A Quantitative Model for Policy Text Assessment: A Multi-Dimensional Analysis of China's High-Standard Farmland Construction

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Abstract. Systematic evaluation of policy documents is essential for optimizing policy design; however, quantitative models for analyzing and assessing the content design of such documents remain inadequate. Accordingly, this paper introduces the TOL index model and a three-dimensional analytical framework of "theme-objective-lifecycle." The TOL index model was developed through variable selection, parameter configuration, and index measurement. By implementing text feature extraction utilizing the Word2Vec model and LDA topic model analysis based on corpus from text mining methodologies, unstructured data was converted into structured data, thereby achieving systematic deconstruction of policy document content design and providing a scientific foundation for policy optimization. As a case study, a quantitative analysis was performed using policy documents concerning high-standard farmland construction in China during the current developmental stage. The research reveals that, overall, policy text content design exhibits considerable comprehensiveness, with policy ratings ranking above medium level. However, significant regional heterogeneity is observed in policy topics across various construction zones, substantial differences exist in policy objectives, and there are varying focuses on policy project lifecycles. The research concludes that this paper establishes a "Topic-Objective-Lifecycle" analytical framework and the TOL index model, systematically and multidimensionally deconstructing the content design of policy texts. The research findings provide scientific evidence for optimizing the content design of high-standard farmland construction policy texts in terms of policy topic coverage, progressive nature of policy objectives, and connectivity of policy lifecycles. Consequently, the TOL index model can also function as a decision support tool to facilitate policy design optimization.

Keywords: Policy text evaluation, the TOL index model, high-standard farmland construction policies.

1 Introduction

The scientific rigor and rationality of policy text content design constitute a prerequisite for effective policy implementation. Yet existing research predominantly focuses on proposing optimization recommendations based on post-implementation effectiveness

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assessments, with relatively little attention devoted to evaluating the rationality of policy design through systematic analysis of policy texts themselves. Moreover, as policy texts constitute a vast reservoir of digital government big data, conventional qualitative approaches are increasingly inadequate. Meanwhile, current quantitative policy evaluation studies largely rely on internationally established PMC (Policy Modeling Consistency) index models, and their analytical scope tends to center narrowly on policy instruments. Few studies incorporate the full lifecycle of public policy initiatives, and even fewer simultaneously examine both central-local governmental relationships and regional disparities across policy levels. Accordingly, this study proposes the development of the TOL index model and a three-dimensional analytical framework centered on "themes, objectives, and policy lifecycle." Applying this framework to China's current high-standard farmland construction policies, the study deconstructs the design of policy text content and generates empirical evidence to support policy optimization, thereby offering a novel research perspective and methodological approach to policy text analysis and evaluation.

High-standard farmland construction serves as a critical measure for enhancing cultivated land quality and constitutes a vital foundation for ensuring food security. In recent years, to strengthen quality management in high-standard farmland construction, the Ministry of Agriculture and Rural Affairs has formulated and issued a series of regulatory standards, including the Management Measures for High-Standard Farmland Quality, the Management Measures for Completion Acceptance, and the National Standard for General Rules of High-Standard Farmland Construction. These documents standardize specific technical requirements and quality controls for the design, construction, supervision, and acceptance of high-standard farmland projects. Various provinces have also introduced a range of local regulations, laying a solid foundation for the smooth implementation of such projects. By the end of 2024, China had cumulatively developed over 1 billion mu of high-standard farmland and upgraded more than 100 million mu, accounting for over 50% of the nation's total cultivated land area. Despite the notable achievements in implementing existing high-standard farmland construction policies, several issues persist that hinder the full realization of its benefits. These include problems with the quality of farmland water conservancy facilities projects, inaccuracies in data of high-standard farmland, and financial management issues such as misappropriation of project funds. Additionally, there are bidding problems like collusive bidding and avoidance of bidding, as well as procedural shortcomings such as perfunctory supervision, perfunctory acceptance, and inadequate management and protection.

In response, the No. 1 Central Document for 2025 emphasizes the need to advance high-standard farmland construction with high quality, optimize construction components, improve mechanisms for farmers' participation throughout project implementation, and strengthen full-process supervision of project quality. In January of the same year, the Central Committee of the Communist Party of China and the State Council issued the Rural Comprehensive Revitalization Plan (2024–2027), which calls for increased investment in high-standard farmland construction. The plan aims to progressively convert eligible permanent basic farmland into high-standard farmland, raise construction standards and quality, and refine the mechanisms for construction,

acceptance, and management and protection. In March of the same year, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the Implementation Plan for Gradually Building Permanent Basic Farmland into High-Standard Farmland. The plan explicitly states that food security is a strategic issue, with the foundation for safeguarding national food security lying in cultivated land. High-standard farmland construction serves as a crucial instrument in this endeavor. The plan calls for efforts to gradually transform all eligible permanent basic farmland into high-standard farmland. In April of the same year, the Central Committee of the Communist Party of China and the State Council issued the Plan for Accelerating the Development of a Strong Agricultural Nation (2024–2035). This plan identifies food security as the material foundation for building a strong agricultural nation. It proposes improving the mechanisms for the construction, acceptance, and maintenance of high-standard farmland, and establishing a sound supervision and inspection system for the quality of farmland construction projects. It is evident that the importance of high-standard farmland construction for ensuring food security, along with the necessity of full-process supervision of project quality in such construction, dictates that efforts in this area must remain unwavering. In this context, how to deepen the content design of policy texts, enhance their scientific rigor and systematic nature, and thereby advance high-standard farmland construction has become a critical issue requiring urgent discussion.

Currently, academic research on the high-standard farmland construction policy primarily focuses on its implementation outcomes and policy optimization. In terms of implementation outcomes, this policy has generated positive effects on grain output, cultivated land cropping patterns, farmers' willingness to grow grain, green development in agriculture, and agricultural water-use efficiency. First, the implementation of the high-standard farmland construction policy has significantly strengthened the "grain-oriented" shift in cropping patterns [1]. Second, by enhancing cultivated land quality, the policy has improved both grain production capacity and actual grain output [2-5], thereby increasing farmers' incomes and substantially boosting their motivation to cultivate grain. Third, the policy has effectively enhanced agricultural water-use efficiency and disaster resilience[6], thus promoting sustainable and green development in agriculture[7-8] as well as the expansion of agricultural social services[9].From the perspective of policy optimization for high-standard farmland construction, several challenges persist during implementation, including insufficient construction standards, incomplete supporting infrastructure, overreliance on a single funding source, weak interagency coordination, underdeveloped operation and maintenance mechanisms, inadequate oversight, and failure to meet actual utilization needs. Addressing these issues urgently requires coordinated advancement across multiple dimensions—namely, top-level design, diversification of financing channels, reform of management systems, integration of science and technology, and establishment of long-term, sustainable operation and maintenance frameworks—to strengthen the foundational capacity for food security [10-11].

With the explosion of policy data, traditional qualitative interpretation methods for revealing policy content design have become inadequate for data-intensive policy research due to their high human resource costs and limited capacity to handle large-scale

policy texts. The rapid development of information technology and interdisciplinary integration have facilitated the migration and application of techniques from fields such as computer science to policy text analysis, giving rise to a new policy research paradigm: quantitative research on policy texts. Quantitative research on policy texts is a methodological approach that quantifies and analyzes the unstructured internal and external characteristics of policy documents. It transforms these characteristics into structured data that can be processed by computers, enabling computer-assisted analysis to uncover latent information within the texts. The primary quantitative methods for achieving this data conversion are bibliometrics, content analysis, and text mining. These methods respectively focus on the external attributes, content features, and underlying semantics of policy texts. The policy system can be further decomposed into five components: policy texts, policy subjects, policy objects, policy processes, and policy environments [12]. By integrating the composition of the policy system with the quantitative methods for policy texts, five distinct research perspectives emerge: the analysis and evaluation of policy texts, the cooperation and game of policy subjects, the change and development of policy objects, the decryption and reasoning of policy processes, and the influence and function of policy environments[12].From the perspective of analysis and evaluation of policy texts, regarding the quantitative evaluation of policy texts, Sun Yiping et al. (2024) conducted a quantitative evaluation of cultivated land protection compensation policy based on the PMC index model[13]. However, the variable assignment method of the PMC index model uses a 0-1 binary scale, and each sub-variable is assigned equal weight. This approach fails to account for the influence of word frequency and semantics on variable assignment, nor can it adjust sub-variable weights based on the specific configurations of current policies. Consequently, their PMC index model exhibits significant limitations. Zhang Zuo et al. (2024) employed the "theme - goal - tool" framework and the TOT index model method to reveal the multi-level and multi-dimensional design characteristics of cultivated land protection policy texts, thereby broadening the methodological approaches for quantitative evaluation of policy texts [14]. Although the logical framework for policy text analysis and the corresponding quantitative deconstruction index model they constructed considered capturing variable intensity precisely through frequency, they overlooked the impact of semantics. Nevertheless, their work provides an important reference for this study to comprehensively consider the influences of both frequency and semantics in constructing the "theme - goal - lifecycle" framework and the TOL index model for the systematic deconstruction of policy text content design.

In the field of quantitative evaluation of policy texts, existing academic research has focused on deconstructing the content design of policy texts and conducting quantitative assessments by designing evaluation dimensions and evaluation indices, determining objective variables, and constructing evaluation systems. Studies primarily follow two approaches. Some scholars analyze and evaluate policy texts using internationally established quantitative evaluation models. For instance, Sun Yiping et al. (2024) applied the PMC index model to quantitatively evaluate China's cultivated land protection compensation policy [13]. Other scholars develop tailored evaluation systems and analytical frameworks by selecting appropriate objective variables based on the specific needs of policy text research. For example, Zhang Zuo et al. (2024) analyzed China's

cultivated land protection policy texts using a "theme-objective-tool" framework [14]. This study similarly constructs a policy text evaluation index model and an analytical framework by selecting objective variables for corresponding evaluation dimensions based on the practical needs of researching policy texts of high-standard farmland construction. Regarding the design of evaluation dimensions, existing research has predominantly focused on dimensions such as policy themes and policy goals, with less attention paid to the policy lifecycle.

In summary, existing studies related to high-standard farmland construction policies have typically examined single policies in isolation. They have primarily considered policy implementation effectiveness and optimization perspectives. This approach fails to systematically and scientifically deconstruct the content design of policy texts, lacks the provision of empirical evidence to support policy optimization, and consequently cannot effectively advance high-standard farmland construction. Therefore, this study constructs a "theme-objective-lifecycle" evaluation system for policy texts to deconstruct the content design of current high-standard farmland construction policy texts issued by the central government and various construction zones. Using the evaluation results of these policy texts as empirical evidence for policy optimization, it proposes targeted policy recommendations. This approach aims to enhance policy implementation effect, advance high-standard farmland construction, and safeguard national food security.

2 Research Design and Methods

2.1 Analytical Framework

This paper constructs a policy text evaluation index model and an analytical framework based on three dimensions: policy theme, policy goal, and lifecycle. The policy goal indicates the intended policy effects to be achieved through implementation, clarifying the design intent of the policy by specifying "what to do." The policy theme clearly reflects the core issues and key content addressed in existing policy texts, pointing to the focal areas of policy action required to realize the policy intent behind the goals, thereby outlining "how to do it." The concept of lifecycle here differs from previous approaches that focus on policy formulation, implementation, and evaluation. Instead, it refers to the project lifecycle covered by the policy text. This perspective helps policymakers adapt and refine policies according to the characteristics and challenges of different project phases, thereby optimizing management effectiveness in key project segments, which addresses the need to "strengthen management of critical links."

Accordingly, as illustrated in Figure 1, this study constructs a policy text analysis framework based on the evaluation dimensions of policy theme, policy goal, and lifecycle. It also designs a corresponding policy text evaluation model, the TOL index model. Taking the policy texts of high-standard farmland construction issued by the central government and various construction zones as the research objects, the study deconstructs the content design of these policy texts across different administrative levels, geographical regions, and project lifecycles, followed by analysis and evaluation.

Fig. 1. A Policy Text Analysis Framework Based on "Theme, Objective, and Lifecycle".

2.2 Data Sources and Preprocessing

The primary platforms for policy retrieval were the official website of the Central People's Government of the People's Republic of China, the official websites of local governments at the provincial (province, autonomous region, and municipality) level, the official website of the Ministry of Agriculture and Rural Affairs of the People's Republic of China, and the official websites of local agricultural management departments at the provincial (province, autonomous region, and municipality) level. Supplementary sources included the National Standard Full-text Public System, the National Standard Information Public Service Platform, "PKULAW," and "Law-Star." Policy collection was conducted using a title search method, targeting documents with titles explicitly containing the keywords "high-standard farmland" or "farmland construction." Considering the current stage of high-standard farmland construction policy texts, the period from April 2018 to June 2025, which represents the policy deepening phase, was

selected as the start and end point for evaluating high-standard farmland construction policy texts. Given the distinct factors such as topography, farming systems, climatic characteristics, and soil-water conditions that vary between construction zones but are relatively similar within each zone, the policy texts of high-standard farmland construction from the central government and each construction zone were selected as the research subjects. The collected policy texts were screened and preprocessed according to the following criteria: ① Duplicate and invalid policy texts were removed, retaining only those currently in effect. ② Policy texts that were almost entirely irrelevant were excluded. ③ Annual task assignment documents were deleted. Ultimately, a valid data sample of 264 policy texts from the central government and each construction zone was determined (after removing duplicate counts from Inner Mongolia, which belongs to both the Northeast and Northwest zones). These are primarily policy texts in the categories of "notices" and "guidance opinions." Specifically, there are 21 central-level policy texts, 65 from the Northwest Region, 35 from the Northeast Region, 7 from the Qinghai-Tibet Region, 32 from the Southwest Region, 45 from the Huang-Huai-Hai Region, 49 from the Middle and Lower Reaches of the Yangtze River Region, and 29 from the Southeast Region.

This study first conducted text preprocessing on the collected corpus of policy texts. This involved text cleaning to remove elements such as emojis and punctuation marks, followed by Chinese word segmentation using the jieba library. Stop words were then removed, resulting in a set of word vectors suitable for analysis. Subsequently, the TOL index model was constructed.

2.3 Construction of the TOL Index Model

As illustrated in Figure 2, the TOL index model constructed in this study employs policy text analysis to convert unstructured policy texts into structured data. This enables the systematic deconstruction of policy content design across different administrative levels and geographical regions. The main procedural steps are as follows: (1) variable identification, (2) parameter setting, and (3) TOL index calculation.

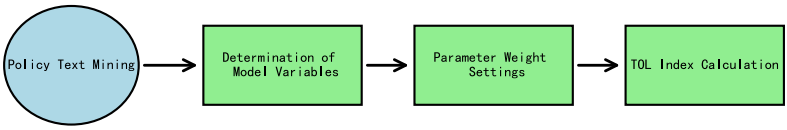

Fig. 2. TOL Index Model Construction Framework.

Determination of Variables for the TOL Index Model. From the perspective of policy text analysis and evaluation, this study employs a dual approach. First, it utilizes text feature extraction based on the Word2Vec model, a method within text mining for quantitative research on policy texts, to analyze content features such as policy goals

and lifecycle stages. This analysis identifies high-frequency keywords for the variables of policy goal and lifecycle. Second, it applies Latent Dirichlet Allocation (LDA) topic modeling based on a corpus, another text mining method in quantitative policy text research. Model parameters are adjusted, and the optimal number of topics is determined using the elbow method by evaluating perplexity and topic coherence. This process eliminates interference from parameters where perplexity decreases with an increasing number of topics. Since the LDA model aims to generate interpretable themes, when metrics conflict with minimal differences, priority is given to the number of topics yielding higher coherence. Consequently, the number 4 is selected as the optimal topic count, as illustrated in Figure 3 and summarized in Table 1. The LDA model is then rerun with this setting to analyze semantic features, including policy themes. This step determines the subtopics for the policy theme variable and identifies the high-probability keywords associated with each subtopic. The determination results for the variables of policy theme, policy goal, and lifecycle are as follows.

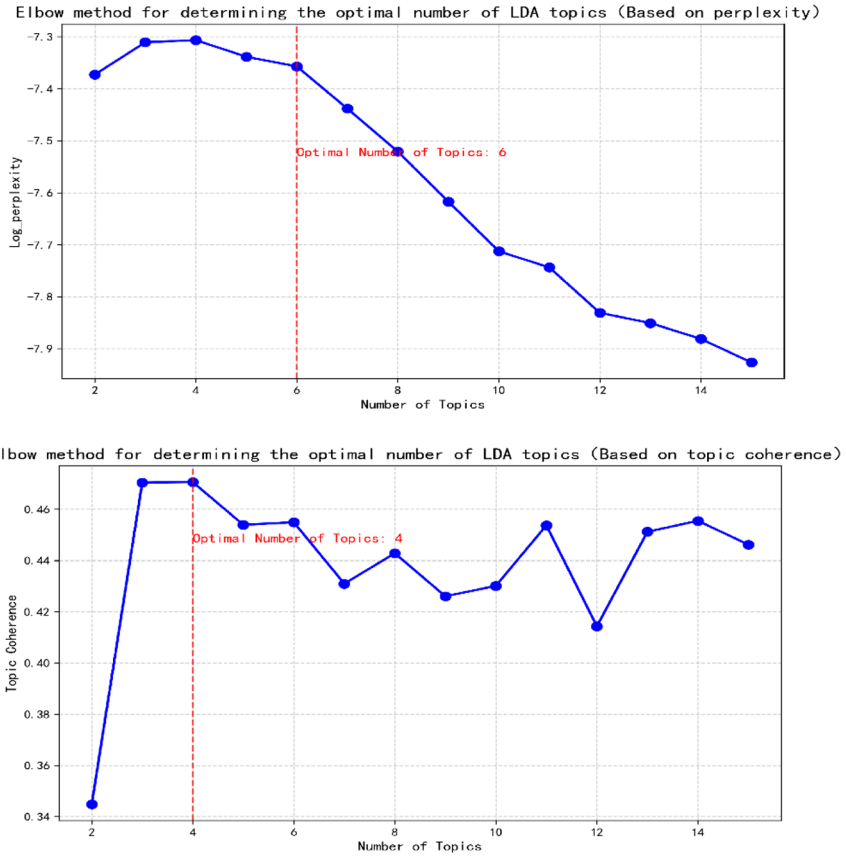

Fig. 3. Elbow method for determining the optimal number of LDA topics.

Table 1. LDA Model Topic Analysis Performance.

Number of Topics	Perplexity	**Topic** Coherence
4	-7.32	0.4730
6	-7.37	0.4420

X: Policy theme variables. X1: The management and maintenance mechanism for high-standard farmland construction projects primarily involves clarifying the responsible entities for maintenance, consolidating maintenance responsibilities, securing maintenance funds, and implementing farmland protection measures. Key terms include "construction," "farmland," "high-standard," "agriculture," "project," "rural," "work," "department," "cultivated land," "maintenance," "implementation," "funds," "planning," "management," "quality," "improvement," "evaluation," "status," "implementation," and "development." X2: The acceptance mechanism for high-standard farmland construction projects mainly entails a comprehensive evaluation of project completion, construction quality, and fund utilization. The keywords primarily include "farmland," "high-standard," "project," "construction," "maintenance," "agriculture," "acceptance," "engineering," "work," "rural," "facilities," "cultivated land," "quality," "status," "completion," "department," "management," "funds," and "organization." X3: The construction mechanism for high-standard farmland construction projects primarily encompasses aspects such as planning, design, and construction content for high-standard farmland construction. The keywords mainly consist of "farmland," "construction," "high-standard," "engineering," "cultivated land," "agriculture," "soil," "irrigation," "improvement," "production," "facilities," "maintenance," "planning," "field," "quality," "enhancement," "roads," "ecology," "measures," and "standards."X4: The full-process supervision mechanism for project quality in high-standard farmland construction projects primarily encompasses the supervision methods and aspects involved in this mechanism. Keywords related to the full-process supervision mechanism for project quality in high-standard farmland construction projects mainly include "project," "construction," "farmland," "engineering," "high-standard," "unit," "design," "acceptance," "agriculture," "rural areas," "conditions," "quality," "construction (as in building)," "supervision (as in oversight)," "work," "documents," "materials," "completion," and "content."

Y: Objective variable for policy goals. The current policy goal of high-standard farmland construction is to establish high-standard farmland that prioritizes both quantity and quality while being ecologically friendly. This is achieved through implementing farmland infrastructure construction projects and farmland productivity enhancement projects, ultimately aiming to improve cultivated land quality and ensure national food security. The policy objective variables for high-standard farmland construction at the current stage and their respective keywords are identified as follows: Y1: Quantity Increase (Keyword: quantity), Y2: Quality Improvement (Keyword: quality), Y3: Ecological Friendliness (Keyword: ecology), and Y4: Food Security (Keyword: food).

Z: Lifecycle Variables. The project lifecycle involved in the implementation of the current high-standard farmland construction policy primarily encompasses aspects such as planning and design, bidding and tendering, construction management, completion acceptance, post-construction management and maintenance, and comprehensive

oversight. The lifecycle variables associated with the policy's implementation and their corresponding keywords are defined as Z1: Planning and Design (Keywords: planning, design), Z2: Bidding and Tendering (Keywords: bidding, tendering), Z3: Construction Management (Keywords: construction, supervision), Z4: Completion Acceptance (Keywords: completion, acceptance), Z5: Post-construction Management and Maintenance (Keyword: management and maintenance), and Z6: Comprehensive Oversight (Keyword: oversight).

Building upon the above interpretation of the policy theme variable, policy goal variable, and life-cycle variable in current high-standard farmland construction policy texts, this study develops a three-dimensional analytical framework for high-standard farmland construction policy texts, as illustrated in Figure 4.

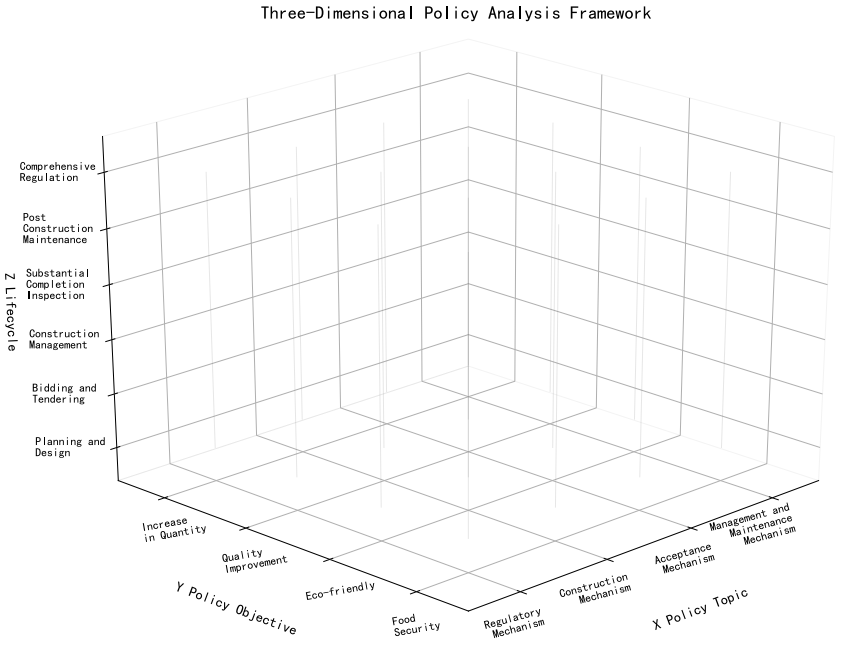

Fig. 4. Analytical Framework for Policy Texts on High-Standard Farmland Construction.

Parameter Setting for the TOL Index Model. This primarily refers to the comprehensive weight setting for the parameters of the variables in the TOL index model. On one hand, based on the text feature extraction results from the Word2Vec model, the frequency weight, semantic intensity weight, and semantic direction weight of high-frequency keywords for the policy goal and lifecycle variables are calculated. The comprehensive weight is then computed using a ratio of frequency weight to semantic intensity weight to semantic direction weight of 2:1:1. This process completes the comprehensive weight setting for the parameters of the policy goal and lifecycle variables. On the other hand, based on the analysis results from the LDA topic model of the corpus and the statistical results of keyword frequencies with high probability distribution

weights for each subtopic, the frequency weight and semantic weight of keywords with high probability distribution weights for the policy theme are calculated. The comprehensive weight is subsequently determined using a 1:1 ratio of frequency weight to semantic weight, thereby finalizing the comprehensive weight setting for the parameters of the policy theme variable.

TOL Index Calculation. First, taking the policy texts of high-standard farmland construction from the central government and various construction zones as the research objects, this study applies the fuzzy-set logic of fsQCA. It sets the upper, middle, and lower quartiles as anchor points and uses the calibrate function to perform initial calibration and assignment for keywords related to policy themes, policy goals, and lifecycle variables. Second, the initial calibrated values of the variable keywords are multiplied by their comprehensive weights to obtain the scores for each keyword. The scores of keywords within each sub-variable are then summed and averaged to derive the score for that sub-variable. Subsequently, the scores of all sub-variables are summed and averaged to obtain the overall score for each variable. Finally, following Equation (1), which adopts a ratio of policy theme to policy goal to policy lifecycle of 1:1:1, the TOL index scores for the policy texts of high-standard farmland construction from the central government and each construction zone are calculated. The TOL index scores for the policy texts of high-standard farmland construction at the central level and across individual construction zones were classified and graded according to the zoning mapping scheme presented in Table 2, thereby enabling a systematic deconstruction of the content design of these policy texts and facilitating their quantitative evaluation.

$$TOL = \frac{1}{3} * \left[X \left(\sum_{i=1}^{4} \frac{X_i}{4} \right) + Y \left(\sum_{j=1}^{4} \frac{Y_j}{4} \right) + Z \left(\sum_{p=1}^{6} \frac{Z_p}{6} \right) \right] \quad (1)$$

Equation (1) presents the calculation method for the TOL index.

Table 2. TOL Score Zone Mapping and Grading Ranges.

TOL Score Partition Mapping Interval	TOL Index Level
[0.75,1]	Excellent
[0.5,0.75)	Good
[0.25,0.5)	Average
[0,0.25)	Fair

3 Empirical Analysis

3.1 Policy Multi-Dimensional Evaluation Score

The TOL index reflects the current performance of policy texts on high-standard farmland construction—issued by both the central government and individual construction zones—across three evaluation dimensions: policy theme, policy goal, and lifecycle. Quantitative TOL evaluation results for these policy texts are presented in Table 3 and Figure 5; the score distributions across the three dimensions—policy theme, policy goal, and lifecycle—are shown in Figure 6. As indicated in Figure 6, the TOL index

scores range from 0.036 to 0.146, with a mean of 0.086. The overall policy evaluation outcomes for the policy texts are as follows: two rated "excellent," two "good," two "moderate," and two "fair." Collectively, this indicates that the majority of construction zones achieve at least a moderate rating in the policy evaluation, and that most zones demonstrate relatively comprehensive design of their policy texts across the three evaluation dimensions—policy theme, policy goal, and lifecycle. Specifically, the mean score for policy theme (X) is 0.020, which falls below the overall TOL index mean of 0.086, indicating that the policy texts on high-standard farmland construction across most administrative divisions inadequately cover key implementation priorities and methods, and thus exhibit insufficient breadth in policy theme representation. In contrast, the mean score for policy goal (Y) is 0.180—substantially higher than the TOL index mean—suggesting that these policy texts place relatively high expectations on the intended policy implementation effects, and articulate both a broad range of objectives and ambitious targets for their achievement. Meanwhile, the mean score for lifecycle (Z) is 0.059, lower than the TOL index mean, reflecting comparatively low emphasis across most administrative divisions on ensuring coherence and integration across critical stages of policy implementation.

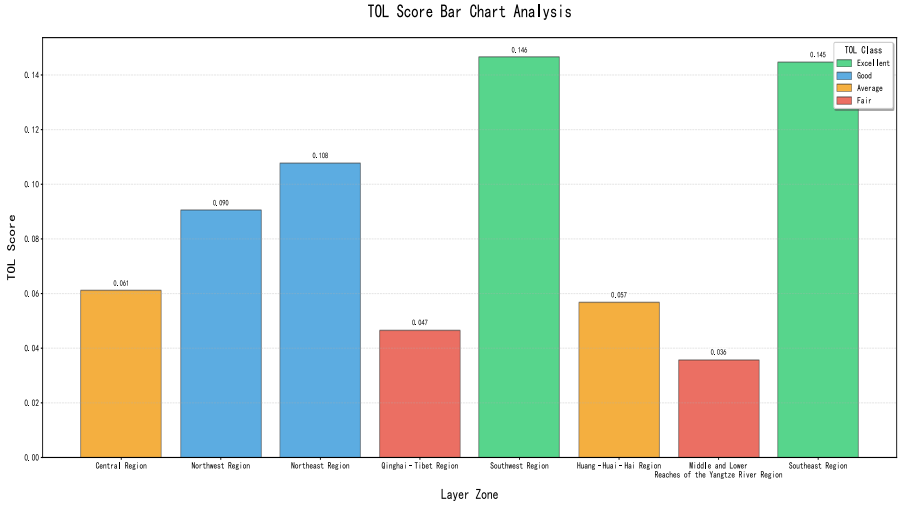

Fig. 5. TOL Score Diagram for the Policy Text of High-Standard Farmland Construction.

From a hierarchical perspective, the TOL score of central-level policy texts is 0.061, which falls below the overall mean TOL score of 0.086. This indicates that the majority of construction zones exhibit relatively high levels of hierarchical transmission and progressive evolution in their policy texts, successfully conveying central-level policy directives while simultaneously advancing their own policy development. From a scores and policy ratings: policy texts from the southeast and southwest regions receive an "excellent" rating; those from the northwest and northeast regions are rated "good"; the Huang-Huai-Hai construction zone receives a "moderate" rating; and policy texts from the Qinghai–Tibet Plateau and the middle–lower reaches of the Yangtze River regions are rated "fair."

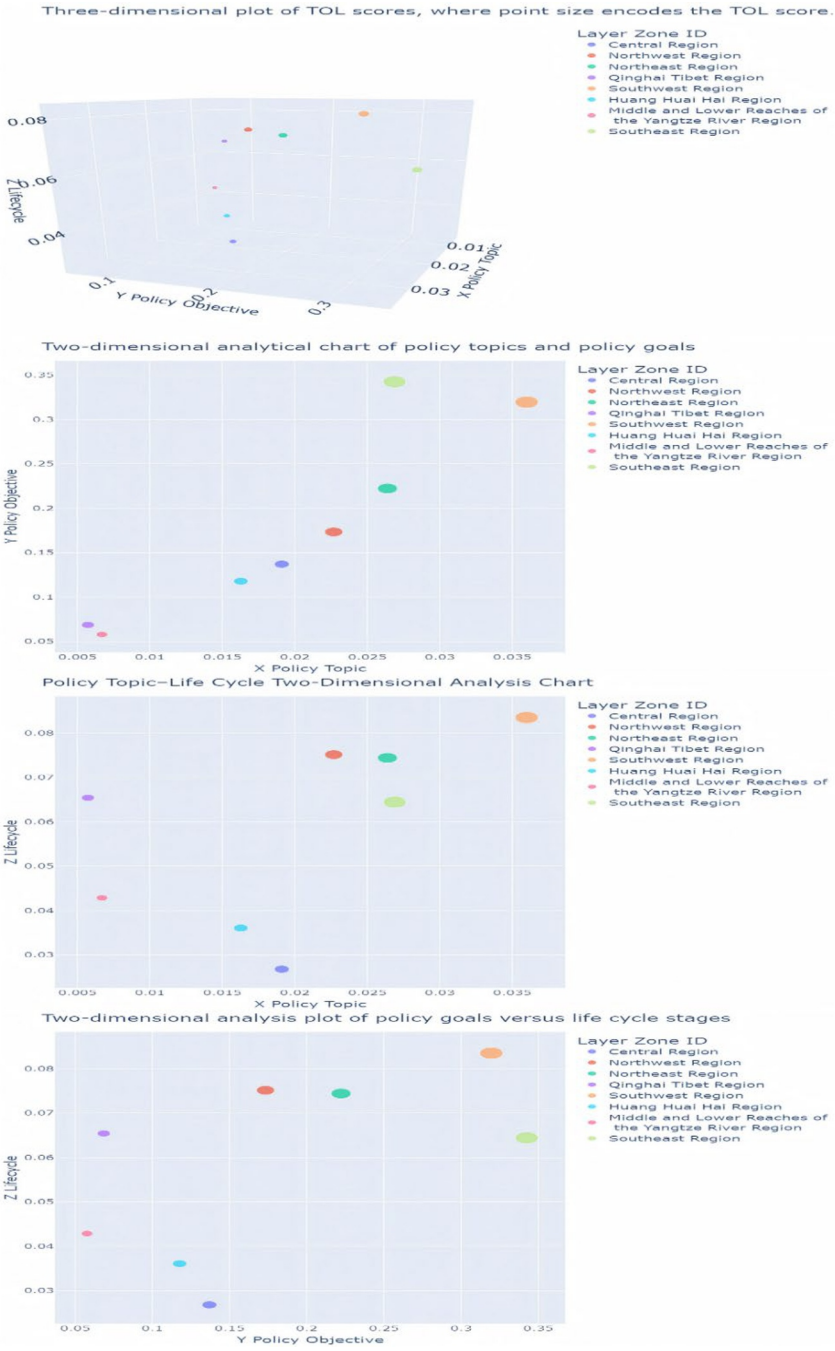

Fig. 6. Three-dimensional scoring chart of policy topic, policy goal, and lifecycle.

Table 3. Quantitative Evaluation of Policy Text TOL Scores.

layer zone	Policy Topic X Score	Policy Objective Y Score	Lifecycle Z-Score	TOL score	TOL Index Level
Central Region	0.0191	0.1370	0.0268	0.0610	Average
Northwest Region	0.0227	0.1733	0.0751	0.0904	Good
Northeast Region	0.0264	0.2223	0.0744	0.1077	Good
Qinghai–Tibet Region	0.0057	0.0685	0.0654	0.0466	Fair
Southwest Region	0.0360	0.3196	0.0835	0.1464	Excellent
Huang–Huai–Hai Region	0.0163	0.1177	0.0361	0.0567	Average
Middle and Lower Reaches of the Yangtze River Region	0.0067	0.0577	0.0429	0.0358	Fair
Southeast Region	0.0269	0.3425	0.0644	0.1446	Excellent
Average	0.0200	0.1798	0.0586	0.0861	Average

3.2 Policy Topic Coverage Analysis

The scores for policy themes and their respective subthemes across the central government and each construction zone are presented in Figure 7. The score range for all policy subthemes falls between 0.002 and 0.037. Overall, the mean scores across the policy subthemes are relatively similar: Subtheme 1—maintenance mechanism for high-standard farmland construction projects—has a mean score of 0.020; Subtheme 2—acceptance mechanism for high-standard farmland construction projects—also has a mean score of 0.020; Subtheme 3—project implementation mechanism for high-standard farmland construction—has a mean score of 0.020; and Subtheme 4—full-process supervision of project quality for high-standard farmland construction projects—has a mean score of 0.020. These results indicate that policy texts across all administrative levels comprehensively cover the designated policy themes and assign comparable emphasis to each policy subtheme.

From the perspectives of different administrative levels and geographic regions, policy themes in central-level policy texts of high-standard farmland construction exhibit a distinct emphasis, particularly on management mechanisms and implementation mechanisms for high-standard farmland construction projects. Policy texts from the four construction zones—Northwest, Northeast, Southwest, and Southeast—demonstrate relatively comprehensive coverage of policy themes, addressing a broad spectrum of thematic areas. In contrast, policy texts from the Qinghai–Tibet, Huang-Huai-Hai, and Middle–Lower Yangtze River construction zones show comparatively limited thematic coverage, with insufficient attention to multiple subthemes across the policy domain.

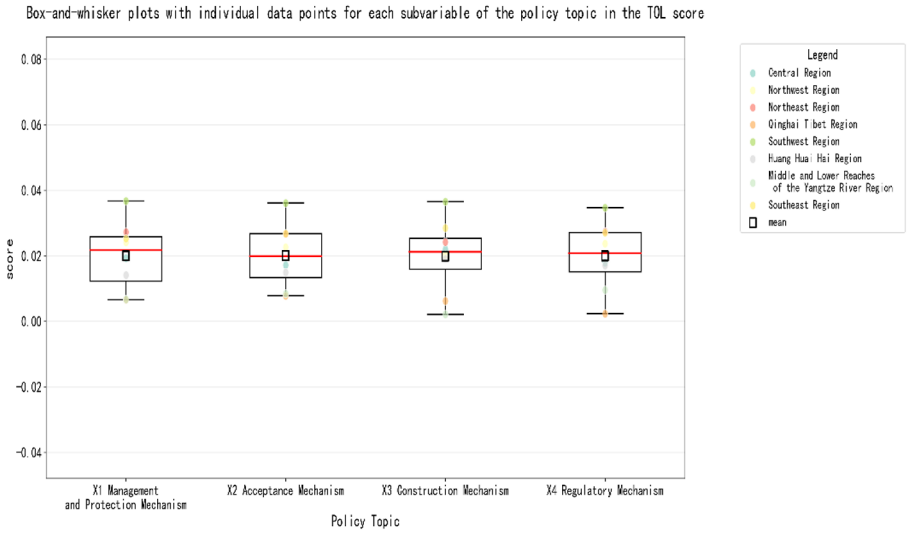

Fig. 7. Scores for policy subthemes under each policy topic.

3.3 Policy Objective Progression Analysis

Figure 8 presents the scores for each sub-variable of the policy goals outlined in the policy texts issued by the central government and individual construction zones. The scoring range for each policy goal sub-variable is [0, 0.49]. Overall, these policy texts place greater emphasis on food security and quality enhancement, while devoting comparatively less attention to area expansion and ecological compatibility. This disparity is reflected in the mean scores across the policy goal variable and its four sub-variables: the overall policy goal variable (Y) has a mean score of 0.180; the sub-goal of area expansion (Y1), 0.126; the sub-goal of quality enhancement (Y2), 0.253; the sub-goal of ecological compatibility (Y3), 0.153; and the sub-goal of food security (Y4), 0.187.This reflects the relatively high degree of hierarchical progression in the policy goals articulated in the current policy texts on high-standard farmland construction issued by the central government and various construction zones. Specifically, these texts place greater emphasis on quality improvement and food security, while devoting comparatively less attention to output expansion and ecological compatibility. It further indicates that food security constitutes the foundational objective of high-standard farmland construction, whereas output expansion, quality improvement, and ecological compatibility represent progressively layered objectives that such construction aims to achieve. Among the sub-goals specified in the current policy texts across different administrative levels, food security and quality improvement consistently yield the highest mean scores, followed by ecological compatibility, with output expansion registering the lowest mean score. This pattern suggests that, at present, policy frameworks for high-standard farmland construction have largely shifted from a primary focus on output volume toward a balanced emphasis on both quantity and quality—and are gradually evolving to incorporate ecological considerations as an integral component.

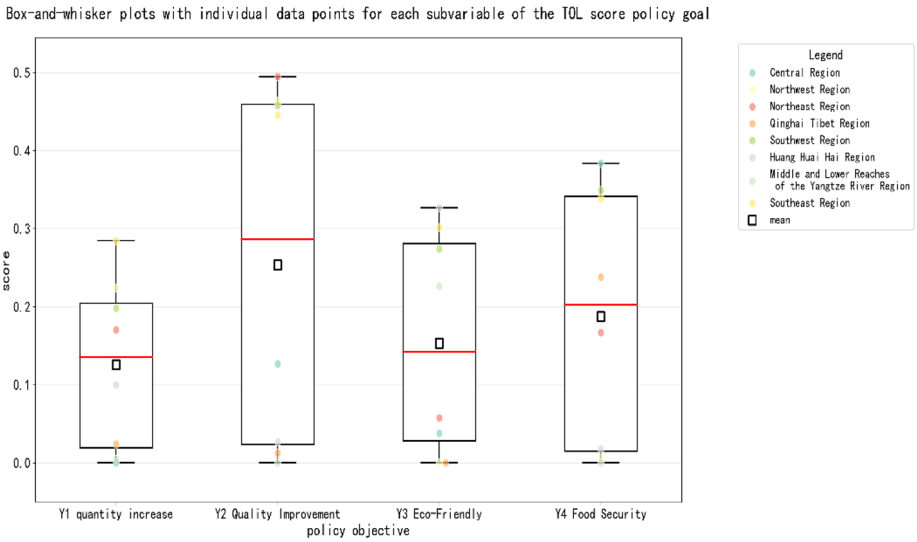

Fig. 8. Policy Goal Sub-Variable Scores

From the perspectives of different administrative levels and geographic regions, national-level policy texts emphasize food security. Policy goals in the Northwest and Northeast regions demonstrate relatively high progression, placing equal emphasis on increasing output and improving quality, yet they pay insufficient attention to ecological sustainability. In contrast, policy goals in the Qinghai–Tibet region exhibit the lowest level of progression, focusing exclusively on food security while neglecting objectives related to output expansion, quality enhancement, and ecological sustainability. By comparison, policy goals in the Southwest and Southeast regions show the highest degree of progression, integrating output expansion, quality enhancement, and ecological sustainability as equally important priorities and assigning adequate weight to achieving food security. Finally, policy goals in the Huang–Huai–Hai and Middle–Lower Yangtze regions display relatively low progression: their policy design prioritizes ecological sustainability but devotes inadequate attention to output expansion, quality enhancement, and food security.

3.4 Policy Lifecycle Connectivity Analysis

The scores for each sub-variable of the policy texts issued by the central government and various construction zones across their life cycles are presented in Figure 9. The score range for each life-cycle sub-variable is [0, 0.314]. Overall, the mean scores across the life-cycle sub-variables exhibit notable variation: post-construction maintenance received the highest mean score, followed by planning and design and by project completion and acceptance; construction management and comprehensive supervision ranked third and fourth, respectively; and bidding and tendering received the lowest mean score. Specifically, the mean score for the overall life-cycle variable (Z) was 0.059; for planning and design (Z1), 0.067; for bidding and tendering (Z2), 0.032; for

construction management (Z3), 0.046; for project completion and acceptance (Z4), 0.061; for post-construction maintenance (Z5), 0.105; and for comprehensive supervision (Z6), 0.040.This indicates a relatively high degree of lifecycle connectivity across policy texts in all administrative regions. In terms of content design, these policy texts place greater emphasis on managing key phases of the high-standard farmland construction project lifecycle—specifically post-construction maintenance, planning and design, and completion acceptance—while comparatively less attention is devoted to managing other critical phases, including construction management, comprehensive supervision, and bidding and tendering.

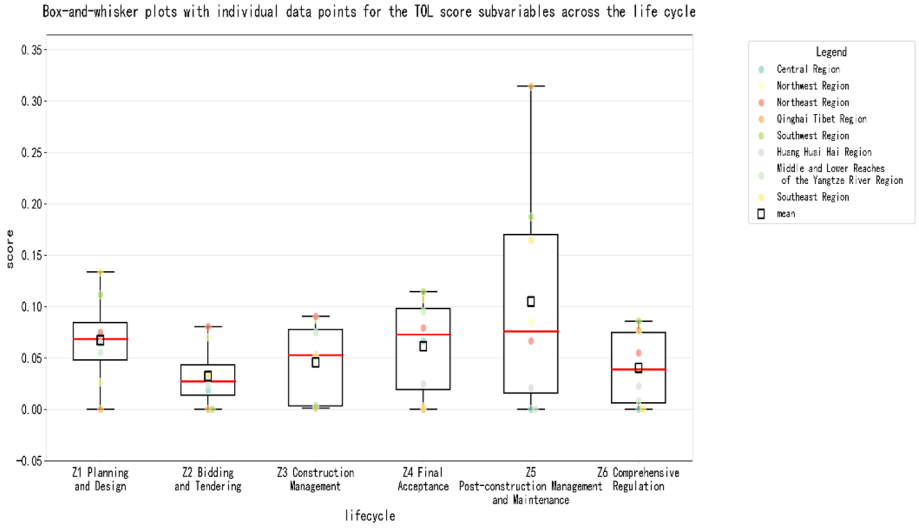

Fig. 9. Lifecycle Sub-variable Scores.

From a hierarchical perspective, policy texts at the central level place greater emphasis on planning and design as well as completion acceptance, while devoting relatively less attention to tendering and bidding, construction management, post-construction maintenance, and comprehensive supervision. From a regional perspective, variations in scores across lifecycle sub-variables—and in the mean scores of those sub-variables—among policy texts from different construction zones reflect pronounced regional disparities in lifecycle connectivity. Specifically, the Northwest Zone exhibits relatively high lifecycle connectivity, with strong emphasis on tendering and bidding, construction management, completion acceptance, and comprehensive supervision, but comparatively limited attention to planning and design and post-construction maintenance. The Northeast Zone also demonstrates high lifecycle connectivity, prioritizing planning and design, tendering and bidding, construction management, completion acceptance, and comprehensive supervision, yet underemphasizes post-construction maintenance. The Qinghai–Tibet Plateau Zone shows high lifecycle connectivity as well, focusing primarily on post-construction maintenance and comprehensive supervision, while giving weaker attention to other key phases. The Southwest Zone achieves the highest lifecycle connectivity, emphasizing planning and design, completion

acceptance, post-construction maintenance, and comprehensive supervision, but devotes insufficient attention to tendering and bidding and construction management. In contrast, the Huang-Huai-Hai Zone displays the lowest lifecycle connectivity, concentrating predominantly on construction management while providing comparatively weak coverage of other critical phases. The Middle and Lower Reaches of the Yangtze River Zone exhibits relatively low lifecycle connectivity, placing emphasis on construction management and completion acceptance but neglecting other key phases. Finally, the Southeast Zone demonstrates relatively high lifecycle connectivity, prioritizing planning and design, tendering and bidding, construction management, and post-construction maintenance, yet underemphasizes completion acceptance and comprehensive supervision.

4 Conclusion

This study aims to deconstruct the content design of policy texts on high-standard farmland construction through a policy text evaluation approach, thereby offering targeted policy recommendations for optimizing such content design. These recommendations are intended to strengthen the guidance these texts provide for implementing high-standard farmland construction policies and to enhance overall policy effectiveness, ultimately laying a solid foundation for food security. The main findings are as follows: (1) Across the three evaluation dimensions—policy theme, policy goal, and lifecycle—the comprehensiveness of content design in high-standard farmland construction policy texts is generally high; the majority of administrative tiers assign a medium or higher rating to their policy texts in terms of overall policy evaluation. (2) Overall, policy texts on high-standard farmland construction across administrative tiers demonstrate relatively comprehensive coverage of policy themes, with consistent attention paid to all subthemes; however, significant variation exists across construction zones in the extent of thematic coverage.(3) Overall, the policy texts of high-standard farmland construction issued by the central government and across different construction zones demonstrate a relatively high degree of progression in policy goals; however, significant variation exists among construction zones in both the extent of such progression and the specific emphasis placed on particular policy goals. (4) Overall, the policy texts of high-standard farmland construction across all administrative levels exhibit a relatively high degree of connectivity across the policy lifecycle; yet substantial variation exists among construction zones in both the strength of such lifecycle connectivity and the relative emphasis assigned to different lifecycle stages.

Policy text content design optimization recommendations. Each construction zone should tailor its content design to local conditions, strengthening the weaker aspects of its respective policy themes, policy goals, and policy lifecycle—thereby mitigating implementation challenges and converting enhanced policy object engagement into tangible advantages during implementation. Specifically, the following policy optimization recommendations are proposed: (1) Optimization of policy theme content design in the policy text of high-standard farmland construction. This includes reinforcing responsibility for operation and maintenance, ensuring adequate funding for such activities,

staffing professional operation and maintenance teams, and improving the overall operation and maintenance mechanism; conducting compliance reviews of acceptance procedures, assessing the authenticity of acceptance outcomes, and involving farmers from project areas in the acceptance process to strengthen the acceptance mechanism; ensuring rationality in planning and design and effectiveness in fund management to improve the construction mechanism; implementing routine quality inspections of engineering works and establishing accessible channels for public oversight to enhance the regulatory mechanism.(2) Optimization of policy goal content design in the policy text of high-standard farmland construction: promoting efficient water-saving irrigation, farmland protection and ecological conservation, soil improvement, soil fertility enhancement, and removal of restrictive soil layers; strengthening ecologically sustainable policy goals. (3) Optimization of lifecycle content design in the policy text of high-standard farmland construction: reviewing the conduct of bidding entities, bidding procedures and documentation, and on-site personnel qualifications; establishing a credit evaluation mechanism for participating construction entities; and improving management practices across the bidding and tendering process.

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