

How to Improve Garbage Classification in Chinese Universities

- Based on the Smith Model

Yiya Shen^{1,a,*}

¹*School of Management, China Women's University, Beijing, 100105, China*
a. 200411045@email.cwu.edu.cn

**corresponding author*

Abstract: In 2017, the Chinese State Council issued the “Implementation Plan for Domestic Waste Classification System,” mandating waste classification in 46 pilot areas. This led to further development of garbage classification management in Chinese universities. However, most research on garbage classification management in universities has focused solely on education. Using the Smith model for analysis from a public policy perspective, this study identifies four problems with garbage classification management in Chinese universities at all levels: (1) idealistic policies require a long period of practice and a perfect system to be implemented in universities, (2) the old system of implementing agencies hinders the implementation of new policies, (3) the government and universities do not prioritize follow-up policy implementation environments, and (4) there are significant differences in the recognition of the target group. This study proposes three suggestions for the government, society, and schools to address these problems. The government should increase research and development of related public infrastructure, society should unite various social actors to jointly shape a good environment for garbage classification, and schools should guide students to take collective responsibility for garbage classification. Thus, this study proposes a new perspective for the research on garbage classification management in Chinese universities from the perspective of garbage classification policy.

Keywords: Chinese public policy, garbage classification, policy implementation, Smith model, universities

1. Introduction

With the acceleration of China's urbanization process, urban household waste production has increased annually. Waste sorting, as part of environmental protection, is valuable in treating waste at the source. National policies guide the country's future development, so effective formulation and rational implementation of waste sorting policies can bring great benefits to China. After clarifying that waste sorting has shifted from a propaganda strategy to a mandatory strategy in some areas, China has attached more importance to urban waste management since the issuance of the “Implementation Plan for the Household Waste Sorting System” by the State Council in 2017. Currently, most research on waste sorting policy focuses on cities, analyzing policy design and related implementation issues,

but lacks specific contextual perspectives for policy analysis. The proportion of university students in China's urban population is gradually increasing. As a component of China's urban environment, Chinese universities have the responsibility and obligation to implement waste sorting policies. Chinese universities, as a large and special "micro-society," can serve as a good research model for waste sorting policy implementation. However, most research related to waste sorting in Chinese universities remains experimental in terms of how to educate college students about waste sorting awareness. Therefore, this study proposes the question: how can waste sorting policies in universities be improved? This study will focus on how waste sorting policies in China can be implemented on campus and how they can affect university students. Finally, using three perspectives of government regulation, social level, and planned behavior, based on the waste sorting status of university students, this study will propose ideas on what problems waste sorting policies may generate and how to solve them. This study uses literature analysis and the Smith Model theory to analyze the process of waste sorting policy implementation. It proposes corresponding optimization suggestions for the design and implementation of waste sorting policies from a new perspective.

2. Analysis of China's Policy Implementation of Garbage Classification Policy

In China, policies are implemented through a "top-down" model, which typically involves an "experiment-promotion" process [1]. Given the unique position of the Communist Party of China within the country, a public policy implementation mechanism led by the Party has been established, characterized by "high-level promotion." Central public policies are implemented at the grassroots level through a block system. This model has been applied to the garbage classification policy, which is promoted by central leadership and local governments through local regulations [2].

In 2000, China's Ministry of Construction designated eight cities, including Beijing, Shanghai, Nanjing, Hangzhou, Guilin, Guangzhou, Shenzhen, and Xiamen, as the first batch of pilot cities for household waste classification to promote the practice of waste sorting. However, at that time, the implementation effect of these garbage classification policies was not satisfactory.

In 2017, the National Development and Reform Commission and the Ministry of Housing and Urban-Rural Development issued the "Implementation Plan of Household Waste Classification System," which clearly stated that mandatory household waste classification should be implemented in the urban areas of 46 key cities, and waste sorting pilot work was carried out. Among them, on July 1, 2019, Shanghai issued the "Shanghai Municipal Household Waste Management Regulations" in advance, and other key cities followed suit. As of June 2021, pilot cities such as Shanghai, Guangzhou, Xiamen, Hangzhou, and Fuzhou have formulated their own regulations on household waste classification management according to local conditions.

These key cities are all cities with abundant educational resources, where the proportion of college students in the total population of urban residents is high. In Shanghai, for example, the proportion of college students in the total population of urban residents is more than 10% [3]. The implementation of these policies in these universities depends on relevant regulations issued by local governments, which are supervised by various local government departments. The relevant administrative regulations have a long cycle, and the effect is relatively lagging.

Among them, the main body responsible for the supervision of garbage classification and recycling in universities is the school's relevant management department and student organizations (hereinafter referred to as "schools") [4]. Schools implement direct management of college students' garbage classification through various means at the implementation level. In terms of regulations, there are generally specialized departments responsible for them. For example, a certain university in Guangzhou, China, divides the campus into two areas. The cleaning department within the campus is responsible for the teaching area, and the cleaning staff of the property company is responsible for the dormitory area [5].

In terms of garbage classification, there are relatively innovative measures based on the system. For example, Shanghai Second Polytechnic University has an ecological environment doctoral propaganda team dedicated to environmental protection training. Some universities have also set up garbage classification classes to explain in detail to teachers and students the classification and management technology of household waste. Overall, the front-end classification of garbage in universities is under the control of the school, lacks organizational innovation, and students have limited autonomy.

3. Problems with Garbage Classification Policies at the University Level Based on the Smith Model

The Smith model is a policy implementation theory model based on Western experience. It mainly focuses on the perspective of public policy implementation and analyzes the relationship among the four aspects of idealized policy, implementing institutions, target groups, and policy implementation environmental factors [6]. By applying the Smith policy implementation process model to local garbage classification policies, the problems of garbage classification policies at the university level can be analyzed from top to bottom.

3.1. A Long Period of Practice and a Perfect System

The first aspect is that implementing idealized policies in universities requires a long period of practice and a perfect system. Idealized policies are a critical factor in garbage classification policy, including the perfection of the local government's proposed garbage classification policy system, the scientific reasonability of policy content, and the feasibility of policy objectives. These factors all impact the implementation of garbage classification policy. The problems in the policy system, high policy content homogeneity, and low level of coordination among departments in garbage classification policies before 2017 in China were all issues within the idealized policy elements [7]. However, starting in 2017, garbage classification policies were launched in various key cities, each with its own policies for handling garbage, and the implementation effects in each city were relatively different.

Among these cities, Shenzhen ranked second in China in the 2018 garbage classification effectiveness of the Ministry of Housing and Urban-Rural Development, with well-placed institutional mechanism construction. After years of exploration, Shenzhen issued one government regulation, three local standards, and seven normative documents in the field of garbage classification management in 2018, forming a relatively complete system of normative standards. Shenzhen has thus established an eight-part garbage collection, transportation, diversion, and processing system of "large-scale sorting and fine classification [8]." This is also a response to the central government's policy in 2017. The success of Shenzhen's garbage classification implementation is due to its perfect and scientifically sound policies. However, idealized policies require years of exploration of the local situation and the policy orientation of the central government to fully exert their policy power.

As an important entity in the city, universities may lag behind and respond only after relatively perfect policies are issued. For example, after garbage classification became popular in society in October 2020, Shenzhen University carried out a comprehensive removal of trash bins and set up specific collection points on campus. Shenzhen University assigned the front-end task of garbage classification to students. Compared with other universities in China, Shenzhen University had already responded earlier by promoting garbage classification on campus.

3.2. The Relationship Between the Old Policy Implementation Organizations and the New Policy Implementation

The second aspect is that the old system of implementing agencies hinders the implementation of new policies. In terms of implementing agencies, China's urban management bureaus are an important guarantee for the implementation of garbage classification policies at the local level. They need to change the behavior patterns of the target group (city residents) by supervising the implementation of garbage classification policies, thereby promoting the achievement of policy goals. At the university level, it is about the impact of garbage classification policies and implementation mechanisms on garbage classification on campus.

Currently, in the management of garbage classification by local governments in China, regional implementing agencies generally do not have dedicated personnel, and there are common problems such as unclear departmental functions and insufficient professional team building. They only use performance assessment as a means to promote garbage classification policies. In addition, there are significant regional differences in China, and the problems in each region are different, but the methods and personnel deployed in implementation are similar. This is actually a problem within the main body of the implementing agency.

The Institute of Public and Environmental Affairs (IPE) "Garbage Sorting Index (GSI) and 2021 City Evaluation Report" pointed out a problem: the mixed rate of kitchen waste in various cities is still high, and few cities have a correct sorting rate of over 50%. Sanmenxia had a high garbage mixing rate of up to 90% in the city snapshot results. In 2021, all institutions in Sanmenxia issued the "Implementation Opinions on Further Promoting the Work of Domestic Waste Classification in Sanmenxia City." In the environmental prevention and control information announcement of the Sanmenxia Ecological Environment Bureau, the front-end garbage sorting in Sanmenxia was chaotic, and the kitchen waste had not established a production, collection, transportation, and disposal system, and there was no dedicated sludge landfill. Hindered by their capacity and funding, the city of Sanmenxia can clearly recognize their own problems, but they need continuous practice to find a suitable way to make changes.

Similar to the situation in Sanmenxia, most universities generally have their own garbage disposal systems and dedicated cleaning departments for disposal before China releases policy implementation plans. These implementing agencies are difficult to change in the short term, resulting in the front-end and back-end always remaining in the old standards. Implementing agencies need to rely on policies to carry out practical reforms to solve their own unique problems.

3.3. Attention to the Policy Implementation Environment

The third aspect is that the government and universities do not give enough attention to the policy implementation environment. The policy implementation environment is crucial in the local government's management of urban garbage classification, and it runs through the entire process [9]. External environmental factors, such as the level of publicity of garbage classification policies, the level of funding guarantee for local universities, and the information technology construction in the middle of garbage classification processing, promote or hinder the local government's garbage classification management at different times.

Currently, there are several main problems in the implementation of garbage classification management in China. These include insufficient guarantee of relevant basic conditions, weak data foundation, and limited guarantee of related education funding. These are also internal problems of the main elements of the policy implementation environment. For example, as mentioned earlier, Shenzhen and Sanmenxia have certain differences in their garbage treatment methods, environmental

protection funds, degree of attention, university scale, and level. In Sanmenxia, external environmental factors may sometimes hinder garbage classification management.

Therefore, after the policy is issued, the government should also pay attention to the corresponding follow-up results, the improvement of advantageous factors in environmental factors, and the reduction of related obstacles in environmental factors. At the university level, universities should not only receive support from the top, but also adjust the factors that they can control, such as policy promotion and middle-end design.

3.4. The Significant Variation in Recognition of the Target Group

The fourth aspect is the significant variation in recognition of the target group, including the degree of support and understanding of the policy objectives. The target group in this study is college students, who are vital to achieving the goals of the garbage classification policy. As a direct channel to reach college students, universities - as an auxiliary responsibility subject for local governments to implement garbage classification policies - need to adjust their behavior patterns and improve policy cooperation to ensure the realization of policy goals. Therefore, universities need to improve their sense of responsibility, cooperation degree, education for college students, and related organizational structure construction. All of these directly affect the implementation of garbage classification policies.

This study proposes that the support of Chinese college students for garbage classification policies can be divided into two stages: understanding and behavioral support. China places significant importance on ideological work, which is reflected in the strict attention paid to policy implementation in various cities and universities. As a result, all Chinese universities will hold garbage classification education lectures, garbage classification volunteer activities, and other activities during the policy promulgation period. All Chinese college students can understand the policy. Behavioral support is the stage where the target group has not been stimulated. Local governments in key pilot areas are in the stage of comprehensive exploration, and the ways of behavioral support of the target group in the region are different. For instance, in Shenzhen, Shenzhen University uses specific placement points to guide students to participate in behavioral support activities. Southern University of Science and Technology in Shenzhen uses intelligent buried garbage bins, which can record garbage dumping behavior in real-time, and college students are subject to certain constraints. Other local governments are in the stage of waiting for the exploration of garbage classification policy methods. However, insufficient implementation of policies by departments has led to problems such as insufficient awareness of responsibility subjects and unreasonable organizational structure settings within the target group.

From this analysis, it can be observed that the policy of garbage classification by local governments in China can be analyzed using the four main elements of the Smith policy implementation process model, and various issues can be elaborated on in various aspects.

4. Improving the Garbage Classification Policy for Universities

4.1. Government-level Work and Relevant Public Infrastructure

The government should increase research and development of public infrastructure that universities can use for garbage classification. According to the principle of externalities regulated by the government, universities cannot charge students who benefit from garbage classification, and no individual is likely to build public infrastructure related to garbage classification out of personal interest [10]. Therefore, it can only be achieved through government subsidies and mandatory requirements. At this point, it is necessary for universities to allocate more funds to correcting the end first, similar to how the Three Gorges Dam reflects on the garbage system problem at the end.

Ensuring proper waste disposal at the end of the system will, to some extent, improve the garbage classification situation for university students at the front end. By improving the end, the implementing agency can gradually promote the garbage classification policy at the front end, and this is a critical step that should be considered when perfecting the ideal policy and breaking through the old system. It is essential that the government leads this effort.

4.2. A Favorable Environment

At the social level, social leaders should work together to create a favorable environment for garbage classification. The policy implementation in China follows a “policy tools-classification chain-governance subject” format [7]. The classification chain in policy tools and governance subjects include environmental factors, which combine social and campus garbage classification and do not separate their work. Social environmental protection leaders should actively encourage students to participate in environmental governance by organizing relevant activities, recruiting volunteers, and completing projects together to achieve the desired effect.

4.3. The Collective Responsibility for Garbage Classification

At the school level, colleges can guide students to take collective responsibility for garbage classification through action. According to the theory of behavioral norms, perceived behavioral control is a critical variable that determines behavioral intention. For some target groups, their level of identification is not high, which is reflected in the degree to which individuals expect to be able to control (or master) specific behavior [11]. For example, Xiamen ranked first in the 2018 urban ranking of garbage classification announced by the Ministry of Housing and Urban-Rural Development. However, during a 2018 interview, reporters raised concerns about the garbage classification situation at Xiamen University. The correct rate of garbage classification in student apartments is generally low, not because of the students’ literacy, but because there are no kitchen waste or hazardous waste bins in the student apartments. To sort and throw them away, students have to spend more time and money. As a result, students tend to throw everything into the same bin, and the school’s cleaning staff has to spend more time classifying them [12]. The cleaning staff is taking on too much responsibility for garbage classification.

To tackle this issue, schools can gradually guide students to take responsibility for garbage classification by implementing measures such as monitoring classmates, using intelligent buried garbage bins that can be supervised, and imposing fines. These measures can encourage students to classify their waste properly and take collective responsibility for keeping their environment clean.

5. Conclusion

In 2017, the Ministry of Housing and Urban-Rural Development and the State Council jointly issued the “Implementation Plan for Domestic Waste Classification System,” which enforced mandatory classification in pilot areas. Universities also began to carry out garbage classification during the policy implementation process. According to the Smith Model, garbage classification in universities is one of the links, but there are certain problems associated with it. These include the fact that idealistic policies need a long time to implement in universities and require a perfect system to be put in place, the old system of implementing agencies hinders the implementation of new policies, the government and universities do not pay enough attention to the follow-up policy implementation environment, and there is a large difference in the identification of target groups.

This study proposes three opinions to address these problems at the government, society, and school levels. At the government level, the opinion is to increase research and development of relevant public infrastructure. At the social level, the opinion is to unite all social groups to create a

conducive environment for garbage classification. At the school level, schools should guide students to collectively take responsibility for garbage classification through action.

The Smith Model was used to analyze the situation of garbage classification in Chinese universities, which has strong applicability and explanatory power. However, it should be noted that the Smith policy implementation process model is a Western policy model and does not fully match the analysis of China's garbage classification policy. Future research should explore the unique characteristics of garbage classification policy based on this foundation.

References

- [1] Ning Sao (2018), *Public Policy Studies*, Higher Education Press, 2018, 324.
- [2] He Donghang & Kong Fanbin, *China's experience in public policy implementation*, *Chinese Social Sciences*, 2011, No.191 (05): 61-79+220-221.
- [3] Hao Mengge, *Research on the current situation and influencing factors of garbage classification and recycling in college campuses*, *Henan Agricultural University*, 2021, 2-3.
- [4] Li Da, *Evolutionary game analysis of the supervision mechanism of garbage classification and recycling in universities*, *China Environmental Management*, 2017, 9(05):90-94.
- [5] Lai Wenfei, *Current situation and optimization of domestic waste classification and treatment for college students in Guangzho*, *Guangdong University of Finance and Economics*, 2020, 5-20.
- [6] Smith T.B. *The Policy Implementation Process*, *Policy Science*, 1973,197-200.
- [7] Xie Qiushan & Yang Xu, *Why does garbage classification policy have such little effect? - A content analysis based on central policy texts from 1986 to 2019*, *Chinese Public Policy Review*, 2021, 19(02): 53-75.
- [8] Chen Hongzhong & Liu Rongjie & Li Shuikun, *Improvement of the system of domestic waste classification in Shenzhen*, *Environmental Sanitation Engineering*, 2021, 29(06): 82-87.
- [9] Wang Wei & Peng Yunzhi, *Construction of the performance management system of local government budgets in China - Based on the perspective of the Smith policy implementation process model*, *Journal of Shanghai Business School*, 1-12.
- [10] D.R. Kiran, *Principles of Economics and Management for Manufacturing Engineering*, Butterworth-Heinemann, 2022, 23-31, 85-92.
- [11] Icek Ajzen. *The theory of planned behavior. Organizational Behavior and Human Decision Processes*, Volume 50, Issue 2, 1991, 179-211.
- [12] Xixingren. 2018-01-04, "Gathering of goods demand" - investigation on garbage classification at Xiamen University, Zengcuoan, <https://www.zgzca.com/newsview-2632.html>.