

Article

Risk Governance of Centralized Farmers' Residence Policy in Rural-Urban Integration: A Case Study of Shanghai L Town

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Abstract

Amid China's rural–urban integration and rural revitalization, the Centralized Residence of Farmers Policy (CRFP) emerges as a pivotal tool to optimize rural spatial structure and land-use efficiency, yet its implementation risks—particularly risk coupling effects—remain underexplored. This study addresses this gap by constructing a holistic risk assessment framework and empirically examining CRFP in L Town, Shanghai; it employs a multi-method approach, integrating the Delphi method, Analytic Hierarchy Process (AHP), and Cumulative Impact Model (CIM) to develop and validate a comprehensive risk assessment framework. This framework evaluates five key dimensions: policy content, implementation subjects, resource guarantees, target groups, and environmental adaptation. Empirical analysis of relocated farming households in L town reveals that the overall risk level of CRFP implementation falls within the moderate-risk range. Key identified risk factors include public opinion control, clarity of implementation standards, communication feedback accessibility, reliability of information resources, and effectiveness of implementation strategies. Based on these findings, the study proposes several risk mitigation strategies: aligning policies with local realities to promote high-quality social development, fostering collaborative digital governance through multi-stakeholder engagement, ensuring law-based policy formulation with transparent and supervised processes, enhancing public input through effective interest communication mechanisms, improving information dissemination with inclusive public participation, and adopting flexible implementation strategies. This research addresses fragmentation issues in the existing literature with a unified indicator system and provides actionable solutions that offer significant theoretical and practical value for advancing rural revitalization in the context of urban–rural integration.

Keywords: centralized residence of farmers policy; policy implementation risk assessment; rural-urban integration; risk governance; land use policy



Academic Editor: Ruishan Chen

Received: 11 August 2025

Revised: 5 September 2025

Accepted: 14 September 2025

Published: 18 September 2025

Citation: Xu, X.; Li, Q.; Liao, Z.; Yu, X.

Risk Governance of Centralized

Farmers' Residence Policy in

Rural-Urban Integration: A Case

Study of Shanghai L Town. *Land* **2025**,*14*, 1906. [https://doi.org/10.3390/](https://doi.org/10.3390/land14091906)[land14091906](https://doi.org/10.3390/land14091906)**Copyright:** © 2025 by the authors.

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1. Introduction

Against the backdrop of global urbanization, China's rural development has entered a critical transition period marked by the dual challenges of narrowing the urban–rural gap and realizing sustainable rural revitalization [1]. Since the reform and opening up, the rapid advancement of urbanization has not only driven economic take-off but also exacerbated the imbalance between urban and rural areas [2], manifested in issues such as scattered rural residential layouts [3], inefficient land use [4], inadequate infrastructure [5],

and uneven public service provision [6]. In response to these dilemmas, the Chinese government has successively introduced strategies such as “New-type Urbanization” and “Rural Revitalization” to promote integrated urban–rural development, among which the “Centralized Residence of Farmers Policy” (CRFP) has emerged as a pivotal land space-use tool. According to the UN-Habitat 2021 Report (Global State of National Urban Policy 2021-4. <https://habnet.unhabitat.org/sites/default/files/documents/Global%20State%20of%20National%20Urban%20Policy%202021-4.pdf>, accessed on 13 September 2025), globally, urban-rural integration has become a critical agenda for sustainable development, and developing countries are increasingly adopting land consolidation and residential concentration policies to address the urban-rural disparities. For instance, similar to China’s CRFP, programs like South Korea’s “New Village Movement” (1970s) [7] and Germany’s “Rural Renewal Scheme” (1990s) [8] aimed to optimize rural spatial structures yet faced challenges such as social resistance and cultural disruption. These international experiences highlight that centralized residence policies, while promising for efficiency, require rigorous risk assessment to balance state goals with community needs.

Actually, rural areas face prominent contradictions between traditional living patterns and modern development needs [9]. The long-standing scattered habitation mode has led to fragmented land resources [10], difficulty in scaling up agricultural production [11], high costs of infrastructure construction and maintenance [12], and constrained improvement in farmers’ quality of life [13]. Concurrently, with the acceleration of industrialization and urbanization, a large number of rural laborers have migrated to cities [14], resulting in hollowed-out villages [15] and idle homesteads [16], which further highlight the urgency of optimizing rural spatial structures.

Against this context, the CRFP, characterized by relocating scattered rural households to centralized communities through homestead readjustment and land consolidation, has been widely promoted across the country. In 2004, the Ministry of Land and Resources (Chinese Government Website. https://f.mnr.gov.cn/201702/t20170206_1436301.html, accessed on 13 September 2025), in its Opinions on Strengthening the Management of Rural Homesteads, instructed authorities to guide rural housing construction in a planned manner toward small towns and central villages. The policy also advocates establishing centralized new villages aligned with urbanization goals and promoting more efficient land use. This document represents the first official policy in China addressing the centralization of rural housing. Its central aim is to generate multiple policy benefits, including the enhancement of farmers’ living conditions through the concentration of supportive infrastructure, the expansion of arable land by consolidating homesteads, the promotion of rural industrial restructuring, and the improvement of grassroots governance efficiency. However, as a complex, systematic project involving land property rights, social relations, and cultural adaptation, the policy’s implementation process has triggered extensive academic discussions on its objectives, effects, and risks, reflecting the intricate balance between state-led development strategies and farmers’ endogenous demands.

CRFP has emerged as a pivotal strategy in China’s pursuit of new-type urbanization and rural revitalization, representing a deliberate effort to transform rural spatial patterns, optimize resource allocation, and bridge the urban–rural development gap. Against the backdrop of rapid urban expansion and diminishing arable land resources, this policy seeks to address longstanding challenges of rural underdevelopment through the systematic reorganization of residential spaces, primarily by relocating scattered rural households into centralized communities equipped with modern infrastructure and public services. Its core objectives encompass multiple dimensions: improving farmers’ quality of life, enhancing land-use efficiency through homestead consolidation, promoting integrated urban–rural development, and facilitating the modernization of rural governance systems. Since its

pilot implementation, the policy has sparked extensive scholarly debate regarding its multifaceted impacts, reflecting the complexity of balancing state-led development agendas with the diverse interests and adaptive capacities of rural residents. While proponents highlight its potential to alleviate rural poverty and accelerate rural-urban integration [17], critics caution against unintended consequences such as livelihood disruption and social dislocation [18], underscoring the need for a nuanced understanding of its implementation dynamics. This study contextualizes the policy within China's broader rural reform landscape, examines key academic controversies surrounding its objectives and outcomes, and outlines the analytical framework for assessing its risks and mitigation strategies, ultimately aiming to contribute to evidence-based policy refinement in the evolving context of rural transformation.

The related policy implementation risks can be divided into two stages: before and after concentrated residence. Risks prior to concentrated residence mainly focus on protecting farmers' interests and regulating implementation behaviors, including disputes over land ownership [19], homestead ownership [20] and income distribution [21], land requisition compensation standards [22], and collective asset disposal and social security integration [23], as well as implementation deviations such as forced promotion [24], excessive exploitation, abuse of power, and mismatches in government roles [25]. Risks after concentrated residence involve social adaptation and community governance challenges for relocated farmers [26], manifested in livelihood and identity transition issues such as limited employment channels [27], household registration system restrictions [28], identity crisis [29], and cultural adaptation difficulties [30], as well as community governance problems [31], including insufficient public goods provision, low professionalization of property management, alienated neighborhood relations, and lack of community safety and conflict mediation mechanisms [32]. In response to risks at different stages, scholars have proposed hierarchical governance strategies: during the land expropriation stage, it is necessary to strengthen the protection of farmers' land rights and interests, improve land requisition compensation mechanisms and collective asset management systems [33], establish a unified urban–rural social security system to break down household registration barriers, and regulate implementation behaviors to prohibit forced promotion and rent-seeking [34]. During the social adaptation stage, efforts should be made to provide skills training to expand employment channels and enhance farmers' sustainable livelihood capabilities, optimize community public services and living environments to foster a sense of community belonging and civic awareness [35], promote mixed and small-scale residential patterns to reduce group segregation, and introduce urban property management standards to enhance the professionalization of neighborhood property management [36]. Scholars also assess the policy's effects from the perspective of welfare changes, finding that farmers' overall living standards have improved after concentrated residence, but significant discrepancies exist at specific levels: living conditions (such as housing quality and infrastructure) and physical and mental health have been significantly optimized, while economic income and living cost balance issues have become prominent, with some farmers facing livelihood pressures [37]. Additionally, the degree of welfare improvement varies with regional economic levels: some studies indicate that farmers in less developed areas experience greater welfare growth than those in economically developed regions [38], while others reach the opposite conclusion [39], a contradiction that may stem from differences in evaluation indicators and regional development specificities.

In summary, internationally, research on centralized residence policies has emphasized three dimensions: First, spatial justice: Harvey (2019) critiques "top–down spatial restructuring" for potentially marginalizing rural communities [40], a concern echoed in studies of India's "Smart Village" program [41]; second, risk coupling effects: UN-Habitat

(2023) warns that inadequate stakeholder communication often amplifies implementation risks [42]; third, cultural adaptation: Brown (2018) notes that policies ignoring local traditions lead to low compliance [43]. However, few studies have quantitatively modeled risk interactions, leaving a gap in holistic assessment frameworks. Domestic studies, while rich in case analyses, have focused narrowly on China-specific contexts, with limited engagement with international risk assessment methodologies like the Cumulative Impact Model (CIM) or comparative analyses of global policy outcomes.

The literature review indicates that current research on the Pre-primary focuses on the two-stage classification of implementation risks (pre- and post-implementation), stage-specific hierarchical governance strategies, and welfare impact assessments of policy outcomes. Current research on policy implementation presents several limitations. First, the lack of clear and consistent definitions of policy objectives leads to fragmented evaluation frameworks. Second, existing impact assessments tend to focus predominantly on welfare changes, often overlooking the broader effects on rural social structures, cultural heritage, and ecological environments. Third, the prevailing risk studies are often superficial, offering limited empirical analysis of risk formation mechanisms and prevention strategies, resulting in recommendations that remain overly abstract and macro-level. Finally, there is insufficient cross-referencing of experiences, which fails to account for regional variations in both domestic and international case studies, thereby impeding the development of context-specific policy models for China.

This study bridges this gap by integrating international insights on risk coupling with China's CRFP practice. In this paper, three interconnected objectives are advanced: first, to construct a holistic risk assessment framework integrating the Delphi method, Analytic Hierarchy Process (AHP), and Cumulative Impact Model (CIM); second, to empirically identify critical risk factors in L Town's CRFP implementation through mixed-methods research; and third, to propose context-specific governance strategies tailored to stakeholder dynamics. The study develops a unified risk assessment indicator system, addressing fragmentation issues in the current literature and enhancing the scientific rigor of policy risk quantification. Theoretically, this study contributes to global rural policy literature by adapting the Smith Policy Implementation Model (1973) to non-Western contexts, testing its applicability in China's hybrid governance system. Practically, it offers lessons for developing countries pursuing similar policies: balancing efficiency with equity through transparent and inclusive processes, quantifying risk interactions to mitigate compounded risks, and integrating cultural adaptation mechanisms to enhance policy compliance.

This paper is structured as follows: Section 1 contextualizes the Centralized Residence of Farmers Policy (CRFP), delineates its research significance, and highlights gaps in the current literature, notably fragmented risk assessment frameworks and insufficient analysis of risk coupling effects. Section 2 delineates the study area (L Town, Shanghai), detailing the data collection methods and analytical models employed. Section 3 details the results of risk identification and assessment model outputs. Section 4 discusses the key risk mechanisms and contextualizes the findings through comparison with the existing literature. Finally, Section 5 summarizes the research contributions, proposes context-specific governance strategies, addresses study limitations (including the single-case focus and insufficient integration of resident perspectives), and outlines avenues for future research.

2. Materials and Methods

2.1. Study Area

2.1.1. Policy Background and L Town Overview

Since the introduction of the "Management Measures for Linking Urban and Rural Construction Land Increase and Decrease" in 2008, the concept of "concentrated living"

has become a key component of China's new rural construction and rural revitalization initiatives. In 2012, the 18th National Congress of the Communist Party of China introduced the concept of the "Four Synchronizations," providing a policy foundation for promoting the concentrated resettlement of rural residents. Subsequently, in 2019, Shanghai issued the "Opinions on Further Improving the Living Conditions of Farmers and Promoting the Relatively Concentrated Living of Farmers to Enhance the Rural Environment." Since the implementation of this policy, over 50,000 dispersed rural households from areas outside designated residential zones, as well as households in regions impacted by the "Three Highs" (highways, high-speed railways, and high-voltage power lines) and ecologically sensitive areas, have successfully relocated to more concentrated living arrangements.

L Town, located in the southwest corner of Shanghai, spans an area of 93.89 square kilometers. Construction land accounts for over 15% of its total area, with a scattered distribution. The suburban ecological space is dominated by forests, farmlands, rivers, and ponds. The region exceeds its planned land-use standards, with a significant proportion of industrial and rural land distributed in a fragmented manner, resulting in inefficient land use.

2.1.2. L Town: Regional Characteristics and CRFP Context

The regional characteristics of L Town are marked by prominent ecological and spatial contradictions. On one hand, rigid constraints are stringent. These include water source protection zones, high-voltage corridors, and the Husuhu Railway. Relocation is required to avoid ecological red lines and infrastructure control areas. On the other hand, the total construction land exceeds the standard. Industrial and rural residential land is distributed extensively. The town is home to ecologically sensitive areas, including water source protection zones, and is intersected by planned infrastructure projects such as the Hu-Su Lake railway, Shenjiahu Expressway, and several high-voltage corridors. In response to these programs, L Town has implemented zoning measures to manage these impacts effectively. The town has encouraged the relocation of farmers to urban areas, leveraging detailed planning and coordinated land allocation to relocate residents from water source protection zones, ecological redlines, high-voltage corridors, and other sensitive areas. The specific layout of the control line scope is shown in Figures 1 and 2.

Figure 1 shows the spatial background for the introduction of the FCRP policy: based on a large-scale green agricultural base and ecologically controlled reserve areas, it highlights the pressure of cultivated land protection and ecological management and control; the central urban area is interspersed with surrounding agricultural land, and roads and water systems divide the green space, reflecting the problem of landscape fragmentation caused by urban–rural development; there is spatial competition between urban expansion, agricultural protection, and ecological conservation, and public services and transportation infrastructure further squeeze the green corridors, highlighting the necessity of land-use regulation by the policy, which aims to coordinate protection and development, repair ecological corridors, and strengthen land-use management and control.

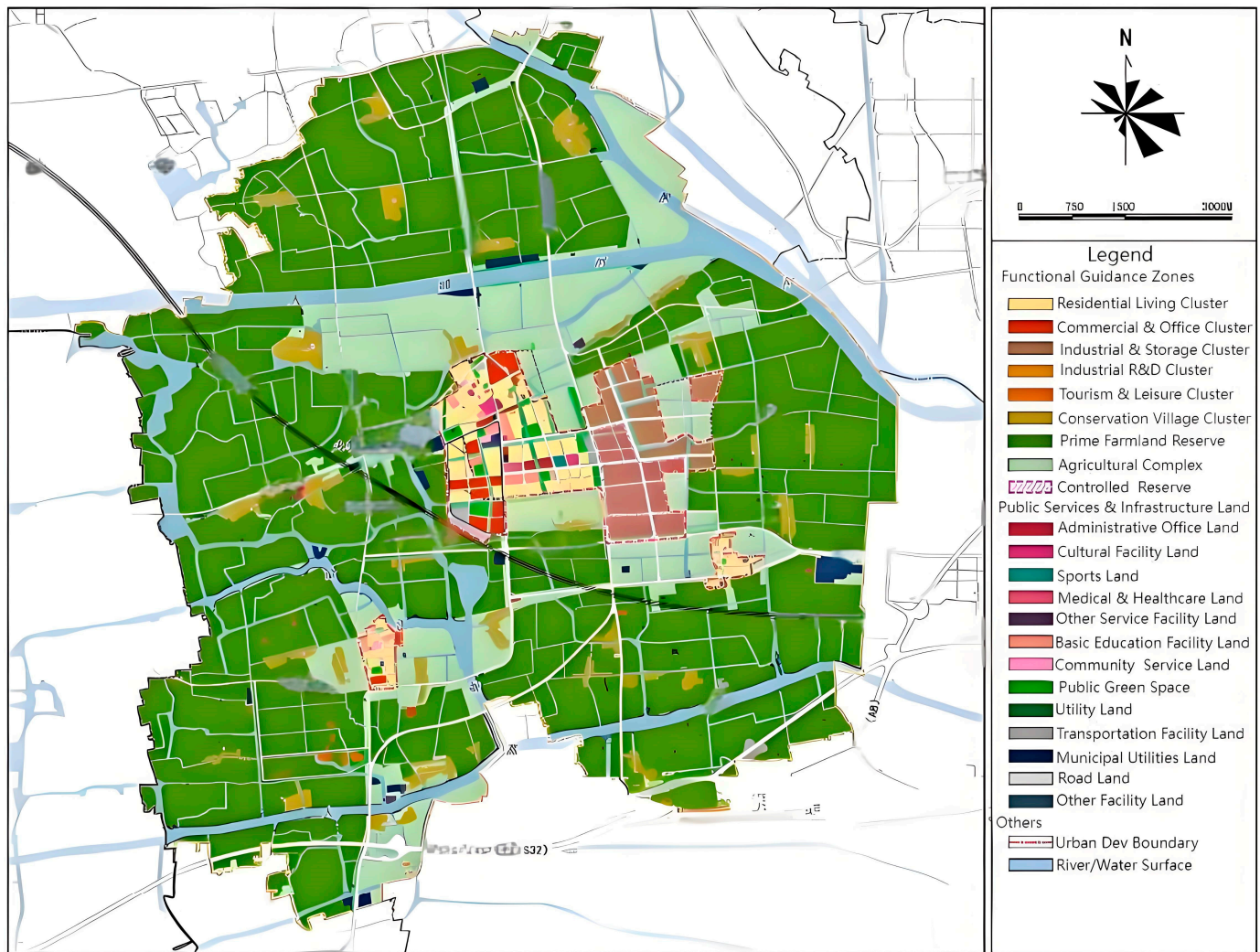


Figure 1. Current Land Use Map in L Town.

In Figure 2, the spatial pattern of rural household relocation in L Town involves 944 relocated households, including 55 in ecologically sensitive areas, 197 along “Three Highs” corridors, 121 scattered households, and 524 in remote areas, resettled into ~20 “Priority Resettlement Zones” (marked by black circles). These zones exhibit a “central agglomeration with transportation/water system diffusion” distribution: 5–6 core zones around central industrial land and major roads, 6–7 linear zones along S32 Shenjiahu Expressway, 3–4 scattered zones along Taipu/Xiliu Rivers, and sparse small zones in northern/northwestern fringes. Relocation flows show peripheral scattered households concentrating toward central core, transportation corridors, and waterfront zones, reflecting policy-driven spatial restructuring from “dispersion to concentration” and “restricted areas to livable spaces”.

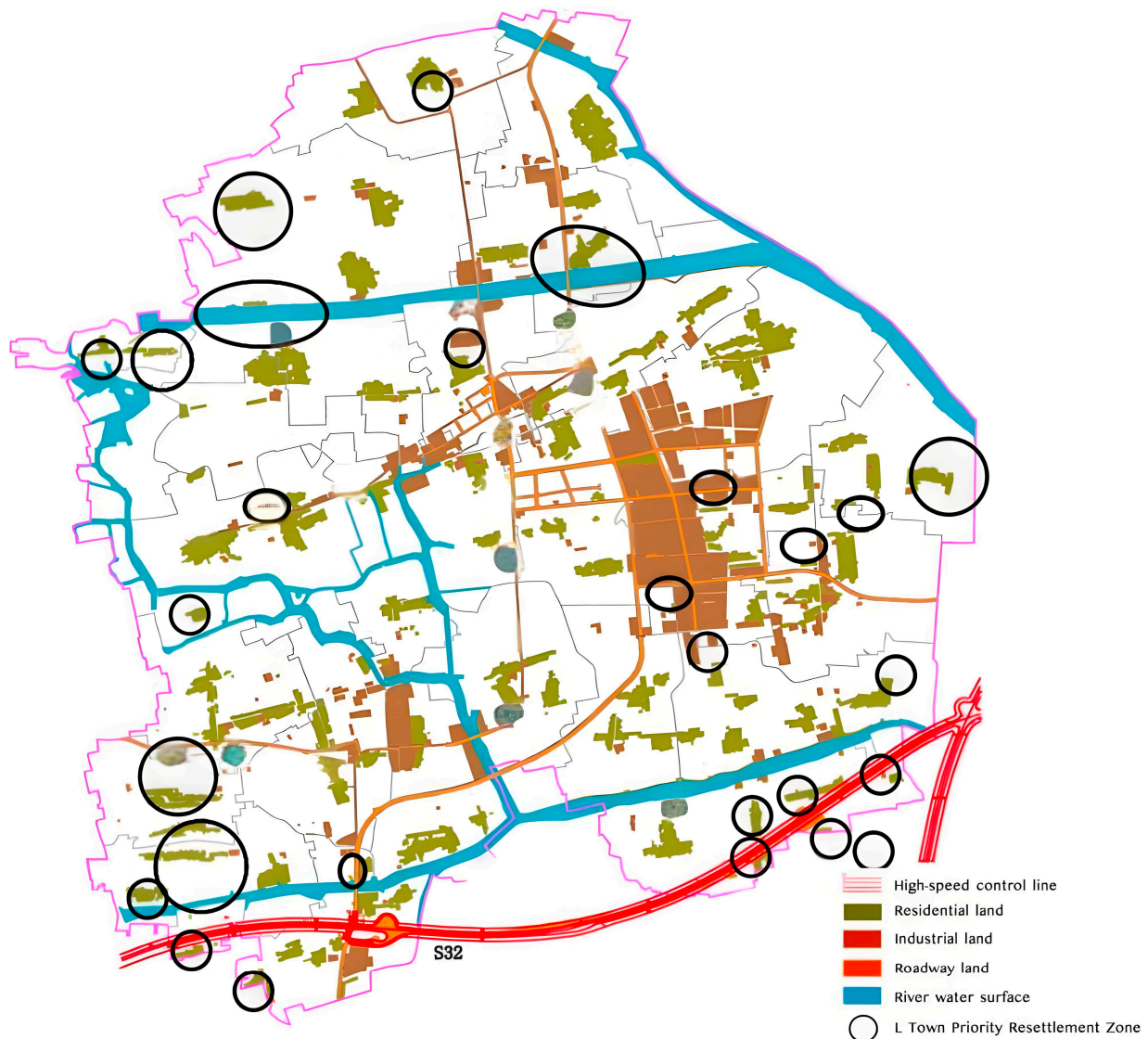


Figure 2. Farmers' Centralized Residence Promotion Area Schematic Map in L Town.

2.1.3. Implementation Models and Compensation Standards

As a pilot site for Shanghai's CRFP, L Town has been steadily advancing the policy since 2020. As of August 2025, 32 rectification tasks have been completed. Among these efforts, the Nanzhongxin River Resettlement Housing Project, which broke ground in July 2024 and is slated for completion in July 2025, encompasses 944 rural households across four categories: those along "Three Highs" corridors, remote areas, ecologically sensitive zones, and scattered natural villages with fewer than 30 households. Abandoned areas will undergo land consolidation and ecological restoration to optimize land-use efficiency, in line with L Town's 2035 construction land control target. Abandoned buildings will be demolished to facilitate homestead readjustment, with residual materials recycled where feasible.

L Town's implementation of the CRFP uses two models. Upstairs relocation moves willing rural households from their homesteads to commercial or resettlement housing in township centers or new urban districts. Horizontal relocation consolidates scattered households into newly planned farmers' communities that retain Jiangnan rural character and provide roads, water, electricity, and gas. The program strictly upholds farmers' voluntary participation, and compensation follows the 2024 Shanghai Municipal Standards for Land Expropriation Compensation (Shanghai Municipal Bureau of Planning and Natural

Resources. <https://ghzyj.sh.gov.cn/zcwj/gfxwj/20231229/87dbd1b414dd41af8a7a84e0102ec2c9.html>, accessed on 13 September 2025).

The land compensation fee is set at CNY 126.15 per square meter, which is paid to rural collective economic organizations. Additionally, a base price of CNY 350 per square meter for land-use rights and a price subsidy of CNY 250 per square meter are provided, with no duplicate compensation for free replacement areas. In L Town, the resettlement area is determined based on household size: no more than 60 square meters for 1-person households, 75 square meters for 2-person households, 112.5 square meters for 3-person households, and 150 square meters for 4-person and larger households. For residential households (zero-person households), homeless households, and rural households with a total effective construction area of original housing less than 30 square meters, the replacement area is calculated as 30 square meters.

The diversity of policy implementation goals and local environments in L Town underscores the complexity and variability of policy-related risks. This initiative also reflects a series of influencing factors such as land-use patterns, ecological protection requirements, implementation planning, and land allocation, further highlighting the multidimensional nature of policy implementation risks. Additionally, the policy necessitates the coordination of multiple objectives, including urban–rural integration, rural revitalization, farmers’ welfare, and land conservation, thereby illustrating the dynamic balance required for effective risk management. In summary, L Town’s practice of “two parallel models plus dynamic rectification” provides a typical case for implementing rural revitalization policies amid urban–rural integration and offers empirical evidence for relevant policy risk assessments.

2.2. Assessment Method

The identification of policy implementation risks for farmers’ centralized residence involves the systematic and continuous process of recognizing and classifying risk factors specific to the policy’s execution. It also entails analyzing the underlying causes of these risks. Commonly employed risk identification methods include the Delphi method (Political, Economic, Social, Technological, Environmental, Legal) [44], on-site investigations (such as village-level interviews with farmers), fault tree analysis, risk checklists, check sheets, pros and cons analysis, flowcharts, and work breakdown structures. However, it is noteworthy that China currently lacks a comprehensive risk assessment indicator system specifically designed for farmers’ centralized residence policies. Furthermore, there is a limited availability of frameworks from other risk management fields that can be directly applied to this context.

Given that the implementation of such public policies is primarily led by government agencies and characterized by a strong public welfare orientation—ultimately aiming to balance farmers’ interests, promote rural development, and improve land use efficiency—it is inappropriate to apply enterprise-oriented risk management tools, such as cost–benefit analysis or financial assessments, in this setting. Moreover, the complexity of policy implementation, involving multiple stakeholders (including government bodies, village committees, and farmers) and dimensions such as land expropriation, housing relocation, and social adaptation, results in diverse implementation strategies that cannot be rigidly interpreted through typical enterprise production processes. This complexity presents significant challenges to effective risk identification.

In light of these challenges, this study adopts the risk checklist method to identify risk factors across the policy implementation cycle. The focus is on four core principles: the feasibility of resettlement objectives, such as alignment with farmers’ housing needs; the operational efficiency of executing agencies, including coordination across multi-level government structures; the responsiveness of target farmer groups, including their willingness

to relocate and satisfaction with compensation; and the suitability of the implementation environment, such as the adequacy of infrastructure in newly developed residential areas.

As a pivotal strategy for rural–urban integration and sustainable development, the Farmers’ Centralized Residence Policy (FCRP) aims to optimize land-use efficiency, improve rural living conditions, and reduce urban–rural disparities, particularly in developing countries experiencing rapid urbanization. However, the implementation of FCRP often involves complex interactions between institutional reforms, resource redistribution, and social adaptation, which give rise to multifaceted risks that can undermine the achievement of policy goals. While existing studies have focused on localized challenges, such as land expropriation conflicts or farmer resistance, they generally lack a systematic framework for comprehensively identifying and categorizing risks across macro-environmental dimensions.

To systematically identify risk factors, this study adopted the PESTEL framework to classify and screen potential risks, ensuring comprehensive coverage of macro-environmental and micro-implementation factors. The correspondence between PESTEL dimensions and risk factors, along with selection rationale, is detailed in Appendix A Table A1. Raw data were collected through interviews with relevant staff of the L Town government and farmers from six related administrative villages, supplemented by analysis of relevant policy texts, for compiling the risk checklist. Subsequently, the Delphi method was adopted for secondary screening: 10 experts were invited, including 5 scholars in the professional field and 5 relevant policy implementers. Through two rounds of consultation (the first round used open-ended questionnaires to supplement risk factors, and the second round adopted the Likert five-point scale for scoring), screening thresholds were set (mean value ≥ 3.5 , coefficient of variation ≤ 0.2), and consistency was tested via Kendall’s W coefficient. The specific identification results and screening process of risk factors are detailed in the Results section.

2.3. Framework

Policy implementation refers to the process of translating policy plans into practical actions to achieve policy objectives [45]. It essentially involves the activities undertaken by social organizations and their members to accomplish specific policy purposes. To achieve policy objectives, it is not only necessary for the government to make correct decisions but also for policies to be effectively implemented. However, in the process of policy implementation, numerous risk factors can directly impact the implementation of public policies and even lead to deviations or failures in policy implementation.

Some scholars believe policy implementation risk refers to the failure of control in policy implementation of government departments [46], mainly resulting from two situations: either the policy implementation requirements are not met, or the quality of policy implementation is low. Others define policy implementation risks as various factors arising from the internal and external environment of the policy implementation system that may prevent the achievement of the expected goals or result in policy termination [47]. Some scholars point out that policy implementation risk is a type of socio-political risk, which includes the uncertainties in the policy implementation process and the possibility of deviating from policy objectives [48]. This study believes that policy implementation risks are uncertain factors and possibilities within the policy implementation process, which originate from the internal or external environment of the system and may lead to deviations from policy objectives or policy failures.

Thomas Smith, a pioneer in the study of factors influencing policy implementation, proposed that the factors impacting policy implementation include ideal policies, executing agencies, target groups, and policy environment [49]. These four factors undergo dynamic

interaction and adjustment processes from tension to coordination. Based on a review of relevant literature, it is found that the lack of policy implementation resources is one of the important factors constraining the implementation of public policies, and it possesses objective and irreplaceable characteristics. For example, scholar believes that factors such as government power allocation, institutional norms, and financial resources are important constraints on policy implementation [50]. In the process of policy implementation, grassroots governments often lack sufficient funds due to hierarchical assessments and institutional constraints, resulting in a severe shortage of implementation resources. Relying solely on the efforts of the implementation personnel and the pressure of policy implementation can easily lead to discounted policy implementation effects. Therefore, based on Smith's policy implementation model, this study adds the risk factor of policy implementation resources and utilizes various risk identification methods to comprehensively analyze potential risk factors in the policy implementation process, thus laying a solid analytical foundation for constructing a risk assessment indicator system for policy implementation. The logical framework is depicted in Figure 3.

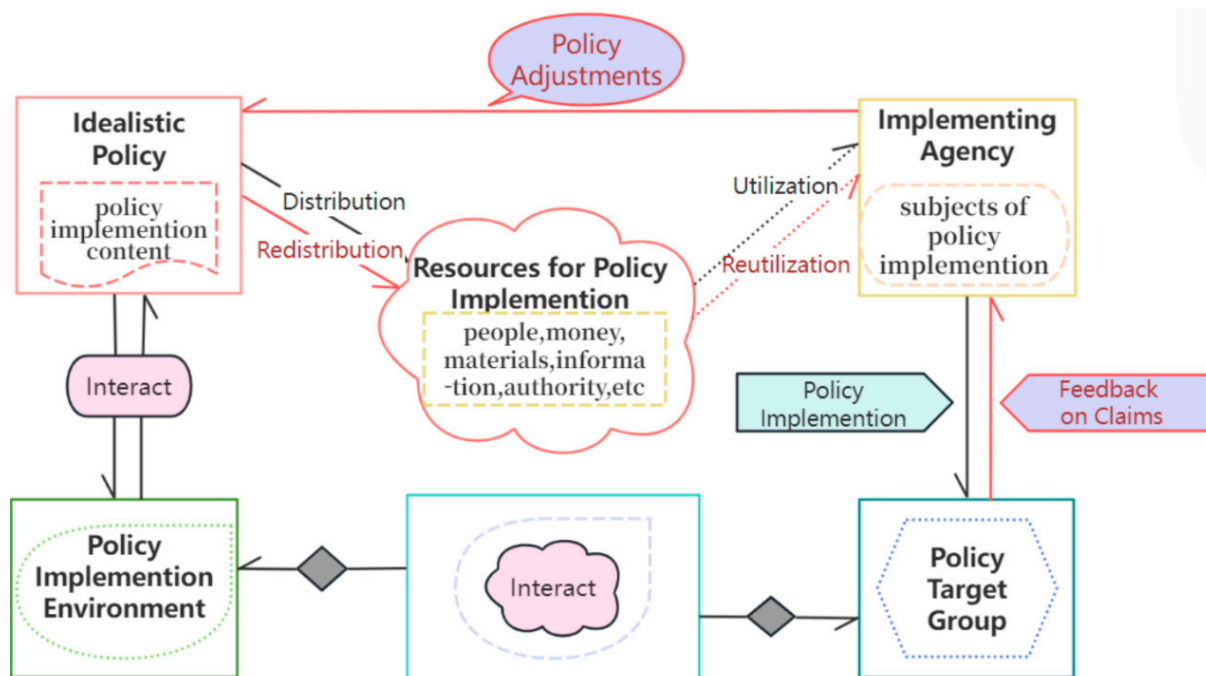


Figure 3. CRFP Implementation Analysis Framework.

Figure 3 presents the closed-loop logic of CRFP policy implementation in L town: Idealized Policy provides resources such as human, financial, and material resources to implement agencies through resource allocation and reuse; based on this, implementing agencies implement policies on target groups, which, after interacting with the policy environment, provide feedback on their demands to implementing agencies; ultimately, feedback acts back on Idealized Policy through the “policy adjustment” mechanism, forming a dynamic cycle of “formulation–implementation–feedback–optimization.” Various elements (environment, target groups, resources, etc.) interact with each other through the “interaction” link, jointly promoting policy implementation and improvement.

3. Results

3.1. Risk Factor Identification and Screening

The PESTEL framework offers a robust analytical tool for dissecting the multi-layered risk factors involved in the FCRP's implementation. By examining how political dynamics, economic constraints, social factors, technological gaps, environmental pressures, and legal ambiguities collectively shape policy outcomes, this study seeks to establish a structured relationship between macro-environmental dimensions and specific risks associated with the FCRP. This approach not only addresses the fragmentation of current risk identification efforts but also provides policymakers with a comprehensive risk assessment matrix that enhances the adaptability and efficiency of policy implementation. Therefore, through field research and systematic identification from the PESTEL perspective, this study summarizes the risk sources in the implementation of FCRP into 46 items.

To enhance the accuracy and effectiveness of risk identification, the Delphi method was employed for secondary screening. In this study, a total of 10 experts were invited, including five scholars with expertise in the relevant research areas and five local government practitioners involved in the policy's implementation. These experts were asked to evaluate the initially identified risk factors using the Delphi judgment technique and to offer authoritative recommendations for refinement. To assess the implementation risks of CRFP in L Town more accurately, the research team conducted interviews from 6 May to 21 May, 2020, with staff from relevant policy-implementing departments of the L Town People's Government, including the Comprehensive Management Office and the Major Projects Office. The team also held discussions with villagers from administrative villages in L Town, such as Changhe, Zhuzhuang, Yegang, Punan, Zhengxia, and Jinqian. Interviews focused on five thematic areas aligned with risk assessment dimensions: (1) Policy clarity and standards (e.g., "How are relocation compensation criteria determined for 'Three Highs' corridors vs. ecological zones?" to verify clarity of implementation standards (C4)); (2) Information transmission (e.g., "What channels are used to update farmers on resettlement progress?" linked to reliability of information resources (C11)); (3) Stakeholder feedback mechanisms (e.g., "How are farmers' objections addressed?" corresponding to accessibility of communication feedback (C16)); (4) Social adaptation (e.g., "Have you encountered healthcare access issues post-relocation?" reflecting socio-cultural adaptation (C18)); and (5) Implementation strategies (e.g., "How are high-demand areas prioritized?" related to effectiveness of implementation strategies (C8)). By gathering feedback from various stakeholders through these targeted questions, the team systematically investigated and organized risk factors, ensuring alignment with the five-dimensional assessment framework (policy content, implementation subjects, resource guarantees, target groups, and environmental adaptation). Following in-depth interviews and a second-round screening, the risk checklist was further refined and optimized based on expert feedback. Non-generalizable or less significant risk factors were excluded, while the remaining risk factors were categorized and encoded accordingly. In alignment with the policy implementation analysis framework outlined earlier, the identified risks were classified into five main categories: policy content risk, policy actor risk, policy resource risk, policy target group risk, and policy environment risk. Each category was further subdivided into several specific risk elements. This process resulted in the development of a comprehensive policy implementation risk factor checklist and the construction of a corresponding risk assessment indicator system, as presented in Table 1.

Table 1. Indicator system for risk assessment of policy implementation.

Target	Primary Indicators	Secondary Indicators	Content of Assessment
Policy implementation risk A	Policy implementation content risk B1	Legality of implementation C1	procedural legalityD1 Legitimate contentD2
		Clarity of implementation target C2	Clarity of orientation D3 Instruction consistencyD4
		Stability of implementation C3	Evolutionary sustainabilityD5 Time extendableD6
		Clarity of implementation standards C4	Standard clarityD7 Variability of implementationD8
	Policy implementation subject risk B2	Match ability of competencies C5	Knowledge structureD9 Organizational capacityD10
		Positive attitudes of personnel C6	Initiative levelD11 Interest orientationD12
		Fit of performance incentives C7	Government supportD13 Rewards and punishments systemD14
		Effectiveness of implementation strategies C8	Plan perfectionD15 Progress control effortsD16
	Policy implementation resource risk B3	Specialization of human resources C9	Staffing quantityD17 Staffing structureD18
		Sustainability of financial resources C10	Budget adequacyD19 Timeliness of funding availabilityD20
		Reliability of information resources C11	Speed of transmissionD21 Information authenticityD22
		Authority of organizational resources C12	Government credibilityD23 Official credibilityD24
	Policy target group risk B4	Participation of target groups C13	Public awarenessD25 Public supportD26
		Target group satisfaction C14	Public trustD27 Public ExpectationsD28
		Heterogeneity of membership C15	Membership D29 Differences in interest claimsD30
		Accessibility of communication feedback C16	Avenues of reflection D31 Feedback effectD32
	Environmental risk in policy implementation B5	Psychosocial tolerance C17	Social risk perceptionD33 Range of social changesD34
		Socio-cultural adaptation C18	Adaptability of customs and habitsD35 Value acceptanceD36
		Control of public opinion C19	Speed of public opinion disseminationD37 Breadth of public opinionD38
		Social relationship enablers C20	Social network structureD39 Frequency of social interactionD40

This study focuses on the Centralized Residence of Farmers Policy (CRFP) against the backdrop of urban–rural integration, taking L Town in Shanghai as a case study. Through the Risk Checklist Method combined with the PESTEL framework, 46 risk sources were initially identified, and after screening via the Delphi method (10 experts, two rounds of screening, Kendall’s $W = 0.78$), 20 key indicators were retained. An assessment system covering five dimensions—policy content, implementation subjects, resource guarantees, target groups, and environmental adaptation—was constructed. Using the Analytic Hierarchy Process (AHP) and Cumulative Impact Model (CIM) to quantify risks, we provide theoretical and practical references for the refined implementation of CRFP.

3.2. Model Establishment

This study employed the Analytic Hierarchy Process (AHP) to determine the weights of the policy implementation risk assessment indicators. First, a hierarchical structure was established by grouping the factors based on their types, thereby forming multiple distinct levels. Factors at the same level are influenced by those in the upper level and exert dominant effects on certain factors in the lower level. The dominance relationships

between factors at different levels create the hierarchical structure. In this study, the target layer was defined as policy implementation risk A, consisting of five primary indicators B, each with four secondary indicators, resulting in a total of 20 secondary indicators C. These secondary indicators were further subdivided into 40 assessment items D. Next, judgment matrices were constructed to facilitate pairwise comparisons of the indicators and assess their relative importance using expert scoring methods. Finally, a consistency test was conducted to ensure the reliability of the judgments and determine the weights of the indicators at each level. The resulting indicator weights are presented in Table 2.

Table 2. Results of solving for indicator weights.

Primary Indicators	Weights	Secondary Indicators	Weights
B1	0.13	C1, C2, C3, C4	0.14, 0.14, 0.29, 0.43
B2	0.40	C5, C6, C7, C8	0.20, 0.19, 0.27, 0.34
B3	0.13	C9, C10, C11, C12	0.19, 0.26, 0.36, 0.19
B4	0.27	C13, C14, C15, C16	0.23, 0.18, 0.18, 0.41
B5	0.07	C17, C18, C19, C20	0.17, 0.28, 0.46, 0.09

The Cumulative Impact Model (CIM) is an economic approach developed by British scholars Professors Cooper and Chapman in 1983, based on the principles of modern risk management [51]. This model effectively combines the probability distribution of complex risk factors in engineering projects in a scientifically rigorous manner. CIM employs mathematical models to process the probability distribution of each risk factor, enabling comprehensive evaluation and analysis. It is particularly well-suited for assessing targets or systems characterized by numerous risk factors and intricate interrelationships.

The CIM model can be categorized into two types: “parallel response mode” and “series response mode”, based on the physical relationships between variables. In these modes, the probability distribution of the variables is combined and accumulated either in a “series” or “parallel” configuration. However, in the context of policy implementation, risk factors do not occur sequentially but rather randomly. Each risk factor may either occur or not, and they can materialize either simultaneously or independently. Additionally, interactions exist between these factors, where the occurrence of any given risk may influence the overall outcome, resembling the principles of parallel circuits in physics. As such, the “parallel response mode” was selected for the CIM model to assess policy implementation risk in this study. A schematic diagram of the model is presented in Figure 4.

The specific assessment process of the CIM model is as follows: First, the risk factors associated with policy implementation are cumulatively combined using the CIM parallel response mode, yielding the risk weight values at each level. These weight values are then aggregated to calculate the total risk weight. Next, the expected value of the total risk is computed, and a probability distribution graph is generated. Based on these calculated results, the overall policy implementation risk is assessed. Finally, the key risk factors with higher expected risk values are identified from the set of policy implementation risk factors. The formula used in this process is as follows:

$$P(S_i = s_i) = \sum_{i=1}^n P(S_1 = s_i, S_2 \leq s_i) + \sum_{i=1}^n P(S_1 < s_i, S_2 = s_i) \quad (1)$$

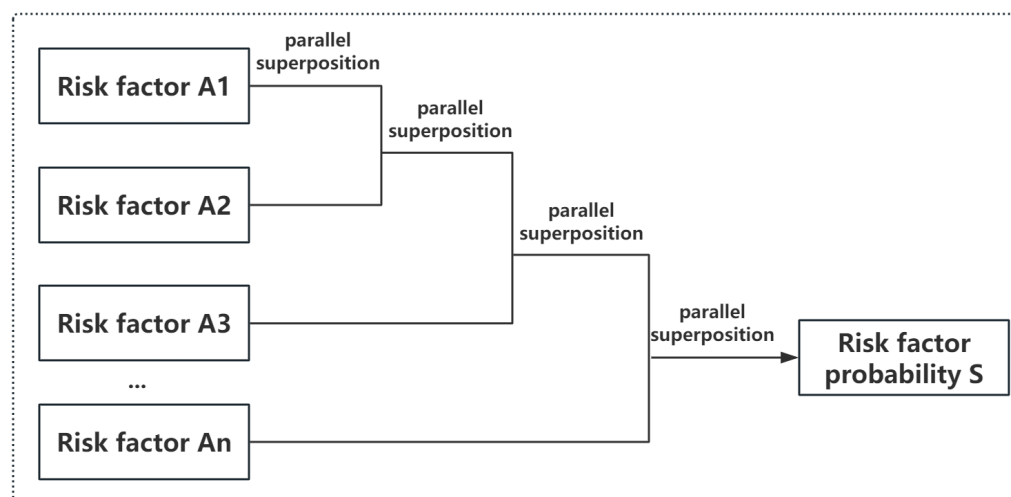


Figure 4. The schematic diagram of parallel probability superposition of risk factors.

In the formula, S_1 and S_2 represent the risk factors, s_i denotes the group midpoint of the probability interval, and n is the number of groups.

In Section 2.2, potential risk factors for the implementation of the Farmers' Centralized Residence Policy (FCRP) have been identified, and a comprehensive policy implementation risk assessment indicator system has been constructed. Building upon this foundation, a CIM model for policy implementation risk assessment is developed to support the subsequent risk evaluation in the practical implementation of the Farmers' Centralized Residence Policy in L Town. The specific assessment process for the policy implementation risk assessment using the CIM model is as follows:

The process begins by selecting the CIM parallel response model, tailored to the characteristics of policy implementation risks. This model is then employed to perform a hierarchical accumulation of risk factors, calculating risk weight values at each level. These weight values are further aggregated to derive the total risk weight value. Subsequently, the expected value of the total risk is calculated, and a probability distribution graph is generated. Based on these results, a comprehensive policy implementation risk assessment is conducted. Finally, key risk factors with higher expected risk values are identified for in-depth analysis. The assessment framework for the CIM model in the context of FCRP implementation risk is illustrated in Figure 5.

The determination of risk probability distribution requires expert judgment and scoring. To enable a more effective quantitative analysis, it is crucial to clearly define the evaluation levels and scoring criteria for risk probability before experts conduct their assessments, thereby transforming subjective evaluations into quantifiable indicators. The evaluation levels are categorized as low, relatively low, medium, relatively high, and high, with corresponding scores of 0.2, 0.4, 0.6, 0.8, and 1.0, respectively. In this study, a total of 10 experts from relevant fields were invited to participate in the judgment and scoring process, including 5 scholars specializing in the relevant research areas and 5 government practitioners involved in policy implementation. Based on the expert scores, the probability distribution and expected risk value of the secondary indicators were calculated. The calculation formula is as follows:

$$P_{ij} = \frac{N_j}{N} \quad (2)$$

N_j represents the number of experts who have assigned indicator i to the same level j , and N represents the total number of experts. The results of the secondary risk probability distribution are shown in Table 3.

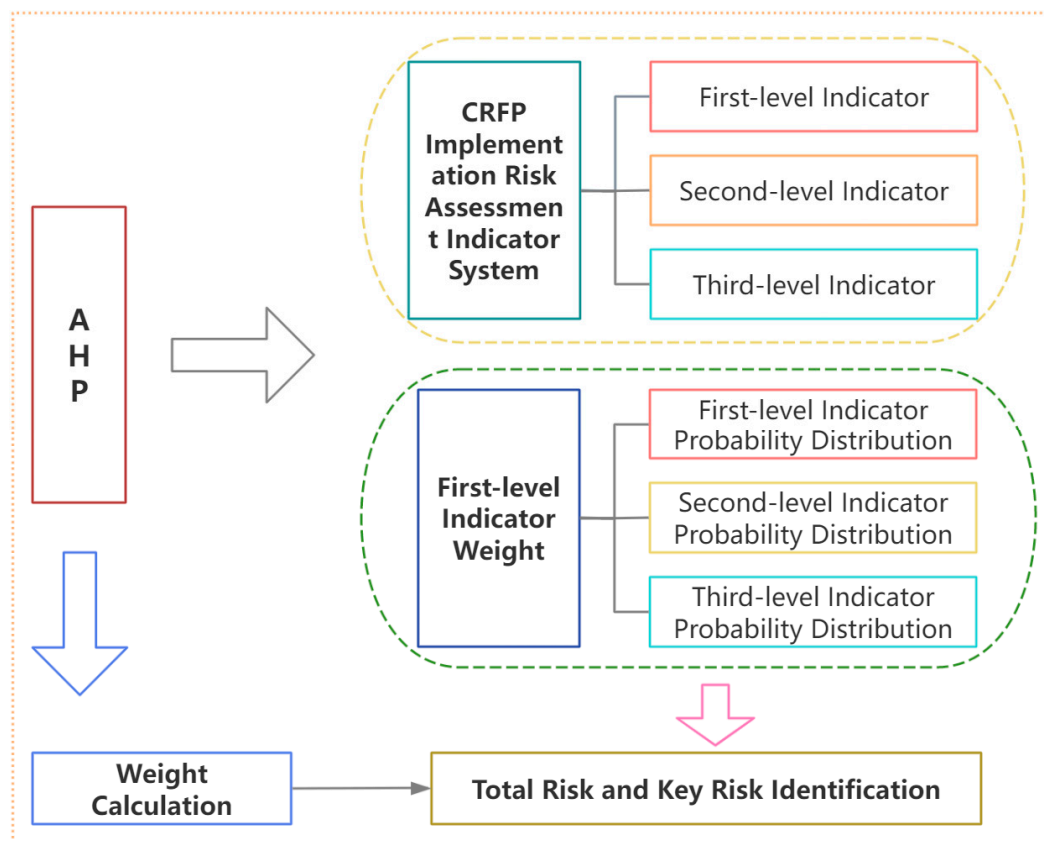


Figure 5. The assessment principle of the CIM model for policy implementation risk.

Table 3. Secondary risk probability distribution and expectation.

Secondary Indicators	Probability Distribution					Risk Expectation
	High	Higher	Medium	Lower	Low	
C1	0	0.1	0.3	0.4	0.2	0.46
C2	0.2	0.2	0.2	0.3	0.1	0.62
C3	0	0.1	0.2	0.5	0.2	0.44
C4	0.2	0.3	0.3	0.1	0.1	0.68
C5	0.1	0.2	0.2	0.3	0.2	0.52
C6	0	0.1	0.3	0.3	0.3	0.44
C7	0.1	0.1	0.3	0.3	0.2	0.52
C8	0.2	0.3	0.2	0.2	0.1	0.66
C9	0	0.1	0.2	0.5	0.2	0.44
C10	0.2	0.3	0.2	0.2	0.1	0.66
C11	0.2	0.2	0.3	0.3	0	0.66
C12	0.1	0.2	0.3	0.3	0.1	0.58
C13	0.1	0.3	0.3	0.2	0.1	0.62
C14	0.2	0.3	0.2	0.2	0.1	0.66
C15	0.2	0.2	0.3	0.2	0.1	0.64
C16	0.2	0.3	0.3	0.2	0	0.70
C17	0	0.1	0.3	0.3	0.3	0.44
C18	0.1	0.2	0.3	0.3	0.1	0.58
C19	0.2	0.2	0.3	0.2	0.1	0.64
C20	0	0.1	0.2	0.4	0.3	0.40

Parallel stacking calculations were performed on the secondary indicators to obtain the risk probability distribution for the primary indicators. The results are shown in Table 4.

Table 4. Probability distribution of risk at the level 1 indicator level.

Factor	Risk Level				
	High	Higher	Medium	Lower	Low
B1	0	0.002	0.0556	0.4608	0.4816
B2	0	0.003	0.067	0.3332	0.5968
B3	0	0.006	0.0822	0.5598	0.352
B4	0.0008	0.0392	0.2344	0.4546	0.271
B5	0	0.0012	0.0492	0.3465	0.6031

3.3. Total Risk Calculation

The CIM model, through policy implementation risk assessment, calculates the risk probability distribution at various levels. By combining the weights of indicators with the risk probability distribution, the total risk probability distribution of the assessment target is derived. From this, the expected risk value is calculated, enabling the determination of the overall risk level of the assessment target. The results of the total risk probability distribution and expected risk value are presented in Tables 5 and 6.

Table 5. Calculation of the probability distribution of the total risk of implementation of CRFP in Shanghai L town.

Risk Level	Probability Distribution
High	$0.13 \times 0 + 0.40 \times 0 + 0.13 \times 0 + 0.27 \times 0.0008 + 0.07 \times 0 = 0.000216$
Higher	$0.13 \times 0.002 + 0.40 \times 0.003 + 0.13 \times 0.006 + 0.27 \times 0.0392 + 0.07 \times 0.0012 = 0.012908$
Medium	$0.13 \times 0.0556 + 0.40 \times 0.067 + 0.13 \times 0.0822 + 0.27 \times 0.2344 + 0.07 \times 0.0492 = 0.111446$
Lower	$0.13 \times 0.4608 + 0.40 \times 0.3332 + 0.13 \times 0.5598 + 0.27 \times 0.4546 + 0.07 \times 0.3465 = 0.412955$
Low	$0.13 \times 0.4816 + 0.40 \times 0.5968 + 0.13 \times 0.352 + 0.27 \times 0.271 + 0.07 \times 0.6031 = 0.462475$

Table 6. Probability Distribution and Expected Value of Total Risks of Implementing CRFP in Shanghai L Town.

Target	Risk Probability Distribution					Risk Expectation
	High	Higher	Medium	Lower	Low	
Total Risk Probability	0.0002	0.0129	0.1114	0.4130	0.4625	0.405

Table 6 shows that the total risk probability distribution for the Shanghai L Town centralized rural living project primarily falls within the low- and moderate-risk ranges. The overall risk expectation value is 0.405, placing it within the moderate risk range of (0.4–0.6). Overall, the risk level associated with the implementation of the centralized residence policy for farmers in Shanghai L Town is categorized as moderate, suggesting that the policy can be implemented lawfully.

3.4. Risk Identification

Based on the data analysis, it is evident that although the overall risk level of implementing the centralized residential policy for farmers in Shanghai L Town is categorized as medium, some risk indicators still exhibit relatively high expected values. Relying solely on the expected risk values of individual indicators is insufficient to assess the magnitude of the risk and its potential impact on the assessment target. Therefore, this study integrates the secondary indicators with their respective weights to derive weighted values, selecting the risk factor indicators with higher values. This approach allows for the identification of the key risk factors in the implementation of the CRFP in Shanghai L Town. The results are presented in Table 7.

Table 7. Identification of key risk factors for the implementation of CRFP in Shanghai L town.

Secondary Indicators	Risk Expectation	Risk Weighting Values	Risk-Weighted Values	Arrange in Order
Control of public opinion C19	0.64	0.46	0.294	1
Clarity of implementation standards C4	0.68	0.43	0.292	2
Accessibility of Communication feedback C16	0.70	0.41	0.287	3
Reliability of information resources C11	0.66	0.36	0.238	4
Effectiveness of implementation strategies C8	0.66	0.34	0.224	5
Sustainability of financial resources C10	0.66	0.26	0.172	6
Socio-cultural adaptation C18	0.58	0.28	0.162	7
Participation of target groups C13	0.62	0.23	0.143	8
Fit of performance incentives C7	0.52	0.27	0.140	9
Stability of implementation C3	0.44	0.29	0.128	10
Target group satisfaction C14	0.66	0.18	0.119	11
Heterogeneity of membership C15	0.64	0.18	0.115	12
Authority of organizational resources C12	0.58	0.19	0.110	13
Match ability of competencies C5	0.52	0.20	0.104	14
Clarity of implementation target C2	0.62	0.14	0.087	15
Positive attitudes of personnel C6	0.44	0.19	0.084	16
Specialization of human resources C9	0.44	0.19	0.084	16
Psychosocial tolerance C17	0.44	0.17	0.075	18
Legality of implementation C1	0.46	0.14	0.064	19
Social relationship enablers C20	0.40	0.09	0.036	20

Based on the results shown in Table 7, this study identified the top 40% of the highest probability and importance in each secondary risk indicator of the policy implementation for concentrated rural living in L Town, resulting in five key risk factors: control of public opinion (C19), clarity of implementation standards (C4), accessibility of communication feedback (C16), reliability of information resources (C11), and effectiveness of implementation strategies (C8).

4. Discussion

This study identifies the key implementation risks of the CRFP in L Town, Shanghai, through analysis and calculation, with the following focus on three critical findings: First, control of public opinion (C19) emerges as the most prominent risk factor with a risk-weighted value of 0.294, followed by clarity of implementation standards (C4, 0.292) and accessibility of communication feedback (C16, 0.287). These results challenge the traditional focus on land property disputes in the existing literature, highlighting the previously underestimated role of information dissemination and stakeholder interaction in policy execution. Second, the application of the Cumulative Impact Model (CIM) reveals a significant risk coupling effect: the combined probability of C19 and C16 reaches 0.581, far exceeding individual risk probabilities, thereby providing a novel quantitative tool for identifying “risk amplifiers” in public policy. Third, counterintuitively, L Town—an economically developed area in eastern China—exhibits severe information asymmetry (C11, 0.238), which contradicts the prevailing assumption that economic prosperity correlates with higher policy transparency. By integrating these empirical insights with the expanded Smith Policy Implementation Model, this discussion explores the theoretical and practical implications for CRFP governance in the context of rural–urban integration.

4.1. Control of Public Opinion

Public opinion risk refers to the anxiety or resistance that villagers may experience when they encounter information about the concentrated rural living policy through social media or the internet. This risk has the potential to hinder the smooth implementation of the policy and undermine the protection of villagers’ interests. The primary objective of the pol-

icy is to improve villagers' living and environmental conditions and enhance their quality of life, aligning with the broader interests and demands of the rural population. However, field interviews reveal that most villagers involved in the policy's implementation have differing expectations and concerns, particularly regarding compensation standards for relocation, land ownership, and assistance with migration and resettlement. Additionally, insufficient transparency and communication about the specific progress and details of the policy prior to its initiation have led to a lack of confidence and security among villagers, fostering feelings of anxiety. The "control of public opinion risk" identified in this study (C19, risk-weighted value 0.294) validates the hypothesis in Smith's policy implementation model that "the interaction between policy environment and target groups influences policy effectiveness." Unlike traditional studies that solely focus on "policy content–implementer" interaction, this study, through an expanded five-dimensional risk framework, further reveals that the reliability of information resources (C11, weight 0.36) serves as a key mediating variable exacerbating public opinion risk.

4.2. Clarity of Implementation Standards

The implementation of the CRFP in Shanghai L Town involves collaboration across multiple departments and the completion of a variety of tasks. Although the local policy implementation agency has formulated and issued plans and standards for the policy, several issues and risks persist in the implementation process. First, the target group for the policy objectives is highly diverse, and there is a lack of effective coordination between the different stages of implementation, as well as insufficient organic collaboration among the relevant departments. Second, investigations and interviews revealed that a sense of unfairness regarding the policy implementation standards is a primary source of conflict between the policy implementers and the target group. Consistent with the conclusion of Zhang and Wang (2020) [33] that "ambiguity in standards causes group conflicts," this study found that the fairness concerns triggered by differences in compensation standards between the "Three Highs corridors" and "ecological zones" in L Town have a risk expectation of 0.68 (Table 3), which confirms the view that "differentiated standards require supporting transparent explanation mechanisms." However, through further AHP weight analysis (Table 2), this study revealed that the risk weight of clarity of implementation standards (0.43) is higher than that of clarity of implementation targets (C2 = 0.14), indicating that "operational details" are more likely to trigger risks than "macro-objectives" in policy implementation.

4.3. Accessibility of Communication Feedback

The "accessibility of communication feedback risk" identified in this study (C16, risk-weighted value 0.287) validates the core proposition in Smith's policy implementation model that "target group participation directly influences policy acceptance." Unlike traditional studies that solely focus on "coverage rate of feedback channels," this research, through the expanded five-dimensional risk framework, further reveals that timeliness of feedback response constitutes the critical bottleneck restricting target group trust. Its risk weight (0.41, Table 2) is significantly higher than that of clarity of policy objectives (C2 = 0.14), indicating that "channel effectiveness" is more important than "channel form."

The investigation into the CRFP's implementation in Shanghai L Town reveals that grassroots government agencies have gained the trust and support of most villagers. However, certain unfavorable factors have led to doubts about the policy's implementation. A key issue is that villagers have a limited understanding of the concentrated living policy and are not fully satisfied with the arrangements made during the implementation process. To mitigate the risks to the target group, the following two actions are essential:

(1) establishing an effective communication and feedback mechanism to help villagers understand the significance and benefits of the policy while also gathering their opinions and suggestions, and (2) enhancing the transparency of policy implementation funds and actively inviting oversight and evaluation from the villagers.

4.4. Reliability of Information Resources

The “reliability of Information Resources risk” identified in this study (C11, risk-weighted value 0.238) validates the hypothesis in the expanded Smith policy implementation model that “resource guarantee is the core constraint for policy implementation.” Unlike traditional studies that solely focus on “financial resources,” this research further reveals through the five-dimensional risk framework that information resource reliability (weight 0.36, Table 2) is the indicator with the highest risk contribution in the resource guarantee dimension. Its risk expectation reaches 0.66 (Table 3), significantly higher than that of human resource professionalism (C9 = 0.44) and organizational resource authority (C12 = 0.58), indicating that “information asymmetry” is more likely to trigger a policy trust crisis than “insufficient personnel.” The implementation of the CRFP in Shanghai L Town faces the challenge of asymmetric and imbalanced information. Many grassroots government departments publish information on official websites, but the lack of timely updates and ineffective communication channels fails to meet the public’s needs. Moreover, government personnel at the grassroots level are responsible for both formulating and implementing the policy, which may lead to the misuse of information for personal gain. The target group of the policy may either support or oppose the policy based on their own interests and perceptions. If effective communication and feedback are not maintained throughout the implementation process, public understanding and trust in the policy may diminish, potentially resulting in strong resistance. Therefore, to ensure the successful implementation of the policy, it is vital to improve the transparency of information, ensure timely updates, and address public needs and expectations, thereby eliminating doubts and resistance toward the policy implementation bodies.

4.5. Effectiveness of Implementation Strategies

Shanghai L Town aims to achieve the CRFP goals within 3 years, a task that involves balancing multiple interests and navigating a complex environment. To facilitate this, Shanghai L Town has formulated the Shanghai L Town Ecological Environment Remediation Zone Special Planning Program, preparing for public participation, expert consultations, risk assessments, legal reviews, and collective discussions based on four key principles for phased implementation. However, investigations and interviews indicate that villagers in ecologically sensitive areas and those near important municipal facilities have the greatest demand for concentrated living, significantly surpassing that of residents in other areas. These villagers have raised their concerns to relevant authorities for over a year, and some have even visited district and city governments multiple times. These circumstances suggest that the implementation of the policy faces substantial difficulties and risks in Shanghai L Town. Through the parallel probability superposition of the Cumulative Impact Model (CIM) (as shown in Figure 4), this study found that the combined risk probability of effectiveness of implementation strategies (C8) and accessibility of communication feedback (C16) reaches 0.511 ($0.224 + 0.287$), far exceeding the impact of individual factors. This provides a quantitative tool for identifying “risk amplifiers” in policy implementation and addresses the deficiency in existing research regarding the analysis of risk coupling effects.

Beyond the primary risks identified above, the study also notes the following issues. First, risks also manifest in the social-psychological domain: accessibility of communication

feedback may lead to local residents' distrust in the government, thereby resulting in social resistance to policy implementation (such as protests against relocation). Furthermore, in terms of economic trade-offs, while the CRFP aims to enhance land-use efficiency, preliminary data from this study indicate that some households may face increased living costs related to transportation, employment, etc., thereby highlighting the necessity for targeted economic subsidies and relevant vocational training. Meanwhile, in the context of environmental–social coupling, relocation from ecologically sensitive areas may conflict with farmers' traditional livelihoods, necessitating adaptive strategies such as ecological compensation or skill training for green jobs.

5. Conclusions

5.1. Research Conclusions

This study aimed to identify the implementation risks of the Centralized Residence of Farmers Policy (CRFP) and develop a comprehensive risk assessment framework for rural–urban integration contexts. Specifically, it sought to: (1) construct a multi-dimensional risk evaluation system integrating policy content, implementation subjects, resource guarantees, target groups, and environmental adaptation; (2) empirically assess CRFP risks in L Town, Shanghai, using the Delphi method, Analytic Hierarchy Process (AHP), and Cumulative Impact Model (CIM); and (3) propose targeted governance strategies based on key risk factors. The empirical analysis in this study also revealed three critical findings: First, regarding key risk factors, the top five implementation risks in L Town, ranked by risk-weighted values, were public opinion control, clarity of implementation standards, accessibility of communication feedback, reliability of information resources, and effectiveness of implementation strategies. Second, in terms of theoretical innovation, the application of the Cumulative Impact Model (CIM) identified significant risk coupling effects, such as the combined probability of public opinion control (C19) and accessibility of communication feedback (C16) reaching 0.581, which exceeds individual risk impacts and provides a quantitative tool for identifying “risk amplifiers”. Finally, concerning contextual insights, despite L Town's economic development, information asymmetry and delayed feedback responses emerged as critical bottlenecks, challenging the assumption that economic prosperity correlates with policy transparency.

This study makes several significant contributions to the field of policy implementation research. First, it has developed a novel framework for analyzing policy implementation risks and created an indicator system for assessing these risks. Second, the study applied the CIM model to assess the implementation risks of the CRFP, providing valuable insights into public policy research with significant social relevance. Third, the study utilized a combination of qualitative and quantitative research methods to analyze and calculate the importance and probability distribution of risks. This approach enhances the scientific objectivity of the policy research process.

5.2. Policy Implementation

Based on these findings, to mitigate the risks associated with the implementation of the CRFP, the following strategies are proposed: First, it is crucial to promote high-quality social development by aligning policies with local realities. This includes resettlement plans in Shanghai L Town that balance stability with tailored compensation. Additionally, updating the legal system to address the increasing public awareness of rights is essential. This is evidenced by the collective petitions from villagers and their recourse to legal actions, which highlight the need for stronger legal frameworks to ensure fairness in policy implementation. Second, fostering diversified and collaborative digital governance is key. This strategy calls for multi-stakeholder participation, involving enterprises, civil

organizations, and governmental agencies. Strengthening the legal framework at the top level, coupled with enhancing public engagement, will contribute to governance that is both fair and scientifically rigorous. The involvement of multiple stakeholders ensures that the policy implementation process is transparent and accountable, making it more responsive to public concerns. Third, ensuring law-based policy formulation and implementation is critical. Transparent and supervised processes for policy formulation and implementation must be promoted, along with expanded opportunities for public participation to prevent power abuse. Providing targeted legal support for vulnerable groups—such as the legal consulting services offered to L Town villagers—can empower the local community, ensuring that the policy serves all groups equitably. Fourth, establishing effective communication mechanisms for the expression of interests is necessary. This involves creating channels for rational public input, particularly from disadvantaged groups like impoverished households. It is also essential to provide customized relocation plans for these groups, addressing their specific needs. Administrative arbitration can help resolve conflicts and ensure that all stakeholders feel heard and represented in the process. Fifth, improving the effectiveness of information dissemination is another critical strategy. Inclusive public participation through activities such as hearings and surveys will help ensure that the policy is transparent and responsive. Additionally, e-government platforms should be made more accessible and interactive. Strict information verification measures are required to prevent misinformation, and clear accountability systems should be established to ensure that the public trusts the implementation process. Finally, adopting scientific and flexible implementation strategies is key to reducing inefficiencies in policy execution. This includes adjusting implementation sequences to prioritize areas of high demand, such as ecologically sensitive regions in L Town, based on villagers' input. Goal-oriented governance should be emphasized to ensure effective use of resources, while officials should adopt frontline problem-solving methods that balance both efficiency and public needs.

5.3. Limitations and Future Research

This study has several limitations. First, it is a single-case analysis of L Town, which constrains external validity across regions and policy stages. Second, residents' perspectives were only captured through limited interviews and were not analyzed systematically. We did not administer a structured household survey or track post-relocation outcomes. Third, the social, economic, and environmental dimensions were not fully quantified. We lacked panel data on livelihoods, service access, and household welfare, and we did not construct a time-series environmental baseline using remote sensing or monitoring data. Fourth, the methodological choices introduce uncertainty. The Delphi panel size and composition may bias factor selection; AHP weights entail subjective judgments; and our cross-domain coupling may omit unobserved variables. Finally, the results reflect a cross-sectional snapshot rather than long-term effects after occupation of resettlement housing.

Future work will address these gaps in several ways. First, we will extend the study to multi-site comparative cases and add longitudinal tracking to test generalizability across relocation categories and regions. Second, we will incorporate residents' perspectives through a stratified household survey, analysis of satisfaction and grievance records, and follow-up interviews. Third, we will develop socio-economic indicators of livelihoods, affordability, employment transitions, and access to services, and we will conduct distributional and equity analyses with particular attention to vulnerable groups. Fourth, we will construct environmental baselines and trajectories using GIS, ecological redlines, corridor buffers, and time-series remote sensing to evaluate land-use change and ecosystem effects. Fifth, we will strengthen methodological robustness through sensitivity and uncertainty

analyses of AHP weights, alternative MCDA specifications, and cross-validation with quasi-experimental or matched comparisons. Finally, we will enhance transparency by pre-registering analytical procedures, sharing de-identified instruments, and providing replication materials where feasible. Beyond these core tasks, sustainable rural tourism may, in selected contexts, complement livelihood diversification among relocated households, particularly in horizontally relocated communities that retain Jiangnan-style characteristics. Any such initiative should respect market access, cultural heritage, environmental carrying capacity, and equitable benefit sharing. As our current data do not cover tourism, we note this as a promising avenue for future research.

Author Contributions: Conceptualization, X.X. and Q.L.; methodology, X.X. and Z.L.; software, X.X. and Z.L.; validation, X.X. and X.Y.; formal analysis, X.X. and X.Y.; investigation, X.X., Z.L. and Q.L.; resources, X.X.; data curation, X.X. and Z.L.; writing—original draft preparation, X.X., Q.L., Z.L. and X.Y.; writing—review and editing, X.X., Q.L., Z.L. and X.Y.; visualization, X.X. and X.Y.; supervision; project administration, Q.L. and X.Y.; funding acquisition, Q.L. and X.Y. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Major Project of the National Social Science Fund of China (grant number 23&ZD142), the Guangdong Provincial Philosophy and Social Science Planning 2025 Project—Youth Project (grant number GD25YGG33), and the University Research Foundation of Guangzhou Education Bureau (grant number 2024312384).

Institutional Review Board Statement: Not applicable.

Data Availability Statement: The datasets presented in this article are not readily available because the data are part of an ongoing study. Requests to access the datasets should be directed to the authors.

Acknowledgments: The authors would like to express their sincere gratitude to the Qingpu District Government of Shanghai for its valuable support during this research. Special thanks are also extended to the local residents for their active cooperation in the surveys and interviews.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Through field research and systematic identification from the PESTEL perspective, this study summarizes the risk sources associated with the implementation of farmers’ centralized residence into 46 distinct items, as outlined in Table A1.

Table A1. Initial Risk Factors Mapped to PESTEL Dimensions and Selection Rationale.

PESTEL Dimension	Risk Sources	Brief Description
Political	Intersectoral collaboration	Focuses on core political risks, including interdepartmental coordination, government authority-responsibility alignment, and institutional frameworks. For example, overlapping responsibilities among land, housing, and environmental protection departments in L Town led to implementation delays.
	Lack of coordination	
	Policy-related regimes	
	Government offside	
	Unclear division of labor	
	Leadership importance	
	Consistent policy directives	
Economic	Financial guarantee	Encompasses economic risks such as funding sustainability and interest distribution. Notable issues include disputes over compensation standard differences between “Three Highs corridors” and ecological zones in L Town, reflecting unbalanced resource allocation.
	Implementation security issues	
	Untimely funding	
	Elastic space for policy objectives	
	Implementation of interest orientation	
	Policy target elasticity	

Table A1. Cont.

PESTEL Dimension	Risk Sources	Brief Description
Social	Public participation enthusiasm Lack of government trust Social opinion orientation Customs and habits Social network Social culture Social psychology	Covers social risks including public trust, cultural adaptation, and community cohesion. Centralized residence in L Town disrupted traditional neighborhood networks, leading to reduced social capital and increased psychological anxiety among relocated farmers.
Technological	Inadequate implementation plan Policy implementation strategy Organizational resources Personnel professionalism Poor communication of information Inconsistent policy directives Implementation stiffness	Involves technical risks related to execution capacity, information management, and strategy effectiveness. L Town's delayed updates on online feedback platforms exemplify poor information dissemination, hindering public access to policy details.
Environmental	Clear policy guidance Difficulties in effective regulation	Focuses on environmental governance and ecological protection. Clear policy guidance is critical for ensuring compliance with ecological redlines (e.g., water source protection zones in L Town), while ineffective regulation may lead to unauthorized development in sensitive areas, threatening biodiversity
Legal	Policy content is legal Legitimacy of the formulation process Irregularities in implementation Lack of unified standards	Addresses legal compliance risks, including procedural legitimacy and standardization. Inconsistent compensation standards violate the principle of legal equality, as seen in disputes between “Three Highs” and ecological relocation zones in L Town.

References

- Chen, K.; Long, H.; Liao, L.; Tu, S.; Li, T. Land use transitions and urban-rural integrated development: Theoretical framework and China's evidence. *Land Use Policy* **2020**, *92*, 104465. [\[CrossRef\]](#)
- Jiang, C.; Li, J.; Liu, J. Does urbanization affect the gap between urban and rural areas? Evidence from China. *Socio-Econ. Plan. Sci.* **2022**, *82*, 101271. [\[CrossRef\]](#)
- Duan, Y.; Chen, S.; Zhang, L.; Wang, D.; Liu, D.; Hou, Q. Spatial distribution characteristic and type classification of rural settlements: A case study of Weibei plain, China. *Sustainability* **2023**, *15*, 8736. [\[CrossRef\]](#)
- Jin, R.; Huang, C.; Wang, P.; Ma, J.; Wan, Y. Identification of inefficient urban land for urban regeneration considering land use differentiation. *Land* **2023**, *12*, 1957. [\[CrossRef\]](#)
- Zhou, F.; Guo, X.; Liu, C.; Ma, Q.; Guo, S. Analysis on the influencing factors of rural infrastructure in China. *Agriculture* **2023**, *13*, 986. [\[CrossRef\]](#)
- Pan, M.; Huang, Y.; Qin, Y.; Li, X.; Lang, W. Problems and strategies of allocating public service resources in rural areas in the context of county urbanization. *Int. J. Environ. Res. Public Health* **2022**, *19*, 14596. [\[CrossRef\]](#) [\[PubMed\]](#)
- Lee, Y.; Kim, D.S. Internal migration in south korea. In *Internal Migration in the Countries of Asia: A Cross-National Comparison*; Springer International Publishing: Cham, Switzerland, 2020; pp. 93–111.
- Tuitjer, G.; Steinführer, A. The scientific construction of the village. Framing and practicing rural research in a trend study in Germany, 1952–2015. *J. Rural. Stud.* **2021**, *82*, 489–499. [\[CrossRef\]](#)
- Camarero, L.; Oliva, J. Thinking in rural gap: Mobility and social inequalities. *Palgrave Commun.* **2019**, *5*, 95. [\[CrossRef\]](#)
- Zhang, R.; Jiang, P.; Kong, X. Reconstructing Rural Settlements Based on Investigation of Consolidation Potential: Mechanisms and Paths. *Land* **2024**, *13*, 354. [\[CrossRef\]](#)
- Zhang, Q.F.; Donaldson, J.A. China's Agrarian Reform and the Privatization of Land: A contrarian view. *J. Contemp. China* **2013**, *22*, 255–272. [\[CrossRef\]](#)
- Liu, M.; Ji, Y. Determinants of agricultural infrastructure construction in China: Based on the “participation of beneficiary groups” perspective. *Land* **2020**, *9*, 6. [\[CrossRef\]](#)
- He, Q.; Deng, X.; Li, C.; Kong, F.; Qi, Y. Does land transfer improve farmers' quality of life? Evidence from rural China. *Land* **2021**, *11*, 15. [\[CrossRef\]](#)

14. Zhao, Y. leaving the countryside: Rural-to-urban migration decisions in China. *Am. Econ. Rev.* **1999**, *89*, 281–286. [\[CrossRef\]](#)
15. Long, H.; Li, Y.; Liu, Y.; Woods, M.; Zou, J. Accelerated restructuring in rural China fueled by ‘increasing vs. decreasing balance’ land-use policy for dealing with hollowed villages. *Land Use Policy* **2012**, *29*, 11–22. [\[CrossRef\]](#)
16. Jiang, S.; Gan, Z. The current situation and management of idle rural homesteads in China-based on a survey in Jiangxi province. *Public Adm.* **2020**, *22*, 109–118.
17. Zhou, D.; Qi, J.-L.; Zhong, W.-Y. Review of urban-rural integration evaluation: Connotation identification, theoretical analysis, and system reconstruction. *J. Nat. Resour.* **2021**, *36*, 2634–2651. [\[CrossRef\]](#)
18. Wang, Y.; Fan, J. Technological Mediation of Photovoltaic System to Improve Rural Sustainability in the Background of Resettlement and Consolidation: Evidence from the Rural Community and Villages in China. *Sustainability* **2023**, *15*, 9579. [\[CrossRef\]](#)
19. Ho, P. Who owns China’s land? Policies, property rights and deliberate institutional ambiguity. *China Q.* **2001**, *166*, 394–421. [\[CrossRef\]](#)
20. Zhang, Y.; Torre, A.; Ehrlich, M. Governance structure of rural homestead transfer in China: Government and/or market? *Land* **2021**, *10*, 745. [\[CrossRef\]](#)
21. Benjamin, D.; Brandt, L.; Giles, J. The evolution of income inequality in rural China. *Econ. Dev. Cult. Chang.* **2005**, *53*, 769–824. [\[CrossRef\]](#)
22. Qian, Z. Land acquisition compensation in post-reform China: Evolution, structure and challenges in Hangzhou. *Land Use Policy* **2015**, *46*, 250–257. [\[CrossRef\]](#)
23. Cheng, L. Factors Affecting Farmers’ Satisfaction with Contemporary China’s Land Allocation Policy—The Link Policy: Based on the Empirical Research of Ezhou. In *Contemporary China’s Land Use Policy*; Springer: Singapore, 2021; pp. 117–142.
24. Göbel, C. Uneven policy implementation in rural China. *China J.* **2011**, *65*, 53–76. [\[CrossRef\]](#)
25. Yang, C. On the Construction of Service-Oriented Local Governments—A Perspective from the Benign Promotion of Farmers’ Concentrated Residency. *Adm. Forum.* **2014**, *21*, 32–37. [\[CrossRef\]](#)
26. Lin, Y.; Zhang, X.; Geertman, S. Toward smart governance and social sustainability for Chinese migrant communities. *J. Clean. Prod.* **2015**, *107*, 389–399. [\[CrossRef\]](#)
27. Xie, Y. Land expropriation, shock to employment, and employment differentiation: Findings from land-lost farmers in Nanjing, China. *Land Use Policy* **2019**, *87*, 104040. [\[CrossRef\]](#)
28. Zhu, X. Impact of the household registration system on farmers’ rural housing land use decisions in China. *Land* **2017**, *6*, 75. [\[CrossRef\]](#)
29. He, S.; Xue, D. Identity building and communal resistance against landgrabs in Wukan Village, China. *Curr. Anthr.* **2014**, *55*, S126–S137. [\[CrossRef\]](#)
30. Tong, W.; Zhu, L.; Lo, K. Livelihood adaptation and life satisfaction among land-lost farmers: Critiquing China’s urbanisation-driven land appropriation. *Bull. Geogr. Socio-Econ. Ser.* **2019**, *46*, 149–161. [\[CrossRef\]](#)
31. Tang, B. “Not Rural but Not Urban”: Community governance in China’s urban villages. *China Q.* **2015**, *223*, 724–744. [\[CrossRef\]](#)
32. Liang, F.; Lin, C.; Lin, S.-H. Farmers’ livelihood, risk expectations, and homestead withdrawal policy: Evidence on Jinjiang pilot of China. *Int. J. Strat. Prop. Manag.* **2022**, *26*, 56–71. [\[CrossRef\]](#)
33. Li, C.; Wu, J.; Xi, Z.; Zhang, W. Farmers’ satisfaction with land expropriation system reform: A case study in China. *Land* **2021**, *10*, 1353. [\[CrossRef\]](#)
34. Yang, C.; Qian, Z. ‘Resettlement with Chinese characteristics’: The distinctive political-economic context, (in)voluntary urbanites, and three types of mismatch. *Int. J. Urban Sustain. Dev.* **2021**, *13*, 496–515. [\[CrossRef\]](#)
35. Basok, T.; George, G. “We are part of this place, but I do not think I belong.” Temporariness, Social Inclusion and Belonging among Migrant Farmworkers in Southwestern Ontario. *Int. Migr.* **2021**, *59*, 99–112. [\[CrossRef\]](#)
36. Dong, C.I. The Current Situation, Problems, and Countermeasures of Rural Property Management after Farmers Move into Buildings: A Field Survey in Beijing. *Rural. Econ.* **2013**, *06*, 14–18.
37. Niu, K.; Xu, H. Urban–rural integration and poverty: Different roles of urban–rural integration in reducing rural and urban poverty in China. *Soc. Indic. Res.* **2023**, *165*, 737–757. [\[CrossRef\]](#)
38. Li, H.; Zhang, X.; Li, H. Has farmer welfare improved after rural residential land circulation? *J. Rural. Stud.* **2022**, *93*, 479–486. [\[CrossRef\]](#)
39. Dorward, A.; Kydd, J.; Morrison, J.; Urey, I. A policy agenda for pro-poor agricultural growth. *World Dev.* **2004**, *32*, 73–89. [\[CrossRef\]](#)
40. Harvey, D. City and justice: Social movements in the city. In *The Human Sustainable City*; Routledge: Oxford, UK, 2019; pp. 235–254.
41. Renukappa, S.; Suresh, S.; Abdalla, W.; Shetty, N.; Yabbati, N.; Hiremath, R. Evaluation of smart village strategies and challenges. *Smart Sustain. Built Environ.* **2024**, *13*, 1386–1407. [\[CrossRef\]](#)
42. United Nations Human Settlements Programme. *World Cities Report 2024: Cities and Climate Action*; Stylus Publishing, LLC.: Sterling, VA, USA, 2024.

43. Agheyisi, J.E. Land subdivision in peri-urban areas of sub-Saharan African cities: Conceptual definitions and policy guidelines. *Ghana J. Geogr.* **2018**, *10*, 98–128.
44. Yüksel, I. Developing a multi-criteria decision making model for PESTEL analysis. *Int. J. Bus. Manag.* **2012**, *7*, 52. [[CrossRef](#)]
45. Hill, M.; Hupe, P. *Implementing Public Policy: An Introduction to the Study of Operational Governance*; Sage Publications: New York, NY, USA, 2021; pp. 1–100.
46. Fu, C.; Yin, Y.I. Identification and Analysis of Risk Factors in Public Policy Based on Policy Process Theory. *Theory Reform* **2009**, *166*, 31–33.
47. Meng, X.M.; Zhang, X.L. Risk Assessment and Response to Public Policy from the Perspective of Risk Management. *J. Southwest Pet. Univ.* **2014**, *16*, 30–35.
48. Sellke, O.R.P. Risk, society and policy making: Risk governance in a complex world. *Int. J. Perform. Eng.* **2011**, *7*, 349.
49. Smith, T.B. The policy implementation process. *Policy Sci.* **1973**, *4*, 197–209. [[CrossRef](#)]
50. Sager, F.; Gofen, A. The polity of implementation: Organizational and institutional arrangements in policy implementation. *Governance* **2022**, *35*, 347–364. [[CrossRef](#)]
51. Chapman, C.B.; Cooper, D.F. Risk engineering: Basic controlled interval and memory models. *J. Operational Res. Soc.* **1983**, *34*, 51–60. [[CrossRef](#)]

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