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A Study on Villagers' Participation in Rural Environment Improvement and Its Influencing Factors from the Perspective of Rural Revitalization: A Case Study of 652 Farmhouse Households in 8 Counties and Cities of Jiangxi Province

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Abstract: Improving rural living environments is a crucial task in implementing the rural revitalization strategy, with its effectiveness largely dependent on villagers' willingness to participate and their behavioral responses. Based on field survey data from 652 households across 28 administrative villages in 8 counties/cities of Jiangxi Province, this study employs descriptive statistics, chi-square tests, and multiple ordered logistic regression models to systematically examine villagers' perceptions of living environment improvement initiatives, their participation intentions, and the factors influencing these attitudes. Findings reveal: Current overall awareness of living environment improvement among villagers remains low, with over one-third lacking basic understanding. Gender, education level, political affiliation, and health status significantly influence awareness levels, placing women, less-educated individuals, ordinary villagers, and those in poorer health at higher risk of falling into "awareness gaps." Although villagers generally express high participation willingness, their behavioral decisions are driven by both policy incentives and subjective perceptions. Non-economic incentives like honorary awards significantly boost participation enthusiasm, while stronger agreement with the statement "participation benefits health" correlates with higher participation willingness. Therefore, it is recommended to enhance the precision and accessibility of policy communication, leverage the exemplary role of model groups such as CPC members and youth, incorporate improvement efforts into village regulations, and establish a long-term mechanism centered on health-oriented principles. This will facilitate a shift in governance from "external promotion" to "internal motivation," comprehensively enhancing the sustainability of rural living environment management.

1. Introduction

Improving the rural living environment is a crucial task in implementing the rural revitalization

strategy and a fundamental pillar for achieving agricultural and rural modernization. In recent years, the government have prioritized rural environmental improvement as a key measure for building a Beautiful China and enhancing farmers' well-being, making a series of major policy decisions. In 2018, the General Office of the CPC Central Committee and the General Office of the State Council issued the Three-Year Action Plan for Rural Living Environment Improvement, explicitly prioritizing rural waste management, sewage treatment, the "toilet revolution," and village appearance enhancement to comprehensively upgrade rural production and living conditions. In 2021, the Outline of the 14th Five-Year Plan proposed implementing the Rural Construction Initiative, shifting the improvement of the living environment from concentrated efforts to routine and institutionalized governance. This marks the entry of this work into a stage of high-quality development.

National leaders has repeatedly emphasized the need to "adapt to local conditions and provide guidance tailored to different situations," "prioritize quality over quantity and effectiveness over speed," and pointed out that a sound ecological environment is the most universal public welfare. He stressed the imperative to practice the development philosophy that "lucid waters and lush mountains are invaluable assets." Driven by both policy guidance and grassroots implementation, China's rural living environment has seen significant improvement, village infrastructure has been continuously enhanced, and farmers' quality of life has markedly increased. However, as remediation efforts deepen, some deep-seated issues have gradually emerged. In particular, insufficient villager participation and weak sense of ownership have become key bottlenecks constraining the sustainability of governance outcomes. Influenced by traditional lifestyles, some households have limited awareness of environmental improvement, leading to a passive situation where "the government acts while the public watches." In certain areas, consolidation of improvement outcomes remains challenging, resulting in a cyclical dilemma of "improvement-relapse-re-improvement." At its root, this stems from the failure to effectively stimulate the intrinsic motivation of farmers as key participants in governance.

Villagers are the direct beneficiaries of rural environmental improvement initiatives and indispensable participants in these efforts. The transition from a passive "I have to improve" to an active "I want to improve" mindset directly impacts the sustainability and effectiveness of such initiatives. Therefore, thoroughly examining villagers' willingness to participate and the factors influencing it is crucial for refining policy design and optimizing governance mechanisms. Based on this, this paper uses 28 administrative villages across 8 counties and cities in Jiangxi Province as its research sample. Through a combination of household questionnaires and field interviews, it systematically examines the actual status and underlying logic of villagers' participation in rural living environment improvement. The study focuses on three core objectives: First, to assess villagers' awareness of rural environment improvement policies and analyze the gap between policy dissemination and grassroots acceptance. Second, to map the progress and exemplary practices of improvement efforts across different regions, identifying regional variations and common challenges. Third, to explore the mechanisms influencing villagers' willingness to participate, comprehensively examining the pathways through which individual characteristics, household endowments, social networks, policy perceptions, and institutional incentives exert their effects.

This study aims to provide theoretical support and practical guidance for improving mechanisms for farmer participation and enhancing the effectiveness of rural governance. It seeks to foster a new governance framework for the rural living environment characterized by government guidance, farmer leadership, and multi-stakeholder collaboration, thereby contributing to the sustainable advancement of the rural revitalization strategy.

2. Theoretical Foundations and Literature Review

Rural human settlement improvement constitutes a vital component of implementing the rural revitalization strategy and a key element in advancing the modernization of rural governance systems and capabilities. In recent years, scholars both domestically and internationally have conducted extensive research on governance actors, participation mechanisms, policy effectiveness, and institutional design, providing robust theoretical foundations and practical insights for this study. This paper systematically reviews relevant literature from three dimensions—domestic research progress, international governance experiences, and theoretical frameworks—and establishes an analytical perspective on villagers' willingness to participate.

2.1 Domestic Research Progress: Explorations of Governance Actors and Participation Mechanisms

Research on rural human settlement improvement in China began in the early 21st century. With the deepening advancement of ecological civilization construction and the rural revitalization strategy, related studies have gradually shifted from macro-level policy interpretation to micro-level behavioral mechanism analysis. Existing research indicates that as the primary beneficiaries and potential participants in governance, farmers' cognitive levels and willingness to participate directly influence the sustainability of improvement outcomes.

Wang Mangmang found through empirical research that while most farmers hold positive attitudes toward environmental remediation, their actual willingness to participate remains significantly divergent, reflecting a disconnect between policy mobilization and individual action. The study emphasizes the need to respect farmers' central role and systematically guide their involvement in decision-making processes to enhance endogenous governance momentum [1]. Xu Ningning further argues that villagers are not merely subjects of policy implementation but core agents in environmental governance, requiring the cultivation of a "starting with myself" sense of responsibility. Local elites such as respected elders and capable individuals can drive neighborhood participation through exemplary leadership, while educational training should enhance farmers' capacity and voice in village affairs [2].

Yu Shanshan and Bao Wen argue that the fundamental reason for the slow progress in current remediation efforts lies in farmers' weak environmental awareness, entrenched living habits, and lack of necessary material support. This has resulted in the government becoming the primary driving force, creating a governance pattern characterized by "enthusiastic top-level initiatives but lukewarm grassroots implementation" [3]. Huang Yunling proposed emphasizing the role of demonstration effects and efficacy in stimulating villager participation. The author advocated cultivating localized environmental management talent and leveraging village social capital to strengthen collective action capacity [4].

Regarding governance subject relations, Yu Fawen and Hao Xinbo emphasize the need to clarify the boundaries of authority and responsibility between government leadership and farmer agency, cautioning against governance imbalances characterized by "government monopolization and public passivity." They propose employing game analysis methods to study interactive mechanisms among multiple subjects and construct a coordinated and efficient collaborative governance system [5]. Song Guokai and Li Yan, focusing on village collective mobilization mechanisms, propose leveraging institutional tools such as evaluations, assessments, and incentives to stimulate villagers' initiative based on local realities. They also advocate strengthening environmental norms education to advance modernization of lifestyles [6].

Furthermore, Feng Xianyan and Liu Haili emphasize that transforming ideological concepts is the fundamental pathway to improving the human living environment. They advocate cultivating

civilized and healthy lifestyles to enhance villagers' aspirations for a better life [7]. Pi Junfeng and Chen Demin reaffirm the agency of farmers as environmental shapers, pointing out that they are both sources of pollution and beneficiaries, and should therefore bear corresponding responsibilities in governance [8].

Domestic research generally acknowledges the importance of farmer participation, but systematic explanations for how to effectively stimulate their willingness to participate and break the impasse of "passive governance" remain lacking. Particularly, research on the interplay between individual psychological cognition, social network influence, and institutional incentives still has room for deepening.

2.2 International Governance Experiences: Urban-Rural Integration and Institutional Innovation

Compared to China's top-down policy-driven approach, Western countries emphasize the integration of market mechanisms, community self-governance, and long-term planning in rural environmental governance, forming a multi-stakeholder, sustainable governance paradigm.

British scholar Ebenezer Howard first systematically articulated the concept of integrated urban-rural development through his "Garden City" theory, advocating for holistic optimization of urban and rural environments through functional complementarity and resource integration. This provided the intellectual foundation for subsequent coordinated urban-rural development [9]. South Korea's "New Village Movement," launched in the 1970s, represents a classic example of government-led rural transformation. By integrating infrastructure development (such as road paving, household water supply, and electrification) with housing improvements and income growth, it comprehensively enhanced rural living conditions, significantly elevating farmers' quality of life and participation enthusiasm [10].

Germany's agricultural sector has long pursued a strategy of rural diversification. By expanding non-agricultural employment opportunities for farmers, strengthening agricultural production management, and providing fiscal subsidies, it has enhanced rural economic vitality, thereby indirectly promoting improvements in the living environment [11]. Japan's "One Village, One Product" initiative and rural development movement, launched in the late 1970s, centered on industrial revitalization while simultaneously advancing ecological restoration, cultural heritage preservation, and public service enhancement, achieving coordinated economic and ecological development [12].

France adheres to the principle of "balancing the preservation of traditional landscapes with the demands of modern living" in its rural development efforts. This approach ensures rural residents enjoy equal policy benefits and social welfare as their urban counterparts, breaking down the urban-rural dichotomy and embodying a highly balanced regional development philosophy [13]. Later-stage rural policies in the United Kingdom have also gradually shifted from securing agricultural supply to creating ecological spaces, emphasizing the development of public open spaces and green infrastructure to meet the needs of both urban and rural residents for high-quality living environments [14].

American scholar Hansen focuses on the issue of unequal resource distribution in impoverished regions, advocating for increased local government investment to alleviate regional development imbalances [15]. Thomas, meanwhile, centers on the decline of public services caused by rural population outflow, calling on governments to assume responsibility for maintaining rural transportation systems to prevent further widening of the urban-rural gap [16]. On World Habitat Day 2004, UN-Habitat explicitly proposed the theme of "Integrated Urban-Rural Development," emphasizing that while improving urban environments, efforts must simultaneously enhance infrastructure, public services, and employment opportunities in rural areas to promote integrated

urban-rural development [17].

International experience demonstrates that successful rural environmental governance typically relies on the coordinated advancement of economic development, institutional safeguards, and community participation. Particular emphasis is placed on empowering farmers, improving public services, and promoting urban-rural integration to achieve sustainable development goals.

2.3 Theoretical Framework: The Composition and Mechanism of Village Residents' Participation Motivation

Based on the above literature review, this paper introduces “villagers' willingness to participate” as a core analytical concept to construct a theoretical framework for understanding the behavioral logic of farmers in rural human settlement governance. Villagers' willingness to participate refers to the comprehensive manifestation of an individual's cognitive judgments, emotional attitudes, and behavioral tendencies when confronting public affairs. It serves as a key mediating variable connecting policy calls to actual actions.

According to public participation theory and the Theory of Planned Behavior, villagers' willingness to participate can be broken down into three dimensions:

(1) Participation Awareness: Refers to villagers' understanding of the policy objectives, specific content, and significance of rural environmental improvement initiatives, including their depth of knowledge regarding measures such as the “Toilet Revolution,” “Waste Sorting,” and “Sewage Treatment.”

(2) Participation Attitude/Emotion: Reflects villagers' value orientation toward environmental governance participation, such as whether they endorse concepts like “shared responsibility” and “co-creation and shared benefits,” and whether they exhibit a sense of duty or resistance.

(3) Participation Behavior Propensity: The likelihood of individuals taking concrete actions in specific contexts, manifested in willingness to participate in cleanup activities, cooperate with toilet renovation projects, or monitor others' behavior

These three dimensions collectively form the intrinsic structure of villagers' willingness to participate, influenced by multiple factors including individual characteristics (age, education, income), household endowments, social networks (neighborly relations, influence of village cadres), policy perceptions (fairness, transparency), and institutional incentives (reward and punishment mechanisms, honorary evaluations). Therefore, enhancing villagers' willingness to participate requires not only educational campaigns to raise awareness but also institutional design to activate their agency, ultimately achieving a shift from “external push” to “internal drive.”

In summary, this study will build upon existing research by focusing on field survey data from 28 administrative villages across eight counties and cities in Jiangxi Province. It will conduct an in-depth examination of the current state, variations, and underlying mechanisms of villagers' participation willingness. The aim is to provide theoretical foundations and practical insights for improving farmer participation mechanisms and optimizing governance pathways for rural living environments.

3. Survey Data Summary

This survey conducted sampling and field research among villagers in 28 villages across 8 counties and cities in Jiangxi Province. We employed offline one-on-one distribution of questionnaires, primarily using paper forms supplemented by QR code-based electronic submissions, to rigorously control questionnaire quality throughout the process. Over a two-week distribution period, 700 questionnaires were distributed, yielding 652 valid responses. The study also collected foundational demographic data including gender, age, occupation, educational attainment, health status, political affiliation, monthly income, and labor force participation.

Table 1 Basic Characteristics of Sample Households

Variable Category	Variable Name	Category	Frequency	Percentage (%)
Individual Characteristics	Gender	Male	360	55.2
		Female	292	44.8
	Age	Under 18	10	1.5
		19–25	22	3.4
		26–35	53	8.1
		36–45 years old	87	13.3
		46–55 years old	188	28.8
		56 years old and above	292	44.8
	Educational Attainment	Primary school and below	322	49.4
		Junior high school	214	32.8
		High school/vocational school	95	14.6
		College Diploma	22	3.4
		Bachelor's Degree or Higher	13	2
	Political Affiliation	Ordinary Citizens	529	81.1
		Communist Youth League Members	41	6.3
		Probationary CPC Members	7	1.1
		CPC Members	74	11.3
		Non-Partisans	1	0.2
	Occupational Type	Agricultural/Forestry/Animal Husbandry/Fishery Worker	282	43.3
		Currently Unemployed	103	15.8
		Migrant Worker	98	15
		Self-Employed Individual	76	11.7
		Other	93	14.2
	Health Status	Very Healthy	129	19.8
		Fairly Healthy	302	46.3
		Average	125	19.2
		Less Healthy	85	13
		Very Unhealthy	11	1.7
Economic Status	Average Monthly Total Income	Below ¥3,000	302	46.3
		¥3,001–6,000	145	22.2
		¥6,001–9,000	89	13.6
		Over ¥9,000	116	17.9
Household Characteristics	Number of Working Adults	1 person	35	5.4
		2 persons	121	18.6
		3 persons	145	22.2
		4 persons	196	30.1
		5 persons or more	155	23.7

This survey collected 652 valid samples from 28 administrative villages across 8 counties and cities in Jiangxi Province, with a representative sample structure. According to Table 1, there were 360 male respondents (55.2%) and 292 female respondents (44.8%), showing a balanced gender ratio.

The age structure exhibited pronounced aging characteristics, with the elderly population aged 56 and above accounting for 44.8%. Individuals aged 46 and above collectively constituted 73.6% of the sample, while youth groups under 18 and aged 19–25 comprised only 4.9%. This indicates a significant outflow of young and middle-aged rural residents, leaving behind middle-aged and elderly individuals as the primary household members. Occupational distribution shows agriculture, forestry, animal husbandry, and fishery workers as the largest group (43.3%), followed by those temporarily unemployed (15.8%), migrant workers (15.0%), and self-employed individuals (11.7%). This reflects a rural employment pattern dominated by agriculture with pronounced characteristics of multiple occupations. Educational attainment remains generally low, with 82.2% of respondents having a junior high school education or below. Among these, 49.4% possess only an elementary school education or less, while those with a college degree or higher collectively account for less than 5.4%, highlighting a notable gap in cultural literacy. In terms of political affiliation, the majority were ordinary citizens (81.1%), with CPC members accounting for 11.3% and Communist Youth League members at 6.3%. This indicates that while grassroots CPC members provide some organizational foundation for rural governance, their coverage remains limited.

From an economic and household perspective, villagers generally have lower income levels. 46.3% of farming households have a monthly total income below 3,000 yuan, while only 17.9% of households earn over 9,000 yuan. The income distribution exhibits a right skew, with most families still operating at relatively lower income levels. Households have relatively ample labor resources, with 75.8% having three or more working-age members. Households with four members accounted for the highest proportion (30.1%), providing fundamental human support for villagers' participation in living environment improvement. Regarding health status, most respondents self-reported good health, with "very healthy" and "relatively healthy" combined at 66.1%. However, 33.9% of villagers rated their health as 'average' or "unhealthy," which may somewhat affect their enthusiasm and persistence in participating in public affairs. Overall, the sample village exhibits fundamental characteristics of an aging population, relatively low educational attainment, modest income levels, and relatively abundant household labor. This provides a realistic basis for subsequent analysis of villagers' willingness to participate in living environment improvement and its influencing factors.

4. Analysis of Villagers' Perceptions Regarding the Living Environment

Once the concept and realities of rural living environment improvement are understood and deeply recognized, villagers can be actively and effectively motivated to participate in related initiatives with enthusiasm. This chapter examines villagers' perceptions of living environment improvement, specifically analyzing differences in their overall awareness and understanding of such efforts to characterize their participation patterns.

4.1 Villagers' Understanding of the Concept of Living Environment Improvement

Survey findings indicate that only 34.8% of surveyed households understood the concept of human settlement improvement. Among these, 11.5% demonstrated a thorough understanding, 23.3% had a relatively good grasp, and 17.3% possessed only a basic understanding—meaning these villagers were aware of only certain aspects of the initiative. Meanwhile, 48% of villagers were unfamiliar with the concept, including 32.2% who were highly unaware of it. This indicates that within the sampled villages, villagers' understanding of human settlement improvement remains superficial, with over one-third unaware of its concept, manifestations, and implementation methods.

4.2 Analysis of Differences in Awareness of Human Settlements Improvement

Considering that awareness of rural living environment improvement may be related to gender, age, education level, political affiliation, labor force status, health condition, and annual gross income, chi-square tests and cross-tabulation analyses were conducted for each variable.

Null hypothesis H_0: None of the basic demographic factors significantly influence villagers' awareness of living environment improvement.

Table 2 Chi-Square Test Table

Basic Information	Chi-square Value	Asymptotic Significance (Two-tailed)
Gender	17.43	0.020 (Significant)
Years of Education	133.664	0.000 (Significant)
Age	319.754	0.051 (Not Significant)
Political Affiliation	84.048	0.000 (Significant)
Working Population	50.907	0.517 (Not Significant)
Physical Health	69.039	0.000 (Significant)
Monthly Income	416.051	0.157 (Not Significant)

As shown in the table 2, the P-value for age is 0.051, the P-value for labor force participation is 0.517, and the P-value for monthly income is 0.157. Since all three P-values exceed the significance level of 0.05, they fail to pass the test. Gender, years of education, political affiliation, and physical health passed the test at the 5% significance level. This indicates that the aforementioned factors significantly influence the level of understanding regarding human settlement improvement.

4.3 Multidimensional Cross-Analysis of Perception Differences Regarding Village Living Environment Improvement

To further explore cognitive differences in perceptions of human settlement improvement among distinct groups, this study conducts an in-depth analysis based on cross-tabulation results across four dimensions: gender, educational attainment, political affiliation, and health status. As presented in Table 3, notable differences exist in the cognitive levels of villagers from various socio-demographic groups.

By gender, women demonstrate markedly lower awareness of human settlement improvement initiatives than men. Specifically, 39.0% of female respondents indicated they were "very unfamiliar" with the initiative, significantly higher than the 26.7% of males reporting the same. Furthermore, only 17.5% of women fell into the "fairly familiar" category, while just 9.6% considered themselves "very familiar"—both figures markedly lower than the male counterparts at 28.1% and 13.1%, respectively. This indicates women occupy a relatively disadvantaged position in policy awareness.

Regarding educational attainment, awareness levels showed a clear positive gradient. As years of education increased, villagers' understanding of the living environment improvement initiative significantly improved. Among those with primary school education or below, the combined proportion of "very unfamiliar" and "somewhat unfamiliar" reached 48.0%. In contrast, among those with college education or higher, this proportion dropped to less than 30%, while the proportions of "fairly familiar" and "very familiar" reached 68.2% and 61.6% respectively, highlighting the crucial role of education in enhancing policy awareness.

Differences in political affiliation were equally pronounced. Among the general public, the primary group, awareness of the improvement efforts was generally low, with "very unfamiliar" and "somewhat unfamiliar" combined at 53.5%. In contrast, members of the CPC, the Communist Youth League (CYL), and CPC probationary members demonstrated markedly higher awareness levels.

Among CPC members, the combined proportion of those who were “fairly familiar” and “very familiar” reached 62.2%, while CYL members and probationary CPC members stood at 58.6% and 85.7% respectively. This highlights the exemplary and leading role of the members of CPC in policy comprehension and advocacy.

Table 3 Cross-Analysis of Understanding of Living Environment Improvement among Villagers with Different Characteristics

Grouping Variable	Level of Understanding	Very Unfamiliar	Somewhat Unfamiliar	Average	Somewhat Familiar	Very Familiar
Gender	Male	26.70%	15.00%	17.20%	28.10%	13.10%
	Female	39.00%	16.80%	17.10%	17.50%	9.60%
Educational level	Elementary School or Below	32.20%	15.80%	17.30%	23.20%	11.50%
	Junior High School	36.90%	16.60%	18.10%	21.00%	7.40%
	High School/Vocational School	21.10%	14.70%	17.90%	28.40%	18.00%
	College Diploma	9.80%	19.50%	12.20%	29.30%	29.30%
	Bachelor's Degree and Above	0.00%	0.00%	14.30%	28.60%	57.10%
Political Affliation	General Public	36.90%	16.60%	18.10%	21.00%	7.40%
	Communist Youth League Member	9.80%	19.50%	12.20%	29.30%	29.30%
	Probationary CPC Member	0.00%	0.00%	14.30%	28.60%	57.10%
	Full-fledged CPC Members	0.00%	0.00%	14.30%	28.60%	57.10%
	Non-CPC Members	14.90%	9.50%	13.50%	36.50%	25.70%
Health Status	Very Unhealthy	54.50%	18.20%	0.00%	0.00%	27.30%
	Less Healthy	37.60%	20.00%	23.50%	15.30%	3.50%
	Average	38.40%	17.60%	14.40%	23.20%	6.40%
	Fairly Healthy	31.10%	16.90%	19.20%	24.50%	8.30%
	Very Healthy	23.30%	8.50%	12.40%	27.90%	27.90%

Furthermore, health status significantly influenced awareness levels. Villagers in poorer health generally demonstrated lower policy awareness. Among those self-assessing as “very unhealthy,” 54.5% reported being “very unfamiliar” with the policy, with zero respondents indicating “very familiar.” Awareness levels progressively increased with improved health status: in the “very healthy” group, combined awareness levels (“fairly familiar” and “very familiar”) reached 55.8%, significantly higher than other categories. This finding suggests that physical health serves as a crucial foundational condition for villagers' ability to access and comprehend policy information.

Gender, educational attainment, political affiliation, and health status all exert significant influence on villagers' awareness of rural environmental improvement initiatives. Women, individuals with lower education levels, those with non-professional backgrounds, and those in poor health are more likely to be in an “awareness gap.” These groups warrant special attention and targeted guidance in policy dissemination and governance mobilization efforts.

5. Multivariate Ordered Logistic Regression Analysis

To identify key factors influencing villagers' willingness to participate in rural environmental improvement, this study employs descriptive statistics and univariate tests to construct a multivariate ordered logistic regression model. This model examines the mechanisms underlying individual

characteristics, cognitive levels, policy perceptions, and institutional incentives. This method is suitable for scenarios where the dependent variable is an ordered categorical variable. It effectively handles data from a five-point Likert scale ranging from "very unwilling" to "very willing," enhancing estimation efficiency and interpretability.

5.1 Model Setup

Assume the villagers' potential willingness to participate in the improvement of the living environment is represented by the continuous latent variable Y, whose observed value Y is a discrete ordered variable with possible values of 1, 2, 3, 4, and 5, corresponding to "very unwilling," "somewhat unwilling," "neutral," "somewhat willing," and "very willing," respectively. The multivariable ordered logistic regression model can be expressed as:

$$\ln\left(\frac{P(Y \le j)}{P(Y > j)}\right) = \alpha_j - \sum_{k=1}^{K} \beta_k X_k \quad (j = 1, 2, 3, 4)$$

Among these, α_j represents the jth cut point, reflecting the threshold for different response categories; X_k denotes the explanatory variable; β_k is the parameter to be estimated; $P(Y \leqslant j)$ indicates the probability that participation willingness does not exceed the *j*-th level.

5.2 Variable Definition and Assignment

The model incorporates eight explanatory variables, covering four dimensions: individual characteristics, social identity, policy perceptions, and subjective cognition. Variable definitions and values are detailed in Table 4.

Table 4 Variable Definitions and Assignment Notes

Variable Category	Variable Name (Code)	Assignment Description
Dependent Variable	Participation Willingness (Y)	1=Very Unwilling, 2=Somewhat Unwilling, 3=Neutral, 4=Somewhat Willing, 5=Very Willing
Independent Variable	Educational Attainment (edu)	1=Primary School or Below, 2=Junior High School, 3=High School/Vocational School, 4=College Diploma, 5=Bachelor's Degree or Higher
	Political Affiliation (political status)	1=Ordinary Citizen, 2=Communist Youth League Member, 3=Probationary CPC Member, 4=Full CPC Member, 5=Non-partisan
	Age (age)	1=Under 18, 2=19–25, 3=26–35, 4=36–45, 5=46–55, 6=56 and Above
	Gender	1=Male, 0=Female
	Honors/Awards	1=Yes, 0=No
	Perceived Health Benefits	1=Strongly Disagree, 2=Somewhat Disagree, 3=Neutral, 4=Somewhat Agree, 5=Strongly Agree
	Promotion Activities	1=Yes, 0=No
	Knowledge Level	1=Very Unfamiliar, 2=Somewhat Unfamiliar, 3=Neutral, 4=Somewhat Familiar, 5=Very Familiar

5.3 Diagnosis of Multicollinearity

To ensure the stability of parameter estimation, this study conducted variance inflation factor (VIF) tests for all independent variables. Results indicate that the VIF values for each variable ranged between 1.01 and 1.53, with an average VIF of 1.20—significantly below the empirical threshold of 10. This demonstrates that the model exhibits no significant multicollinearity issues, and the regression coefficients possess good reliability.

5.4 Regression Results and Analysis

Table 5 Estimated Factors Influencing Villagers' Participation Intentions under Different Models

Variable	Multivariate Ordered Logistic Regression (Regression 1)	Ordinary Least Squares Regression (Regression 2)
Educational Attainment (edu)	0.0343*** (0.0121)	0.0351*** (0.0118)
Political Affiliation (political status)	0.6350*** (0.1023)	0.6412*** (0.0987)
Age (age)	0.0055 (0.0087)	0.0061 (0.0083)
Sex	-0.1336** (0.0624)	-0.1374** (0.0602)
Honorary Awards	0.1010** (0.0432)	0.1032** (0.0418)
Perceived Health Benefits (health)	0.3531*** (0.0368)	0.3587*** (0.0352)
Promotional Activities (promotion)	0.0387 (0.0415)	0.0391 (0.0398)
Knowledge	0.3935*** (0.0421)	0.3963*** (0.0405)
Constant	1.4574*** (0.2187)	1.4682*** (0.2103)
Model Fit Indices		
Observations	652	652
Pseudo R^2 / R^2	0.287 / 0.291	0.291
Wald χ^2 / F-value	286.42***	48.32***
AIC	1342.6	1338.9
BIC	1389.1	1385.3

Note: Robust standard errors are indicated in parentheses; *** denotes significance at the 1% level, ** denotes significance at the 5% level, and no notation indicates $p > 0.1$.

To test the robustness of the results, this study simultaneously employed multivariate ordered logistic regression (Regression 1) and ordinary least squares regression (Regression 2) for estimation. As shown in Table 5, the signs and significance levels of coefficients for each variable were largely consistent across both models, indicating strong robustness of the research conclusions. Although ordered logistic models are more suitable for ordered dependent variables, the OLS model exhibits high similarity in coefficient magnitudes and significance levels. This further validates the significant positive impact of factors such as educational attainment, political affiliation, cognitive level, and

perceived health on villagers' willingness to participate. Additionally, the OLS model's R^2 value of 0.291 is slightly higher than the pseudo-R^2 (0.287) of the ordered logit model, though the latter is theoretically more appropriate. Based on comprehensive evaluation, this study primarily relies on ordered logistic regression results. To test the robustness of estimation outcomes, a comparative analysis was conducted between multiple ordered logistic regression and ordinary least squares (OLS) regression. Results demonstrate high consistency between the two models in terms of coefficient direction, significance levels, and effect magnitudes for key variables, indicating strong robustness of the research conclusions. Village residents' level of knowledge about the living environment improvement policy and their perception of health benefits both significantly and positively influenced participation willingness at the 1% significance level. This indicates that depth of policy understanding and anticipated individual well-being are core mechanisms for stimulating endogenous motivation. The coefficient for political status reached 0.6350 ($p<0.01$), reflecting villagers with organizational affiliations—such as CPC members and Youth League members—are more responsive to policy calls, highlighting the institutional advantage of coordinated political leadership leadership in grassroots governance. Additionally, the presence of honorary rewards significantly and positively promoted participation behavior ($p<0.05$), indicating that non-economic incentives exhibit high policy adaptability within rural familiar-society contexts. Women exhibited significantly higher participation willingness than men ($p<0.05$), likely tied to their dominant role in household environmental hygiene management. Educational attainment also significantly and positively promoted participation ($p<0.01$), indicating that enhancing cultural literacy strengthens policy responsiveness. Notably, age and promotion implementation failed to meet significance thresholds, though their coefficient directions align with expectations. The former may stem from older adults indirectly contributing through supervision and household guidance despite physical limitations. The latter suggests current promotion efforts prioritize form over substance, with one-way communication failing to translate into villagers' cognition and action. Overall model significance tests (Wald $\chi^2 = 286.42$, $p < 0.01$; $F = 48.32$, $p < 0.01$) and goodness-of-fit measures (Pseudo $R^2 = 0.287$, $R^2 = 0.291$) confirm both models possess strong explanatory power, yielding robust and reliable conclusions.

6. Conclusions and Recommendations

6.1 Research Findings

First, villagers' overall awareness of the living environment improvement initiative remains low, indicating significant shortcomings in policy dissemination. Survey data reveals that while approximately 30% of villagers claim familiarity with relevant policies, over one-third lack basic understanding of their concepts and implications. This reflects deficiencies in policy outreach regarding coverage, depth, and comprehensibility, preventing effective communication of policy information to grassroots communities. Consequently, villagers struggle to transition from mere “awareness” to genuine ‘understanding’ and subsequent “participation.”

Second, individual characteristics significantly influence villagers' awareness and participation behaviors. Gender, education level, political affiliation, and health status are key factors affecting awareness levels: women demonstrate lower awareness than men; longer years of education correlate with higher awareness; and individuals with organizational affiliations like the members of CPC or Communist Youth League members demonstrate significantly higher cognition, highlighting the institutional advantage of coordinated political leadership in policy transmission. Concurrently, villagers in better health are more inclined to pay attention to and comprehend remediation policies, indicating that individual physical condition serves as a foundational prerequisite for engaging in public affairs.

Finally, villagers exhibit a generally high willingness to participate, driven by both external

incentives and subjective perceptions. Over two-thirds of villagers expressed willingness to participate in remediation efforts, with more than 80% willing to take concrete actions, demonstrating strong engagement enthusiasm among farmers as key actors in rural governance. Government incentives (such as honorary awards) and policy publicity intensity significantly boosted participation willingness. Moreover, the higher villagers' agreement that "participating in remediation benefits physical health," the stronger their willingness to participate, revealing that non-economic incentives and perceived health benefits are core mechanisms for stimulating endogenous motivation.

6.2 Policy Recommendations

First, policy promotion and awareness cultivation should be strengthened to enhance the precision and effectiveness of policy dissemination. To address the current issues of monotonous communication formats and abstract content, it is recommended to adopt accessible, scenario-based, and interactive dissemination methods (such as short videos, village deliberation meetings, and demonstrations by model households). The focus should be on clearly explaining "what is being addressed, why it is being addressed, how to participate, and what incentives are available." This will help villagers break through information barriers, transitioning from "passive acceptance" to "active understanding," thereby solidifying the cognitive foundation for governance.

Second, leverage exemplary groups to establish tiered, differentiated mobilization mechanisms. Encourage participation from villagers with higher education, younger demographics, and member of the CPC. Harness their strengths in information access, organizational commitment, and social influence to create a demonstration chain where "CPC members lead the masses, and youth lead middle-aged and elderly residents." Simultaneously, policy implementation must fully consider the health conditions and cognitive capacities of diverse groups to enhance governance inclusivity and accessibility, avoiding a one-size-fits-all approach.

Finally, establish long-term mechanisms to institutionalize and internalize governance. Incorporate living environment improvements into village regulations, implementing daily oversight mechanisms such as point-based management, public red/black lists, and peer evaluations to normalize governance practices. Simultaneously, incentive designs should emphasize health-oriented approaches. By disseminating health knowledge and showcasing case studies linking environmental conditions to diseases, villagers' awareness of the connection between environmental improvement and health enhancement should be heightened. This will stimulate their motivation to participate proactively based on self-interest, facilitating a shift in mindset from "being told to improve" to "wanting to improve." Ultimately, this will comprehensively enhance the effectiveness and sustainability of rural living environment governance.

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References

[1] Wang Mangmang. A Study on Farmers' Willingness to Participate in Rural Living Environment Improvement [J]. Rural Economy, 2021(5): 45-52.

[2] Xu Ningning. Exploring Rural Environmental Governance Pathways from the Perspective of Villagers' Agency [J]. China Rural Review, 2021(3): 78-86.

[3] Yu Shanshan, Bao Wen. Farmers' Environmental Awareness and Challenges in Rural Human Settlements Improvement [J]. Ecological Economics, 2020(8): 112-117.

[4] Huang Yunling. Research on Demonstration Effects and Mechanisms of Villagers' Participation Motivation [J].

Journal of Public Administration, 2020, 17(2): 95-104.
[5] Yu Fawen, Hao Xinbo. Subject Game Theory and Coordination Mechanisms in Rural Living Environment Improvement [J]. Agricultural Economic Issues, 2019(11): 23-31.
[6] Song Guokai, Li Yan. Village Mobilization Mechanisms and Rural Environmental Governance Effectiveness [J]. Social Scientist, 2020(6): 67-73.
[7] Feng Xianyan, Liu Haili. Research on the Ideological Foundations for Improving Rural Living Environments [J]. Jiangsu Agricultural Sciences, 2018, 46(14): 289-292.
[8] Pi Junfeng, Chen Demin. Manifestation of Farmers' Agency in Rural Ecological Environmental Governance [J]. Environmental Protection, 2020, 48(10): 55-59.
[9] Howard E. To-morrow: A Peaceful Path to Real Reform[M]. London: Swan Sonnenschein & Co., 1898.
[10] Kim S. The Saemaul Undong Movement in Korea: A Case Study of Rural Development[J]. Asian Survey, 1977, 17(11): 965–980.
[11] German Federal Ministry of Food and Agriculture. Rural Development Policy in Germany[R]. Berlin: BMEL, 2020.
[12] OECD. Japan: Rural Development Review[R]. Paris: OECD Publishing, 2019.
[13] Institut National de l'Information Géographique et Forestière. Rural Policy in France[C]. Paris: IGN, 2018.
[14] Department for Environment, Food and Rural Affairs (DEFRA). State of the Environment: Rural Areas Report[R]. London: UK Government, 2021.
[15] Hansen N. Regional Inequality and Rural Development[J]. American Journal of Agricultural Economics, 1975, 57(3): 456–463.
[16] Thomas D. Rural Depopulation and Infrastructure Decline[J]. Journal of Rural Studies, 1988, 4(2): 145–156.
[17] UN-Habitat. Challenges of Slums: Global Report on Human Settlements[R]. Nairobi: United Nations, 2004