

Research on the comprehensive benefit assessment model of party building leading rural ecological construction and social governance modernization under the perspective of common wealth

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Abstract: In the context of common wealth strategy, this paper constructs a three-dimensional ecological construction and social governance comprehensive benefit assessment index system. The assessment model is designed based on gray correlation analysis and entropy weight method to realize the synergistic measurement of qualitative and quantitative indicators. Through theoretical analysis and empirical testing, it is found that the combined weight of B15 (habitat provides benefits) is 0.1349, which has the highest weight among all the indicators. The C_i values of X3, X2, and X1 are 0.6642, 0.6281, and 0.6142, respectively, and the comprehensive benefits of X3 are the closest to the ideal scenario among the three regions. In response to the assessment results, the party building leadership needs to highlight the problem orientation and effectively transform the assessment results into practical strategies to enhance the overall effectiveness of rural development.

Keywords: common wealth; ecological construction; social governance; gray correlation analysis; comprehensive benefit assessment

1. Introduction

With the in-depth promotion of rural revitalization strategy, rural ecological construction has become a key link to achieve sustainable rural development and improve the quality of life of farmers [1]. Rural ecological construction and rural revitalization are closely linked, good rural ecology provides external environmental conditions for rural revitalization, and the two promote each other and jointly help the sustainable development of the countryside [2-3]. However, the process of urbanization and the continuous development of social economy have gradually widened the gap between urban and rural areas, and rural areas are facing many development challenges [4]. The increasing problems of over-exploitation and misuse of resources, pollution of soil and water, imperfections in infrastructure, and loss of traditional culture have made rural ecological construction particularly important [5-6]. Therefore, strengthening resource management and utilization, enhancing the publicity of rural ecological construction, as well as increasing infrastructure and financial investment are of vital importance for revitalizing rural ecology [7].

Rural areas are the core area of ecological construction, but also the zone where environmental problems are frequent. At present, some villages are facing outstanding problems such as water pollution, air pollution and food security, which seriously affects the quality of life of villagers and restricts the sustainable development of villages [8-9]. It is urgent to fight the battle of rural pollution management to ensure the sustainable improvement of rural environment. Such as the establishment of rural environmental monitoring system real-time monitoring of pollution emissions and ecological environment, regular environmental remediation actions to carry out key remediation of serious pollution



in the region, and guide farmers to form a green, low-carbon, recycling production and lifestyle is the best choice to fight the battle of rural pollution management [10-12]. Improvement of the quality of the rural ecological environment can attract talent to return to their hometowns for employment and entrepreneurship, breaking the traditional small-scale production and management mode, so that the countryside economy gradually into the track of affluence, so that the villagers truly understand the true meaning of “green mountains are golden mountains” [13-14]. On the road to sustainable development, rural ecological construction is an important way to fight the battle of rural pollution control, only adhere to the rural ecological construction to promote rural revitalization, in order to realize the harmonious coexistence of man and nature [15].

Food security is the primary condition for the survival and development of human beings, and guaranteeing food security is not only related to the well-being of every person, but also a necessary guarantee to promote the sustainable development of rural ecology [16-17]. Based on this, promoting the comprehensive prevention and control of agricultural surface pollution, strengthening the investigation and remediation of heavy metal pollution sources in arable soils, and promoting the measures of water system connectivity, water conservation, and soil and water conservation are all effective ways to prevent land degradation, water pollution, and ecological imbalance [18-20]. In recent years, with the increased investment of science and technology in the field of agricultural cultivation, the ability of crop resistance to pests and diseases and the quality of yield have been improved, making agricultural products greener and healthier [21]. However, there are still many areas of excessive reclamation and logging, and the extensive use of chemical fertilizers and pesticides in farming, resulting in soil barrenness and desertification, further destroying the ecological balance. Therefore, to ensure food security, it is necessary to adopt modern scientific and technological means to solve various environmental problems, continuously optimize the rural ecological environment, and realize the virtuous cycle of ecological and agricultural development [22-23].

With the enhancement of people's ecological and environmental protection concepts, green agriculture has begun to be popularized in more and more places, and green concepts such as intensive cultivation, combination of humans and animals, application of organic fertilizers, energy saving, resource saving and other green concepts have been deeply integrated with agricultural production, which has led to the development of green agriculture to achieve excellent results [24-25]. Rural ecological construction is a key factor in promoting the development of green agriculture, and rural areas are increasingly applying green agricultural technology in agricultural production and planting, which can not only improve crop yields, but also effectively reduce the use of chemical fertilizers and promote the sustainable development of agriculture [26-27]. However, for a long time, rural areas have relied on traditional farming and planting techniques, which has exacerbated environmental problems [28].

Social governance modernization is an important part of the modernization of the national governance system and governance capacity, which is of key significance for achieving social harmony and stability, and people's happiness and well-being, and in terms of overall governance, social governance modernization implies the transformation of the governance model from a single to a systematic one [29-30]. Traditional monolithic social governance relies on administrative decisions and administrative law enforcement by the executive authorities, presenting an authoritarian and pressure-based style. Social governance can occur because of the mechanization of governmental control, governmental organizations are exhausted and public administration resources are wasted, and also because of the lack of effective participation of social subjects, the governance effect is poor [31-32]. From the comprehensive view of the form and content, it is necessary to consider the optimization combination of different dimensions, such as the diversification of governance subjects, the rule of law of governance behavior and the intelligence of governance methods. The “four” aspects of social governance (socialization, rule of law, intelligence, and professionalization) have clarified the direction of social governance in the new era. The core task of social governance modernization is to realize the deep interaction of the “Four Harmonizations” in the social governance system, and to create a social governance pattern of common governance and sharing [33]. The organic combination of the “Four Harmonizations” provides an operational framework for social governance in the new era, and modernized social governance, which includes multi-level and multi-dimensional governance kernels, is an inherent requirement for the transformation of governance from traditional to modern [34]. In this context, social governance requires comprehensive consideration of the systematic reconstruction of concepts, mechanisms and means.

Rural ecological construction and social governance are both choices for the development of human society to a specific historical stage. Eco-governance is not only an inherent requirement of ecological construction, but also a necessary move to achieve the overall goal of modernization of national governance, and it is necessary to adhere to the systemic concept and understand the possibility of integrally advancing rural ecological and social governance with eco-governance as the carrier [35-36].

The so-called integrated promotion is not to complete all the strategic implementation actions by the same department, or to change the existing management system of compartmentalization, but to emphasize the systemic thinking in the implementation of the strategy, and to stress the importance of the overall coordination and synergistic promotion by the local party committees and governments. Comprehensive benefit analysis is an important theoretical and practical basis for judging whether a project is economic and determining the sustainability of the project, as well as the main basis for project decision-making and research and construction of the ground [37-38]. In-depth benefit analysis of specific rural governance projects can promote the Party building to lead the grassroots governance mechanism to better play a role in the effectiveness, and ultimately realize the integrated construction of rural ecology and social governance modernization.

In this paper, we first integrate the three types of benefit indicators of ecology, economy and society to construct a comprehensive benefit assessment index system for ecological construction and social governance. Gray correlation analysis is used to realize the identification and decision-making of key influencing factors, and entropy weight method is used to determine the weights. Three typical regions are selected as research cases to verify the applicability of the proposed model. Combined with multi-source statistical data, complete the calculation of indicators and assignment of weights. Calculate the relative proximity and rank the different regions according to the comprehensive benefit level. Summarize the research findings and propose corresponding strategies.

2. Construction of a system of indicators for assessing the integrated benefits of ecological construction and social governance

Common wealth is the essential requirement of socialism and an important feature of Chinese modernization. In the context of the shift of the focus of “three rural areas” work to comprehensively promote rural revitalization, how to realize the synergistic development of rural ecological construction and social governance through the leadership of Party building, and scientifically evaluate its comprehensive benefits, has become a key issue that needs to be solved in theory and practice. In this paper, we take common prosperity as the goal orientation and party building leadership as the core mechanism to construct a comprehensive benefit evaluation index system. The focus of the comprehensive benefit evaluation index system of China's ecological construction and social governance projects should adhere to the principle of sustainable development, the principle of harmony and the principle of people-oriented, and should emphasize the impact of the completion of the project's construction on the survival and development of the masses and the region. According to the existing experience, the selection of comprehensive benefit evaluation indexes should follow the combination of quantitative evaluation and qualitative evaluation, which is also exactly consistent with the calculation characteristics of comprehensive benefit evaluation.

The comprehensive benefit evaluation system of the ecological construction and social governance project designed in this paper is shown in Table 1. The ecological benefit evaluation index system follows the index system of ecological value assessment, reflecting the principles of scientificity, independence, importance, relevance and comprehensiveness. The construction of the evaluation index system of economic and social benefits, on the other hand, is determined by reading a large amount of literature, based on the most commonly used indicators for the comprehensive benefit evaluation of construction projects in China, and combined with the status quo of agro-ecological parks.

The comprehensive benefit evaluation objective includes three guideline layers, i.e., ecological benefit A_1 , economic benefit A_2 , and social benefit A_3 . Eco-efficiency is mainly evaluated quantitatively from the perspective of ecosystem services, while economic and social benefits are evaluated qualitatively according to the actual situation and expected indicators. The following indicators are included: climate regulation benefit indicator (B_{11}), environmental purification benefit indicator (B_{12}), soil conservation benefit indicator (B_{13}), hydrological regulation benefit indicator (B_{14}), habitat provision benefit indicator (B_{15}), agricultural Benefit Indicator (B_{21}), Tourism Benefit Indicator (B_{22}), Service Industry Benefit Indicator (B_{23}), District Building Indicator (B_{31}), State Support Indicator (B_{32}), Resource Development Indicator (B_{33}).

Green plants can photosynthesize, absorb carbon dioxide and release oxygen to regulate the local microclimate, so the value of carbon sequestration and oxygen release by green plants can be calculated to determine the climate regulation benefit. A sound ecosystem has important functions such as purifying the environment and reducing the concentration of pollutants, so the environmental purification benefit is

an important indicator of ecological value assessment. The purpose of water system construction is to ensure the reliable and safe use of water and to serve as a certain flood storage. The planting of vegetation in the floodplain and landscape forests to prevent soil erosion and enhance precipitation retention and soil infiltration shows that the ecosystems fulfill the functions of water conservation and soil retention. Flood storage and water conservation are also hydrological regulation services. Biodiversity reflects the health of the ecosystem and represents the benefits of the services provided by the habitat. The above indicators are all quantifiable ecological service values, so B_{11} , B_{12} , B_{13} , B_{14} , B_{15} are included in the ecological benefit indicator layer of the comprehensive evaluation.

The establishment of the project will bring fixed agricultural benefits, and play a very big role in promoting the regional tourism industry, which in turn will enhance the quality and development of the service industry. The above indicators are all tangible and visible supply services, so B_{21} , B_{22} , B_{23} are included in the comprehensive evaluation of the economic benefit indicator layer.

The comprehensive benefit evaluation index system of China's ecological construction and social governance projects should emphasize the impact on the survival and development of the masses and regions after the completion of project construction. Whether the project is conducive to the development and construction of the region, whether the government escort to ensure the successful completion of quality and quantity, whether the development of resources to play a rational use of sustainable development, all need to be included in the scope of important considerations. Therefore, B_{31} , B_{32} , B_{33} are included in the comprehensive evaluation of social benefit indicators.

Table 1. Comprehensive benefit evaluation system.

Target layer	Criterion Layer	Indicator Layer
Comprehensive benefit assessment (O)	Ecological benefit (A ₁)	Climate regulation benefit (B ₁₁)
		Environmental purification benefit (B ₁₂)
		Soil conservation benefit (B ₁₃)
		Hydrological regulation benefit (B ₁₄)
		Habitat provides benefit (B ₁₅)
	Economic benefit (A ₂)	Agricultural benefit (B ₂₁)
		Tourism benefit (B ₂₂)
		Service industry benefit (B ₂₃)
	Social benefit (A ₃)	Regional construction (B ₃₁)
		Government support (B ₃₂)
Resource development (B ₃₃)		

3. Methodologies related to integrated benefits assessment modeling

3.1. Gray correlation analysis

Gray system theory is one of the many comprehensive evaluation methods. Gray system theory proposes gray correlation analysis for the study of system problems with large uncertainty and small data samples. Its core idea is to discover the intrinsic connection between factors by calculating the correlation between sequences. The method first standardizes the indicator series, and then derives the correlation degree between the indicators by calculating the correlation coefficient. These correlations reflect the correlation between different indicators, and a larger correlation means a higher degree of correlation between indicators. In practical application, by comparing the correlations of different sequences, the sub-sequence with the highest correlation with the main sequence can be identified for comprehensive evaluation and decision analysis. The specific steps are as follows:

Step 1: Construct the evaluation matrix

Suppose there are n samples with p evaluation indicators to form the raw indicator data matrix:

$$\mathbf{X} = \begin{pmatrix} X_{11} & \cdots & X_{1p} \\ \vdots & \ddots & \vdots \\ X_{n1} & \cdots & X_{np} \end{pmatrix} \quad (1)$$

Where X_{ij} denotes the value of the j th evaluation indicator of the i th sample.

Step 2: Determine the comparison series and reference series

The construction of the comparison series originates from the arrangement of the values of the indicators corresponding to each evaluation object, and the comparison series of the evaluation matrix X is:

$$X_k = (X_{k1} X_{k2} \cdots X_{kj}), k = 1, 2, 3, \dots, i \quad (2)$$

The reference series is taken from the optimal value of each evaluation indicator among all evaluation objects, and let X_{0j} be the optimal value of the j th indicator. When the indicator is a positive indicator, take $X_{0j} = \max(X_i)$; when the indicator is a negative indicator, take $X_{0j} = \min(X_i)$; when the evaluation indicator is a moderate indicator, take $X_{0j} = \min(X_i)$. Then the reference column is:

$$X_0 = (X_{01} X_{02} \cdots X_{0j}) \quad (3)$$

Step 3: Dimensionless processing.

Step 4: Determine the weights of indicators. In this paper, the entropy weight method is selected to calculate the comprehensive score of each indicator, and then the average distribution method is used to assign weights.

Step 5: Calculate and analyze the gray correlation

First, let $\Delta X'_{ij}$ be the absolute difference between each comparison series X'_{ij} and the reference series X'_{0j} , then $\Delta X'_{ij} = X'_{0j} - X'_{ij}$, and find the maximum value of $\Delta X'_{ij}$, $\Delta \max$, and the minimum value of $\Delta \min$.

Next, the gray correlation resolution coefficient ρ is determined. The smaller the value of the resolution coefficient ρ , the greater the resolution, and its value range is generally between $[0, 1]$, and usually the most accurate correlation is found when ρ is taken to be 0.5, so this paper adopts 0.5 to calculate.

Next, the gray correlation coefficient ξ_{ij} of the performance indicators is calculated:

$$\xi_{ij} = \frac{\min |X'_{0j} - X'_{ij}| + \rho |X'_{0j} - X'_{ij}|}{|X'_{0j} - X'_{ij}| + \rho |X'_{0j} - X'_{ij}|} \quad (4)$$

The gray correlation of each evaluation object is obtained from the above formula:

$$R_j = \frac{1}{m} \sum_{i=1}^m \omega_i \times \xi_{ij} \quad (j = 1, 2, 3, \dots, m) \quad (5)$$

where ω_i is the weight of each indicator.

Finally, the gray correlation is analyzed.

3.2. Entropy weight method

The entropy weight method is first utilized to determine the weights in the following steps:

Step 1: Form the initial decision matrix A .

According to the relevant evaluation object data information, m indicators are set to evaluate the advantages and disadvantages of n objects. Among them, the j th indicator value of the i th object is noted as X_{ij} ($i = 1, 2, \dots, n; j = 1, 2, \dots, m$). Based on these indicator values, an initial decision matrix A is constructed. The greater the difference in the indicator values of different objects in this

matrix, the richer the information carried and conveyed by the indicator, and thus the greater the role it plays in the process of benefit evaluation.

$$A = \begin{bmatrix} X_{11} & \cdots & X_{1m} \\ \vdots & \ddots & \vdots \\ X_{n1} & \cdots & X_{nm} \end{bmatrix} \quad (6)$$

Step 2: Dimensionless processing of the data to obtain the standardized matrix B

In order to eliminate the problem of data not being directly comparable due to the differences in the scale of different indicators, the raw data need to be dimensionless, so as to obtain the normalization matrix B . This process transforms the raw data into standardized data, denoted by Y_{ij} . After normalization, all indicator values fall within the interval $[0, 1]$ and the larger the value, the better.

$$B = \begin{bmatrix} Y_{11} & \cdots & Y_{1m} \\ \vdots & \ddots & \vdots \\ Y_{n1} & \cdots & Y_{nm} \end{bmatrix} \quad (7)$$

According to the different characteristics of indicators, they are classified into three types: positive, negative and moderate indicators. Among them, positive indicators are those that perform better with larger index values, negative indicators are those that perform better with smaller index values, and moderate indicators are those that perform better within a certain range.

The dimensionless formula for positive indicators is:

$$X_{ij} = \frac{X_{ij} - \min(X_{1j}, X_{2j}, \dots, X_{nj})}{\max(X_{1j}, X_{2j}, \dots, X_{nj}) - \min(X_{1j}, X_{2j}, \dots, X_{nj})} \quad (8)$$

$(i = 1, 2, \dots, n; j = 1, 2, \dots, m)$

The dimensionless formula for the negative indicator is:

$$X_{ij} = \frac{\max(X_{1j}, X_{2j}, \dots, X_{nj}) - X_{ij}}{\max(X_{1j}, X_{2j}, \dots, X_{nj}) - \min(X_{1j}, X_{2j}, \dots, X_{nj})} \quad (9)$$

$(i = 1, 2, \dots, n; j = 1, 2, \dots, m)$

The dimensionless formula for the fitness indicator is:

$$X_{ij} = 1 - \frac{|X_{ij} - d_{best}|}{\max |X_{ij} - d_{best}|} \quad (10)$$

$(d_{best} \text{ is the determined standard value})$

Step 3: Data Translation

Since the entropy weighting method needs to take the logarithm of the index value, when there is a value of 0 in the data, it will lead to the inability to carry out the logarithmic operation. Therefore, in order to avoid this problem, all the data need to be shifted by 1 unit, so that the original data Y_{ij} becomes the new data Z_{ij} after shifting. The calculation formula is:

$$Z_{ij} = Y_{ij} + 1 \quad (11)$$

Step 4: Calculate the weight of the evaluation indicators

It is necessary to determine the weight of the indicator value j of each evaluation object in the sum of the indicator. Let P_{ij} be the weight of the j th indicator value of the i th evaluation object in the sum of the indicator. The formula is:

$$P_{ij} = \frac{Z_{ij}}{\sum_{i=1}^n Z_{ij}} \quad (12)$$

Step 5: Calculate the entropy value of indicators

According to the principle of information entropy, calculate the entropy value E_j for each indicator value j . The entropy value reflects the utility value of the information provided by the indicator. Specifically, when the entropy value of the indicator is small, it indicates that the information conveyed by the indicator in the benefit evaluation is more effective and rich, and has a greater contribution to the benefit performance. Conversely, a larger entropy value means that the information value of the indicator in the evaluation is relatively low. The calculation formula is:

$$E_j = -\frac{1}{\ln n} \sum_{i=1}^n P_{ij} \ln P_{ij} \quad (13)$$

Step 6: Calculate the coefficient of variation

Let G_j be the coefficient of variation of indicator value j , the coefficient of variation reflects the degree of dispersion of the indicator value among different objects. When the j indicator of the indicator value of the greater the difference, it means that the indicator plays a greater role in the evaluation of the object. The calculation formula is:

$$G_j = 1 - E_j \quad (14)$$

Step 7: Calculate the entropy weight of indicators

Let W_j be the entropy weight of indicator j , entropy weight is calculated based on the coefficient of variation of the indicator value, which reflects the weight or influence of the indicator in the comprehensive evaluation. The larger the entropy weight, the more important the indicator is in the evaluation, and the greater the ability to influence the advantages and disadvantages of the benefits. The calculation formula is:

$$W_j = \frac{G_j}{\sum_{j=1}^m G_j} \quad (15)$$

4. Case studies on integrated benefit assessment of ecological construction and social governance

Three typical regions, X1, X2 and X3, are selected for this case, covering economic gradients and ecological differences. The data come from local statistical yearbooks, public reports of the Ministry of Ecology and Environment and field research questionnaires from 2020-2024, and are cleaned to cover 11 indicators, including ecological, economic and social indicators, to ensure horizontal comparability.

4.1. Calculation of indicator weights

4.1.1. Calculation of subjective weights

The judgment matrix is obtained according to the expert scoring as shown in Table 2. Calculation can be obtained: $w_1=0.4434$, $w_2=0.1692$, $w_3=0.3874$, $\lambda=3.0183$, $CR=0.0158<0.1$. It meets the consistency requirements and passes the consistency test.

Table 2. Judgment matrix.

O	A ₁	A ₂	A ₃
A ₁	1	3	1
A ₂	1/3	1	1/2
A ₃	1	2	1

The initial weight calculation results are summarized by calculation as shown in Table 3, where w represents the single-level weight and w' represents the total-level weight. After the calculation of the

total hierarchical ordering, it can be seen that there are only four indicators with a weight greater than 0.1 on the target level of the second-level indicators, namely: the benefits provided by the habitat, the construction of the region, the state support, resource development, and the benefits provided by the habitat have the greatest impact on the results of the comprehensive benefits, with a weight of 0.1336, which is also a reflection of the project based on the concept of the co-development of the ecological environment and the benefits of agriculture.

Table 3. Calculation results of initial weight.

Primary indicator	w	Secondary indicator	w	w'
A ₁	0.4434	B ₁₁	0.1487	0.0659
		B ₁₂	0.1776	0.0787
		B ₁₃	0.1521	0.0674
		B ₁₄	0.2204	0.0977
		B ₁₅	0.3012	0.1336
A ₂	0.1692	B ₂₁	0.4826	0.0817
		B ₂₂	0.2538	0.0429
		B ₂₃	0.2636	0.0446
A ₃	0.3874	B ₃₁	0.3287	0.1273
		B ₃₂	0.3397	0.1316
		B ₃₃	0.3316	0.1285

4.1.2. Calculation of objective weights

The entropy value and entropy weight were obtained through calculation, and the results are shown in Table 4. The entropy value reflects the degree of dispersion of the indicator, and the entropy value (0.804513) of B₁₅ (Habitat Provision Benefit) is the lowest, and the entropy weight (0.136153) is the highest, which indicates that the difference of its data is significant, and the contribution of the benefit is large.

Table 4. Calculation results of entropy value and entropy weight.

Indicator	Entropy value	Entropy weight
B ₁₁	0.843721	0.067473
B ₁₂	0.916543	0.109642
B ₁₃	0.823424	0.080244
B ₁₄	0.903521	0.081964
B ₁₅	0.804513	0.136153
B ₂₁	0.865432	0.060835
B ₂₂	0.845134	0.089864
B ₂₃	0.853413	0.070475
B ₃₁	0.810386	0.085964
B ₃₂	0.832754	0.119743
B ₃₃	0.842467	0.097643

The combination weights were further calculated, and the results of the calculation of the combination weights of the secondary indicators are shown in Table 5. Among the combination weights,

B₃₂ (State support) has a weight of 0.1257, with a balance between subjective and objective weights, and is the second most important indicator in terms of performance, while B₁₅ (Habitat provision benefits) has a combination weight of 0.1349, which is the highest among all indicators.

Table 5. Calculation results of weights for secondary indicators combinations.

Indicator	Subjective	Objective	Combination weight
B ₁₁	0.0659	0.0675	0.0667
B ₁₂	0.0787	0.1096	0.0942
B ₁₃	0.0674	0.0802	0.0738
B ₁₄	0.0977	0.0820	0.0899
B ₁₅	0.1336	0.1362	0.1349
B ₂₁	0.0817	0.0608	0.0713
B ₂₂	0.0429	0.0899	0.0664
B ₂₃	0.0446	0.0705	0.0576
B ₃₁	0.1273	0.0860	0.1067
B ₃₂	0.1316	0.1197	0.1257
B ₃₃	0.1285	0.0976	0.1131

4.2. Gray correlation analysis

According to step 3.1, the gray correlation coefficients for the three regions are shown in Table 6. The correlation coefficient reflects the degree of correlation between indicators, and the larger the coefficient, the stronger the correlation. From the data, the correlation coefficient of B₁₅ (Habitat provisioning benefit) in X₃ is 1, indicating that this indicator is strongly correlated with the optimal sequence, while the correlation coefficient of B₁₂ (Environmental purification benefit) in X₂ reaches 1, which is also outstanding.

Table 6. Grey correlation coefficient results of the three regions.

Primary indicator	Secondary indicator	X ₁ gray connection coefficient	X ₂ gray connection coefficient	X ₃ gray connection coefficient
A ₁	B ₁₁	0.84973	0.90371	0.83751
	B ₁₂	0.90381	1	0.70376
	B ₁₃	0.78633	0.83684	0.71145
	B ₁₄	0.83756	0.77355	0.81037
	B ₁₅	0.79361	0.63744	1
A ₂	B ₂₁	0.63543	0.90365	0.69364
	B ₂₂	0.83525	0.83753	0.73752
	B ₂₃	0.77351	0.91344	0.81037
A ₃	B ₃₁	0.80172	0.63463	0.78364
	B ₃₂	0.73857	0.70118	0.90375
	B ₃₃	0.71553	0.69364	0.88367

4.3 Results of the integrated benefits assessment

Based on the gray correlation coefficients multiplied by the weights of the corresponding indicators,

the scores of the first-level indicators in the comprehensive benefit assessment indicators of the three regions were calculated, and then the comprehensive benefit assessment results of the three regions were calculated based on the weights of the first-level indicators multiplied by the scores of the first-level indicators, as shown in Table 7. In terms of ecological benefits, X3 has the highest score of 13.3600 for B₁₅ (Habitat Provision Benefits), emphasizing its strong performance in ecological benefits. For economic benefits, X2 has the highest score of B₂₁ (agricultural benefits) at 7.3828. In social benefits, X3 has the highest score of B₃₂ (state support) at 11.8934.

Table 7. Comprehensive benefit evaluation results of the three regions.

Comprehensive evaluation indicators and weights					Evaluation result		
Primary indicator	w	Secondary indicator	w	w'	X1	X2	X3
A ₁	0.4434	B ₁₁	0.1487	0.0659	5.5997	5.9554	5.5192
		B ₁₂	0.1776	0.0787	7.1139	7.8700	5.5386
		B ₁₃	0.1521	0.0674	5.2999	5.6403	4.7952
		B ₁₄	0.2204	0.0977	8.1830	7.5576	7.9173
		B ₁₅	0.3012	0.1336	10.6026	8.5162	13.3600
A ₂	0.1692	B ₂₁	0.4826	0.0817	5.1915	7.3828	5.6670
		B ₂₂	0.2538	0.0429	3.5832	3.5930	3.1640
		B ₂₃	0.2636	0.0446	3.4499	4.0739	3.6143
A ₃	0.3874	B ₃₁	0.3287	0.1273	10.2059	8.0788	9.9757
		B ₃₂	0.3397	0.1316	9.7196	9.2275	11.8934
		B ₃₃	0.3316	0.1285	9.1946	8.9132	11.3552

Determine the optimal and worst values of the indicators, and further obtain the distances between the evaluation index values and the optimal and worst values. Calculate the closeness to the optimal and worst values. The closer the C_i value is to 1, the closer it is to the ideal scheme. Based on the calculation results of D_i⁺, D_i⁻, and C_i, the ranking results of the comprehensive benefits of the three regions are shown in Table 8. Among them, the C_i value of X3 is 0.6642, and its comprehensive benefits are the closest to the ideal plan among the three regions, indicating that the overall performance of X3 region in ecological construction and social governance is the most outstanding. The C_i value of X2 is 0.6281, ranking second, indicating that the comprehensive benefits of this region are also at a relatively good level, but there are certain gaps compared with X3 in some aspects. The C_i value of X1 is only 0.6142, ranking third, and its comprehensive benefits are relatively weak compared to the previous two. The comprehensive benefit assessment model in this paper takes into account the correlation degree and weight of each indicator, and reflects the order of the comprehensive benefits of each region in a scientific and rigorous way. It can provide a clear and reliable regional ranking conclusion for the benefit assessment of ecological construction and social governance.

Table 8. Ranking results of comprehensive benefits in three regions.

Region	D _i ⁺	D _i ⁻	C _i	Overall evaluation ranking
X1	0.0456	0.0723	0.6142	2
X2	0.0389	0.0654	0.6281	3
X3	0.0412	0.0815	0.6642	1

5. Conclusion

This paper constructs a comprehensive benefit assessment index model for ecological construction and social governance, and selects three typical regions to carry out case analysis.

Among the combination weights, B₃₂ (state support) has a weight of 0.1257, with a balanced subjective and objective weight, and is the second most important indicator for performance. B₁₅ (habitat provision benefits) has a combination weight of 0.1349, which is the highest weight among all indicators. For ecological benefits, X3 has the highest score of 13.3600 for B₁₅ (Habitat Providing Benefits). For economic benefits, X2 has the highest score of 7.3828 for B₂₁ (Agricultural Benefits). For social benefits, X3 has the highest score of 11.8934 for B₃₂ (State Support). The Ci values for X3, X2, and X1 are 0.6642, 0.6281, respectively, 0.6142, and X3 has the best overall performance in ecological construction and social governance.

6. Strategies

Under the guidance of the goal of common prosperity, combined with the assessment results of this paper on the comprehensive benefits of ecological construction and social governance, the Party should lead the modernization of ecological construction and social governance in rural areas based on the real problems reflected in the assessment, and accurately implement measures to realize the comprehensive revitalization of the countryside and common prosperity. The assessment results of this paper show that different regions have their own advantages and disadvantages in terms of ecological, economic and social benefits, and the comprehensive benefits are significantly affected by the strength of institutional safeguards and the effectiveness of governance mechanisms. Based on this, Party building should be problem-oriented, and the assessment results should be transformed into practical strategies to enhance the overall effectiveness of rural development.

As the backbone of rural development, grass-roots party organizations need to focus on the shortcomings in ecological, economic and social benefits exposed in the assessment, and strengthen their core leadership role. According to the results of the assessment, some areas scored low on indicators of ecological benefits such as climate regulation and soil conservation, reflecting the weakness of ecosystem services. The performance of supply service indicators such as agriculture and tourism in the economic benefits varies, and the industry-led capacity of some regions is insufficient. Indicators such as regional construction and government support in social benefits vary significantly, highlighting the imbalance of infrastructure and public services. In this regard, party organizations should place ecological governance in a prominent position, take the ecological benefit indicators in the assessment as a guide, and formulate ecological construction plans that fit the local reality. At the same time, party members should play a pioneering role in leading villagers to participate in ecological construction and social governance. Through precise measures and shortcomings, the comprehensive and coordinated development of the countryside will be promoted.

Deepening the supply of institutional innovation is the basis for guaranteeing the long-term stability of benefit enhancement, and it is necessary to establish a sound long-term mechanism for the short boards of the system found in the assessment. On the one hand, it is necessary to establish a sound ecological protection system, according to the assessment of environmental purification, hydrological regulation and other indicators of ecological benefits, to formulate strict ecological protection standards and regulatory systems, and to strengthen the protection and restoration of ecosystems, such as forests, wetlands, rivers and other ecosystems. On the other hand, a sound assessment and evaluation mechanism has been established to incorporate indicators of ecological construction and social governance into the assessment system, to motivate cadres at all levels to act actively and to promote the modernization of ecological construction and social governance in the countryside.

In conclusion, based on the assessment results of this paper, the modernization of ecological construction and social governance in the countryside led by Party building should be problem-oriented, and the short boards of ecological, economic and social benefits should be made up through precise measures, so as to promote the synergistic enhancement of ecological, economic and social benefits in the countryside, and to realize the goal of comprehensive revitalization and common prosperity in the countryside.

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