Research on Collaborative Governance Path of Rural Waste Classification: A Case Study of D City

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Abstract

Through research, it has been found that D City has initially established a rural waste classification governance system, and the effectiveness of governance is gradually improving. However, during the promotion process, there are still a series of problems, including: insufficient effectiveness of governance objectives, inadequate allocation of rights and responsibilities, lack of fiscal resources, poor participation of target groups, and failure to establish collaborative relationships. These factors have led to the unsatisfactory results of collaborative governance. In order to improve the collaborative governance path, D City has chosen E Village as a pilot to explore a series of measures. The study found that E Village has significantly improved the effectiveness of rural waste classification governance by establishing a common governance goal of beauty and livability, clarifying the division of responsibilities among collaborative entities, increasing sustained investment of fiscal resources, and strengthening villagers' awareness of responsibility. As a result, the living environment of the local area has been effectively improved.

Keywords

Waste Classification; Collaborative Governance; Rural Governance.

1. The Introduction of Problem

1.1. D city basic information

D City, located in the northwest of Hubei Province, China, is situated in the middle and upper reaches of the Han River. It encompasses 20 towns (offices, bureaus, districts), including 12 townships, 4 street offices, 3 forestry development management areas, and 1 economic development management office. The total area of the city reaches 3,121 square kilometers, with a population of 463,300, including 312,700 residents in rural areas. As the core water source area for the South-to-North Water Diversion Project, the local government attaches great importance to environmental governance. Its achievements in environmental governance have gained recognition from various levels of government. As of 2020, D Town, X Town, G Town, J Town, and L Town have been selected as National Hygienic Townships, while 16 townships at the provincial level and 77 ecological villages have been successfully established. Additionally, as a county-level city in H Province, D City was the first to receive the title of "Green Waters and Green Mountains are Golden and Silver Mountains" Practice Innovation Base. Moreover, for five consecutive years from 2016 to 2020, it was selected as a winning unit in the province's ecological environment assessment. After years of development, the local economic situation has continued to improve. By 2020, it is estimated that the GDP of D City will reach 27.5 billion yuan, and the per capita disposable income of rural permanent residents will reach 12,700 yuan. With the continuous increase in rural residents' income, the local government started to contemplate how to achieve high-quality economic development while simultaneously improving the living environment of rural residents, thus achieving the

governance goal of ecological livability. In this regard, while continuously addressing rural environmental issues, D City has been making efforts to improve the living environment conditions in rural areas.

1.2. D city basic information

1.2.1. D city waste problem survey design

Based on extensive literature review and research, the author has developed an interview outline. In-depth interviews were conducted in a semi-structured manner, mainly selecting 15 individuals closely related to the implementation of rural waste classification policies as interviewees. Specifically, this includes officials from county-level housing construction, environmental protection, and sanitation departments, officials responsible for environmental health at the township level, village committee members, village construction directors, village cleaners, and villagers. The interviews mainly covered the implementation background, operational methods, current status, existing problems, and suggestions regarding rural waste classification. After the interviews concluded, the author compiled a report with over 20,000 words, which provides a basis for a comprehensive understanding of the collaborative governance of waste classification and the governance process, laying the foundation for our subsequent research.

1.2.2. Interview implementation

The author began drafting the interview outline in May 2021 and made several revisions before conducting in-depth interviews from June to August 2021. Prior to the interviews, the author sent the interview outline to the interviewees to ensure their understanding of the entire interview process. The interviews were conducted using two forms: telephone interviews and on-site interviews. We aimed to gain an in-depth understanding of the relevant issues in as much detail as possible while ensuring economic feasibility.

Table 1: Basic information table of respondents

Number	Interviewee	Gender	Position	Interview time	Interview form
1	WW	M	Junior Officer of Housing and Urban-Rural Development Bureau	2021.6.28	Field interview
2	LR	F	Environmental Protection Bureau Officer	2021.7.4	Field interview
3	ZG	M	Deputy Director of D City Sanitation Departmen	2021.7.4	telephone interview
4	ZLH	M	Director of D Town Sanitation Department	2021.7.5	telephone interview
5	SY	M	Deputy Secretary of D Town	2021.7.5	Field interview
6	ZZX	M	Village Party Secretary of E Village	2021.7.8	Field interview
7	DJZ	M	Director of Village Construction in E Village	2021.7.8	Field interview
8	DDC	M	Cleaner in E Village	2021.7.9	Field interview
9	CML	F	Villagers of E Village	2021.7.9	Field interview
10	WZX	M	Villagers of E Village	2021.7.9	Field interview
11	WWY	M	Village Party Secretary of X Village	2021.7.15	Field interview

12	LYH	M	Villagers of X Village	2021.7.15	Field interview
13	XM	F	Cleaner in X Village	2021.7.15	Field interview
14	FJQ	M	Village Party Secretary of W Village	2021.7.20	Field interview
15	BZC	F	Villagers of W Village	2021.7.20	Field interview

1.3. Overview of the Garbage Issue in City D

1.3.1. Basic Features of Rural Garbage in City D

According to the survey data from the local housing and construction department, the daily average garbage production in rural areas of D City exceeds 200 tons, with an average per capita daily garbage production of approximately 1kg. Moreover, during holidays such as the Spring Festival and National Day, there is a noticeable increase in garbage production due to the return of migrant workers. In terms of the types of garbage, the primary components of rural household waste in D City include food packaging bags, kitchen residues, plastic waste, worn-out clothing and bedding, and general household waste. In terms of the proportion of each category, kitchen waste accounts for 35%, recyclable waste accounts for 5%, non-recyclable waste accounts for 50%, and construction waste that can be landfilled locally accounts for 10%.

1.3.2. The status of rural garbage management in D City

From the perspective of the government, the focus of governance in 2016 was more on emphasizing standardized collection and harmless disposal of garbage. In response, each town in D City has started to actively address the rural garbage problem through special governance initiatives. Special garbage collection and cleaning fees have been arranged to ensure the smooth implementation of village garbage cleaning and disposal work. Specific details can be found in Table 2:

Table 2: The basic situation of garbage management in each village in 2016

Number	Town names	Number of administrative villages	Number of small groups	Population (unit: ten thousand people)	Annual garbage volume (unit: tons).	Harmless treatment rate	Number of sanitation workers	Budget allocation (unit: ten thousand yuan)	
								Clearance fee	transportation fee
1	LLP	20	107	4.7	20586	80%	156	71	30
2	JX	19	108	2.4	10512	82%	80	37	28.5
3	GS	13	52	1.4	6132	71%	46	21	19.5
4	LS	14	54	1.7	7746	75%	56	26	21
5	DJY	7	36	1.3	5694	84%	43	20	10.5
6	LH	9	43	2.2	9636	87%	73	34	13.5
7	YCH	12	72	1.1	4818	69%	36	17	18
8	TGY	11	47	1.4	6132	86%	46	21	16.5
9	LSH	15	94	3.0	13140	82%	100	45	22.5
10	SG	7	53	1.5	6570	79%	50	23	10.5
11	HP	9	43	1.3	5694	83%	43	20	13.5
12	XJD	23	122	4.4	19272	79%	146	66	14.5
Total	--	159	831	26.4	115932	--	875	401	238.5

From the perspective of disposal methods, rural waste disposal in D City is currently mainly carried out through two methods: composting and landfill. Composting is the most traditional and practical disposal method, but its scope is limited and it is difficult to handle large quantities of waste within villages. Therefore, in practice, composting is often used as a supplementary method. Landfilling, on the other hand, is the simplest and fastest method. Due to its relatively low cost and ability to handle large quantities of waste, it has become widely used in the local area. However, a large amount of waste is not effectively sorted, which not only hinders resource utilization but also occupies a significant amount of arable land. Additionally, due to insufficient sorting at the front end, a considerable amount of metal waste is buried, which may cause secondary pollution to groundwater, air, and other resources. Furthermore, in recent years, the stockpile of waste and the increasing increment have posed a growing challenge as the quantity of waste continues to rise, leading to the imminent closure of many landfill sites, which creates significant governance challenges for local governments.

In terms of disposal effectiveness, various regions have implemented relevant waste management measures. By 2016, local governments primarily focused on the degree of harmless waste disposal. The actual situation varies significantly due to differences in economic conditions and natural environments. For instance, the waste management situation in H Town can reach 87%, while YCH Village only achieves 69%. In most areas, the degree of harmless waste disposal ranges around 80%, leaving room for improvement. Waste reduction and resource utilization efforts are still in the promotion stage, and the actual results are not significant.

1.4. The effects of collaborative governance in rural waste classification in City D

1.4.1. The preliminary establishment of a rural waste classification governance system

Through a series of measures, the local area has basically established a coordinated governance system for rural waste classification and management, with a focus on "household sorting, group cleaning, village collection, town transportation, county (town) disposal". Specifically, the operation of this model is as follows: Rural households are primarily responsible for initial sorting. To facilitate this, the government of City D provides each household with a small, categorized garbage bin to enable them to sort their waste. Within the villages, the village committee is mainly responsible for hiring sanitation workers, who are primarily responsible for the cleaning of roads, rivers, public areas, and residential areas within the village. They also perform secondary sorting to reduce the volume of waste. The town government is responsible for waste transportation and delegates this task to transport companies to ensure timely collection. The county (town) government is primarily responsible for end-of-life waste disposal. They entrust professional environmental protection companies to register and weigh the waste and implement sanitary landfill-based harmless treatment. Through rational division of labor, the aim is to ensure that rural waste is collected from its source and undergoes proper disposal, with dedicated personnel responsible for each stage, thus achieving effective governance.

1.4.2. The effectiveness of garbage management is gradually increasing

With the progress of garbage classification management, the government has undertaken rectification of long-standing waste and unauthorized dumping sites in rural areas, and has prioritized the cleaning of roads, rivers, and other locations with accumulated waste. The cleaning and collection rates in villages have reached over 90%, and the waste collection rate has exceeded 90% as well. This has resulted in preliminary improvements to the previous issues of dirtiness, disorder, and inadequacy in rural areas, leading to positive changes in the appearance of villages and enhancing the living experience of the residents. In terms of the 3R goals of garbage classification management, by the end of 2018, a total of 116 administrative

villages had achieved harmless disposal of household waste, with the rate of harmless treatment exceeding 80%. In the same year, City D was included as one of the pilot counties and cities for harmless disposal of household waste in H Province. Subsequently, the "Three-Year Action Plan for Full Compliance of Harmless Treatment of Urban and Rural Household Waste in City D" was issued, demonstrating continuous efforts to strengthen governance. The reduction and resource utilization work have also gradually gained momentum. Village-wide implementation of garbage classification has commenced. By the end of 2017, the basic goals of rural waste management had been achieved, including having complete facilities and equipment, mature governance techniques, stable sanitation teams, sound regulatory systems, and sustainable financial support. Overall, the local area has achieved certain accomplishments in promoting coordinated governance of rural waste classification.

2. Analysis of Challenges in Coordinated Governance of Rural Garbage Classification

2.1. Insufficient effectiveness of governance objectives

The rationality and scientific nature of governance objective setting are often constrained by the government's existing governance experience and capabilities. In the process of implementing coordinated governance of rural garbage classification in City D in 2017, there were certain issues with the setting of objectives due to a lack of appropriate guidance. These issues are specifically manifested in the following ways:

Firstly, governance objectives are often ambiguous. Governance objectives serve as a direction for implementers. However, due to the early stage of garbage classification governance in the local area and a lack of corresponding guidance and reference, vague policies are adopted to drive policy implementation. For example, the use of terms such as "maximization" and "achievement" to establish governance objectives creates a lack of specific criteria for local governments to determine concrete assessment standards. Additionally, specific explanations of priority and detailed content regarding the objectives of waste reduction, resource utilization, and harmlessness have not been provided. While this allows for local autonomy, it also increases the difficulty of implementing grassroots work.

Secondly, there is a lack of overall coherence in governance objectives. It should be noted that the classification standards developed by City D are primarily based on environmental protection, aiming to enhance the effectiveness of subsequent disposal methods. However, for the villagers, they are more concerned about the economic value of waste. The inconsistency between these two objectives creates a weak social foundation for waste classification implementation in rural areas, making it difficult to effectively promote coordinated governance.

Thirdly, there is a lack of standardization in the terminology of core concepts. In the local policy texts related to waste classification, various terms have been used to refer to waste categories, such as "compostable waste" and "non-compostable waste," "wet waste" (biodegradable waste) and "dry waste" (other waste), "perishable waste" and "non-perishable waste," and so on. The use of multiple inconsistent terms can easily lead to confusion. Moreover, no relevant list of specific types of items has been introduced, resulting in a lack of necessary reference for classifying various items. This leads to executing agencies and villagers having to rely on their own life experiences to interpret and implement the policies, which undermines the scientific and rational aspects. It also makes it difficult for the government to conduct effective subsequent evaluations of governance, particularly in achieving the 3R (reduce, reuse, recycle) objectives.

2.2. Insufficient rationality in the allocation of rights and responsibilities

The inadequacy of rational allocation of rights and responsibilities is mainly reflected in the ineffective distribution of governance responsibilities among different entities. Specifically, according to China's Solid Waste Law, the government, social organizations, enterprises and institutions, autonomous organizations, and news media are all considered governance entities in waste management. Residents and businesses, as both waste generators and victims, bear the responsibility as producers. The government, on the other hand, primarily assumes the responsibility of waste management and supervision. With the introduction of supporting policies such as the Solid Waste Law and the Implementation Plan for Household Waste Classification, the responsibilities that the government needs to undertake have become increasingly clear.

However, there is a lag and ambiguity in defining and implementing producer responsibility. On the one hand, there is a delay in the definition of corporate responsibility. In 2016, China introduced the Implementation Plan for Extended Producer Responsibility system, which primarily focused on electrical appliances, automobiles, lead-acid batteries, and packaging materials. However, the requirements for classification responsibilities, such as setting classification labels and implementing back-end sorting, are still relatively insufficient. On the other hand, there is a lack of clear responsibility provisions for villagers in governance. This means that during the actual implementation of waste management, the government can only provide indirect oversight. The level of precision in waste classification, resource utilization, and other specific indicators rely more on self-management and self-supervision by diverse stakeholders.

2.3. Shortage of fiscal resources

The investment of fiscal resources often has a direct impact on the local governance situation. However, in the case of waste classification management in City D, there is still a scarcity of fiscal resources, which is evident in three aspects:

Firstly, there is insufficient overall funding. City D was a poverty-stricken county for a prolonged period and only managed to lift that status in April 2019. This has resulted in a relatively weak local economic foundation, limiting the budgetary allocation for waste classification management. Although the local government has continuously increased financial investment, the reality of numerous rural villages and weak infrastructure has led to the dispersal of funds. Currently, the City D government provides a special fund of 15,000 yuan per year to each village, and additional subsidies are granted to individual townships based on their specific circumstances. While this can meet some of the governance needs of each village, there still exists a significant funding gap.

Secondly, there is a single channel for funding sources. In order to promote the sustainable operation of waste classification, City D intends to solve the funding issue through a diversified financing approach of "partial government support, collective contributions, and community fundraising". However, in reality, while each township can provide some financial support to the villages based on their actual situation, a significant financial burden still falls on the villages themselves. The reasons for this issue include the following: On the one hand, most of the local village-level collective economies are relatively underdeveloped, with insufficient self-generating capacity. Villages need to hire full-time sanitation workers and bear the operational maintenance of internal waste infrastructure, resulting in a severe lack of governance funds. Additionally, there are currently seven townships in the area that do not have their own waste treatment facilities, and the waste needs to be transported to neighboring towns for disposal. However, City D has not yet allocated specific funds for this part of the expenses, adding to the governance pressure on these villages themselves.

Thirdly, it is difficult for villages to self-fund. This is mainly due to the ineffective implementation of a domestic waste charging system among the local residents. The existing regulations regarding waste charging criteria, standards, and methods lack proper institutional guidelines. In practice, policy implementers can only promote it based on a voluntary principle among the villagers. For example, the local policy document titled "Opinions on Strengthening the Operation and Management of Rural Environmental Infrastructure through 'Rewarding for Governance'" explicitly states: "Gradually implement the appropriate collection of fees from villagers for domestic wastewater and waste treatment through methods such as 'discussing each matter with the villagers.' The collection of fees from villagers must adhere to the principle of voluntary participation, refrain from forced allocation, and prevent harm to farmers' interests." The voluntary principle fully respects the villagers' willingness, but it is challenging to ensure their voluntary payment in practice. Although the villagers are both the creators of waste issues and the beneficiaries of waste management, their long-standing reliance on traditional practices of natural waste disposal has hindered their full recognition of the importance of waste management for a long time. Most people prefer to enjoy the benefits of waste management by "free-riding" rather than actively participating and contributing financially.

2.4. The participation effectiveness of the target population is unsatisfactory

In rural waste classification management, villagers play multiple roles. They are not only the creators of waste issues but also participants in waste classification, as well as beneficiaries of the governance outcomes. This requires them to take responsibility and consciously adjust their behaviors to facilitate smooth governance. However, most villagers have a distorted understanding of their responsibilities, leading to a problem of collaborative indifference in governance. This is mainly attributed to the following factors:

On one hand, while villagers have some understanding of the harmfulness of waste, the long-term concealed nature of such harm often limits their awareness to educational materials and awareness campaigns. Usually, they only take self-cleaning measures or seek resolutions through complaints when the accumulated waste becomes unbearable. Some villagers may only realize the severity of the problem when their health is directly threatened. Overall, the effectiveness of their understanding of the harmfulness of waste is limited.

On the other hand, even if villagers do not classify waste or dispose of it properly, they face no economic or administrative penalties apart from moral condemnation within the village. With the continuous improvement of the village's environmental sanitation system, various positions such as cleaners, road workers, and river workers have been established to specifically undertake environmental sanitation responsibilities. Even if villagers litter or dispose of waste improperly, there are cleaners available to clean up and sort their waste, which undermines the establishment of a sense of environmental responsibility and hinders substantial behavioral change. Some villagers may even unilaterally withdraw or refuse to cooperate during the governance process. This self-perception bias not only prevents villagers from fully realizing the significance of waste classification but also makes it difficult for them to establish self-motivation mechanisms, ultimately resulting in collaborative indifference among villagers in waste classification management.

3. Improvement Pathways for Collaborative Governance in Rural Waste Classification Based on the Experience in City D

E Village is a newly established immigrant village formed due to the impact of the South-to-North Water Diversion Project. It consists of four village groups with a total of 173 households and 595 registered residents, 90% of whom are immigrants. The village has implemented

unified planning and management for residents' housing, and has relatively complete infrastructure for production, living, and other supporting facilities. It has been dedicated to becoming an ecological riverside new area.

In 2017, when the waste classification management was initiated in City D, E Village was selected as a pilot village and became one of the key guidance and support targets in the city. From the perspective of governance process, it has achieved a relatively complete governance process. From 2018 onwards, it has started a series of practical explorations to improve collaborative governance pathways. By 2020, through the joint efforts of local governments, villages, and the society, it has successfully transformed waste classification governance from "disorder" to "order". Significant progress has been made in achieving the goals of harmless treatment, reduction, and resource utilization ("3R") in waste management. Specifically, the rate of harmless treatment of local waste has reached 100%. This not only avoids the risk of secondary pollution but also alleviates the pressure of waste disposal at the back end, improving the waste problem in terms of quality and quantity. In terms of reduction, E Village has achieved the goal of "basically none" in six areas, including cleaning up the waste in front and behind residential houses, within the village, and in rivers and ponds. With the reduced amount of waste, the transportation and disposal costs incurred by the village have greatly decreased. The cost of waste collection has been reduced from around 500 yuan per month to about 200 yuan. In terms of resource utilization, the recycling rate has reached 40%. A large amount of kitchen waste and recyclable waste are reused through two rounds of classification activities, effectively solving the waste problem. In 2021, City D started to promote these governance experiences throughout the city based on the E Village model.

3.1. Etting common governance goals for creating a beautiful and livable environment

From the perspective of government governance needs, the 19th National Congress report points out that we should take the people's aspiration and pursuit of a better life as our continuous goal. As the main contradiction changes, the demands of the people for a beautiful living environment are constantly increasing. The governance of rural garbage also needs to emphasize the combination of environmental protection and economic development, so as to achieve a positive cycle between the two. How to make them work together is a factor that policymakers must consider [1].

Looking at the development process of E Village, due to its favorable natural conditions of mountains and rivers, the local residents have long relied on fishing as the main industry. After the reform and opening up, the unique location advantage has led local residents to gradually choose net cage aquaculture as their main business to generate income. However, in recent years, net cage aquaculture has caused increasingly severe eutrophication of water bodies. In order to effectively protect water quality, the local government started to ban net cage aquaculture in July 2014, and the efforts to rectify the situation have been strengthening. In this context, the village urgently needs to seek a new development path to help residents gain economic income and achieve sustainable development. However, due to the relatively small scale of the village, it often faces disadvantages in competing with other villages for projects and attracting funds due to the difficulty of achieving economies of scale. It urgently needs to find a breakthrough to create its own highlights and attract the attention and support of the local government. The village has discovered that rural garbage management is one of the key tasks of the local government and has always received high attention from local leaders. In this background, if it can further deepen garbage management and set higher goals on its own, it can undoubtedly form its own characteristics and attract the attention of the government in order to obtain more investment and support. Therefore, in the initial stage of governance, it has been actively appealing, hoping to participate in the garbage classification management [2].

Based on the consideration of government governance needs and the actual situation of village governance, the government of D Town has proposed the goal of building beautiful and livable rural areas. They have set the overall objective of "minimizing the total amount of rural garbage and achieving comprehensive utilization of garbage through resource recycling". Subsequently, they have put forward the principles of "farmer acceptance, financial affordability, replicability, and long-term sustainability" to innovate traditional garbage disposal methods. They hope to effectively achieve the dual goals of village development and environmental protection by establishing a garbage classification system.

3.2. Clarifying the division of roles and responsibilities among collaborative entities

Collaborative governance is essentially a network of multiple stakeholders working together in a coordinated manner. It requires cooperation and leveraging the strengths of each entity to achieve a synergistic effect where 1+1>2. In order to achieve this, it is essential to have a clear system of rights and responsibilities to effectively regulate the interactions and relationships among the multiple stakeholders. Scholars have pointed out that a clear system of rights and responsibilities for multiple stakeholders determines their interaction, making it an important aspect of collaborative governance[3].

Therefore, in order to better leverage the role of multiple stakeholders and establish a governance pattern of "co-building, co-governing, and sharing," the local government engages in interactions and consultations with multiple stakeholders, eventually issuing formal documents that emphasize the importance of multiple stakeholders in governance. This includes specifying the government's guidance responsibilities, the village's management responsibilities, the sanitation workers' operational responsibilities, and the villagers' individual responsibilities. Please refer to Table 3 for further details.

Table 3: The governance responsibilities of various entities in waste classification

governance entities	governance responsibility
town government	1. Develop and formulate plans for solid waste management.
	2. Establish a waste management office to coordinate the management of publicity, training, assessment, etc.
	3. Responsible for the transportation of segregated waste.
village committee	1. Strengthen propaganda and education among villagers, guiding their participation in waste sorting.
	2. Responsible for the cleaning and sanitation within the village, as well as the centralized collection and disposal of waste.
	3. Establish a village (residential) council to incorporate waste sorting into village regulations and community agreements.
	4. Appoint a village administrator to specifically oversee waste management tasks.
sanitation worker	1. Responsible for cleaning and sanitation within the work area, including secondary sorting of waste.
	2. Register households that fulfil their sorting responsibilities with the village committee.
villager	1. Responsible for cleaning and sanitation around their own houses.
	2. Responsible for the centralized collection of household waste and sorting it according to the required categories.

3.3. Strengthening sustained financial resource investment

In rural areas, the use of relevant funds in waste classification mainly includes daily infrastructure construction and maintenance, terminal waste disposal costs, and related management expenses. However, in terms of waste fee collection in China, there are still "blank spots" in terms of relevant charging criteria and fund utilization, making it difficult to effectively implement in practice. In response to this, E Village has actively explored financial sources to make up for the financial shortfall. As a pilot village, the government has provided key guidance and support to E Village to promote waste classification throughout the village.

On one hand, during the initial phase of governance, the D City government provided small classified waste bins for permanent residents in E Village. As governance progressed, in 2018, the city government allocated 20 million RMB as a long-term management fund for comprehensive rural environmental governance, with 15 million RMB used as "reward-based subsidy" funds for comprehensive environmental management at the township and village levels, and 5 million RMB allocated for year-end evaluation special rewards. Waste classification is an important aspect of the evaluation. During the selection process, E Village achieved a score of 95, ranking second in the city, and received a reward of 300,000 RMB, providing financial support for subsequent governance efforts, especially the operation and maintenance of waste disposal infrastructure within the village.

3.4. Enhancing villagers' awareness of their responsibilities

Self-awareness is dynamic and can be influenced by external factors such as admonition, experience, learning, and mental and physical states. The key to the success of waste classification lies in helping villagers establish a correct understanding of waste classification. It is important to help them develop the belief that "I can do it" and "I am good at it". Only when individuals have positive expectations for their own actions will they adjust their behavior in the desired direction of the governance target, and vice versa[4].

In E Village, villagers' environmental awareness is mainly promoted through continuous propaganda by village elites, using a "personal-organization-village" approach to transform waste classification from individual behavior to collective behavior. Specifically, E Village has taken the following measures:

Firstly, conducting overall propaganda. Waste classification is made an important agenda item in courtyard meetings and village meetings in E Village. Through on-site explanations, distribution of handbooks, screening of short films, and live demonstrations, all villagers are directly educated through propaganda.

Secondly, utilizing villagers' WeChat groups, QQ groups, and other means to share policy texts and public service advertisements related to waste classification within the villagers' groups. This not only raises villagers' awareness, but also enables them to stay updated with policy dynamics and access relevant classification knowledge anytime and anywhere. E Village has also independently designed relevant propaganda manuals to provide tutorials to each villager, ensuring that they can engage in offline self-learning.

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