

Construction of Supervision and Management System of Beijing Grass-Roots Waste Sorting Pilot-Taking A Community in Shijingshan as an Example

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I. PROJECT OVERVIEW

1.1 Research background

Social research on the needs of the society led to the innovative direction of the project.

This project aims to address the growing problem of domestic garbage management in China. China's annual production of domestic garbage is up to 400 million tons, increasing at a rate of about 8% per year. The large number of mixed garbage can not be effectively classified and disposed, which causes serious pollution of the ecological environment. To solve the problem, garbage classification is not only an effective and scientific treatment method, but also the best way to promote green living.

The 18th Party Congress and the 20th Party Congress have explicitly included the construction of ecological civilization in the important strategy, putting forward the task of improving the modern environmental governance system. As a key part of ecological environmental protection, garbage classification not only helps to reduce the amount of garbage disposal, but also improves the quality of ecological environment, which is highly compatible with the national development strategy. Therefore, ecological environmental protection is a top priority for national development.

This project aims to promote the residents' enthusiasm of participating in garbage classifying through the construction of the intelligent garbage-classifying trash cans and the points system, maximizing the use of waste resources, reducing environmental pollution and improving the ecological environment. It is also combined with the government's community "Points +" grass-roots governance model as well, which will further stimulate the motivation of the residents and improve the efficiency and popularity of garbage classifying. At present, the project is in pilot operation in the Shijingshan community, because the community is the basic unit of the city, and urban environmental governance should be carried out from part to whole. It is starting with the community as the scope of governance that provides a useful attempt and experience for the comprehensive promotion of urban environmental governance.

1.2 Analysis of the current situation

This project aims to improve the community garbage classification and supervision system in Beijing, for which we designed a more perfect institutional chain. By placing intelligent garbage-classifying trash cans, taking the Shijingshan community as a test point and integrating with the grassroots management system of the community, we could

exploring a citizens' garbage classification point system that cooperates with the government departments. As for now, the proportion of the tertiary industry in the national economy is gradually increasing, and the garbage classification industry is gradually improving, but the awareness of the residents of garbage classification is still weak, and littering is also common, which leads to higher street cleaning costs. If the system that is extended from the intelligent garbage-classifying trash cans could gradually popularized, then the labor costs of street cleaning can be greatly reduced, so that the labor force can be saved and invested in other industries, and promote the development of other industries. If the system of intelligent garbage-classifying trash can could be gradually popularized, it can greatly reduce the labor cost of street cleaning and save the labor to be invested in other industries, promoting the development of other industries, and promote the construction of scientific and technological life. By paying attention to government announcements to find the community "points +" new model of grass-roots governance, and combine the two to form a more perfect points system, motivating residents to correctly put garbage in the trash can currently, in order to better promote the popularization and the execution of the extended system of the classification of garbage.

The industry background of this project: Technology is developing rapidly and playing a great role in various industries. Under the general environment, green community can also be combined with technology to promote the modernization of the grassroots garbage classification system by taking advantage of science and technology.

This system is a management mechanism that takes garbage classification and environmental protection as the fundamental concept, and combines it with the government's new model of community "points+" grassroots governance to motivate residents.

1.3 Project Innovations and Advantages

Innovations

1: Promotes the concepts of ecological protection and garbage classification at the community level, and practice green living behaviors.

2: Increases the participation of community residents, reduce the input of manual garbage disposal labor. Combines the power of science and technology, putting in and promoting the intelligent garbage-classification trash cans.

3: Opens a green supermarket, implementing the points reward mechanism. If the classification is correct, you can accumulate points, to reach a certain amount of points can go

to the green supermarket to exchange for reward items.

Advantages

(1) Promotes urban environmental governance through community participation. Strengthens the ability of grassroots governance, carrying out in-depth green community creation campaign, and makes use of the unique attributes of the community with the characteristics of the basic unit of urban governance, the experimental field of urban environmental policy, and the pioneer area of social governance.

(2) Intelligent classification of domestic garbage benefits a wide range of groups and is easier to implement. Taking the classification of urban household garbage as an example, while residents do not understand the principles of classification, most of the selected supervisors are middle-aged and old people, who have not received systematic training and are not very clear about the requirements of garbage classification so that they do not play a guiding and supervisory role, which makes the implementation of garbage classification even more difficult, resulting in a waste of labor and a waste of community funds.

(3) Where the garbage can are dropped off are add environmental protection-related brochures to guide citizens to consciously fulfill their environmental protection responsibilities, gradually changing the backward living customs and habits, actively carry out garbage classification, practice green lifestyles, and advocate green travel and green consumption. This will help citizens recognize and exercise their ecological and environmental rights and responsibilities, providing broader ideas and richer experience for urban environmental governance in the new era, in order to form a pattern of building, governing and sharing a better life.

1.4 Research Significance

Theoretical significance

The creation and improvement of green community can make effective improvement in all 4 aspects of environment, economy, management and society within the community, which not only emphasizes on environmental protection, but also pays attention to the aspects of citizens' participation and the coordination of the relationship between the government and the citizens. The project will reduce resource wastage, increasing productivity, improving human health and standardize environmental governance.

Reality significance

1. According to the big data survey, the residents are not satisfied with the community they live in, 66% of the demand is for services of the type of old age assistance, 76% of the demand is for the improvement of the infrastructure of the community, and 38% of the demand is for the mediation of disputes and the demand for legal aid.

2. Protecting residents' environmental rights and interests: As a group living in a common ecological environment, residents of green communities have common environmental rights and interests.

3. Help people fulfill their environmental responsibilities: Citizens' environmental rights and responsibilities include caring about environmental quality; supervising environmental law enforcement; participating in policy suggestions; and choosing a green life.

4. Enhance people's environmental awareness and civilization: through continuous environmental protection publicity and education and a series of environmental protection activities, a penetrating effect can be formed. Chapter 2: Factors Influencing the Supervision and Management of Waste Separation at the Grassroots Level in Beijing

2.1 Intelligent Separation of Waste Bins Implementation and Cooperation

Implementation of Intelligent Garbage Bins

Combining the face recognition system and the points exchange system of the green supermarket, the implementation of intelligent trash cans is a key part of the institutional construction. Through the combination of trash classification and the points exchange system, points are saved by correctly classifying trash, and points are exchanged for goods through the green supermarket. The implementation of smart waste separation bins enhances the efficiency of waste separation, thereby achieving environmental protection. In the process of piloting the system, it can enhance citizen participation and harmonize the relationship between the government and citizens. "Points for Rewards" is a useful attempt to promote garbage separation and a powerful measure to make garbage truly reduced, resourceful and harmless. This project will reduce the waste of resources, improve production efficiency, improve human health, make environmental governance more standardized, and make life scientific.

Compared with the traditional waste collection method, the intelligent waste bin effectively avoids the investment in subsequent manual intervention in waste classification and reduces the workload of sanitation workers. In terms of garbage recycling, garbage classification is one of the most important steps, our project through the combination of face recognition system, greatly simplifies the manual garbage classification steps, in this industrial chain of manpower, such as sanitation workers will also reduce the investment cost, saving the investment in manual garbage disposal. However, in the process of implementing the smart waste separation bin, we found that the cost of the smart waste garbage can is very expensive in the process of communicating with the merchants, so it is not possible to achieve the popularization of all the communities, and the smart waste separation bin already exists in some communities with higher economic level, so we take the shijingshan community as a pilot, and have not explored other communities.

Cooperation of Intelligent Classified Garbage Bins

1. Work with the community to put in smart waste separation bins. During the implementation of this project, we communicated with the community in charge and investigated and understood some practical aspects of the project. We explored the possibilities of the project with the community and found some practical problems that hindered the implementation of the project.

2. Worked with smart bin manufacturer to place the garbage cans. Through communication with the vendor, our project members were informed of the various functions of the trash cans and the cost of placing the trash cans. Because of the high cost and lack of funding, this cannot be practiced in the community.

3. Whether there are owners' face information exchange

and interoperability. This is one of the important steps in the implementation of the monitoring system in this project, the extraction of owners' information and the combination of intelligent classification of garbage cans, the correct garbage into the barrel to save points system to exchange points. In the process of communicating with the responsible personnel in the community, we learned that there are cameras in the community, but it is unknown whether the exchange and interoperability function is suitable to be opened.

4. Property companies to cooperate in the establishment of green supermarkets, rental costs and other aspects of communication. In order to sound monitoring system, points exchange for the purchase of goods need to cooperate with the property supermarket, through points exchange to create a win-win situation for supermarkets and owners. In terms of cooperation with supermarkets, for example, we can redeem points for items with a shorter shelf life to reduce supermarket losses, which not only reduces the cost of garbage classification inputs, but also reduces the loss of supermarkets, so that the economic benefits increase.

2.2 Cooperation and communication between residents and properties

Community as the source of urban living garbage classification, residents jointly participate in the management of garbage classification, can play the main body of the residents, effectively promote the residents to carry out garbage classification, and then enhance the community cohesion, the formation of a strong sense of identity of garbage classification. First of all, the residents are the source of community living garbage production and collection; secondly, the property is based on the classification rules to guide and supervise the residents to put the behavior in line with the norms, if not, the property needs to be classified for a second time; the garbage disposal institutions are standardized to recycle or deal with the garbage. As the person responsible for the management of community living garbage classification, the property is the guide, service provider, supervisor, maintainer and supervisor of garbage classification and collection facilities, as well as the link between the garbage putting process and garbage collection and transportation process. Good cooperation between residents and property owners can efficiently accomplish the work of garbage classification.

However, there are still many problems in terms of cooperation between properties and residents. From the point of view of properties, first of all, the publicity and education efforts of properties are insufficient. Properties do not pay attention to the residents to participate in garbage classification of publicity and education to expand the way, did not form a unified community culture to guide the residents to participate in the garbage classification of the behavior of low enthusiasm, resulting in garbage classification of the accuracy rate is low, increasing the cost of garbage disposal. Secondly, the incentives for property are weak. Residents recognized and adopted the garbage classification policy at the beginning of the policy, but the lack of reasonable incentives, back-end mixed transportation and indulgence in unreasonable classification behavior seriously dampened the enthusiasm of residents to participate in garbage classification. Finally, the lack of long-term supervision and assessment mechanism of the property garbage classification as an instantaneous behavior, administrative law enforcement departments on the

behavior of non-compliance with the casting of evidence is difficult, the lack of full-time supervisors and complete supervision system within the community, the need for law enforcement departments to invest a lot of human and financial resources. From the residents' point of view, many residents ignore the publicity and education work on garbage classification and are resistant to it. Some residents believe that waste separation is a waste of their time and energy, and do not carry it out for their own personal benefit and convenience; while others contribute to waste separation, so that the benefits of waste reduction, resource conservation and environmental improvement can also be enjoyed by those who do not participate in waste separation, resulting in the failure of waste separation to form an effective collective action.

III. RESPONSES AND RECOMMENDATIONS

3.1 Research Countermeasures

Since the green community supervision and management system in this project includes both hardware and software, in the course of the project, we have concentrated our efforts on the intelligent classification of garbage bin facilities, the construction of green supermarkets and the setting up of a points system, and the publicity of environmental management and protection in order to realize the operation of the system.

We have analyzed the problems found according to the implementation of the project and researched the following feasible countermeasures.

With regard to the cooperation of intelligent garbage can technology companies

Firstly, our pilot community already has intelligent classification of garbage cans, so did not invest in funding, while in our project process and technology companies to negotiate with the production of optimized intelligent classification of garbage cans, but its price is more expensive, a facility needs 20,000 yuan, we are also because of the lack of funds, choose to study the intelligent classification of garbage cans already have a community of Shijingshan. Through communication with the technology company, we determined that the smart bin could not only sort garbage but also broadcast information about environmental management and protection on an electronic screen. The final blueprint of our project is to implement the environmental management and monitoring system to all communities in Beijing. We do not have enough funds, so we would like to publish this project paper to arouse the attention of the society to this issue, so as to get the financial help from technology companies, social environmental protection public welfare organizations and the government.

Secondly, the concept of green supermarket does not meet the reality, through the practice of this project in the mechanism of the theoretical construction process of the green supermarket link is too idealized. Firstly, the cost of renting a store to build a supermarket and operate it is too high, and the funding is not enough, which still needs the help of the government and people from all walks of life. Secondly, after researching daily necessities and food in the market, it was found that the process of operating a green supermarket would result in the waste of unfinished exchanges due to the short shelf life.

Therefore, through practice and discussion of the project team, it was decided to remove the green supermarket link.

Thirdly, the point system can be combined with the new model of community "Points +" grassroots governance announced by the government, which is an incentive mechanism that gives points for correctly or incorrectly placing garbage. In the points system of garbage classification, the government should take the lead, the community governance should cooperate with the main body, and the project team can assist in setting the rules of the points system.

IV. PROJECT SUMMARY

4.1 Project References and Academic Value

In the spirit of rigorous research, for the green garbage classification supervision system this project has conducted a lot of research from the technical aspects, public health facilities and environmental education. The green garbage sorting supervision system we researched is based on the mature intelligent garbage sorting technology. In the design of intelligent garbage cans, we combined some practical features of private intelligent garbage cans and transplanted them to public garbage cans, which is a part of the conclusion we drew through interviewing professionals and obtaining statistical data from the National Bureau of Statistics.

Garbage classification is an important part of public sanitation construction, and the country strongly advocates green development and sustainable development. We collected policy guidelines on garbage classification in the past three years, and relied on the Beijing Municipal Life Management Regulations promulgated in April 2023 to define the standards of the garbage classification supervision system. We divided the monitoring system into detailed tasks, formulated scientific and feasible quantitative standards for different tasks, and conducted simulation exercises to test the feasibility of the tasks based on the data model. We contacted the community workers to show them the results of our research and asked them about the practical problems that the monitoring system might face. With the help of the community workers, we optimized the details, and then we also participated in the community's promotion activities of garbage classification. At the level of public sanitation facilities construction, we also designed a green waste classification supervision system for schools, stations, courier stations and other special scenarios.

4.2 Team Achievements and Experiences

In the pre-project, the process and its difficulties, the project's pre-preparation, all the members of the team have launched a brainstorming, invested great time and experience, the project's pre-preparation is the key link of the entire project, in the submission of the application for the project, we continue to carry out research and study, to understand the degree of community members for the relative satisfaction of the environment in which they live, as well as to understand the market prices in Beijing, as well as the environmental awareness of the community residents in Beijing. environmental awareness of Beijing's residents. After the project application was successful, the team members had an internal discussion to define the next goal, and around the goal to carry out a detailed discussion and the next step of practice, to clarify the division of labor of the team, and then, each member of the team according to the division of labor to implement the division of labor.

Project Leader Tie Siqin

As the person in charge of the project, coordinating the division of labor of each member, as well as the team leader is responsible for communicating and negotiating with the place of research and practice, determining the research matters of each trip, each team member has a clear division of labor, so that we realize the completeness of the project process, and at the same time realize the need for team members to cooperate and collaborate with each other, so as to fully mobilize the enthusiasm of members. Cooperation and communication are crucial: Big creative project is usually a process of multi-person cooperation, good team cooperation and effective communication are the key to the success of the project. Good communication channels should be established among members to share information, solve problems in a timely manner, and ensure that everyone is clear about their roles and tasks.

Chang Jiahao, representative of the project members

This project went through one year of practice from beginning to end. During this year, other members of the project and I carried out the initial plan step by step under the guidance of the instructor. Since this project is a social investigation and research, it requires a large amount of data. After careful analysis of the data, we finally drew some conclusions and achieved our project objectives. In the whole project, I was mainly in charge of the schedule of the whole team, which improved my ability of organization and coordination as well as communication. In terms of paper writing, I was mainly responsible for the analysis and writing of the project results, which not only trained my writing ability but also strengthened my ability of data analysis. We hope that our improved abilities and skills can be applied in the process of future study and work.

Attachments,

Questionnaire survey

The following are the questionnaires:

<https://www.wjx.cn/vm/PTjRoyr.aspx>

Here are the results of the questionnaire:

https://pubref.paperol.cn/clientdown/210182923/210182923_1677629202Gnmr7b.pdf