

“Environment-Supply”: Comparative Analysis of Provincial Disaster Relief Core Policies in China

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Abstract

Combating natural disasters is an eternal challenge for human survival and development. As a manifestation of the integrated development of disaster management and social security, the soundness of core disaster relief policies profoundly impacts China's disaster prevention, mitigation, and response capabilities, as well as its public safety assurance capacity. Examining provincial-level core disaster relief policies in China can provide valuable insights for future policy adjustments and improvements. This study employs policy instruments as its analytical framework. Utilizing Nvivo software, it coded 42 provincial-level policy documents and constructed a two-dimensional analytical structure—environmental policy instruments and supply-oriented policy instruments. Findings reveal that while most provinces (municipalities) currently possess core policies in disaster relief, there exists uneven application of policy instruments and imbalanced allocation of resources. With the introduction of the comprehensive security and emergency response framework, China's public safety governance has entered a new developmental phase. Provincial (municipal) disaster relief policies should be updated accordingly, integrating information technology to achieve comprehensive enhancement of disaster prevention, mitigation, and relief capabilities..

Keywords

Disaster Relief, Policy Comparison, Policy Tools.

1. The Problem Statement

China is one of the countries most severely affected by natural disasters worldwide. The variety of disasters, their high frequency, widespread distribution, and significant losses constitute a fundamental national condition. To prioritize safeguarding people's lives and minimizing casualties, and to further standardize disaster prevention, mitigation, and relief efforts by government departments, the State Council successively promulgated the National Emergency Plan for Natural Disaster Relief in May 2005 and the Regulations on Natural Disaster Relief in July 2010. As core policy documents in China's natural disaster relief sector, these guide local governments in fully organizing relief operations to efficiently, accurately, and orderly ensure the basic livelihood of affected populations. Through the concerted efforts of all regions, departments, and sectors, the nation's disaster prevention and mitigation capabilities have significantly improved. Natural disaster relief efforts have matured, with more scientifically structured management systems, broader public participation, and progressively enhanced relief standards.

Enhancing disaster prevention, mitigation, and relief capabilities is an intrinsic requirement for implementing the overall national security outlook. Disaster relief policies at the central level must be more consciously implemented at the local level through responsibility fulfillment, system improvement, resource integration, and coordinated efforts. Only then can a comprehensive, systematic, and scientific disaster prevention, mitigation, and relief system be

formed, improving disaster response capacity and efficiency, effectively preventing and mitigating the impacts of disasters, and truly safeguarding the lives and property of the people. Therefore, reviewing and comparing the core natural disaster relief policies of China's provinces provides a multi-dimensional, multi-level assessment of all aspects and the entire process of disaster prevention, mitigation, and relief.

Policy instruments refer to the collective term for various means adopted by governments to achieve policy objectives and outcomes. This study adopts a policy instrument perspective, focusing on China's core natural disaster relief policies—namely, the Emergency Response Plan for Natural Disaster Relief and the Regulations on Natural Disaster Relief. Using content analysis, it delves into the core content of these policies to explore the key elements and shortcomings within provincial disaster relief policy systems. This analysis aims to provide reference for subsequent adjustments and improvements to relevant policies.

2. Current Research Overview

2.1. Literature Review on Policy Tools.

Regarding the essence of policy instruments, the academic community has largely reached a consensus: It can be defined as “an identifiable method through which collective action can be organized to address public issues,” “a set of techniques by which government departments exercise power to ensure support for, influence, or prevent social change,” a means for government to “influence the nature, type, quantity, and distribution of goods and services provided in society,” or “the techniques by which government carries out its operations, including finding and implementing (ideally) effective solutions to collective problems.” In summary, the most commonly used and prominent definitions of policy instruments converge on the notion that instruments refer to the ways policymakers accomplish their work. Chinese scholar Chen Zhenming, by synthesizing various academic perspectives, distilled the essence of policy tools into three dimensions: from the perspective of the actor, it should be clear that the government is the primary entity employing policy tools; from the perspective of objectives, policy tools are measures adopted by the government to achieve policy goals; and from the perspective of content, policy tools encompass a series of means, techniques, methods, and mechanisms implemented to realize policy objectives.

The classification of policy instruments remains a focal point in academic discourse. Based on varying criteria, three typical classifications emerge: First, the Holit and Lamishe model categorizes policy instruments into hybrid, coercive, and voluntary types according to the degree of government intervention in providing public goods and services. Second, the Schneider and Ingram model classifies policy instruments as authoritative, incentive-based, capability-based, symbolic and persuasive, and learning-based, based on how they leverage different factors to influence individual or collective behavior to achieve policy objectives. Third, the Rothwell and Zegveld model classifies policy instruments as supply-based, demand-based, and environmental-based. This approach considers both the government's leading role in policy formulation and the driving forces of environmental factors and diverse social actors. It has been widely applied across various policy research fields in China and is the most representative classification.

2.2. Literature Review on Natural Disaster Relief Policies.

Natural disaster relief, commonly known as “disaster relief,” refers to the emergency assistance provided by the state and society when members of society face hardship due to natural disasters. It encompasses emergency rescue operations, arranging for the livelihood of disaster victims, restoring industrial and agricultural production along with public facilities, supporting disaster victims in developing production, and rebuilding social relationships. Disaster relief is

characterized by its broad scope, diverse methods, and complex target groups. Its objective is to enable disaster-stricken areas to move beyond disaster recovery toward poverty alleviation, restoring and developing production. Existing literature indicates that natural disaster relief involves a wide range of content:

First, at the macro level, it primarily involves the construction of disaster relief systems, including relief models and institutional frameworks. Regarding relief models, scholars have studied the characteristics and strengths of China's disaster relief approach, emphasizing that the advantage of China's earthquake relief mechanism lies in its national mobilization system—concentrating the nation's human and material resources to support areas most in need. Other scholars have offered differing perspectives on China's disaster relief model. For instance, based on the experiences of the Wenchuan and Yushu earthquakes, Zhang Heqing noted that the “miracles” of Chinese-style disaster relief primarily occurred during the “emergency response” phase, while significant challenges remain in the “post-disaster reconstruction” and “seismic mitigation” stages. Regarding disaster relief systems and mechanisms, academic discourse primarily analyzes key areas for institutional improvement, such as the lack of diverse relief providers, imbalanced funding structures, insufficient resources relative to needs, operational inefficiencies, lagging legal frameworks for disaster response, and the need to strengthen disaster preparedness awareness.

Second, at the micro level, research primarily focuses on typical events like the Wenchuan earthquake to examine the socialization of disaster relief. This literature analyzes the participation of social forces in disaster relief and the characteristics and challenges of their management by examining the roles and functions of government and social forces through the lens of mutual empowerment between the state and society. Based on the current reality of a “strong government and weak society,” it proposes pathways to optimize the participation of social forces in China's disaster relief efforts.

Regarding the research topic of “disaster relief policies” in this paper, academic studies remain scarce. Relevant literature primarily analyzes the hierarchical structure of natural disaster relief policy systems, offering suggestions on current shortcomings in economic relief policies centered on households, social problem response policies focused on communities and vulnerable groups, and disaster relief governance policies centered on government-community relations. Other literature focuses on the evolving demands for national-level relief efforts in major natural disasters under new circumstances. These studies provide in-depth interpretations of natural disaster relief policies, particularly the revisions to the National Natural Disaster Relief Emergency Plan, highlighting the latest requirements and implementation priorities for disaster relief work at all levels of local government.

A synthesis of these studies reveals that current research on natural disaster relief policies remains incomplete. Progress largely follows revisions to core national disaster relief policies, with most attention concentrated on the National Natural Disaster Relief Emergency Plan. Research on provincial-level core disaster relief policies has been absent, indicating significant scope and research value for exploring provincial-level disaster relief policies in China.

3. Research Design

3.1. Research Perspectives and Tools.

This paper adopts a comparative research perspective, conducting a horizontal comparison of core disaster relief policy texts across provinces to clarify the fundamental characteristics and similarities/differences in provincial disaster relief policies. Given that China's core natural disaster relief policies include the Emergency Response Law, the National Natural Disaster Relief Emergency Plan, and the Natural Disaster Relief Regulations, this study selected the natural disaster relief emergency plans and relief measures from all provinces, autonomous

regions, and municipalities directly under the central government (excluding Hong Kong, Macao, and Taiwan) as research samples. Utilizing the Rothwell and Zegveld model, the policy texts underwent content analysis based on the policy instruments dimension.

Qualitative research emphasizes “interpretive understanding” of research subjects from a critical standpoint, and policy text analysis falls under this category. Nvivo, a globally leading qualitative research software supporting both pure qualitative and mixed methods research, possesses robust coding and text search capabilities. This facilitates researchers in conducting descriptive text analysis and accurately reproducing the actual content of the texts. This study employed Nvivo to code the texts and form nodes, enabling direct comparison of differences among provinces and municipalities through the number of codes and code coverage ratio under each node.

3.2. Comparative Dimensions and Research Samples.

This paper analyzes provincial-level core natural disaster relief policies across two dimensions: policy external structure and policy content. Regarding the former, it categorizes the basic characteristics of disaster relief core policies issued by each province (municipality)—including release dates, policy document types, and issuing authorities—based on three sub-dimensions: policy year, policy form, and policy-making entity. This approach assesses the relative importance provinces (municipalities) place on disaster relief efforts.

Regarding policy content analysis, the Rothwell and Zegveld model categorizes policy instruments into environmental, supply-oriented, and demand-oriented types. Environmental policy instruments exert indirect influence on public policy by creating favorable conditions through strategic planning, financial services, tax incentives, regulatory frameworks, and tactical measures to indirectly advance public policy development. Supply-oriented policy tools exert a driving force on public policy, where governments directly accelerate its development through actions like public infrastructure construction, capital investment, technical support, information services, and talent cultivation. Demand-oriented policy tools exert a pulling force on public policy; for instance, government actions such as service outsourcing, service procurement, market shaping, and overseas exchanges can reduce obstacles and uncertainties in policy implementation, thereby pulling public policy toward rapid development. Given that this policy tool classification is widely applied in comparative studies of industrial innovation policies, and since the research context of this paper differs, the definitions of the three policy tools are redefined here in the context of disaster relief:

First, environment-oriented policy tools refer to protective policy provisions designed to bridge supply and demand sides, creating favorable environments and platforms for disaster relief operations and ensuring basic livelihood security for affected populations. These tools exert indirect influence and subtle permeation on achieving disaster relief objectives.

Second, supply-oriented policy tools refer to government regulations that directly influence production factors such as talent, capital, and technology from the supply side in a top-down manner. These policies drive the modernization, professionalization, and refinement of disaster relief operations, providing crucial safeguards for their practical implementation.

Finally, demand-oriented policy tools refer to provisions where governments address the demand side of disaster relief. Through measures like service outsourcing and procurement, these tools create demand for disaster relief services, reduce potential obstacles and resistance in the relief process, and provide traction for both disaster relief operations and the basic livelihood security of affected populations. After reviewing and summarizing the disaster relief emergency plans and disaster relief measures of China's provinces, autonomous regions, and municipalities, no texts were found that align with demand-oriented policy tools. Therefore, at the level of policy text content, this paper primarily focuses on coding and analyzing environmental and supply-oriented policy tools.

Regarding the research sample, this paper primarily collected policies through the Peking University Law Database and the official websites of provincial, autonomous regional, and municipal governments. A final sample of 42 documents was identified, comprising 26 disaster relief contingency plans from provinces, autonomous regions, and municipalities, and 16 disaster relief measures formulated by these administrative regions based on the nationally promulgated Regulations on Natural Disaster Relief.

4. Comparative Analysis of Policy Texts

4.1. Overview of Policies.

In terms of sample size, most provinces (municipalities) in China have established disaster relief emergency response plans, but nearly half still lack formal disaster relief measures. Regarding the timing of the samples, the overall issuance dates of emergency disaster relief plans and disaster relief measures are relatively recent. However, some provinces (municipalities) have updated their emergency disaster relief plans as recently as 2023, indicating that the overall refinement level of emergency disaster relief plans is higher than that of disaster relief measures.

Therefore, while China's provincial-level core natural disaster relief policies encompass both emergency response plans and relief measures, the aforementioned data collectively indicate that emergency response plans hold greater guiding significance and prominence for provincial disaster relief operations. Nevertheless, not all provinces (municipalities) have formulated and publicly released their disaster relief emergency response plans. For instance, Beijing, Liaoning, Heilongjiang, Guizhou, and Tibet have not done so. Among these, Beijing, Liaoning, Guizhou, and Tibet have also failed to formulate and release disaster relief measures, while Heilongjiang has only established disaster relief measures. This situation reflects, to some extent, gaps in their disaster relief work. In contrast, Hebei, Jilin, Jiangsu, Zhejiang, Jiangxi, Shandong, Henan, Hubei, Hunan, Guangdong, Hainan, Shaanxi, Gansu, Ningxia, and Xinjiang have both disaster relief contingency plans and disaster relief measures.

4.2. Policy External Structure.

First, the policy year. While the overall status of core disaster relief policies across the aforementioned provinces (municipalities) clearly indicates whether emergency response plans and disaster relief measures have been established, the timing of policy promulgation and regional variations remain difficult to discern. Public policy exists temporally. Time is both a natural accompaniment to the policy process and possesses distinct functional characteristics. It is a decision-making element policymakers must clearly grasp and a policy variable requiring thorough examination in policy science. Furthermore, time functions as both an input and an output within the public policy process, representing an endogenous entity. Therefore, this paper employs visualization to present the issuance dates of policies across regions, measuring the policy follow-through of each province (municipality). As shown in Figure 1 below, Jilin Province's two disaster relief policies were formulated closest to the present time, with relatively short intervals between their enactment dates, making it the province with the most timely policy implementation overall. In contrast, although Tianjin, Shanghai, Shanxi, Sichuan, and Inner Mongolia formulated disaster relief contingency plans relatively recently, they have yet to establish disaster relief measures. Jiangsu, Jiangxi, Guangdong, and Guangxi exhibit the smallest time gap between disaster relief plans and measures among all provinces (municipalities). From Zhejiang to Heilongjiang in the chart below, the most notable distinction compared to other provinces (municipalities) is that their disaster relief measures were formulated closer to the present, while their plans lagged significantly behind.

derived by statistically aggregating the number of reference nodes for each province's (municipality's) policy tool coding, as shown in Figure 2 below. The proportions of environmental policy tools and supply-type policy tools are also categorized and summarized. The primary function of the coding coverage percentage is to verify whether key elements of policy texts have been comprehensively addressed, while providing a visual understanding of the structure and focal points of policy documents. As shown in Figure 2, among the valid data from 27 provinces, autonomous regions, and municipalities, 33% of policy texts achieved a policy tool coding coverage percentage of 80% or higher. 49% of policy texts had a coverage percentage between 70% and 80%, while the remaining 18% had a coverage percentage below 70%, showing significant variation compared to other provinces (municipalities). Additionally, among the policy tool codes in Shandong Province, supply-side policy tools accounted for the highest proportion compared to other provinces (municipalities). Meanwhile, Henan Province recorded the highest overall policy tool code coverage percentage among all provinces (municipalities).

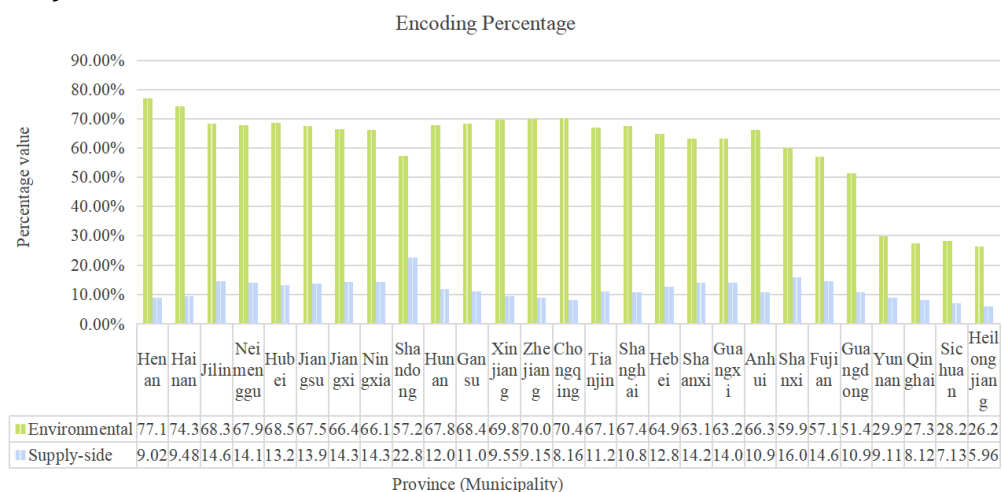


Fig. 2 Percentage Coverage of Policy Codes by Province (Municipality)

Based on the above data and considering the nature of policy instruments—which refer to a series of measures adopted by governments when providing public goods or services—it can be observed that Henan Province has established relatively comprehensive contingency plans and implementation measures for natural disaster emergency relief. Its binding policies are detailed, and the provision of protective measures is also relatively thorough. In contrast, Heilongjiang, Sichuan, Qinghai, and Yunnan exhibit the lowest coding coverage percentages. Heilongjiang, for instance, possesses only disaster relief measures, with insufficient sample data partially affecting its coding coverage ratio. However, an analysis of the policy texts from Sichuan, Qinghai, and Yunnan reveals that, compared to other provinces (municipalities), their disaster relief contingency plans and implementation measures lack detailed discussions on safeguarding measures and the responsibilities of specialized task forces in disaster relief operations. Simultaneously, it was found that the policy texts from these three provinces place greater emphasis on guiding principles and slogans within their contingency plans and implementation measures.

Second are environmental policy tools.

Environmental policy tools, as defined in this paper, refer to protective policy provisions established to foster a favorable environment and platform for disaster relief operations and the basic livelihood security of affected populations. After coding 52 policy documents, five sub-category coding nodes were formed: “Management Standards,” “Reward and Punishment Measures,” “Publicity, Training, and Drills,” “Operational Mechanisms,” and “Multi-Sector Collaborative Coordination,” totaling 1,033 coding reference nodes.

Overall, among the environmental policy tools adopted by provinces (municipalities), “operational mechanisms” account for the highest proportion, while “incentive and penalty measures” account for the lowest. The operational mechanisms for disaster relief in policy texts are primarily reflected in the establishment of organizational command systems, the improvement of disaster information management, and the refinement of emergency response mechanisms. Therefore, the number of coded reference nodes to some extent reflects local governments' emphasis on the foundational systems for disaster relief. “Publicity, Training, and Drills” encompasses emergency drills and disaster prevention, mitigation, and relief publicity, education, and training; “Management Standards” includes disaster situation statistics and verification, responsibility implementation, supervision and regulation, economic compensation, and performance evaluation, which are crucial for the standardized conduct of disaster relief work; “Multi-Party Collaborative Coordination” refers to the government's call for coordinated disaster relief efforts among government departments and between the government and social forces such as research institutions and the public. “Incentive and Disciplinary Measures” pertain to government evaluations of disaster relief actions by responsible entities. The primary reason for the relatively low number of reference nodes in these categories compared to “Operational Mechanisms” and “Management Standards” is the inherent flexibility of disaster relief work. Rigid measures and excessive focus on minutiae yield limited effectiveness, hence the adoption of flexible policies to foster a conducive environment for disaster response and rescue efforts.

Regarding the specific coding reference nodes for each province, Qinghai's policy document contains 33 provisions on operational mechanisms, surpassing other provinces (municipalities). A common feature across provinces (municipalities) is that the number of codes for emergency response mechanisms constitutes the largest portion within their “operational mechanisms” category. The number of codes for disaster information management and organizational command systems is generally comparable overall. Among these, over 60% of provinces (municipalities) have more codes for disaster information management than for organizational command systems. This indicates that local governments prioritize post-disaster information reporting, dissemination, consultation, and immediate response and handling. However, the specific responsibilities of daily administrative offices, specialized task forces, and expert committees remain to be clarified. Specific data is shown in Figure 3 below.

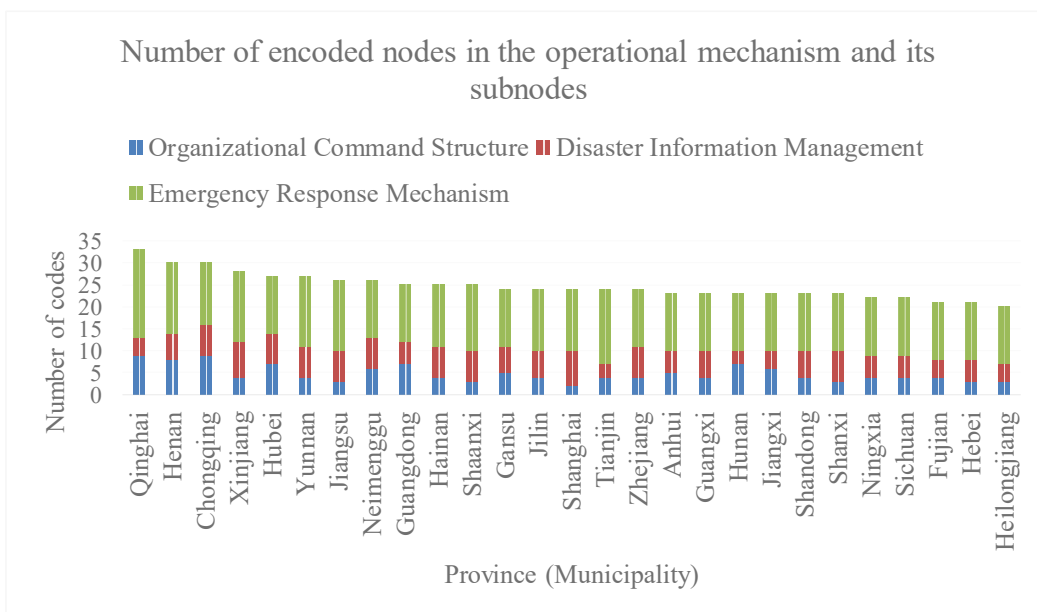


Fig. 3 Number of encoded nodes in the operational mechanism and its subnodes

This paper categorizes management regulations into disaster statistics verification, responsibility implementation, supervision and oversight, economic compensation, and performance evaluation during coding. As shown in Figure 4 below, provinces (municipalities) exhibit distinct emphases in drafting relevant management regulations, with notable variations. For instance, provinces/municipalities such as Jilin, Guangdong, Henan, Jiangxi, and Inner Mongolia allocate a higher proportion of codes to responsibility implementation and disaster statistics verification. Conversely, policy texts from Xinjiang, Yunnan, Tianjin, and Zhejiang do not address disaster statistics verification. Additionally, Guangdong, Anhui, Fujian, Guangxi, Gansu, Hubei, Shandong, and Hunan did not include provisions related to economic compensation. Regarding performance evaluation, although differences among provinces (municipalities) were minimal, it was evident that policy texts from Fujian and Shanxi addressed performance evaluation to a lesser extent.

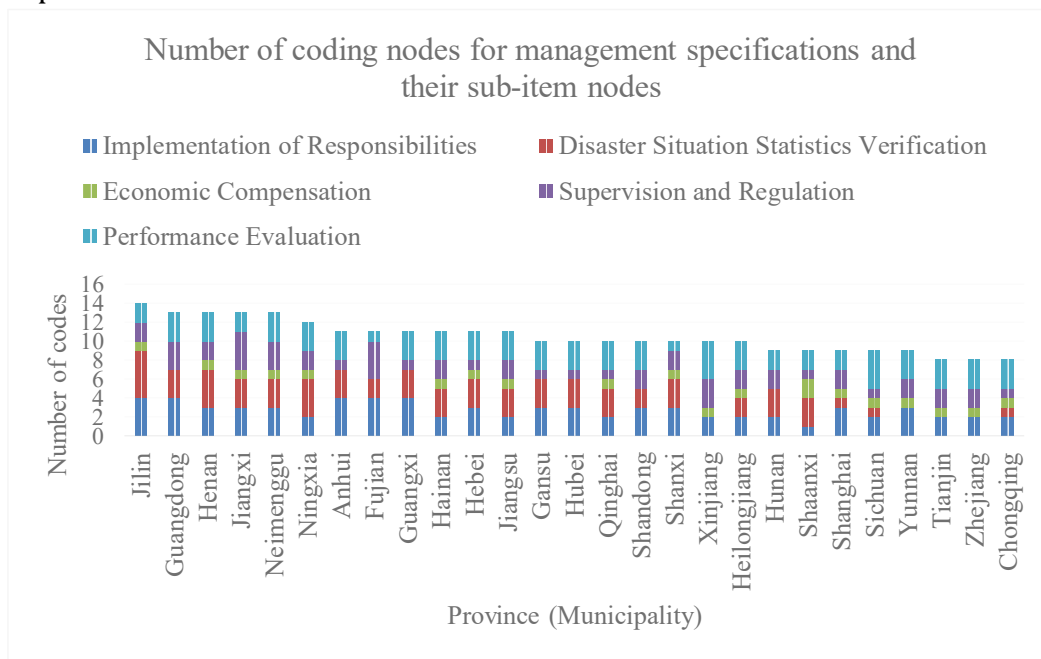


Fig. 4 Number of coding nodes for management specifications and their sub-item nodes

After summarizing the content related to publicity, training, and drills in the policy documents of various provinces (municipalities), it is primarily divided into emergency drills and publicity and training related to disaster prevention, mitigation, and relief. While all provinces include these elements, they are primarily referenced within policy documents. Emphasis is placed on local governments at all levels independently conducting emergency drills and establishing comprehensive disaster reduction model communities in accordance with National Disaster Reduction Day and contingency plan requirements. These efforts aim to disseminate self-rescue and mutual aid knowledge to the public and support local governments in cultivating specialized disaster reduction and relief capabilities. Additionally, Hebei, Henan, Hubei, Shandong, and Yunnan provinces further highlight skill training in new technology applications, encouraging demonstration projects and training initiatives for the use of spatial technologies in disaster reduction.

This study examined policy documents on reward and punishment measures across provinces (municipalities) and found that most regions attach limited importance to this issue. Among 27 provinces (municipalities), only 12 explicitly emphasized evaluating disaster relief performance of responsible entities in their policy texts, while the remaining 15 made no mention—accounting for a significant 55%. This indicates that most local governments have inadequate understanding and implementation of reward and punishment management in disaster relief work, undermining the scientific and fair nature of the disaster relief system.

The multi-stakeholder coordination mechanisms in various provinces (municipalities) are relatively well-developed compared to their incentive and penalty measures. Ten provinces (municipalities), including Fujian and Gansu, emphasize not only the scientific organization and effective guidance of social forces in donating relief supplies but also stress the importance of establishing and improving provincial-level emergency command centers for natural disaster relief, enhancing inter-departmental connectivity, and creating volunteer service record systems to facilitate orderly participation by social forces. Furthermore, Guangdong Province, aligning with national development strategies and its geographical position, proposes that the Provincial Department of Emergency Management should collaborate with relevant provincial departments and units to enhance exchanges and cooperation with neighboring provinces (regions) and the governments of the Hong Kong and Macao Special Administrative Regions in disaster prevention, mitigation, and relief. This aims to promote the establishment and improvement of a coordinated disaster warning and emergency relief mechanism among the nine provinces (regions) in the Pan-Pearl River Delta region and the Guangdong-Hong Kong-Macao Greater Bay Area.

Third are supply-side policy instruments.

Supply-side policy instruments refer to government regulations that directly influence production factors such as talent, capital, and technology from the supply side in a top-down manner, aiming to advance the modernization, professionalization, and refinement of disaster relief and assistance efforts.

After coding 52 policy documents, 189 coding reference nodes were identified across eight sub-categories: "Professional Disaster Relief Team Development," "Infrastructure," "Technology Development and Innovation," "Funding Allocation and Distribution," "Information Services," "Material Reserve and Allocation," "Medical and Health Services," and "Transportation Support and Public Security Maintenance."

Overall, except for "Healthcare Support" and "Transportation Support and Public Order Maintenance" which had the fewest coding reference nodes and showed significant differences compared to other nodes, the proportion of supply-oriented policy tools relative to environment-oriented policy tools was relatively balanced across provinces (municipalities).

Regarding specific coding reference nodes across provinces (municipalities), Jiangsu, Inner Mongolia, and Shandong possess policy content related to "Healthcare Support" and "Transportation Support and Public Order Maintenance." First, concerning healthcare support policy texts, these three provinces primarily emphasize the development of specialized emergency medical rescue teams and the timely provision of medical supplies, equipment, and devices such as medicines and instruments to disaster-affected areas. They also stress the importance of mobilizing social forces like the Red Cross to participate in on-site emergency medical care. Second, regarding transportation support and public order maintenance policies, the three provinces primarily emphasize that disaster-affected areas may implement traffic control at disaster sites and related access routes as needed for relief operations. They establish emergency "green channels" for disaster relief and develop action plans to maintain social order and traffic discipline in disaster areas as circumstances require, effectively safeguarding public order in affected regions. Although there is some overlap with provisions on material reserves and deployment as well as the development of specialized disaster relief teams, these measures demonstrate the three provinces' commitment to implementing the principle of "putting people first."

The remaining six coded nodes, including professional disaster relief team development and infrastructure, primarily differ in terms of technological development and innovation. Figure 5 ranks provinces (municipalities) based on the number of coded reference nodes, with Fujian, Gansu, Guangxi, Hebei, Henan, Hubei, and Hunan having the highest number of "technological

development and innovation” codes. These regions also exhibit the highest proportion of supply-oriented policy tool codes. However, Zhejiang’s disaster relief plans and measures do not address related content. Supply-side policy tools aim to provide essential infrastructure for high-quality disaster relief development, while technological elements serve as prerequisites for information sharing, disaster risk investigation, and assessment. Therefore, only by prioritizing the development of disaster prevention and mitigation technologies and establishing clear technical and management standards can we advance the top-level design of disaster prevention and mitigation networks and fully leverage the province’s emergency public event early warning information dissemination system.

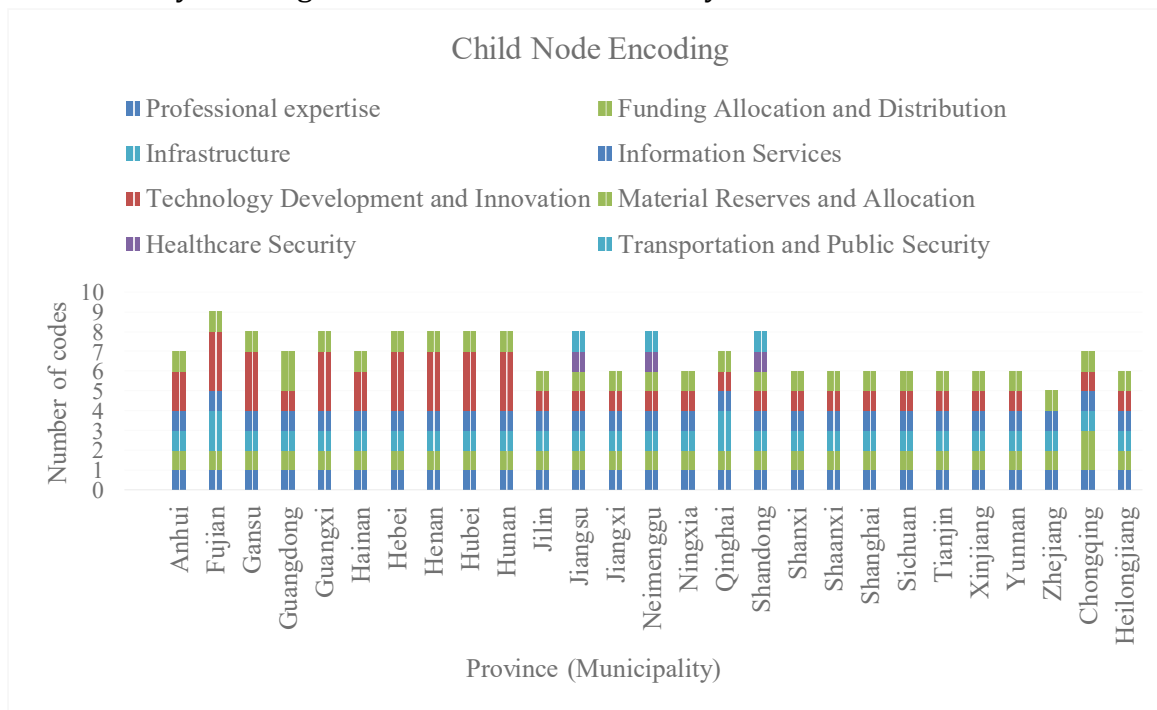


Fig. 5 Number of reference nodes for supply-side policy tools

5. Summary

This paper constructs a policy analysis framework comprising external policy structures and policy instruments, subsequently conducting a comparative analysis of core provincial-level natural disaster relief policies in China. Findings reveal that all provinces, autonomous regions, and municipalities—except Beijing, Liaoning, Guizhou, and Tibet, which lack both disaster relief contingency plans and disaster relief measures—possess core policies governing disaster relief at the local level. Regarding the external policy structure, all provinces (municipalities) adopt the directive and authoritative policy form of “notices,” with policy timelines generally aligned with the current phase. However, policy issuance is dominated by single entities, lacking joint issuance. In terms of policy instruments, provinces (municipalities) exhibit uneven application: environmental policy instruments are widely used, while supply-oriented policy instruments are underutilized. Among environmental policy tools, publicity/training/drills, incentive/penalty measures, and multi-stakeholder coordination are the most deficient areas. Regarding supply-oriented tools, healthcare/transportation support and public security maintenance are the least developed. While technical development/innovation sections generally feature substantial content, they exhibit the most uneven development across provinces/municipalities.

Enhancing disaster prevention, mitigation, and relief capabilities is an urgent requirement for strengthening public safety capacity building. The world is currently undergoing

unprecedented changes in a century, with a new wave of technological revolution and industrial transformation gaining momentum. The widespread application of digital technologies, in particular, offers entirely new technical pathways for strengthening and innovating public safety governance. From monitoring and early warning to emergency rescue, from material support to community-based prevention and control, and from pre-disaster prevention to post-disaster relief, disaster prevention, mitigation, and response demand more scientific allocation and management of human, material, and financial resources. It can be said that enhancing public safety governance capabilities is driven by advancing disaster prevention, mitigation, and relief capabilities through informatization. Increased emphasis on technological development and innovation will also accelerate the adoption of new technologies like big data and artificial intelligence in disaster prevention, mitigation, and relief. Leveraging intelligent drivers, this will continuously elevate the sophistication, professionalism, scientific rigor, and precision of natural disaster relief efforts.

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