

Research on Policy Diffusion Path and Reproduction of River Chief System

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Abstract

The River Chief System (RCS) has evolved from local innovative practices to a national water governance strategy to address the current challenges in China's water environmental management. In contrast to existing research that focuses on the strengths, weaknesses, and improvements of RCS, this study uses literature study to reveal the dynamic evolution of RCS through three phases, with RCS spreading from developed coastal areas to central and western inland regions. RCS's diffusion path involves vertical diffusion between central and local levels and horizontal diffusion among local governments. Moreover, RCS has also achieved conceptual spillover, gradually expanding into other governance domains, such as the Lake Chief System, the Field Chief System, the Forestry Chief System, and the integration of multiple chief roles. However, it is essential to scrutinize the phenomenon of applying similar governance mechanisms to different areas, as it may result in challenges such as overburdening local governments, insufficient public participation, oversimplification of differences in natural resource endowments, and limited applicability. This study also provides suggestions on how to address these challenges. The study contributes theoretical insights and policy implications, providing a foundation for practical policy innovation.

Keywords

Chinese Water Governance Policy, Policy Diffusion, River Chief System

1. Introduction

China is currently confronted with significant challenges, including severe water pollution, water environmental degradation, and the decline in the functionality of rivers and lakes. To tackle these challenges, in 2016, the General Office of the Central Committee of the Communist Party of China and the General Office of

the State Council issued the “Opinions on the Comprehensive Implementation of River Chief System (RCS)” (referred to as the “Opinions”). The “Opinions” outlined a comprehensive plan for establishing a four-tier RCS, including provincial, municipal, county, and township levels throughout China, with the goal of full implementation by the end of 2018. Leaders holding party and government positions at various administrative levels are appointed as “River Chiefs,” their primary responsibility involves the comprehensive management and preservation of rivers and lakes within their respective jurisdictions. Notably, the outcomes of water environmental management are integrated into these leaders’ annual performance evaluations. By the end of June 2018, all 31 provincial-level administrative regions in China, including autonomous regions and municipalities directly under the central government, had successfully implemented RCS at various levels. This nationwide implementation resulted in the appointment of over 300,000 River Chiefs at provincial, municipal, county, and township levels and more than 900,000 village-level river and lake chiefs, including river patrolers and protectors, effectively bridging the last mile of RCS.

Regarding official formal documents, Changxing County in Zhejiang Province explicitly proposed and implemented RCS in 2003 [1]. However, it is widely recognized in Chinese academic discourse that RCS originated in Wuxi City, Jiangsu Province, in 2007 [2]. In response to a blue-green algae outbreak in Taihu Lake, the Wuxi municipal government introduced RCS, achieving remarkable improvements. Subsequently, other regions rapidly adopted and emulated this innovative policy, gradually becoming the nationwide adoption of China. A notable distinction between Wuxi’s RCS and Changxing’s RCS is that the former appoints party and government leaders as river chiefs. This strategic approach is a strong deterrent against environmental violations and easily attracts social attention to environmental protection, optimizing collaborative efforts toward enhanced water management. Local governments’ diverse and innovative policies offer numerous options for national governance. RCS, rooted in local practices and acknowledged for its governance effectiveness, gradually gained recognition as a national policy, effectively addressing challenges in China’s water pollution control efforts. Institutional frameworks demonstrating superior performance, especially with high-level attention and promotion, often initiate a process of institutional reproduction. In this context, RCS rapidly proliferated and swiftly extended its influence into various domains of social governance, giving rise to systems like Lake Chief System, Bay Chief System, Forest Chief System, and Field Chief System.

Scholars extensively studied RCS. For instance, a comprehensive literature review highlights key research trends of RCS, including public participation, the utilization of information technology, and the implementation of the Lake Chief System, Forestry Chief System, and Field Chief System, as well as the establishment of the rule of law [3]. In this study, the author thoroughly reviews the existing literature on RCS and summarizes key points. Firstly, there is a discussion

about the future direction of RCS. Scholars express scepticism, viewing RCS as an effective short-term arrangement rather than a sustainable long-term solution [4], its long-term effects and sustainability remain to be determined [5]. With the improvement of modern water governance systems and mechanisms, RCS will eventually transition out of this historical stage [6]. Others take an optimistic stance, emphasizing RCS's past achievements [1] and advocating for its diffusion mechanism [7]. Secondly, regarding the advantages and disadvantages of RCS, scholars note strengths in the clear assignment of responsibilities and a well-defined allocation of authority but identify weaknesses, including a lack of transparent oversight and enduring mechanisms [7]. Thirdly, achievements through RCS are analyzed, with scholars asserting substantial improvement in water quality [8] [9] [10], incorporation of river and lake governance within the framework of legalization [11] [12] [13], and promotion of the process of policy diffusion [14]. Fourthly, how to improve RCS is discussed. Scholars emphasize strengthening information systems, promoting information disclosure, and enhancing public participation, particularly in remote and rural areas [15] [16]. Lastly, it is related to the effect of RCS, some scholars imply that the implementation of RCS is not as effective as claimed by the government [17].

The academic community has extensively investigated RCS, primarily focusing on the system itself. Moreover, insufficient attention has been given to analyzing the combination of RCS with other chief systems. The term "chief system" appears to be a universal solution, carrying excessively high expectations. Consequently, it is imperative to comprehend the research progression from the River Chief System to other chief systems. What constitutes the evolutionary path of this process, and what impacts does it have? Furthermore, what risks are associated with it? This paper aims to address these gaps by exploring the diffusion of RCS and its subsequent innovations, examining the trajectory from local to national policy levels, analyzing issues related to policy reproduction and its integration with another chief system, carefully examining the phenomenon of generalization within the governance mechanisms of these chief systems. The study contributes theoretical insights and policy implications to promote practical policy innovation at the local government level.

2. Policy Diffusion Path

2.1. Temporal and Spatial Evolution Mechanism of RCS

2.1.1. Temporal Evolution

This study concentrates on RCS documents released by provincial-level governments in China, comprising 31 provinces, autonomous regions, and municipalities directly under the central government. To guarantee information accuracy, a thorough search was undertaken for work plans related to the comprehensive implementation of RCS by provincial-level governments. The policy data was collected up to December 31, 2017. Further verification of policy texts and their release dates was carried out using the official websites of the Chinese Ministry

of Water Resources, provincial and regional governments, and relevant departments. The temporal evolution of RCS was identified to encompass three distinct phases.

1) Due to innovative and promotional initiatives within Jiangsu Province from 2007 to 2010, the province did not release its inaugural provincial-level RCS action plan until 2010. Consequently, this specific timeframe is not depicted in **Figure 1**.

2) The reference point is when each province first issued official policy documents for RCS.

The first phase pertains to the initial promotion of RCS (2007-2010). As China's economy rapidly expanded during this period, it led to severe environmental pollution problems, particularly escalating and concentrated outbreaks of water pollution. These challenges prompted policy innovations by local governments in response to water pollution control. A significant milestone was reached on December 17, 2010, when Jiangsu Province introduced China's inaugural provincial-level RCS action plan.

The second phase can be referred to as the diffusion and absorption of RCS (2011-2015). Experiencing the initial rapid proliferation of the policy, its advantages and disadvantages were reevaluated. Policymakers critically evaluated the effectiveness of RCS and subsequently revised the policy content and framework with the aim of enhancement. Regions that had already implemented RCS continued to adapt it further by their unique local policy execution circumstances. Meanwhile, other provinces and regions engaged in policy learning, adjusting to their specific contexts. This process represents a long-term, dynamic development that requires sustained investment rather than being achievable in the short term. In 2013, Tianjin and Zhejiang initiated the implementation of RCS. Over the following two years, provinces such as Fujian and Jiangxi began to follow as policy pilot areas to commence the practice of RCS. During this period, the trend of policy diffusion began to emerge gradually.

The third phase, characterized by accelerated policy diffusion of RCS, spanned from 2016 to 2017. Following a period of promotion and dissemination, the conditions for accelerated policy diffusion matured, and the implementation of RCS became a societal focal point in China. Chinese President Xi Jinping specifically mentioned RCS in his New Year's address in 2017, stating that every river in China should have its river chief. This marked the first time RCS entered the discourse of China's highest leadership, and as a result, it became a prominent term. On March 5, 2017, Premier Li Keqiang explicitly stated in the Government Work Report that China would enhance the ecological conservation compensation mechanism, implement the strictest water resource management system, and comprehensively implement RCS in China. This declaration marked the commencement of China's comprehensive exploration of RCS, and the high-level administrative push from the central government played a pivotal role in its rapid diffusion.

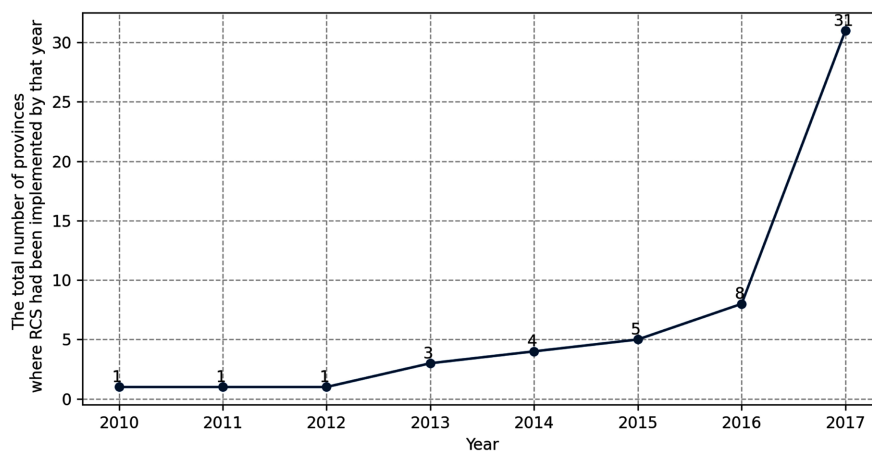


Figure 1. The temporal trajectory of the diffusion of RCS across provinces.

2.1.2. Spatial Evolution

As shown in **Figure 2**, darker colours represent the earlier implementation of RCS. It can be observed that the overall diffusion of RCS has progressed gradually from developed regions in the eastern part of China toward the central and western regions. The provinces and regions that implemented RCS earliest tend to have a multitude of rivers within their territories, abundant water resources, relatively developed economies, and a higher level of government water management capacity.

2.2. The Vertical and Horizontal Diffusion

The emergence of RCS in response to China's water environmental governance challenges, while initially conceptualized as an institutional innovation within emergency management, exhibits distinct characteristics in its policy diffusion path, characterized by absorption and radiation across hierarchical levels, along with horizontal learning and competition dynamics. It is also characterized by strong central government promotion as a safeguard and active local government learning as a driving force [14]. RCS has evolved into a well-established water governance system in China. It has swiftly proliferated nationwide through horizontal and vertical institutional diffusion mechanisms.

2.2.1. The Vertical Diffusion

The diffusion of RCS follows a distinct process, where local governments initially embrace it autonomously. Under specific circumstances, it spreads from the bottom up to the central government. Ultimately, it becomes enforced from the top down by the central government, enabling nationwide adoption and implementation. RCS originated in response to Taihu Lake's water crisis in Wuxi City, constituting an induced institutional transformation driven by external pressures; other cities and counties in Jiangsu Province began learning from Wuxi's water management experience. The formal issuance of the "Opinions" at the end of 2016 signified the transformation of RCS from a bottom-up autonomous innovation to a top-down national policy. Therefore, RCS represents a process in

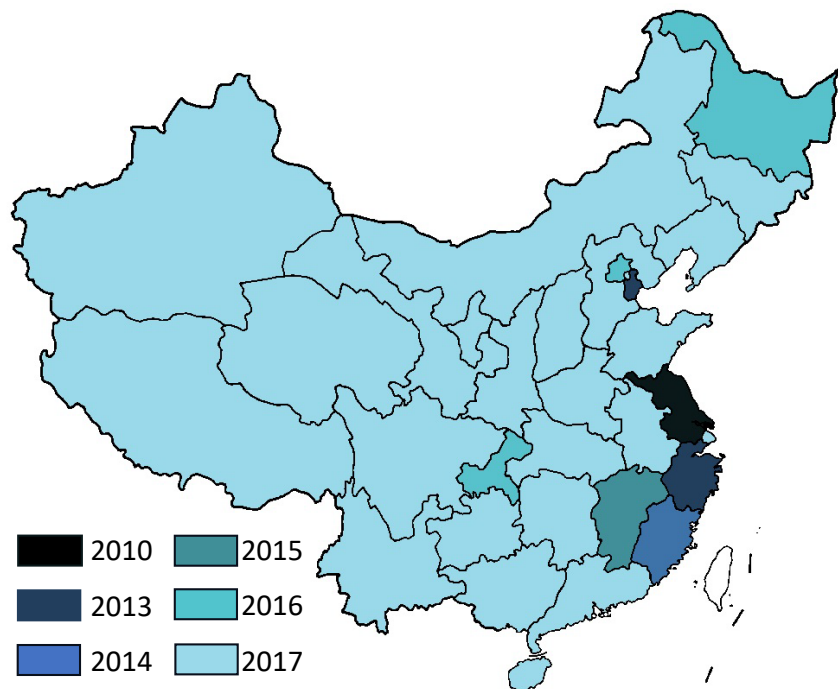


Figure 2. The spatial distribution of the diffusion of RCS across provinces.

which locally induced institutional diffusion transitions into a mandatory policy enforced by the central government, illustrating the integration of local government autonomous innovation and central government mandatory promotion.

1) Bottom-Up Vertical Absorption

China's long-established power structure, characterized by a pyramid-like distribution, has resulted in policy innovation often originating from the central government. The typical path of policy diffusion follows top-down dissemination characterized by a certain level of mandatory spread. In contrast, RCS initially emerged as a local government innovation. Initially limited to a geographic scope encompassing neighbouring provinces, cities, and regions. The innovative achievements at the local level gradually garnered the attention of the central government and relevant functional departments, such as the Ministry of Water Resources; this led to its eventual incorporation into the national system, demonstrating a pattern of diffusion initially moving in parallel and ascending. This process provided the central government with policy alternatives and laid the foundation for subsequent radiating policy promotion.

In 2007, Wuxi initiated the implementation of RCS, prompting neighbouring cities to emulate this initiative; by 2010, Jiangsu Province had comprehensively adopted this system. Unlike the typical diffusion path of policies in China, the introduction of RCS policies in many counties and municipality-level preceded the provincial level, as observed in cities such as Kunming, Dalian, and Huanggang. These localized policy pilot programs were pivotal in shaping subsequent provincial-level policies. A similar pattern emerged in the relationship between provincial and central governments. Jiangsu Province's adoption of

RCS served as a model for other provinces and regions. In a press conference held by the State Council on March 21, 2014, officials from the Ministry of Water Resources stated that RCS, led by local government administrative leaders, represented a valuable measure for policy innovation at the local level. It had achieved significant results in water pollution control and would be promoted nationwide. This signified the formal acceptance and adoption of RCS by the central government.

2) Top-Down Promotion

The vertical intergovernmental relationships between higher and lower levels significantly impact policy diffusion in China, particularly between the central and local governments. As the central government gradually decentralizes authority, local governments gain increased autonomy in managing local affairs. However, the central government can still control local government power through financial and personnel mechanisms, and local government authority in China requires legitimate authorization from the central government. When the central government signals policy support through administrative directives and similar channels, it not only exerts pressure on local governments but also enhances the legitimacy of local policy innovation adoption. Local governments actively respond to higher-level requirements, and policy innovations swiftly diffuse nationwide from the top down. Some scholars have suggested that central government directives have the most decisive influence on the diffusion of RCS. Within China's hierarchical structure, although provincial-level governments possess a certain degree of discretion, their innovation diffusion, particularly in cases involving environmental policies with weak incentives, is still influenced by central mandatory orders. This indicates that central compulsion remains a crucial tool for promoting the diffusion of environmental policies [18].

As a unitary state, China exhibits a relatively high degree of centralization and hierarchy in the organization of governmental institutions. The relationships between higher- and lower-level governments are often characterized by leadership, subordination, commands, and compliance. Therefore, among the five levels of central, provincial, municipal, county, and township governments, policies formulated by higher-level governments and functional departments are rapidly transmitted to lower-level government departments through high-level promotion via administrative directives. In 2016, the nationwide "Opinions" released a significant transition for RCS, transforming it from an emergency measure into a national policy. This development notably expedited the adoption of the system by provincial governments. The central government enhanced the legitimacy of RCS through a promotional strategy resembling administrative directives, urging lower-level local governments to study and implement the policy. This process effectively facilitated policy implementation, execution, and transformation, resulting in the comprehensive and systematic promotion of RCS from top to bottom and from specific points to entire regions. Ultimately, under the strategic direction and leadership of the central government and

through collaborative efforts from various departments and local governments at all levels, all 31 provinces, autonomous regions, and municipalities in China had fully established RCS by the end of June 2018.

2.2.2. The Horizontal Diffusion

Vertical policy diffusion pathways exhibit limitations, such as the potential for delaying pollution control efforts and failing to maximize effectiveness. Therefore, it is imperative to conduct research on mutual learning and parallel competition among regions to facilitate the horizontal diffusion of public policies. In the face of the increasingly severe degradation of water environments like rivers and lakes and the growing public demand for environmental improvement, the efficacy of the existing water management systems is being challenged. The emergence of the water crisis has had significant adverse effects on politics, the economy, society, and the lives of citizens, leading to a surge in public dissatisfaction, as illustrated in **Table 1**.

It can be said that the increasing public discontent has provided a structural demand for the central government to adopt RCS. Consequently, continuous reflection and innovation of the existing water management systems are required to address new challenges and strengthen water environmental management and the ecological health of rivers and lakes. Regional governments have expressed their demands for new water management systems. This is particularly urgent in areas with severe water pollution or where local officials are eager to seek recognition from higher authorities through active participation in water pollution control initiatives. Thus, the demand for new water management systems is the foundation for the horizontal diffusion of RCS among regional governments.

The driving forces of horizontal diffusion task-oriented and problem-oriented approaches primarily influence it. External pressures substantially shape task orientation. In addition to directives from higher-level government authorities and the influential role of public opinion, implicit competition emerges among local governments, particularly those in adjacent regions, to provide high-quality public services and goods. Policies have become the focal point of this competition; a successful policy innovation by a local government may induce imitation and learning among parallel governments, as governments can gain advantages or avoid disadvantages by adopting specific policy measures. The practice has shown that other regions can reduce the likelihood of institutional innovation failure and lower the associated costs by emulating and adopting Wuxi's experience with RCS in water management. This effectively enhances the expected benefits of institutional innovation. As a result, horizontal institutional diffusion occurs among local governments.

Problem-oriented, on the other hand, functions as an intrinsic motivator for governmental policy innovation and learning. In many regions, the adoption of RCS arises from the inadequacy of existing local water management policies to

Table 1. The quantity of environmental protection-related petitions received by the Ministry of Ecology and Environment.

Year	Telephone Reporting	WeChat Reporting	Online Reporting
2017	409,548	129,417	79,878
2018	365,361	250,072	80,766
2019	1,334,712	195,950	62,239
2020	231,297	204,483	33,327
2021	174,198	201,714	69,007

Data source: China Ministry of Ecology and Environment Environmental Statistics Annual Report 2017-2021.

effectively address local water pollution issues. Local governments are motivated to introduce a new solution that improves water environmental quality. Consequently, certain regions actively engage in learning and emulate implemented by more developed areas. This lateral intergovernmental learning reduces intermediaries in the diffusion of RCS and significantly enhances the efficiency of water management. Ultimately, it establishes a rational mechanism for horizontal policy diffusion among local governments.

3. The Results of Policy Reproduction of RCS—N Chief System

As an innovative mode of water environmental governance, RCS has witnessed a continuous nationwide expansion. After over a decade of dissemination, the adoption of RCS in various regions is no longer a mere replication or imitation, nor does it solely respond to central mandatory administrative orders. At this time, locals have consciously engaged in a normative reproduction of RCS. At this stage, local governments have extended the application of RCS to similar or even entirely different issue domains. The Lake Chief System, Bay Chief System, Field Chief System, and Forest Chief System have proliferated rapidly. With the deepening of local governance responsibilities, organizational systems have become increasingly rigorous, management services more refined, and governance systems more systematic; this approach has gained popularity among local cadres and has also received recognition from the general populace. At the same time, it has raised concerns about whether the concept of chief system governance for all at the local level is feasible. This study collectively refers to innovations derived from RCS as N Chief Systems.

As implemented in various specific regions or domains, the N-Chief Systems have undergone modifications to align with their respective contexts. Nevertheless, the underlying naming logic remains fundamentally consistent. Furthermore, their operational mechanisms exhibit high similarity to RCS, encompassing several vital aspects. Firstly, there is a transparent allocation of responsibilities, with the appointment of the top leader of the local government as the head of N-Chief System. Secondly, public notice boards are installed to communicate

mission objectives and provide contact information. Thirdly, a system of inspections, mirroring the logic of river inspections in RCS, is employed to conduct relevant inspection activities. Fourthly, specialized N-Chief offices are established to oversee related activities and task implementation coordination.

The application of other governance systems derived from the RCS in various domains is demonstrated in **Table 2**. The birth of the Lake Chief System can be traced to the issuance of the “Guiding Opinions on Implementing the Lake Chief System” by the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council in January 2018. This directive provided timely and necessary supplements to RCS, leading to the establishment of the Lake Chief System [19]. In 2017, the Bay Chief System emerged as a notable initiative in China’s marine ecological and environmental protection domain. On May 27 of the same year, the Office of the State Oceanic Administration released a notification titled “Notice on Formulating the Pilot Work Plan for the Bay Chief System,” outlining the initiation of pilot work for the Bay Chief System in Hebei, Shandong, Jiangsu, Zhejiang, and Hainan provinces. This introduction signifies a substantial institutional innovation within marine environmental management, potentially significantly enhancing environmental oversight in bays. Shandong Province implemented the Field Chief System in 2017 to enhance farmland management. The Field Chief System is currently primarily promoted at the local level, as evidenced by Hunan Province’s issuance of opinions on “Comprehensively Promoting the Field Chief System and Strictly Protecting Cultivated Land” and Sichuan Province’s stance on “Comprehensively Promoting the Field Chief System”. The Forest Chief System was instituted in 2017, with Anhui Province pioneering its implementation at the provincial level. In January 2021, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council jointly issued “Opinions on Comprehensively Promoting the Forest Chief System”, ushering in new prospects for the high-quality development of forestry. The Chief Systems are not isolated innovations; they systematically incorporate an operational framework similar to RCS. Consequently, these Chief Systems can be regarded as reproduction within the diffusion of RCS, a process that concurrently fortifies RCS.

3.1. Characteristics of N Chief System

3.1.1. Leadership by the Head of the Party and Government

The essential institutional core of the N Chief System lies in the top leaders of the Party and government at all levels serving as the chief. The responsibility at each level is implemented through leading cadres, activating the chain of governance at various levels and the proactiveness in assuming responsibilities. This ensures that the chief performs their duties more effectively, enhances inter-departmental collaboration, and improves the assessment and supervision mechanisms. It provides a feasible pathway for the sustained governance of various environmental issues. Through The active involvement of the Party’s top

Table 2. Dominant governance mechanism in the field of natural resources—N Chief System.

Natural Resources	System	Implementation Period	Implementation Area
River	River Chief System	Implemented in Changxing County, Zhejiang Province, in 2003 and nationwide in 2017	Nationwide
Lake	Lake Chief System	Implemented in Hubei Province in 2012, and nationwide in 2017.	Nationwide
Bay	Bay Chief System	Implemented as a pilot in Shandong, Jiangsu, Hainan, and other provinces in 2017.	Pilot
Forest	Forest Chief System	Implemented in Anhui Province in 2017 and nationwide in 2021.	Nationwide
Grassland	Grassland Chief System	Implemented in Qinghai Province in 2020.	Pilot
Field	Field Chief System	Implemented as a pilot in Anhui Province, Shandong Province, and other regions in 2021.	Implemented in Shandong, Anhui, Sichuan, Hunan and other provinces.

leadership and government, the government governance crises. Under the direct government of the Party's top leaders and government, work can be swiftly conducted, quickly concentrating the most critical, essential, and comprehensive resources within specific areas. This approach facilitates the rational and effective integration and allocation of resources, enabling the resolution of many complex and complicated issues while fully harnessing the enthusiasm and initiative of officials in their duties and entrepreneurial endeavours.

3.1.2. Concentrated Governance of Issues

Existing governance typically relies on the specialized division of responsibilities among functional departments; various regions or functional departments often manage their segments, lacking vertical and horizontal connections. Each functional department defines and resolves problems according to its division of responsibilities, mainly dealing with localized issues. According to the logic of governing by division, segment, and department, governance objectives are defined by various regions or departments and are primarily isolated goals. For example, governing a specific stretch of river or maintaining a particular lake rather than the entire river or lake. This governance structure, rooted in a segmented full responsibility system, has led to problems such as blurred responsibilities, making it challenging to address comprehensive issues promptly. The N Chief System, oriented towards comprehensive issues, integrates various regions and functional departments, directly constructing comprehensive issues. Specifically, it addresses river, lake, forest, and farmland issues rather than administrative di-

vision issues or issues specific to a particular functional department. The system consolidates resources, clarifies and coordinates the relationships of rights and responsibilities in various aspects, uses the N Chief as a focal point, unifies goals, coordinates various parties, and concentrates resources for comprehensive governance.

3.2. Drawbacks of N Chief System

3.2.1. Overburdened Local Government

In a context where responsibilities and pressures have been decentralized to the local government level, introducing N chief systems has raised concerns about overburdening local authorities. Notably, an official may hold multiple positions, such as River Chief, Lake Chief, Field Chief, Forest Chief, and others, each of which entails specific performance assessments. This governance approach often requires the mobilization of a considerable number of personnel, causing local governments to suspend other work to compensate for the human resource shortage. This necessitates a substantial investment of human, financial, and material resources, resulting in substantial administrative expenses for local governments. Introducing a multitude of “chief systems” to address every issue is not feasible, as society may struggle to bear the high costs associated with this mobilization-based governance. More importantly, each introduction of a new system necessitates the development of corresponding assessment policies. If an excessive number of “chief systems” are implemented in a given locality, it may overwhelm local governments.

3.2.2. Insufficient Public Participation

Social governance should not rely solely on the power system; the involvement of social forces also deserves attention. RCS has considered social forces in its institutional design, such as by installing River chief notice boards and complaint boxes along riverbanks during the implementation, enabling the public to play a supervisory role. However, ecological citizens possess the right to environmental oversight and environmental participation, expression, and information. In the application of RCS, the extent and depth of participation from civil society forces remain restricted [20]. In practice, due to the primary reliance on administrative hierarchical systems for pressure transmission, relevant government departments not only neglect the participation of social forces but also seek to reduce the increased workload associated with their participation, subsequently excluding various market and social forces, resulting in the neglect of public opinions, and the perception of social forces involvement as interference in policy implementation. Research-based on investigations into the practice of “River Chief Assistants” in Xiangtan City [21] found that public participation can, to a certain extent, compensate for the shortcomings of movement-style governance within the RCS implementation, such as insufficient social mobilization, temporariness, formalization, high governance costs, and inadequate legitimacy and effectiveness.

3.2.3. The Contradiction between Similar Governance Model and Natural Resource Diversity

While RCS was initially designed for river management, its adaptability to other areas of governance is worth exploring. Due to the distinct characteristics of various natural resources, challenges arise in adopting similar management approaches. Taking the River Chief system and the Forest Chief system as examples, rivers are dynamic, extensive, and visible, and appointing River Chiefs for cross-regional governance through administrative powers can effectively play a role. In contrast, forests are stationary, possess vastness and enclosedness, and have complex terrain, making monitoring activities such as poaching and illegal logging in real-time complex. Instead, forest governance relies more on regular and close-range daily supervision. Furthermore, due to the vast forested areas, even local Forest Chiefs may struggle to be familiar with all forestry matters within their jurisdiction. Regular forest patrols can only provide short-term oversight to areas within their immediate reach, thus contradicting the availability of limited administrative resources and the practical demand for comprehensive monitoring.

3.2.4. Challenges in Achieving Expected Governance Performance

The attention of higher-level government authorities often influences the effectiveness of the new governance model. When higher-level attention is concentrated, local policies tend to be more actively promoted, leading to more noticeable governance outcomes. However, when higher-level attention shifts elsewhere, it quickly leads to a regression in progress. Furthermore, when confronted with complex public management tasks, local governments may engage in selective enforcement during implementation to minimize the increased administrative costs associated with adopting new administrative models. Their selection is influenced by factors such as the intensity of higher-level assessment pressure, the level of higher-level attention, and the issue's urgency. In some cases, they choose symbolic enforcement to meet routine assessment requirements. Additionally, the existing environmental governance mechanisms heavily rely on administrative responsibility systems and the party-state leadership responsibility system. While these mechanisms may compel lower-level governments to execute the governance objectives set by higher-level authorities, they can also result in passive policy execution.

3.2.5. Limited Applicability

Specific governance mechanisms have unique temporal and spatial conditions and social environments, and they exhibit significant performance in specific domains. However, their transplantation to different domains may not yield the same results. RCS's successful application in addressing water pollution crises stems from rivers' public and cross-domain attributes, which enable collaborative governance advantages. However, implementing the Field Chief System as a common property mechanism for farmland faces challenges due to clear divisibility and exclusive property rights, significantly impacting its effectiveness.

Field Chiefs take full responsibility for specific farmland areas, inevitably affecting the interests of farmers. Moreover, local communities often possess unique ecological concepts and cultures related to mountains, water, forests, fields, lakes, and other areas, which may not align with the standardized national governance.

In institutional transplantation, successful cases and valuable lessons are to be learned. Many institutions that have yielded positive outcomes in pilot areas have encountered failures when introduced in other regions. The practice has shown that institutional paradigms demonstrating notable performance often possess specific characteristics and may not be universally applicable. For example, China initiated its first batch of innovative city pilot projects in 2012, leading to the country's rapid spread of the concept [22]. However, constructing intelligent cities requires a reliable and controllable urban information security system and specific hardware conditions. Some economically underdeveloped regions in China lack these specific conditions, leading to them hastily adopting policies related to clever city construction without evaluating their local development positioning and characteristics.

Consequently, these initiatives often fail. Similar lessons abound, but the fundamental principle is that institutional transplantation necessitates a comprehensive consideration of multiple factors and should not be undertaken unthinkingly. Despite the advantages of RCS shown in cross-domain and collaborative governance, its applicability must be assessed while adapting its experiences.

4. Discussion

The process and impact of local policy innovation evolving into a national action in China are crucial topics in academic discussions on governance. In contrast to existing research that focuses on the strengths, weaknesses, and enhancements of RCS, with much research specifically concentrating on RCS itself, this paper conducts a detailed analysis of the policy diffusion process originating from RCS; it examines the evolution from the "River Chief System" to the "N Chief System", shedding light on the characteristics and drawbacks of this chief system. The study identifies three distinct stages in the diffusion of RCS, observing its spatial spread from the developed coastal areas in the east to the central and western inland regions. This diffusion demonstrates horizontal mutual learning and parallel competition among governments and vertically includes both bottom-up absorption at government levels and top-down administrative directive promotion. Concurrently, RCS gives rise to implementing various governance models such as the Lake Chief System, Forest Chief System, and Field Chief System across diverse regions. These governance models have demonstrated the active participation of the highest Party and government leaders in addressing governance crises, ultimately achieving centralized governance effectiveness. However, challenges include the burden on local governments, inadequate public participation, contradictions between similar governance models and resource diversity, and limitations in achieving expected continuity.

5. Conclusions

How to advance the policy diffusion process, ensure the quality of policy implementation during the diffusion process, and ultimately achieve positive policy outcomes are significant topics in public administration. Practical experience has demonstrated that RCS is an innovative policy that aligns with China's current state of watershed governance. A comprehensive understanding of the diffusion pathways of RCS, addressing the challenges encountered during its spread to other areas, and establishing a robust policy diffusion mechanism within academic institutions are essential measures to promote RCS effectively. This guarantees the successful dissemination of RCS and is a necessary step towards modernizing the government's environmental governance system and capabilities.

RCS is a novel governance mechanism developed in response to the dilemma of the inefficiency or even failure of existing conventional governance mechanisms. Its essence lies in implementing a system where the chief executive takes responsibility, and Party and government leaders undertake contractual responsibilities. The RCS is a governance mechanism that, through high-level leadership promotion, enforces responsibility sharing and implementation. It changes the mutual buck-passing among functional departments and, to a certain extent, addresses the challenges of water governance, resulting in governance effectiveness. Consequently, after years of local practice, RCS has gradually become a national policy.

While achieving spatial diffusion, the RCS has also disseminated its conceptual framework. Many new chief systems have emerged along the logic of river chief governance, triggering concerns about whether the chief system can universally govern local governance. However, the RCS is not a panacea and faces several challenges during operation. Additionally, it will transition to conventional governance after completing its specific mission stages. Treating the "chief system" as a cure-all would lead to its misuse and its governance effectiveness would be significantly compromised in practical applications. Therefore, the author proposes the following recommendations:

1) Integration of Old and New Models

Integrating old and new models is vital in minimizing administrative costs and mitigating conflicts within administrative mechanisms. It is essential to incorporate existing strengths in the governance domain while striving for pluralistic governance through the organic combination of national, market, and community-based self-governance mechanisms. This necessitates the innovation of governance models, moving away from a sole reliance on administrative command mobilization that excludes the participation of individuals and organizations. For example, in introducing Chief Systems such as the Forest Chief System and Grass Chief System in forestry and grassland management, it is imperative to enhance the role of the market. When implementing ecological compensation policies, incorporating market-based pricing components is necessary to reduce the scope of administrative directives. Simultaneously, the effective-

ness of policy innovation relies on the practical implementation of policies. There is a need to strengthen the normative management of the Chief Systems to avoid the arbitrary establishment of “chiefs” and prevent the indiscriminate trend of appointing various “chiefs”.

2) Promoting Public Participation

Promoting active participation and cultivating optimistic government and public interactions is imperative. Firstly, it is imperative to empower citizens with the right to oversight, as “all-encompassing supervision” serves as a crucial avenue for exposing transgressions, thereby preventing the proliferation of environmental hazards. Secondly, emphasis should be placed on citizens’ right to discourse; it is crucial to recommend effective response procedures that respect and address citizens’ opinions and suggestions. Furthermore, efforts should be directed towards activating constructive forces within societal organizations. This involves broadening channels for societal and public participation in environmental governance, nurturing non-governmental volunteer organizations, strengthening the organizational capacity of citizen participation, establishing expert advisory think tanks, and motivating public and societal organizations to participate actively. Additionally, there is a need to proactively disclose environmental governance information to the public, constructing an authoritative and unified environment information dissemination platform. This initiative aims to alleviate public concerns and dissatisfaction, thereby enhancing the transparency and credibility of governmental departments.

3) Alignment with the Characteristics of Governance Targets

Due to the diversity of environmental governance targets, it is imperative to adapt exemplary models to the specific characteristics of new domains. Governance targets in different environmental domains exhibit substantial variations in their characteristics, encompassing distinct rights holders and presenting distinct emphases and challenges in natural resource conservation. Utilizing methods proven effective within one domain may not necessarily yield positive outcomes when applied to new areas. Neglecting the differences in resources and inflexibly applying existing approaches to manage other resources may fail to achieve the anticipated results. Therefore, it is imperative to consider various factors comprehensively, such as local natural geographical conditions, soil and water resource status, socioeconomic development, and ecological environmental degradation. Customizing governance models and strategies for mountain, water, forest, field, lake, and grass systems should be executed judiciously, considering economic, social, and ecological considerations based on local conditions.

4) Respecting Local Ecological Culture

A comprehensive and meticulous understanding of local resources and ecosystems is essential. Achieving this requires leveraging the advantages of exemplary models and the application of scientific knowledge and relying on local experiences and various forms of regional knowledge. Traditional ecological knowledge and experiences developed in different regions should play a crucial

role in environmental governance, fostering mutually adaptive relationships between humans and nature. By incorporating local experiences, especially drawing upon community-based natural resource governance practices, tailored strategies can be implemented based on local conditions. Simultaneously, there should be a focus on preserving the ecological characteristics of each region, fully harnessing the resource advantages and cultural features of different areas, thereby achieving multifaceted enhancements in the region's mountain, water, forest, field, lake, and grass aspects.

5) Strengthening Digital Governance

The swift evolution of digital technology has transformed previously uncertain and challenging concepts, which were difficult to achieve through manual means, into tangible and conclusive results. Coupled with the potent penetrative capability and convenience of information technology, barriers between regions or departments can be broken down, fostering efficient collaboration across regions or departments and enabling the centralized application of governance technologies. Integrating digital technology with natural ecological governance contributes to elevating the modernization level of ecological environmental governance. This can be achieved by establishing comprehensive natural resource databases and reinforcing all-encompassing and cross-disciplinary monitoring activities. Examples include monitoring parameters such as flow rates, river water quality, forest resource stocks and increments, distribution and structure, forest fire surveillance, agricultural climate conditions, the occurrence of pests and diseases, and monitoring of ecological environmental pollution conditions. In summary, a commitment to empowering ecological and environmental governance with digital technology is imperative, guiding governance mechanisms towards a trajectory of openness and transparency.

This paper has made several contributions to practices and future research by examining RCS's diffusion process and impacts. It attempts to integrate RCS with other similar chief systems, placing it within a contextual framework for discussion, exploring issues that need scrutiny, elucidating risks faced by these mechanisms, and providing recommendations. The research enhances understanding of the operational characteristics of governance in governance, offering valuable insights for local policy innovation. However, limitations should be considered when interpreting this study's findings. Due to the relatively short implementation time of various derivative versions of the other chief systems, further empirical analysis for specific performance outcomes is necessitated.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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