

New Ways to Promote Waste Classification under the Goal of "Double-Carbon": A Case Study of Siyang County, Suqian City, Jiangsu Province

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Abstract: With the severe challenge of global climate change, China has put forward the "double-carbon" goal of "carbon peak and carbon neutrality". This puts forward higher requirements for waste classification and resource utilization. Under the goal of "double-carbon", the state attaches great importance to waste classification and has issued a series of policy documents. For example, the Implementation Plan of Domestic Waste Classification System and the Law on the Prevention and Control of Environmental Pollution by Solid Waste. The legal status and objectives of garbage classification were clarified. The eastern region took the lead in responding to the call of the state to continuously improve the refinement of garbage classification. However, there are still many difficult problems in practice. In this paper, Siyang County, Suqian City, Jiangsu Province was taken as an example to investigate the current situation of waste classification in Siyang County. This paper explores the new path of waste classification in northern Jiangsu Province under the goal of "double-carbon", finds out the existing problems, and puts forward the corresponding improvement scheme.

1. Current situation of garbage classification in Siyang County

According to the overall work deployment of provinces and cities, Siyang County combines the assessment indicators of high-quality development of provinces and cities. In accordance with the requirements of "reduction, recycling and harmlessness" of garbage, we should actively explore innovative working modes.

1.1 Scientific and technological empowerment to improve the efficiency of urban garbage classification

Siyang County has invested 1610 intelligent garbage sorting boxes, which are designed with automatic induction opening and non-contact inlet. It also has built-in intelligent equipment such as small garbage landing detection system and automatic odor removal spray. It realizes the convenience and accuracy of garbage disposal.

1.2 Innovating Classification Model and Building Green Village

Garbage classification is a trivial and difficult matter. How to turn difficult things into simple things and let the common people accept the "quadratic quartering method" adopted by Haoqiao Village, Luji Town, Siyang County? Even old people and children who can't read can put garbage accurately, which changes the appearance of the whole village and town.

Waste classification and resource utilization is a systematic project, which requires coordination among all parties, precise measures and long-term success. How to let the majority of urban and rural residents actively participate and take the initiative? A series of practices in Haoqiao Village, Luji Town, Siyang County, a demonstration site of rural garbage classification in Suqian City, have given us a lot of inspiration. Every household in Haoqiao Village has two kinds of garbage cans, one green and one grey. The garbage is classified according to "perishable" and "non-perishable". The "non-perishable" garbage is classified twice according to the criteria of "recyclable" and "non-recyclable". The "perishable" garbage was sent to the village garbage disposal station to become organic fertilizer, thus achieving a double harvest of social and environmental benefits.

In addition, Haoqiao Village in Luji Town also implements the rural governance integral system to guide villagers to actively participate in garbage classification. The staff scanned the QR Code on the garbage bag and weighed it. Converted into points and distributed to residents' accounts through the background of mobile phones, the points reached a certain amount. Residents can exchange paper towels, drinks, garbage bags and other daily necessities. Nowadays, the four words of garbage classification have become a habit of Haoqiao villagers, which has changed their old living habits. Through the implementation of the integral system, villagers can actively participate in it, which can not only improve the overall environment of the village. It can also exchange points for some daily necessities and reduce daily expenses, which is a matter of killing two birds with one stone. Therefore, the integral system is strongly supported by villagers.

1.3 Cooperation between government and enterprises to turn garbage into resources

In the era of economic backwardness, people often take the way of landfill to dispose of garbage, but this method is a waste of land resources. It is also easy to cause environmental pollution, so more green and environmentally friendly waste incineration power generation emerges as the times require. Where did the garbage go after classification? Everbright Environmental Protection Energy Co., Ltd. of Siyang County gave the answer. Everbright Environmental Protection Energy Co., Ltd. receives about 600 tons of domestic waste from Siyang every day. The company will incinerate these wastes for power generation, and the basic process includes incineration process, fly ash treatment, flue gas purification and other links. It highlights the characteristics of "one in, four out" of waste incineration power generation, and realizes "turning waste into treasure". This not only protects the environment, but also improves the utilization rate of resources. In addition, Everbright Company covers a wide area, with a large number of large-scale processing machines and a huge amount of investment. As for the company's income sources, there are two main parts, one is government subsidies, because Everbright is a green energy enterprise. It has a certain nature of public welfare; The other part is that the company will incinerate the waste to generate electricity, and then sell the electricity to other places where it is needed. In this way, it not only promotes economic development, but also achieves economic benefits, which can be said to kill two birds with one stone.

1.4 Strengthen the publicity work in the later stage

Siyang County has made a lot of efforts in the publicity of garbage classification.

(1) A total of 30 propagandists, two in a group, are stationed in the community for publicity, and the publicity period is from 6: During these two periods, the flow of people in residential areas is relatively large.

(2) In order to improve the publicity effect, the residents' rest time at home is used to carry out household publicity in the morning, noon and evening. One-to-one publicity mode can quickly improve users' awareness of garbage classification.

(3) More than 20 garbage sorting activities were held in Zhongxing Primary School, Xinyang Middle School, Taozhou Kindergarten and other schools. It covers students of all ages, maximizes the popularization of garbage classification knowledge and drives parents to re-publicize through them. It has carried out nearly 20 publicity activities on garbage classification into the community, such as the kick-off of garbage sorting in the Civic Square and the Zongzi making competition during the Dragon Boat Festival in the community. More than 20 training sessions on garbage classification have been held in life insurance companies, China Telecom, tax bureaus and housing and construction bureaus. During the publicity campaign, it worked closely with Siyang TV Station and reported more than 30 times.

1.1 Coverage of domestic waste classification facilities in urban areas

2. Existing problems

However, there are still some problems with garbage sorting in Siyang County

2.1 Residents' awareness and knowledge of garbage classification

The most serious problem is the lack of awareness of garbage classification. Although Siyang County carries out garbage classification through household publicity, garbage classification theme park, micro film and other forms. However, some residents still lack the awareness and concept of garbage classification. This may be due to long-term habits that are difficult to change, or lack of awareness of the importance of garbage classification.

In addition, the lack of awareness of garbage classification cannot be ignored. Some residents do not have a comprehensive understanding of garbage classification methods, types and relevant laws and regulations. As a result, it is easy to make mistakes in practice. This may be related to the insufficient depth and breadth of publicity, which needs to be further targeted and effective.

2.2 Waste classification facilities and management

In view of the problems existing in the garbage classification work in Siyang County, we put forward some feasible improvement plans.

(1) Although Siyang County has implemented the garbage classification management mode of "withdrawing barrels and merging points", in some districts or regions. The layout of garbage sorting points may still be unreasonable, resulting in inconvenience for residents to throw garbage, and even the phenomenon of random disposal.

(2) Some garbage sorting facilities, such as intelligent garbage sorting boxes, may not be maintained in time. For example, the insensitivity of induction and the failure of deodorization spray affect the use experience and classification effect of residents.

(3) In terms of normal inspection, Siyang County has organized a certain number of inspections and urged rectification. However, there are still regulatory blind areas in some areas or periods, resulting in inadequate implementation of garbage classification.

2.3 Waste classification and resource utilization

(1) Imperfect treatment chain: Siyang County has achieved certain results in waste classification and treatment. However, there are still some wastes that have not been effectively utilized as resources, such as the sorting and treatment of low-value recyclables.

(2) Insufficient technical support: Although Siyang County has invested in high-tech equipment such as intelligent garbage sorting bins. However, the overall technical support still needs to be strengthened. For example, there is still room for improvement in intelligent identification and automatic treatment of garbage classification. In addition, the overall economic benefit of the solid waste recycling industry is not high, and the level of intensification and standardization is low. Some technologies and projects still have the problems of recycling but not economic and low-carbon. As a result, the comprehensive cost-benefit advantage of technology transformation is not obvious, and the endogenous motive force for enterprises to participate in technology transformation is insufficient.

3. Proposal of feasible solutions

Overall, Siyang County still needs to improve in the aspects of garbage classification publicity, resource recovery mode and supervision, and technological innovation.³

3.1 Improve the mode of resource recovery

(1) Natural recovery. The relevant department needs to increase the number of full-time tricycle collection and transportation personnel, and regularly recycle resources from recyclable bins in the area.

(2) On-site recovery. During various publicity activities, residents will send recyclables to the scene for weighing, and can exchange goods on the spot.

(3) Make an appointment for recycling. When there are large pieces of furniture or a large number of recyclables, residents can make an appointment through the app platform or call the door-to-door service telephone directly.

(4) Cabin recycling. The relevant department can set up sorting guidance cabins in each residential area in the urban area, and increase the number of deliveries, so as to achieve on-site recycling or gift exchange of recyclables in a fixed period of time.

3.2 Promote technological innovation and resource utilization of waste classification

For example, regular assessment of garbage classification is carried out to ensure the implementation of various measures. Garbage classification can be incorporated into the performance appraisal system of communities, schools, enterprises and other units to form an effective incentive mechanism. In addition, special inspection of garbage classification can be organized regularly to report and rectify the problems found. Finally, residents are encouraged to participate in supervision, and a reward mechanism for garbage classification reporting is set up to expose and punish violations.

3.3 Promote technological innovation and resource utilization of waste classification

It is suggested that advanced treatment technology should be introduced and scientific and technological means should be used to improve the efficiency of waste treatment and reduce pollution. For example, we can learn from Wuxi City of Jiangsu Province that the "horizontal pre-

compression" process is used for the transfer of domestic waste. Other kitchen waste treatment adopts the process of "pretreatment + aerobic composting". "According to the area and concentration of waste water and odor produced in the process of garbage compression and treatment, high and low concentration treatment systems are set up respectively. The partition and quality treatment meets the requirements of environmental protection." [1] The construction of this project has realized the classification, transshipment and treatment of domestic waste. At the same time, it greatly reduces the impact of domestic waste transfer and treatment facilities on the surrounding environment. It can provide reference for the design of waste sorting transfer station in economically developed areas of China.

We also encourage local green enterprises in Siyang County to develop and promote advanced waste classification and treatment technologies, such as intelligent classification equipment, automated processing systems, etc. In addition, it is also necessary to establish a sound recycling system, and the government should strengthen recycling, maximize the use of resources, and build a three-level recycling network of "community recycling points + garbage classification and two networks integration recycling station + intelligent green sorting center" to improve recycling efficiency and coverage.

3.4 Collection of municipal solid waste treatment fees

It can be charged based on the amount of garbage produced, the number of households or people, and the operating area of specific industries. However, in this process, we should specify the charging standards, determine the main body of charging, strengthen supervision and law enforcement. "There are three kinds of domestic waste treatment fee charging systems, namely, tax, direct charge and indirect charge, in cities where the domestic waste classification system is implemented. On the basis of comprehensive analysis of the types, corresponding processing fee calculation methods and application cases, as well as the advantages and disadvantages of different calculation methods, etc." [2]

4. Conclusion

The northern Jiangsu region, represented by Siyang County, Suqian City, Jiangsu Province, has vigorously responded to the call of the "double-carbon" goal. It has innovated a variety of garbage classification work paths, such as "government-enterprise cooperation" and "rural secondary quartering method". The work of garbage classification has been carried out in an orderly manner. However, in the specific implementation process. Inevitably, there are still many problems, such as residents' weak awareness of garbage classification, less investment in science and technology and management. It is hoped that the Siyang County Government can increase capital investment and improve the deficiencies on the basis of the innovative garbage classification work model, so as to achieve rapid development.

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