

# Sustainability of Rural Environmental Governance

## Research on Waste Disposal Issues

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**Abstract**—Compared with the perfect infrastructure and mature management experience in urban waste treatment, there is a lack of the experience and tradition of environmental protection and garbage disposal in some rural areas because they are located in remote areas. The awareness of the treatment of garbage is weak, which makes the rural “dirty, messy and disordered” environment difficult to cure, seriously affecting the sustainability of rural environmental governance. Therefore, in order to build a high-efficiency, low-cost horizontal coordination system for waste management and a safe and reliable vertical control system for waste management, and to promote technological solutions and management solutions for rural waste management, this paper takes the sustainability of environmental governance as the criterion and proposes a multi-center governance model based on the independent management of residents in rural environmental governance to solve the problem of unsustainable waste disposal.

**Keywords**—environment; rural waste disposal; autonomous governance; multi-center

### I. INTRODUCTION

Since the reform and opening up, China's rural production methods and industrial structure, farmers' lifestyles and consumption structures have undergone significant changes. Correspondingly, the number of production-type garbage and domestic-type garbage in rural areas continues to increase, the types tend to be diversified, and the structure tends to be complicated, resulting in an increase in the cost of garbage recycling and an increase in the technical and equipment requirements for the harmless disposal of garbage. The traditional government-led model, market governance model, third-party governance model, and community governance model show unsustainable governance dilemmas. The realistic situation of rural environmental governance is that whether it is developed eastern region or relatively backward central and western region. The main objectives and basic focus of rural governance structure design are still to promote economic development in rural areas and maintain rural social stability. And environmental governance issues have not been taken seriously. Rural environmental governance is related to the physical and mental health of rural residents, to the national agriculture and food safety, to the urban-rural integration and prosperity and development of waste control and environmental safety management. But it has not received sufficient attention, and rural garbage pollution has become

increasingly serious. Waste pollution is an important issue in environmental governance. It is a public enterprise and also relates to the quality of rural human settlements. Therefore, governments at all levels have unshirkable responsibilities as providers of public services. The government should conduct corresponding guidance and publicity awareness campaigns to help rural residents achieve multi-center governance based on residents' self-governance and establish financing mechanisms for garbage pollution control. In addition to providing institutional guarantees for rural waste disposal, the supervisory mechanism and incentive mechanism should also formulate corresponding policies to support the work of the village committee, support private enterprise investment related infrastructure, and provide preferential policies and subsidies in terms of capital and infrastructure.

### II. CURRENT STATUS OF RURAL WASTE MANAGEMENT

In the traditional agricultural society, there is no big problem of garbage disposal in rural areas. The reason is that in the state of underdeveloped rural economy, the natural and easily decomposed garbage in rural domestic garbage accounts for the main part, which is not easy to be degraded, and there are very few complicated processed products. Therefore, the relatively complete ecological circulation system in rural areas also has sufficient throughput to naturally treat human waste. With the economic development and industrial structure upgrading, there are more and more types of domestic garbage in rural areas, and the difficulty of treatment is gradually increasing. When the decomposition of garbage exceeds the carrying capacity of the rural ecosystem, the rural residents are still dumping, intensively burning, landfilling, and accumulating. Then the problem of rural garbage has become a public problem, resulting in four types of garbage disposal: government processing model, market governance model, third sector model, and community governance model. [1]

The government has the function of public service, but due to the existing and legacy taxation system, financial funds, information asymmetry and other issues, the government has less than enough to manage the rural environment. The new public management movement has brought about market-oriented reforms that have contracted many of the functions of public services to the private sector. Market-oriented governance can be achieved by means of private supply, joint market and government supply, government authorization, and government subsidies.

However, in China, the private capital and human resources in the rural market are not mature enough, and the conditions for realizing this model are not fully met. After the reform and opening up, with the development of the economy, the third sector gradually developed and turned its attention to the countryside, sharing the functions of many public services of the government. The main methods for providing garbage disposal in the third sector of rural areas are: rural communities, community and government cooperation, rural production associations, and rural cooperative institutions. Community governance naturally overcomes the problem of up and down information asymmetry, which is more targeted and efficient. However, for rural communities, their funding is a big problem.

These four types of governance models are effective for rural waste control in a certain period of time. But from the perspective of management system and governance structure, due to the lack of attention to rural waste control, the specific manifestation is that it lacks the concept of garbage management in urban and rural areas and regional integration, lacks the endogenous motivation for management system reform and governance mechanism innovation, lacks the legal system, the rule of virtue system and the social governance system that effectively coordinate the interests of stakeholders and the society, and lacks a technical solution that is sufficient to support rural waste resource development and harmless treatment, and the sustainability of rural waste disposal.

### III. PROBLEMS IN THE SUSTAINABLE MANAGEMENT OF RURAL WASTE MANAGEMENT

#### A. Hypothesis of Rational Man and Collective Action Dilemma

The hypothesis of rational man is the basic premise of economics. Under the conditions of market economy, it is necessary to conduct cost-benefit analysis and live more rationally. Rural garbage disposal requires the participation, maintenance and supervision of residents. It belongs to the category of public affairs. It also requires the relevant legislative departments to prepare for the testimony. And it needs to form a management department for daily management. Through the trade-off of rational people, because of the small cost and the risk of being betrayed, once the supervision is absent, free-riding behavior will be easier to choose. Relevant entities conduct cost-benefit analysis, and then whether the results can be provided according to the collective decision-making. The solution to public affairs is so big that it often requires a large investment in one time, which also increases the threshold of the provider. Due to the size and composition of the collective, taking into account the influence of history and tradition, the cost of voluntary dumping is shared by everyone, but the individual is profitable, and the rational individual makes decision-making more vulnerable to the dilemma of collective action. [2] In the absence of collective decision-making, it is difficult for all parties to take action, and the public sector is not allowed to become a provider of waste disposal services.

#### B. "Tragedy of the Commons"

The rural public environment is as the public resource, and the rural residents are owners and beneficiaries, everyone has the power to dump garbage, but has no power to prevent others from dumping, and the excessive dumping will affect the living environment. Just like excessively felled forests, overfished fisheries resources and heavily polluted rivers and air, rural waste disposal issues are also typical examples of "tragedy of the commons". For "the commons resources", because of its non-exclusive nature, private providers are difficult to make profits, so that the private individuals are unwilling to invest in them, and the market fails. For individual residents, if the private residence of their own property rights is affected, the person will "argue with people". Under the premise that the public environment can not endanger individual residences, residents will not maintain the public environment, and even choose to "free ride" or tend to overuse to make themselves more profitable. Therefore, no matter who is in the public sector to provide services, the supervision problem is costly and difficult to achieve effectively.

#### C. Dilemma of Unsustainable Resources

The countryside has disadvantages in the enjoyment of resources, whether it is about capital, manpower or infrastructure. The first is the unsustainability of capital. Regardless of whether it is provided by the public or private sector, the government should provide certain subsidies, that is, regardless of the services provided by any entity, the responsible body of rural environmental governance should also be the government. But the higher-level government does not understand the real needs of the grassroots, and the grassroots units understand the demand but their financial strength is poor. Secondly, the manpower is unsustainable, and the explicitization of labor prices makes the rural excellent labor shortage and continuous outflow, and lacks a stable human resources market. Finally is the unsustainability of infrastructure. For this, the first is inadequate infrastructure; secondly, even for the existing infrastructure, inadequate maintenance and management staff has led to unsustainable infrastructure. From the geographical distribution of rural villages, uneven distribution and inconvenient transportation are the main features. Therefore, administrative villages are destined to be less than cities in terms of access to public service resources. The contradiction between limited resources and the distribution of rural villages is a major dilemma for public governance.

### IV. MULTI-CENTER GOVERNANCE OF RURAL WASTE DISPOSAL: BASED ON SELF-GOVERNANCE

The problem of rural garbage disposal is an important part of environmental governance. It also belongs to the scope of rural public service supply. There are unsustainable problems in government or private supply. In the case of inadequate systems and institutions, the governance is highly cost and difficult. It is highly prone to breakage of the continuous supply of garbage disposal. Faced with this situation, the study believes that multi-center governance

based on independent governance is a feasible solution to solve the sustainability problem. The theory of multi-center governance was proposed by American scholar Elinor Ostrom, which advocates the participation of multiple subjects in the governance of public affairs and the provision of public services. The goal of governance is to achieve "multi-win", that is, each participant in the network structure is able to obtain the benefits of their respective interests. [3]

Scholar Liu Fangxiong first incorporated multi-center governance into environmental problem solving. In response to corporate neglect of environmental responsibility, he proposed to use market mechanisms to unite governments, industry associations, and enterprises to jointly manage the environment. [4] Since then, scholar Liu Fei has also advocated multi-center governance, using market mechanisms and improving social participation mechanisms on the basis of government leadership. [5] Li Yingying thinks multi-center governance should provide rural public goods, reform a single supply subject, and explore the diversified supply of government, market, and third-party cooperation. [6] The problem of rural garbage disposal has its particular characteristics, including difficulties like geographical dispersion, difficult supervision, management difficulties, scarcity of capital, and scarcity of manpower. Solving these problems is the key to overcome unsustainability.

#### A. Formulating New Rules — Government Providing Institutional Guarantees

The system restricts the collection of people's choices and sets new rules to limit the behavior of rural residents. The new rules include three levels: operational level, collective selection level and constitutional level. Rules at operational level limit the use, provision, supervision, and enforcement of behavioral processes. Rules at collective selection level are to formulate rules for policy decision-making, management, and evaluation processes, and to regulate collective selection behavior. Rules at the constitutional level restrict the formulation of rules at the level of collective choice in the norms of advanced laws such as the Constitution. The higher-level rules are the restrictions of the lower-level rules. The higher the level, the more stable the system, which ensures the expected stability between the residents acting according to the rules. The system is formulated by the government through research and investigation. It is reviewed and approved by the resident election representatives, and has legitimacy and authority among the residents.

#### B. Clearly Defining Property Rights — Residents' Self-governance

The public environment is the public resource. It should be clearly defined of residents and families with the right to maintain and use the public environment and their obligations. China's rural "System of Community Level Self-Governance" has a long history. [7] It has historical traditions and experience advantages in self-governance. Therefore, in the issue of garbage disposal, the government should not directly make decisions on the problem of

garbage disposal. It should be based on assistance, and pass on the governance concept of joint governance to the villagers to help the villagers move toward self-governance.

#### C. Improving Relevant Infrastructure — Government and Market Cooperation

Garbage disposal is technology-intensive. As the emphasis on ecological civilization is getting higher and higher, the requirements for environmental protection are gradually increasing. The infrastructure of rural garbage disposal is not sound enough, and it is even more difficult to rely on residents to meet and update technology and equipment. Therefore, this requires the government and market cooperation to complement the relevant infrastructure and the updates to complement rural waste disposal, using market tools to improve the efficiency of rural waste disposal issues. The composition of the government and the market can be adjusted in a timely manner. When the government has no time on management, the government can provide resources for residents' self-governance through market purchase.

### V. CONCLUSION

Garbage pollution is an important issue in environmental governance. It is a public enterprise and also relates to the quality of rural human settlements. Therefore, governments at all levels have unshirkable responsibilities as providers of public services. The government should conduct corresponding guidance and publicity awareness campaigns, at the same time, establish financing mechanisms, supervision mechanisms and incentive mechanisms for waste pollution control, and provide rural garbage in the system of handling problem protection. Residents conduct self-governance, establish an autonomous governance organization. Through the organization, it can give it a sense of formality and authority, formulate relevant rules to manage it, solve the problem of supervision and punishment, form a good situation of mutual supervision of residents, and prevent the phenomenon of littering. At the same time, the government should formulate corresponding policies to support the work of the village committee, support private enterprises to invest in relevant infrastructure, and provide preferential policies and subsidies in terms of capital and infrastructure.

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