberalization of the two-child policy, the total number of households will probably be no less than 5 million. As shown in the table, the number of classified residents in Chengdu in April 2020 reached 3,891,200, accounting for about 67% of the total number of residents in Chengdu, and there is still a big gap in terms of comprehensive coverage. In addition, the coverage of the party and government organs is basically comprehensive, but the number of schools and medical institutions is increasing slowly due to the epidemic situation.
Table 1 Basic information of domestic waste classification in Chengdu [3]

| Month       | Carry out the classification of the number of residents | Number of party and government organs | Number of schools | Number of medical institutions | Recycling amount of recyclable materials (tons) | Recycling amount of kitchen waste (tons) |
|-------------|--------------------------------------------------------|--------------------------------------|------------------|--------------------------------|---------------------------------------------|---------------------------------------|
| July 2019   | 2746000                                                | 1455                                 | 3531             | 444                            | 12700                                       | 14200                                 |
| August 2019 | 2918000                                                | 1455                                 | 3531             | 444                            | 10700                                       | 12700                                 |
| September 2019 | 3069800                      | 1455                                 | 3701             | 453                            | 10900                                       | 14900                                 |
| October 2019 | 3211200                                                | 1455                                 | 3710             | 453                            | 11700                                       | 13600                                 |
| November 2019 | 3524800                                               | 1455                                 | 3710             | 474                            | 11400                                       | 18800                                 |
| December 2019 | 3752000                                               | 1455                                 | 3715             | 474                            | 11400                                       | 18800                                 |
| January 2020 | 3760600                                                | 1455                                 | 3715             | 868                            | 224800                                      | 37400                                 |
| February 2020 | 3760600                                               | 1455                                 | 3715             | 868                            | 66700                                       | 4200                                  |
| March 2020   | 3796900                                                | 1455                                 | 3715             | 868                            | 159600                                      | 6100                                  |
| April 2020   | 3891200                                                | 1455                                 | 3715             | 868                            | 190400                                      | 9700                                  |

(2) The standard of garbage classification is not uniform
At present, China's municipal waste classification policy not only lacks a clear standard for classification of waste types, but also has different standards when different cities implement the waste classification policy. At present, local legislation basically takes whether garbage can be recycled (such as whether it is combustible or recyclable) and the shape and nature of garbage (such as kitchen waste, large pieces, harmful, etc.) as classification standards [4]. In 2019, "Chengdu Domestic Waste Management Regulations (Draft)" classified garbage into four categories: "recyclable", "harmful waste", "kitchen waste" and "other waste". However, after investigation, some communities are still divided into "recyclable garbage", "non-recyclable garbage" or "dry garbage" and "wet garbage". Because of the disunity of classification standards, residents are at a loss when classifying garbage, which makes the efficiency of garbage classification low.

(3) Insufficient publicity and guidance, and the public lacks common sense of garbage classification
According to the investigation, there are some deficiencies in the publicity and guidance of domestic waste classification in Chengdu. Most of the pilot communities mainly use posters, and the publicity is not strong enough, which makes it difficult for residents to fully understand the classification and delivery of waste. In some communities, the implementation of garbage classification is not enough, and some communities simply set up two kinds of garbage bins: "recyclable garbage" and "non-recyclable garbage". Although some communities have set up classified garbage bins, due to lack of supervision, residents still throw garbage at will, which makes garbage classification a mere formality.

3. Countermeasures for classified management of domestic waste in Chengdu
(1) Improve system design and strengthen waste classification management
First of all, incentive policies for domestic waste classification can be formulated. For example, a "bonus point mechanism" is set up to stimulate and guide the public to carry out classified garbage disposal by collecting points and exchanging points for rewards. In addition, it is necessary to formulate mandatory measures to ensure the effective implementation of garbage classification, and those who violate regulations should be punished accordingly. It is also possible to introduce a supervision mechanism, in which the public has special personnel to supervise and guide the waste sorting, so as to ensure the effective implementation of waste sorting and improve the efficiency of waste sorting.

(2) Clarify garbage classification standards and requirements for setting domestic garbage
collection containers

Clear garbage classification is the premise of realizing garbage classification. According to the current investigation, the standards of garbage classification in different districts of Chengdu are still not uniform, which will lead to confusion of people's understanding of garbage classification, which is not conducive to the effective development of garbage classification and delivery. At the same time, it is also necessary to clarify the basic requirements for the setting of domestic waste classification collection containers, and set up collection containers with corresponding functions according to the garbage classification standards, so as to facilitate the residents to put in the containers [5].

(3) Improve the supporting system of domestic waste classification

First, promote the source reduction of domestic garbage, and reduce the generation of domestic garbage by controlling over-packaging, limiting disposable products, advocating green consumption and other measures. Second, establish a garbage collection and transportation system, and put forward specific requirements for the allocation of classified collection and transportation vehicles, the construction of transfer stations, and the supervision of collection and operation, so as to reduce the pressure of domestic garbage collection and transportation. Third, improve the domestic waste classification and disposal facilities and improve the recycling level of recyclable materials.

(4) Strengthen publicity and guidance

According to the investigation, it is a long-term process for residents to form classification habits. Under the condition that the laws and regulations are being perfected, at present, the residents should mainly take incentive and guidance measures to carry out domestic garbage classification. By vigorously carrying out publicity activities, strengthening environmental protection education in schools, and carrying out youth voluntary activities, people's initiative and enthusiasm to participate in the classification of domestic waste can be fully mobilized, and urban residents' awareness of environmental protection can be strengthened.

References

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