

Informational Interventions in Environmental Behavior of Rural Residents: Example of Waste Separation and Water Quality Enhancement

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Abstract

INTRODUCTION: The ongoing progress in China's rural revitalization and precision poverty alleviation has led to the gradual implementation of environmental improvement initiatives for rural residents. As a result, rural residents' environmental behavior is now being influenced by informatization interventions. With the deepening of these interventions, various environmental behaviors have emerged. Therefore, it is crucial to study the impact of informatization interventions on rural residents' ecological behavior, focusing specifically on garbage classification and water quality enhancement.

OBJECTIVES: To improve the level of China's rural habitat improvement, to improve the mechanism of informatization intervention in the environmental behavior of rural residents; to solve the problem of garbage classification and water quality improvement in the environment of rural residents under the background of informatization intervention, and to improve the level of modernization of China's agriculture and rural areas.

METHODS: First, using the theory of informatization intervention to establish a model of informatization intervention in the environmental behavior of rural residents; secondly, using the questionnaire method to investigate and analyze the ecological behavior of rural residents under the background of informatization intervention in the case townships; finally, using the model to analyze the results of the survey and establish the relevant principles of environmental improvement under the background of informatization intervention.

RESULTS: Under the background of informatization intervention, there is a significant improvement in the environmental behavior of rural residents, and the efficiency of garbage classification is significantly improved compared with the traditional model; the application of informatization intervention has dramatically improved the efficiency of environmental remediation in the case townships, and the informatization intervention can also play a significant role in the improvement of water quality.

CONCLUSION: In the continuous process of rural revitalization and precise poverty alleviation work, to strengthen the informatization intervention of rural residents' environment and comprehensively improve the quality level of rural habitat environment, it is crucial to carry out from various aspects and construct informatization.

Keywords: rural, habitat, informatization, waste classification, water quality improvement

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1. Introduction

The living environment of rural residents belongs to the countryside itself. It is an essential place for residents to gain access to life and production and for their productive education. According to researchers, the main factors affecting the living conditions of rural residents are living

requirements, public transportation, education, and health(X. Zhang et al., 2022). The construction and development of public infrastructure is slower than in cities. Improvement of living conditions of the rural population is a general term for planning, modifying, improving, and evaluating the living needs of the rural population. Its main goal is to improve people's living conditions and quality of life. Improving the living

conditions of the rural population is aimed at improving the ecological environment of the rural population, improving the rural infrastructure, improving the quality of education, and improving the medical setting. Improving the living conditions of the rural population is essential for revitalizing and modernization of rural areas. The living needs of the rural population are closely related to farmers' production and deserve special attention. For example, informatization interventions were studied in Henan Province using various research methods to assess the impact of improving the rural environment under informatization interventions, identify problems, analyze causes, and develop research strategies(Y. et al., 2022). The study was able to provide a clear understanding of the effectiveness of informatization interventions in improving the overall environment of random villagers and to provide a basis and reference for the development of informatization environment strategies for local villagers in lucky villages.

This paper analyzes the actual situation in random villages as part of the informational intervention. Problems and causes of rural ecological management in the context of informatization interventions are empirically analyzed, problems and their influencing factors are identified, and measures and recommendations to improve the overall ecological environment of the rural population are proposed(Nguyen et al., 2021). The study shows that agricultural development shows a good growth trend under the current informatization intervention. The standard of living of farmers will increase significantly with the increase in income and will improve accordingly. Although significant progress has been made in the past in improving irregular living conditions, the desire for better housing has increased the living requirements of the rural population. It is, therefore, necessary to accelerate the improvement of the living conditions of the rural population to ensure a more comfortable and dignified life for the inhabitants(A et al., 2021). This paper focuses on the villages affected by the ITA as a research institution focusing on the effectiveness of environmental management of rural dwellers, taking into account the current state of rural development and examining appropriate corrective measures in the context of the ITA.

2. Background of the study

2.1 Background related to sustainable development

In the 1980s, The Nature Conservancy incorporated long-term ecological, natural, social, and economic development into its 100-year development plan. As socio-economic development has evolved, the theory of sustainable development has taken on new dimensions, but at its core is the reconciliation of "needs" and "constraints" in a changing and advancing world. Multidimensional development involves the development of sustainable development models for different cultures, systems, and environments, considering national or

regional realities(Silva et al., 2021). Sustainable development requires people to respect the environment, change their short-sighted and selfish traditional lifestyles, and engage in appropriate productive activities. Consideration needs to be given to whether these measures will harm the interests of future generations and minimize their negative impact on their development. Since the industrial revolution, environmental damage has been increasing(Gao et al., 2021). It is necessary to take the issue of environmental protection seriously and actively pursue a green and healthy path of sustainable development. Sustainable development is not a negation of economic development but rather a foundation and guarantee for it.

2.2 Background related to collaborative and cooperative governance

Collaborative management theory is a multidisciplinary theory that combines natural and social sciences. The management process requires the joint efforts of many management units. The approach of shared management is to reach a consensus by eliminating conflicts among stakeholders, to get more benefits at lower costs, and to increase added value(Wegner & Verschoore, 2022). The theory of joint management is precious. Management teams include governments, corporations, social organizations, and human organizations. These organizations and groups conduct public affairs voluntarily and equitably to ensure smooth administration. Co-management is based on different actors' shared understanding of management (Arora-Jonsson, 2021). In addition, it has strong social cohesion and moderation and can contribute significantly to the healthy development of social governance. Given the new products and challenges, the diversity of governance actors has become a significant obstacle to consensus. A common cause is an inevitable trend in social development and a result of the development of social forces to a particular stage. Achieving social independence of award-winning organizations, conscious blurring of leaders' boundaries, integration of relationships, and cooperation(Lv et al., 2021). Improving the living conditions of the rural population is a complex and challenging task. It is not only a task of dealing with waste and wastewater but also of managing different relationships. These things are intertwined and very complex. Rural environmental management under informational interventions is a type of governance that requires the participation of multiple stakeholders, and its objectives need to be expanded to include cooperation between the Government, the rural population, and the market(Wang et al., 2021). This theory can be applied to the management of habitats. However, farmers in the context of informatized interventions remain key leaders in actively participating in planning, implementing, assessing, monitoring, and evaluating environmental management in settlements. Agencies must also actively change their thinking and

mandate for monitoring and evaluation to improve the quality and effectiveness of management. The Office of Cooperative Management was established in the 1980s to allow other members of large cooperatives to participate in the governance model of public administration, using the power of non-governmental organizations such as corporations, social organizations, and groups. The Government created a model of good governance by improving governance mechanisms, establishing appropriate governance institutions, coordinating the actions of all parties, and creating a model of good governance (Bova et al., 2021). With the emergence of many administrative units, traditional responsibilities under the jurisdiction of the state can be gradually transferred to other organizational teams, such as companies, organizations, and third parties. In studies on co-management, some researchers have found that research on co-management can be categorized into four areas: cooperation between municipalities, co-management of urban communities, co-management of the environment, and co-management of public services. Environmental management is challenging to understand at certain levels or sectors because of the complexity of the domain.

3. Research methodology

3.1 Application of Information Technology

BIM, under information technology intervention, is a multidimensional modeling technology that provides a platform for collaboration between owners, designers, and builders. As a data carrier, the company is the model's soul, and cooperation between the two parties is at the center of business development. Under informational intervention, BIM integrates all technical project data into a 3D digital data model, a digital representation of functions and features (Harou et al., 2022). The BIM model guides the entire lifecycle of a design project, from concept creation to delivery and dismantling. Both parties can use the BIM model under informational intervention to co-design, retrieve, update, and edit data, integrate data from different domains into a single platform, share data, and collaborate. A feature of BIM design phase visualization under informative intervention is that the designer's intention can be expressed in 3D space (Tan & Zhang, 2021). During the construction phase, the location and fastening of reinforcement bars can be shown in 3D graphics and videos so builders can easily explain their structure and process, improving productivity and reducing the error rate. The workflow diagram of rural waste classification and water quality improvement in the context of information-based intervention is shown in Figure 1.

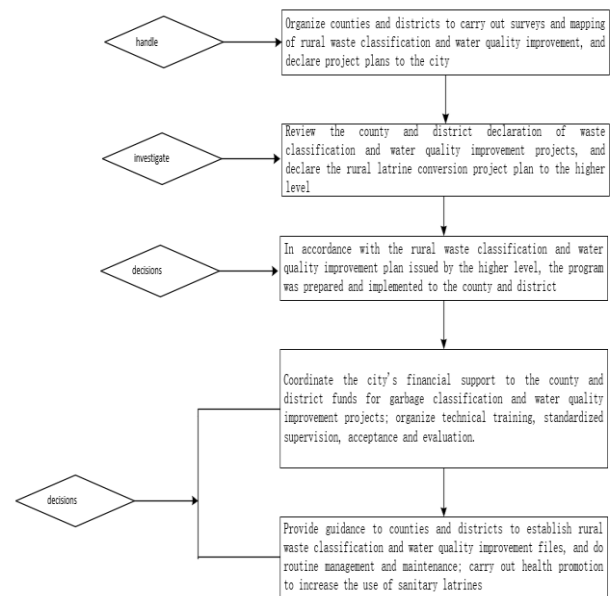


Figure 1 Flowchart of rural waste classification and water quality improvement in the context of information-based interventions

During construction, time and cost data are added to the BIM model with informational interventions to create four-dimensional graphics and five-dimensional cost models. If changes are made to the project, they are model-based and allow for timely adjustments to the financing plan. During project implementation, participants can analyze and update the data in the BIM model under informational interventions as needed to improve diagnostic and professional communication and facilitate project and design integration (Pavon-Benitez, 2021). Design projects focus on communication and coordination between construction operators. Design project management based on BIM under informational intervention provides a common management platform for project participants to organize and coordinate their work. With the development of BIM technology under informational interventions and various optimization tools based on geometric, physical, and legal knowledge of buildings, the design and construction of complex projects can be optimized to ensure quality and maximize the satisfaction of the owner's needs to optimize the construction cycle and to maximize profits. In the CAD era, when parts of an architectural design go awry, similar drawings must be reconsidered, resulting in a significant loss of labor and materials. Graphic processing contains information about detailed parameters in traditional graphics and directly represents extended spatial relationships (Sianturi et al., 2021). It is even possible to convert 3D models and part simulation animations into 2D code to guide employees in production and design. Building performance analysis modeling is called building performance analysis modeling by creating geometric, material, and component characteristics in the building model, as well as energy, lighting, and building

equipment analysis software corresponding to the introduction of BIM modeling with informational interventions. During construction modeling, critical points and design difficulties can be simulated to improve the feasibility of construction.

Calculations were performed on the informational intervention model with the following results:

$$m_0 = |x_0|_{\infty} = \max \{x_i^{(0)}\}, Y^{(0)} = X^{(0)} / m_0 \quad (1)$$

Where X_i is the specific term of the initial vector after iterating over the model as follows:

$$X^{(k+1)} = cy^{(k)}, m_{k+1} = \|X^{(k+1)}\|_{\infty} = \max \{x_i^{(k+1)}\} \quad (2)$$

Where $X^{(k+1)}$ is the result of subtracting the terms of the vector, the vector is normalized as follows:

$$W = Y^{(k+1)} / \sum_{i=1}^m y_i^{k+1}, \lambda_{\max} = m_{k+1} \quad (3)$$

Where λ is the eigenvalue of the set of vectors, and W is the required model matrix.

3.2 Agglomeration Theory, Public Governance and Questionnaire

The purpose of studying human settlements in the context of informational interventions is to determine the general human right to housing and the need to create a scientific theoretical framework and a practical methodology for developing environmental theory. Applying this theory requires a specific and in-depth analysis of the internal structure of rural housing and a comprehensive analysis of rural housing issues(Tingfei et al., 2023). It cannot be layered, modeled, or focused on one aspect. The paper describes the classification of "hard informational interventions in rural environments" and "soft informational interventions in rural environments," as well as ways of thinking about, analyzing, and solving the related problems: dialectical unity, focusing, and a holistic view.

This theory provides a new perspective on social governance, fully recognizing that the subject of social governance must have different characteristics, of which governance is only one. Both civil society organizations and civil society organizations must contribute(Michaud & Audebrand, 2022). According to this theory, social governance in the context of informational interventions is the best solution. It means to achieve governance, democratic governance, and interactive forms of governance through consultation and discussion between the different themes of governance. The Government must only unthinkingly pursue some things. No matter which area of work cannot be accomplished, such an approach may lead to administrative inefficiency, waste of resources, increased costs, etc. This is why the Government and other government actors need to engage in a dialogue on an equal footing and work together to solve the challenges. Based on the explanation of the concepts and contents, the Government relies on the

above theory to coordinate the planning and also to support other higher units to manage the living conditions of the villagers, to build spiritual civilization, and to improve the infrastructures through the understanding, support, and cooperation of the villagers—improvement of waste and wastewater treatment(Frédérique. Six et al., 2021). The authors analyze specific ways to address the environmental problems of rural residents in the context of informational interventions and propose solutions to other issues. The workflow diagram for the approval of waste treatment and water quality improvement projects is shown in Figure 2.

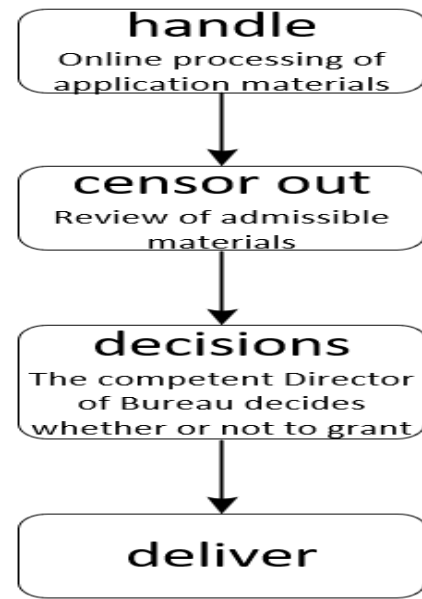


Figure 2 Workflow diagram for the approval of waste treatment and water quality improvement projects

Surveys are a widely used research method; completing a survey makes it easier to get more detailed information on a particular topic. Principles of Questionnaire Design. In developing the questionnaire, the basic principles of this paper are as follows:

The questionnaire's content must be consistent with the research topic and provide accurate and essential information for the study. The selection and treatment of questions in the context of informatization interventions were reviewed based on this study to ensure that the questionnaire meets the study's objectives in light of the actual situation in the villages where informatization is used. When defining the questions, attention should be paid to the logic of each question to avoid repetition and conflict between the meanings and sense of the options(Kalogeropoulos et al., 2023). Values must not guide the questions; the questions and options must be presented objectively and fairly. The total number of questions should be defined correctly to avoid too many questions, which would make the questionnaire boring and would not affect the quality of the questionnaire. Preparing the survey was easy to understand as the target population was rural dwellers(Lebkiri et al., 2021). The

questionnaire is divided into two parts: the first part, entitled "Basic Information," consists of seven questions, including basic information on rural residents, basic information on marital status, and basic information on environmental changes. The second section, entitled "Understanding the improvement of the environment of rural people," consists of three parts: understanding the main groups of the improvement of the environment in the context of informational interventions, promotion of policies, and improvement of the domain (Cao et al., 2021). The third part contains six themes, "Improving the environment for rural people," and is divided into four sections: dealing with rural garbage, toilet waste, rural waste, improving the image of villages, and creating administrative mechanisms. The last question concerns "Suggestions and recommendations for improving living conditions in rural areas."

4. Results and discussion

4.1 Remediation and Effectiveness of Case Townships under Informational Intervention

The Evaluation and Supervision Group comprises the Municipal Environmental Protection Agency, the Disciplinary Committee, the Party Political Office, the administrative villages, and the external organizations responsible for monitoring and evaluation. Four indicators and assessment criteria were developed for regional and extra-municipal institutions: sanitation and cleaning quality, waste collection and transportation, disaster assessment, reporting at all levels, and media and complaints. Allocations are made based on monthly estimates; regional authorities restrict external agencies through interviews, critical interviews, and termination of cooperation.

To improve the environment, case communes should make full use of the coordinating role of the rural councils to continuously improve rural regulation and consider the improvement of living conditions of rural residents among the rural population. Political messages on improving living conditions must be immediately conveyed to village councils, party councils, and assemblies. It is hoped that rural information can be used to train villagers in waste sorting to organize active action by party cadres and village leaders, to encourage villagers in the context of informational interventions to increase their sense of responsibility and honor in their hometowns and to organize villagers to contribute to the improvement of the environment through "donations" by transferring land, acquiring and protecting land management rights, developing various scales of cultivation, actively promoting agricultural restructuring, and creating unique agrarian production. Planting specialty crops such as chili peppers, tobacco, pomegranates, sorghum, chrysanthemums, etc., has strengthened the collective economy and increased farmers' output. Developing specialized rural industries has increased farmers' incomes

and contributed to rural tourism and the urban economy. Ensure adequate financial support for improving the rural environment in the context of informatization interventions and establish a long-term cooperation mechanism to enhance the environment and economic development in densely populated areas. The overall improvement of the environment for rural residents in the context of informatization interventions is shown in Figure 3.

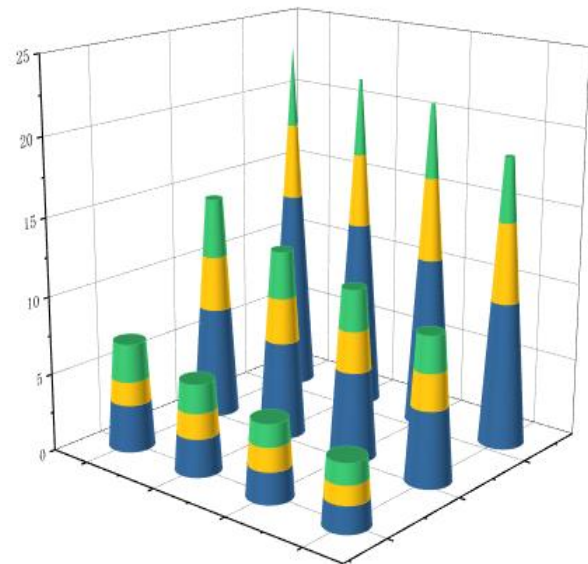


Figure 3 Overall improvement of the environment for rural residents in the context of information-based interventions

While cities are taking steps to improve the living conditions of rural residents through computerization, the treatment of rural domestic waste, wastewater treatment, toilets, and landscape restoration is being actively promoted. Other work is being carried out following the principle of "planning, institution-building, concrete implementation and supervision." Rapidly cleaning up garbage and dismantling illegal structures have made the streets tidier and the villages more beautiful. The town has been revitalized, and given a "new look," concrete results have been achieved in habitat restoration.

Increased investment in personnel, equipment, and other resources. One hundred twenty-two cleaners, representing a percentage of the total population, have been trained, garbage trucks have been purchased, and more than \$1 million has been spent on constructing waste management stations in two villages. As the rural population's living conditions improved, the garbage collection and disposal problem was solved, and the roads became cleaner. A model combining daily waste management and an annual zero-waste campaign was created to improve living conditions. Domestic waste is handled by third-party organizations, and village councils carry out waste construction and annual "waste disposal," gradually establishing a primary mechanism for collecting, transferring, and disposing of municipal waste. Waste was experimentally categorized according to the second-

quarter methodology. A total of 7,476 small garbage cans and two tricycle garbage cans were installed in nine village waste stations, and a pilot village waste segregation scheme was launched.

Establishment of a wastewater network for effective wastewater treatment. First, the city used information technology to establish a new sewer network to treat domestic waste in rural areas effectively. Since 2019, Case Village has been increasing its wastewater treatment operations under the influence of information technology, investing \$12 million in the design and construction of the Three Village Wastewater System and \$3 million in the Yen Village Wastewater Treatment Mission. The entire city consists of three, six, and three streets. The main street in the Village of Ducane was removed, and stormwater and sewer changes were made. Increased monitoring of industrial wastewater discharges is needed. There are several farms near the Ducane River, primarily small farms, no large farms. To cope with this situation, the company's IT activities focus on farm management, rehabilitation, and pollution abuse management.

Adapting to local conditions ensures the effectiveness of toilet rehabilitation in the context of informational interventions. Based on the field study findings, improved models of safe toilets have been identified, such as full flush, rural models above level 3, and household models below level 3—harmonization of standards to ensure effective improvement of toilets. Four coordination criteria have been followed, i.e., coordination of technical management, coordination of design drawings, coordination of assembly, coordination of organizational approvals, coordination of standards, and coordination of scientific planning. Integrated Technical Description. The Office of the Regional Steering Group for Sanitation in Human Settlements is responsible for providing technical training to representatives of municipalities, villages, groups, and communities, mobilizing staff to draw up a set of technical manuals, and ensuring the adoption of good installation techniques in urban and rural areas. Based on the actual situation and the needs of the population, a separate program has been developed to ensure that the modernization of latrines meets the standards and requirements of the "three places" (walls, ceilings, and floors) and that qualified model houses meet the needs of the "four places" (doors, windows, lighting, and sewers), lighting and sewerage). Each administrative village has its bathroom construction team of 3-5 experts and technicians responsible for unified design and standardized operation—a single approval organization. After the renovation, the urban and rural approval teams will conduct preliminary tests, and the regional departments will conduct inspections. In recent years, some cities have actively supported the toilet renovation project with the help of information technology, organizing several mobilization meetings for the toilet renovation project and implementing the essential contents and requirements for the renovation of dry toilets. The purpose and objectives of toilet maintenance in each city are explained, and a monitoring mechanism is

established. Information campaigns on toilet modernization and health education in rural areas have been strengthened.

The village's appearance in the context of informational interventions reflects its image and is essential to improving the living environment. Firstly, every home must be planted with flowering plants to realize the "green door." Secondly, various gardens, paths, and ground plants were improved to complement the greenery. The 4,500-square-meter park is built on lawns and along high-quality agricultural routes, where individual green trees are planted. Finally, the rugged hills around the villages were greened with suitable plants, adding 800 hectares of economic forest. A total of 15 administrative villages have been seeded. On the other hand, it actively participated in illegal demolition and construction activities to improve the local situation—waste separation and water quality enhancement efficiency (I), as shown in Figure 4.

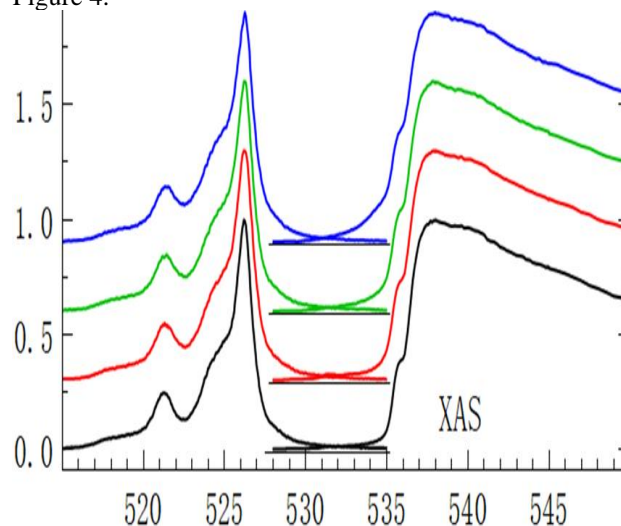


Figure 4 Efficiency of garbage sorting and water quality improvement

4.2 Analysis of the environmental improvement process of rural residents in case townships under information technology intervention

Informatization interventions have achieved significant results in implementing greening, greening, and greening. 86.5% of villagers believe that roads and fortified houses in Dongchun are more efficient. Informational interventions were used to implement rural communication across the city and rustic road lighting in 27 administrative villages. The effectiveness of the rating of 2784 was much lower than the overall indicator due to the better appearance of the villages. 29.3% of the rural population perceived no significant change in land use, while 11.3% perceived insufficient land use. This means the limited power, communication, and television lines above and below have been converted to metro lines. After the conversion, safety hazards were eliminated,

ecological renovations were realized, and the village's appearance improved significantly. However, the cost of the change was relatively high, and the three-line change was only carried out in the "charming village" change, with insufficient coverage.

Both figures were lower than the overall estimate in the context of the informational intervention, except in areas where the estimated maintenance of household latrines was higher than the general estimate. Only 33.3% of villagers reported that excreta from toilets were sent directly to sewage and wastewater treatment plants. In comparison, 34.7% said latrine waste was usually disposed of by transporting it to the fields for fertilization. There is a massive gap between the construction of sewage treatment plants and the sewage network, which directly impacts how household latrines are disposed of and how efficiently they are disposed of. According to the survey, 70.8% of households use flush toilets, and 80.6% of rural residents have achieved good results in household latrine upgrading, which has been done on most rural farms. Only 55.9% of the villagers thought there were many clean public toilets in their villages, and 44.2% believed that the number of public restrooms had not improved or had improved.

94.6% of the villagers believe that the village-wide domestic waste collection and disposal in the context of informatization interventions is in good condition, with uniform installation and professional staff. With the help of informatization, extensive garbage collection and transportation were carried out in 27 administrative villages. After collection, household garbage is placed in designated containers and transported evenly. 74.3% of villagers said trash is only inside the designated collection points. Due to informatization, surveys are conducted four times yearly in villages affected by accidents and mobility. The practice of permanently storing household garbage outside the designated locations has been largely eliminated. Eighty-two percent of rural inhabitants consider the overall composition of rural sanitation workers, garbage cans, and garbage trucks satisfactory or better.

All indicators are higher than the consolidated estimates, except for the percentage of farmers who are lower than the consolidated estimates. 74.7% of the rural population are satisfied with the improvement of the rural environment under the informational intervention, 62.1% of the rural population believe that they have received regular training at least once a month in the improvement, management, and protection of the rural environment under the informational intervention. 72.5% of the rural population believe that the mechanisms for the implementation of the program are in place. 3.3% of the rural population believe that they are actively engaged in the management of the rural environment under the informational intervention. 44.6% of the rural population thought that they were actively involved in the direction of the rural setting under informational intervention, 32.4% believed that they were occasionally involved,

20.3% felt that they were supportive but not involved, and 2.7% thought that they had never been involved in the environmental awareness study. 50.6% believed that the leading environmental management agency should be the rural population, while 48.8% thought that the top ecological governance agency should be the Government or a third party. The study results show that about half of the respondents trust the state or a third party to monitor the environment for rural residents but must actively participate in environmental monitoring. Waste Separation and Water Quality Improvement Efficiency (II), as shown in Figure 5

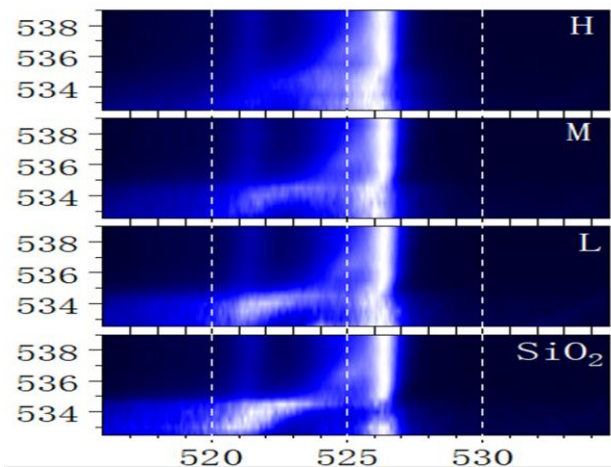


Figure 5 Efficiency of waste separation and water quality improvement

4.3 Principles of Environmental Improvement for Rural Residents in Case Townships under Informatization Intervention

Financing the reconstruction of rural areas in the context of informational interventions is an essential constraint on the effectiveness of reconstruction. Funding should be based not only on financial expenditures at the district level but also on the role of urban management and rural organizations. Vigorous industrial development based on its characteristics and creation of industrial scale to increase the economic income of rural communities and urban administrations; the design of a quality business environment and the development of a modest economy; practical approaches to market-based environmental management in rural areas have been examined through a third party. In the ecological direction for rural residents, recreational cities should focus on scientific planning and management efficiency. Urban governance should strengthen evidence-based planning, implement master plans, improve the rural environment under information-based interventions, and meet the needs of residents. In the renovation process, limited communication and efficient operation of various equipment is ensured, and infrastructure and equipment are adapted to people's

lifestyles and local conditions by adjusting to local conditions, making scientific arrangements, coordinating planning, and listening to people's opinions. On the one hand, the environmental improvement for the rural population must be based on its development to achieve appropriate local improvement goals and develop measures and methods suitable for rural areas. On the other hand, a crossroads can be found between industrial development and improving living conditions by combining industrial tourism and pastoral management routes and principles.

They are enhancing farmers' participation in the agricultural process in the context of informational interventions. Rural dwellers, who are vital members of grass-roots organizations, should be given sufficient incentives to promote environmental improvements to be able to participate actively in the process. At the same time, it is necessary to establish a standard system on a case-by-case basis, listen adequately to villagers' views, improve governance mechanisms and housing systems, and increase administrative efficiency. They are strengthening public accountability. To regulate the behavior of the rural population and raise environmental awareness, environmental health standards administrative and service obligations have been incorporated into agrarian laws and agreements. A democratic system for assessing the situation of the rural population has been established, and citizens are encouraged to make proposals for managing rural environmental issues under informational interventions. They are leading and encouraging the people to form cooperatives for the rural environment under information technology intervention to deepen farmers' independent learning and management. Cultivate rural culture and raise awareness of the rural population's health, well-being, and civilization. Rural culture is the countryside's inner soul and the driving force for sustainable rural development. In daily work, it is essential to cultivate rural culture and maintain a civilized and healthy lifestyle among rural residents. Governments at all levels should strengthen publicity and awareness-raising, encourage villagers to promote hygiene, create new winds, change villagers' behaviors such as garbage, and raise villagers' awareness of indoor hygiene. Efficiency of residents' environmental behavior improvement (I), as shown in Figure 6

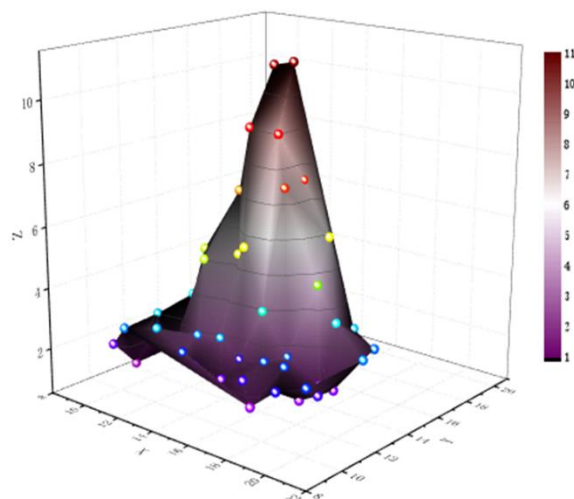


Figure 6 Efficiency of improvement of residents' environmental behavior

4.4 Suggestions for Environmental Improvement for Rural Residents in Case Townships under Informatization Intervention

Rural environmental management under information-based interventions is a comprehensive task that requires planning and leadership, the role of rural organizations and villagers, learning leadership models, and enhancing the implementation and monitoring of sustainable settlement patterns. The rural population has a relatively low level of knowledge and literacy. It needs more structural and managerial capacity to design sustainable development models, which is why there is a need to broaden the sources of finance, implement various financial measures, and strengthen the control of funds: development finance and agricultural finance monitoring. Actively explore the possibility of cooperation between local commercial banks and large commercial banks or state-owned enterprises to attract foreign capital, raise funds, and improve the living conditions of rural residents. It is actively filling out application forms for special funds for land reform at the national, provincial, and municipal levels and coordinating the allocation and use of special funds.

In recent years, due to the pandemic, the focus on tourism and regional tourism in the context of informational interventions has become a narrow path to trust and familiarity with the new popular way of life. In recent years, the cultivation of sorghum and chrysanthemum has increased, increasing farmers' income, including rural communities. By combining the status of industrial tourism with a distinctive cultural heritage, unique tourism has been developed, such as specialty research, immersive brewing experiences, attractiveness, and growth in collective village incomes. Reliable market and governance mechanisms have been established. Qualified external experts were attracted to manage the rural

environment under informational interventions and involved in the management and governance process of the rural environment under informational interventions. Professional cleaning companies have been set up to commission work on domestic waste, wastewater, and landscaping to improve the quality of the rural environment under informational intervention. The role of the National People's Congress must be fully utilized to establish a grass-roots system and consciously implement it to ensure that environmental management is transparent and intentionally subject to the control and protection of the people and to establish a long-term governance and protection mechanism. Strengthen financial control. The special fund for the environment of rural residents should be subject to social supervision, regularly disclose to the public the sources and uses of funds, use scientific planning tools, and establish a scientific and reasonable system of fees and penalties for urban environmental management. Make full use of the foundation's leadership role and strengthen its incentives' positive impact on cohesion and people's willingness to manage their living conditions. A special fund should be created to maintain and preserve public infrastructure. Waste segregation and water quality enhancement efficiency (III), as shown in Figure 7.

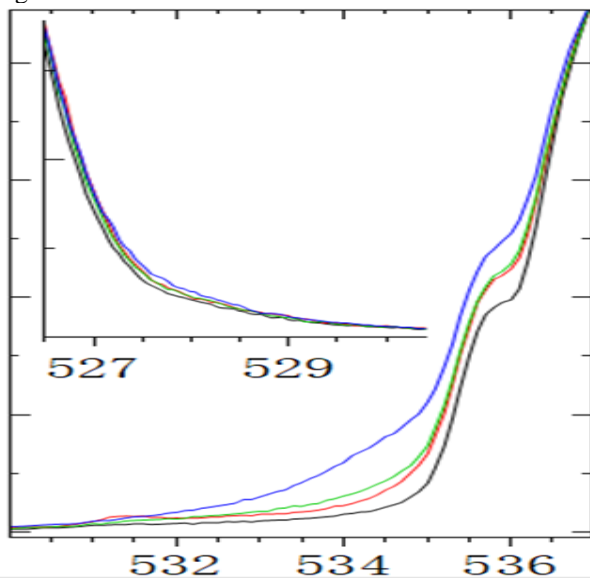


Figure 7 Efficiency of waste separation and water quality improvement

Infrastructure development could be more sustainable due to the under-construction of municipal sewage and wastewater treatment plants. In that case, planning in the context of informational interventions should play a key role in developing sound and efficient master plans, improving infrastructure, and paying particular attention to operation and maintenance support. One of them is to coordinate excellent site planning, construction planning, wastewater treatment planning, etc. After careful organization and research, farmers are fully involved in the environmental management of settlements and joint decision-making systems at the village level. Thirdly,

rural ecological construction has been gradually strengthened. Administrative villages have master plans for agrarian change, infrastructure construction and operation, optimized rural functional planning, and environmental cleanliness. When the three primary rural industries are transformed into urban areas, rural governance is loosely organized, the rural collective economy is loosely organized, and the management of the social environment becomes more complex. Farmers, as stakeholders and beneficiaries of improving the rural environment under informationalized interventions, should be actively involved in improving environmental protection in rural areas in the context of informationalized interventions. The Government and rural organizations must play an adequate leadership, demonstration, and active role in changing the rural environment under informatization intervention. Establish and improve the system of independent farmers' organizations. A pastoral council or representative committee should be established to represent the citizens and to respect human participation in all stages of planning, construction, operation, and assessment of living conditions. Where appropriate, the views of all rural residents should be publicly disseminated. The context of informational interventions enables them to participate in all environmental improvements, giving rural residents full voice and decision-making power and enhancing the science of improving the rural environment in the context of informational interventions—increased transparency in rural affairs and funding and increased oversight of independent rural organizations. The system contains elements and provisions for residential environmental restoration. It creates a rigorous system of accountability and evaluation that allows for quick monitoring of non-compliant residents and businesses' activities to ensure restoration's long-term effectiveness. Rural protocols are constantly being improved by the characteristics of the new period. As the environment improves, rural residents gradually develop consensus and healthy hygiene habits in the context of informational interventions. The efficiency of residents' environmental behavior improvement (II) is shown in Figure 8.

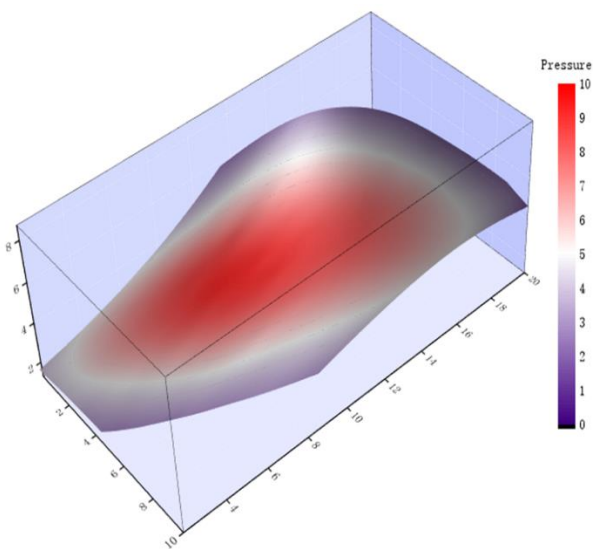


Figure 8 Efficiency of improvement of the environmental behavior of the population

5. Conclusion

Civic protection in rural areas must be part of the national macroeconomic policy and the standard of living of the rural population. This paper collects a large amount of domestic and international research data to study the impact of informatization intervention on improving the rural environment. It proposes the relevant theories of sustainable development, cooperation, and collaboration. The concepts of rural environmental protection under informatization intervention and rural ecological management under informatization intervention are introduced. Field studies and interviews identified measures and impacts to improve living conditions, including awareness campaigns promoting economic and industrial development in challenged cities. As well as the primary standards and achievements in waste management, sewage and wastewater treatment construction, and village appearance. The information-based intervention villages have developed a system of randomized indicators for environmental improvement based on 16 indicators, such as village appearance improvement, domestic sewage treatment, and latrine feces treatment, through surveys, hierarchical analysis, and calculations: rural Domestic Waste Disposal and Building Management Mechanism. The study showed that thanks to the computer intervention, the combined system-level estimates and the magnitude of change for the five indicators were within the correct range and level, indicating that the habitat in the stochastic villages has improved in recent years. However, some imbalances remain, and improvements are needed in some areas. The main drivers of change are the further integration of the living conditions of rural populations associated with computerized activities, mainly the unmet need for sanitation networks and wastewater treatment plants, regional imbalances in infrastructure development, and

ignorance of rural people. The article also presents principles and recommendations for improving measures to computerize the environment of rural populations.

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