

# *Research on Diffusion Mechanism of Local Government Policy Innovation: A Case Study of River Chief System*

Gaozhaoyang Xing<sup>a,\*</sup>, Qiankun Chen<sup>b</sup>

*School of Public Administration, Central University of Finance and Economics, Beijing, China*

*<sup>a</sup>810545810@qq.com, <sup>b</sup>chenqiankuncufe@163.com*

*\*Corresponding author*

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**Abstract:** As the complexity of local governance increases, local government policy innovation, as well as diffusion, has become key to promoting socio-economic development. As an important innovation of local governments in China, the 'river chief system' aims to solve long-standing problems in watershed governance, such as water pollution and ecological damage. This paper examines the diffusion mechanism of the 'river chief system' as a local government policy innovation. The article firstly reviews the development history of the river chief system and analyses the diffusion path of the system in various prefectures and provinces in China. It is found that the diffusion of the river management system is mainly achieved through four mechanisms: learning, imitation, competition and coercion. The paper further explores the specific ways and influencing factors of these diffusion mechanisms. Meanwhile, the widespread diffusion of the river management system reveals a policy diffusion mechanism with Chinese characteristics, which includes a combination of top-down policy guidance and bottom-up policy practice. In addition, the study will explore the challenges and solutions faced in policy innovation and diffusion, providing theoretical and practical guidance for future local government policymaking.

## 1. Introduction

Water management has long been a critical issue in China, a country facing severe challenges due to rapid industrialization, urbanization, and environmental degradation. In response to these pressing water governance problems, the Chinese government introduced the innovative "river chief system" (RCS), which designates local officials as river chiefs responsible for the health of specific water bodies. This system represents a significant shift in environmental governance, aiming to enhance accountability and inter-departmental coordination.

The river chief system first emerged as a localized policy experiment in Wuxi, Jiangsu Province, in 2007, following a severe algal bloom crisis in Tai Lake. The initial success of this policy prompted its gradual diffusion across various administrative levels, eventually leading to nationwide implementation. This process of policy diffusion raises important questions about the dynamics and mechanisms that facilitate the spread of innovative governance models in different political and administrative contexts.<sup>[1]</sup>

This study aims to explore the diffusion of the river chief system using Kingdon's Multiple

Streams Framework, which provides a robust theoretical lens for analyzing how policies emerge, evolve, and proliferate.<sup>[2]</sup> By examining the phases of RCS diffusion, this paper identifies key factors such as local innovation, central endorsement, and adaptive governance that contributed to the system's widespread adoption. The findings offer valuable insights into the complex interplay between local initiatives and central mandates in the diffusion of policy innovations in China.

## **2. Case Study: National Diffusion of River Management Policy Innovations**

The river chief system is a key governmental collaborative mechanism for watershed governance that effectively integrates multisectoral resources and efforts. The system establishes 'river chiefs' on a watershed basis, who are usually senior officials of the relevant administrative region, and gives them decision-making power and responsibility for river governance. The implementation of the river chief system solves the problem of intersectoral coordination in river basin management, breaking the previous situation of 'nine dragons ruling the water' and ensuring the coherence and efficiency of river basin management<sup>[3]</sup>. The innovation of this system is that it strengthens the systemic and holistic nature of watershed management by clarifying responsibilities and unifying command.

### **2.1. Phase I: Initial Pilot Implementation in Wuxi City**

In 2007, faced with the challenge of deteriorating water quality in Lake Taihu, the city of Wuxi took the lead in implementing the river chief system, marking the initial phase of this policy. By incorporating water quality indicators for river crossings into the performance assessment system and assigning dedicated 'river chiefs', Wuxi has innovatively integrated government management resources to effectively monitor and improve water quality. The city's successful practice has not only been recognised by the central government, but has also triggered interest and imitation of the river chief system in other regions, thus promoting the wider dissemination and implementation of the policy.

### **2.2. Phase II: Autonomous Adoption by Municipal Governments**

After the success of the river chief system in Wuxi, it quickly attracted national attention and was promoted and practised in many provinces and municipalities, including Yunnan, Henan, Hebei and Zhejiang. For example, Kunming City launched a pilot river chief system to combat pollution in Dianchi Pond and strengthened the legal status of the river chief system through legislation. Zhoukou City has taken emergency measures in response to the sewage crisis, strengthening water quality testing and accountability. In the case of Ziya River management in Hebei Province, a municipal leadership package and strict accountability system were implemented. In these cases, the content and form of the river management system have been innovated and developed, such as the digital information platform in Zhejiang Province, the 'Chung Chang Responsibility System' in Foshan City, and the 'Seven Actions' in Dali Bai Autonomous Prefecture. These diversified practices have not only enriched the implementation mode of the river chief system, but also provided valuable experience for China's watershed governance<sup>[4]</sup>.

### **2.3. Phase III: Provincial Government Mandated Promotion**

The river management policy was widely promoted during this phase, expanding from the initial 14 prefecture-level cities to 62 cities in 18 provinces across the country, forming the initial framework for a nationwide policy network. In addition, the pioneer provinces have further expanded the implementation of the policy internally, with significant regional transfer. For example, Jiangsu

Province demonstrated significant cluster transfer effects in the promotion of the river management system. In 2008, Jiangsu Province introduced a dual river management system to ensure the openness and transparency of the policy. By 2012, Jiangsu Province had developed a three-year river management plan, which was adapted and improved accordingly to the actual situation in a number of prefecture-level cities, including Suzhou and Xuzhou, in order to modernise watershed management and river care.

## **2.4. Phase IV: Nationwide Upscaling and Proliferation**

In December 2016, the Central Committee and the State Council issued the Opinions on Comprehensively Implementing the River Chief System, transforming it from a local government initiative into a nationwide water environment governance strategy. This policy significantly accelerated the nationwide adoption of the river chief system. In 2017, the nationwide implementation of this system was proposed in the government work report. In the same year, the Water Pollution Prevention and Control Law was amended to mandate the establishment of a four-tier river chief system, solidifying its legal status across the country. Subsequently, 31 provinces across the country quickly established the operational framework of the river chief system and formulated specific programmes. For example, work programmes have been implemented in Shaanxi, Hubei and Shanghai, and drafts have been introduced in Beijing, Tianjin and Jiangsu. As of 2018, the network pattern of the national river chief system has basically taken shape, and the four-tier system has been comprehensively upgraded, providing an effective mechanism for river basin pollution management<sup>[5]</sup>. In addition, many places have set up specialised river chief offices to ensure the efficient implementation of the river chief system.

## **3. Dynamics and Mechanisms of Policy Innovation Diffusion in River Management**

### **3.1. Analysis Using the Multiple Streams Framework**

The Multiple Streams Framework (MSF) is used to analyse the diffusion of river management policy innovations. The framework consists of three parts: problem streams, policy streams, and political streams, and is usually used to explain the process of policy formation and diffusion. In terms of problem streams, problem streams involve the identification and definition of public problems. In the context of the river management system, key issues include water pollution, ecological damage, and inefficiencies in watershed governance<sup>[6]</sup>. The increasing prominence of these problems has prompted policy makers to seek solutions, thus stimulating the proposal and implementation of the river management system. In terms of policy streams, policy streams refer to the policy options and solutions available. As an innovative model of watershed governance, the river chief system is seen as an effective tool for solving water resources management problems after the success of its initial pilots. This led to the formation of policy options that gradually spread among different regions. In terms of political streams, they cover changes in the political environment, such as changes in government leadership, increased public awareness, and administrative reorganisation. In the case of the river management system, the political stream is now the support of the central government, the positive response of the local government, and the increase in public awareness of environmental protection. In terms of policy windows, a policy window, i.e. an opportunity to implement a new policy, occurs when these three streams converge<sup>[7]</sup>. It is in such a policy window that the promotion of the river length system is realised.

In summary, the diffusion of the river management system policy is a complex multi-factor interactive process involving the perception of the problem, the feasibility of the policy options and the support of the political environment. At the right time, these factors come together to facilitate

the widespread diffusion and implementation of the river management system.

### 3.2. Drivers of Policy Innovation in the River Chief System

The driving force behind the policy innovation of the 'river chief system' stems from a number of factors. Firstly, environmental factors, in particular the pollution of Taihu Lake, have become an urgent backdrop for the emergence of the 'river chief system'. The water supply crisis in Wuxi became a key trigger event, providing a direct opportunity for policy innovation. Second, the active attention and support of the policy subject, i.e., the central and local governments, provides pressure and incentives for policy innovation at the local level. Finally, from the object side, the advantages of the 'river chief system' and the visibility of its results provide a solid foundation for its wider promotion and implementation.<sup>[8]</sup>

First, environmental pressure. The proposal and implementation of the 'river chief system' stems mainly from the response to the increasingly serious water environment problems. Environmental problems, especially water pollution and water scarcity, have become the main drivers of policy innovation and the underlying causes of policy proliferation. The river chief system as an effective way of water environment management is crucial for improving water quality and protecting water resources. Environmental pressure, as an important driving force for the diffusion of policy innovations in the river management system, has prompted policy makers and implementers to seek more effective water environment management methods, and the river management system provides just such a solution.

Second, the policy demonstration effect. The formation of this demonstration effect can be attributed to the initial success and visibility of the results achieved by local governments in the implementation of the river-long system. The success of local governments in practicing the river chief system, such as the governance of Lake Tai in Wuxi City, has produced a demonstration effect that has stimulated interest in and imitation of the policy in other regions. The policy demonstration effect plays a key role in the diffusion of policy innovations in the river chief system. By observing the successful practices in other regions, local governments learnt and introduced these effective governance strategies, which led to the diffusion and implementation of the river chief system in a wider region.

Third, the central government's promotion. The central government's support and promotion of the river management system is a key factor in the diffusion of the policy. By issuing guiding documents and policy initiatives, such as the Opinions on Comprehensively Implementing the River Length System, the central government provides a clear direction and policy framework for the river length system and establishes its status as a national water environment governance strategy<sup>[9]</sup>. At the same time, through the establishment of an assessment and evaluation mechanism, the central government has encouraged local governments to actively implement the river-length system, while rewarding or recognising areas with outstanding results, which has enabled the river-length system to be rapidly promoted nationwide through policy guidance and regulatory support. The central government has facilitated information exchange and experience sharing among local governments, and strengthened the theoretical research and dissemination of practical experience of the river management system by organising seminars and working meetings.

Fourth, public awareness and participation. As public awareness of environmental protection increases, there is a growing social demand for effective environmental governance policies. The media also plays a key role in the promotion of the river management system. By reporting on river pollution incidents and publicising the effectiveness of the river management system, public awareness and support for the policy have been enhanced. At the same time, the media's monitoring has also prompted government departments to pay more attention to the effectiveness of the river

management system. The promotion of the river management system has received wide public support and active participation. With the activation of social organisations and the increased awareness of citizen participation, civil forces have played an important role in the implementation of the river management system. Volunteers' participation in river patrols and environmental organisations' river protection activities have supported the implementation of the river management system.

In summary, the driving factors for the diffusion of river management system policy innovations are diversified and complementary, covering a wide range of environmental, political, and social domains, which work together to promote the rapid development and wide application of the river management system in China.

### **3.3. Mechanisms Facilitating Policy Diffusion**

The diffusion of 'river management' policies is not only dependent on motivational factors, but is also subject to specific diffusion mechanisms. These include learning, competition, imitation and coercion, which together shape the path of policy diffusion. Learning mechanisms are driven by social issues and policy characteristics, and facilitate the diffusion of policies across administrative levels and regions. The imitation mechanism, on the other hand, highlights the advantages of the policy's political image and plays a role in inter-regional diffusion. The competition mechanism involves the attention of higher levels of government and geographical proximity, leading to the diffusion of policies between similar regions<sup>[10]</sup>. Finally, the coercive mechanism is driven by administrative orders from the central government, leading to a top-to-bottom hierarchical diffusion of policies. The interaction of these four mechanisms ensures the effective and widespread diffusion of the 'river management system' policy across the country.

#### **3.3.1. Mechanisms of Learning-Based Diffusion**

In learning diffusion, social issues, geographical location, and policy attributes are all important driving factors. In the practice of policy diffusion, the main diffusion paths are inter-provincial diffusion and regional diffusion. It can be analysed mainly from the following aspects. First, problem identification and demand perception. First of all, when facing the specific problems of water resources management and water environment protection, local governments recognise the inadequacy of existing policies and perceive the urgent need to adopt the 'river chief system'. For example, the water supply crisis in Wuxi City revealed the limitations of traditional water management mechanisms, prompting the government to seek new governance solutions. Secondly, learning is carried out through observation and evaluation of the effectiveness of the policy. After the success of the 'river chief system' pilot project, other regions recognised the advantages of the policy by observing its obvious effectiveness in improving the water environment and combating water pollution, thus creating an incentive to learn. Third, learning through the exchange of policy knowledge and experience. Through meetings, seminars and work exchanges, local governments have shared their experience in implementing the 'river management system' and management skills, which has facilitated the dissemination of effective information and learning from experience. Fourthly, the imitation and adjustment of successful cases. In the process of learning, local governments not only imitate successful cases, but also make adaptive adjustments to the policy according to their own geographic, social and economic conditions, so as to ensure the effective implementation of the policy in their localities. Fifth, they rely on guidance and support from higher levels of government. The central and provincial governments play an important guiding role in policy diffusion, facilitating learning and policy adoption by local governments by providing policy guidance and special financial support. Through the above analyses, learning diffusion, as a key

driving force for the diffusion of policy innovations, has effectively promoted the widespread application and in-depth development of the ‘river chief system’ nationwide.

### **3.3.2. Mechanisms of Competitive Diffusion**

In competitive diffusion, the attention and geographical proximity of the higher and central governments play an important role. In the practice of policy diffusion, the main diffusion path is regional diffusion, which is specifically manifested in the policy innovation competition between local governments under the same superior or in the neighbouring areas, in order to obtain higher comprehensive benefits or more attention from superiors. Firstly, there is the inter-regional competition for environmental protection, where local governments compete in environmental protection and water resource management. Each government wants to show excellent performance in these areas to improve its own government image and attract more investment. The Officials ‘Championship theory suggests that officials’ pursuit of political performance is also an intrinsic reason for the competing proliferation of river management systems across China. At the same time, the adoption and successful implementation of a locally-specific ‘river management system’ may be seen as an effective policy innovation to gain the attention of the central government. Behind the diffusion of competitive innovations lies the pressure on local governments to improve their performance, especially in the areas of environmental management and public services. In addition, while successful cases of ‘river management systems’ have had a demonstration effect among local governments, they have also been subject to local reflection and comparison. Regions that have observed significant progress in water environment management in their neighbouring regions may feel pressure to adopt similar policies. This competitive mechanism facilitates the rapid diffusion and adoption of the ‘river management system’ policy, and makes local governments more active in finding and implementing effective environmental management strategies, thus accelerating the competitive diffusion of the river management system.

### **3.3.3. Mechanisms of Imitative Diffusion**

In imitative policy diffusion, the relative advantage of the attributes of the policy itself is the main driving factor. In actual policy diffusion, the main path is regional diffusion, which manifests itself in the form of a local government imitating the ‘role model’ in the region and adopting the same policy innovations as the ‘role model’. In analysing the imitation mechanism of the diffusion of the policy innovation of ‘river chief system’, we can analyse it from the following aspects. Firstly, there is the policy demonstration effect, in which successful cases of ‘river management system’ provide examples for other regions to follow. Once a region has successfully implemented and benefited from the system, other regional governments tend to imitate these policies in order to achieve similar results. Secondly, imitation reduces political risk, as imitating policies that have been proven to be effective reduces political risk. For government officials, adopting policies that have been proven in other regions is more likely to garner support from the public and higher levels of government. Finally resource and knowledge sharing are also strong enablers. In the process of policy innovation, the sharing of resources and experiences across regions can lead to faster and more effective implementation of the ‘river management system’. Such knowledge sharing facilitates policy imitation and improvement. Similarly, policy networks also have an impact, as policymakers are often in an interactive network where they observe and learn from each other's policy practices. With this network influence, successful policies are more likely to be imitated in other regions. Finally, there is the resonance of culture and values. The basic concept of the ‘river management system’ is compatible with local culture and values, which facilitates the acceptance and imitation of the policy. The fit between the policy and local culture is one of the key factors for the success of imitation.

In summary, the imitation mechanism plays an important role in the diffusion process of 'river management system' policy innovation. Through imitation, local governments are able to reduce the uncertainty and risk of policy implementation, and at the same time respond to environmental governance challenges quickly and effectively.

### **3.3.4. Mechanisms of Coercive Diffusion**

In coercive diffusion, the higher and central governments are the main driving force. In order to promote advanced policy innovations across the country and accelerate the diffusion of innovations, higher levels or the central government issue official documents in the form of administrative orders to encourage lower levels of government to actively adopt policy innovations. When analysing the coercive mechanism of the diffusion of policy innovations in the 'river chief system', we can expand in detail from the following aspects. Firstly, there is the administrative order of the central government, which makes the 'river chief system' a mandatory directive through the issuance of mandatory policy documents, such as the 'Opinions on the Comprehensive Implementation of the River Chief System'. This top-down mandatory promotion mechanism ensures that the policy is implemented uniformly throughout the country. Secondly, it is supported by laws and regulations. With the incorporation of the 'river chief system' into the 'Water Pollution Prevention and Control Law' and other laws and regulations, the system has gained legal support and protection, which further strengthens its mandatory nature. In terms of supervision and assessment of policy implementation, the central and provincial governments have established strict assessment and supervision mechanisms to follow up and evaluate the implementation of the policy by local governments to ensure the effective implementation of the policy. The establishment of the accountability system also ensures the efficiency of coercive proliferation. Under the framework of the 'river chief system', the central government has taken measures to hold accountable local governments and relevant responsible persons who fail to perform their duties effectively or who cause serious water pollution incidents, thus enhancing the seriousness of the implementation of the policy.

These mandatory mechanisms have ensured a balanced and rapid rollout of the 'river management system' across the country, demonstrating the central government's determination and strength in environmental governance and water resource protection. The mandatory mechanisms have played a key role in ensuring the uniformity and seriousness of policy implementation, and are important for enhancing the effectiveness of the policy.

## **4. Conclusions**

The 'river chief system' has emerged as a pivotal innovation in China's environmental governance, yielding significant improvements in water pollution control and resource protection. The policy has achieved the goals of water pollution control and water resource protection through effective cooperation and coordination among all levels of government. The success of the policy's diffusion is largely due to the interaction between the central and local governments, the strengths and adaptability of the policy itself, and the multi-level policy dissemination mechanism.

In the current governance context of the country, most of the innovative activities of local governments focus on immediate solutions to pressing social problems. While this improves emergency response capacity, it often lacks foresight into the future. In the face of the complex and volatile environment of post-industrialised societies, the threat of social crises to the public interest has become increasingly serious. Local governments must take the first step to prevent and proactively resolve potential conflicts to avoid the outbreak of crises. In addition, they should promote the construction of a governance model characterised by small government and big society, and through the decentralisation of government power, stimulate social participation, and realise a new

pattern of social governance of co-construction and sharing.

The success of the 'river chief system' policy relies on the active participation of administrative officials and strict evaluation of the effectiveness of water control. However, in social governance, it is important not to rely too much on administrative authority, but to reasonably allocate administrative responsibilities to ensure that the head of the administration is able to focus on promoting the overall development of the local community. In social governance, the relationship between the government, the market and society needs to be repositioned to encourage the participation of social forces to achieve effective social governance and public service enhancement.

Future research should delve deeper into the mechanisms that underpin successful policy diffusion, particularly in the context of environmental governance. Additionally, exploring the transferability of such innovative governance models to other regions and policy areas can provide valuable insights for global environmental management practices.

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