

The Development of Chinese Local Government's Innovation Governance

Li Qin^{1,*} Haixiang Lu^{2,3}

¹School of Government, Beijing Normal University, Beijing 100875, China

²School of Economics and Management, Shanghai University of Sport, Shanghai 200438, China

³School of Foreign Languages and Cultures, Southwest University of Science and Technology, Mianyang, Sichuan 621010, China

*Corresponding author. Email: 524116162@qq.com

ABSTRACT

Since the starting of the Reform and Opening-up policy, China has achieved rapid economic development. Especially after the implementation of National Innovation-Drive Development Strategy, China's regional and municipal innovation competence has been developed significantly, along with accumulated innovation achievements, more complete scientific research system, as well as a shift from quantity increase to quality improvement of innovation. China is building its state innovation system to become a country with strong scientific innovation. By analyzing the innovation policies of both the central and local governments, it finds out the innovation policies of the local government have experienced a three-stage development, including science and technology management, innovation management, and innovation governance.

Keywords: innovation governance, technological innovation, local government

I. INTRODUCTION

Innovation has already become an activity beyond the management of sole science and technology department. Cross-department cooperation and policy coordination are necessary, while the strategy of using innovation governance to promote the state innovation becomes increasingly important. Innovation governance is the extension of public governance theory in science and technology field, it is a new trend of science and technology macro management that emphasizes the multiple innovation policy makers' involvement, cooperation, and democracy. With the development of China's innovation economy, the traditional science and technology macro management does not fit the current innovation economy, therefore a new way of management is needed. The innovation policies of Chinese local government have experienced a three-stage development, including science and technology management, innovation management, and innovation governance.

II. SCIENCE AND TECHNOLOGY MANAGEMENT MODE (1949-1994)

In this period, China was at an early stage of science and technology management, which emphasized research and development to meet the government's needs. Since the founding of People's Republic of China, the government started to appreciate the

scientific and technological innovation, a series of science and technology planning like 1956-1967 *Science and Technology Development Vision Planning* and 1963-1972 *Science and Technology Outline* etc. were enacted. A scientific and technological innovation management system was established based on planned economy system, with over 30 national departments managing almost 100 science and technology plans. The central government was at a dominant position to make the allocation plan of all the scientific and technological resources, while the local government's scientific and technological plans had to follow the central government's administration, at the service of the state's overall objective, which embraced the Chinese principle 'collectivism makes great achievement'. Hence, the central government collected the resources from the local government, and then put them into the state's key projects. This resource allocation mode worked well to enhance China's strategic security, lots of scientific and technological achievements with strategic value have been made, and however, it also deprived the local government's motivation to make innovation. After the Third Plenary Session of the 11th Central Committee (1978), a primary policy 'Economic development must rely on science and technology, while science and technology must be economic development oriented' was made. In 1985, the central government enacted *A Decision on the Reform of the Scientific and Technological System*, which started China's reform of its scientific and

technological system. The fundamental objective of this reform was accelerating the integration of science and technology and economy, defining science and technology as the prior productivity, applying science and technology into production, and motivating the researchers' initiative and creativity. In this background, the local governments of different administrative levels gradually reconstructed the local science and technology innovation management organizations. In order to be coordinated with state science and technology planning as well as the local economic construction, the regional local governments made a series of action plans including *National Key Science and Technology Projects*, *Spark Projects*, *Torch Projects*, *Outcome Application* etc. Since then, a multi-level science and technology management system (state-provincial-municipal) has been gradually established. Nevertheless, due to the local government's short-term economic benefit orientation in this period, the local science and technology management system still lacked independence and autonomy, the systems of the local government and industry were separated, the government's overall coordination was usually absent.

The features of the government's science and technology management mode at this stage are as follows: government is the sole subject of management; the research and development organizations and their researchers are the objects of management; allocating scientific and technological resource by administrative instructions is the main management method; with linear thinking, the subject of management tends to consider innovation activity as a linear process of R&D-economic revenue; the bottom-up bureaucracy has been adopted in management. As a result, this science and technology management mode promoted the development of China's innovation. Nevertheless, it did not go well with the development of market economy, the conversion of science and technology outcomes gradually slowed down, since then the relationship between science and technology innovation and economy as well as society has raised concerns.

III. INNOVATION MANAGEMENT MODE (1995-2005)

At the second stage, the local government turned to innovation management mode from the previous science and technology management mode, the management focus shifted from R&D to the market. Along with the establishment of socialist market economy system, China's economy started to boom. As the local science and technology innovation system did not go well with the market, some new problems arose like deficiency of science and technology investment, outflow of science and technology talents, stagnancy of fundamental research etc. Therefore, the strategies of 'developing the country through science and education'

and 'strengthening the country through talents' have been adopted. Nevertheless, without the support of specific science and technology investment policies, a steady growth mechanism for the local government's investment has not been established. In 2001, the central government defined the significance of local science and technology innovation by publishing *Some Opinions on Further Improvement of the Local Science and Technology Research* by Ministry of Science and Technology, announcing science and technology research was of great importance in the state innovation system, while the major task of the local government's science and technology management was improving its overall competitiveness by serving the economic and social development. In 2002, *Measures for the Administration of Technological Innovation Plans of the State* was published, according to the overall requirements of the economic development as well as the noteworthy problems in the industry and product restructuring, China conducted technological innovation to develop generic, key and prospective technologies, improve the conversion proportion from science and technology to production, upgrade the industries, and finally to guarantee a sustained, rapid and sound economic development.

In innovation management mode, integration occurs between science and technology system reform and industrial transformation, science and technology and market. Under the government's direction, the research subject like enterprises, universities, and research institutions make efforts to meet the state's demand, foster the economic growth. The object of innovation management shifts from R&D to market, for the sake of science and technology conversion and industry integration effect. In the new management concept, it tends to regard innovation as a system engineering, therefore it is necessary to coordinate the adaptive agents of the industrial clusters. Hence, multiple means of management like laws, regulations, policies, planned allocation etc. have been adopted to activate the innovation system, while some contractual inducement means like public procurement, tax regulation, governmental subsidy, service outsourcing etc. have been used. In addition, both bureaucracy and decision-making consultation are used as the management mode.

IV. INNOVATION GOVERNANCE MODE (2006-PRESENT)

Along with the development of innovation economy, innovation involves more trans-regional, multi-level, and interdisciplinary issues. The boundary of innovation management is increasingly blurred (e.g. regional boundary problem, policy diversification problem), the co-governance with multi-agent and democratic consultation is needed. Innovation governance has become a popular trend for each nation

of its macro science and technology management. At this stage, the development of China's innovation economy demands a reform of the previous innovation management mode, therefore, innovation governance has become a popular mode. Innovation governance is the extension of public governance theory in innovation, which emphasizes the multiple innovation policy makers' involvement, cooperation, and democracy. Since 2006, with the publication of *Outline of National Medium and Long-term Scientific and Technological Development Plan (2006-2020)* and the declaration of 'construction of innovation-oriented country' as the overall objective, fostering the regional and local science and technology development has become a main part of innovation-oriented country construction. With the help of the principles of overall coordination, classified guidance, distinct features, advantage utilization, the local government made effort to integrate its science and technology with central government's resource, optimize the allocation of local resource, and improve the overall science and technology research capability. Since then, the local governments of different regions have increased their communication and cooperation, built regional interaction mechanism, made better integration with the state's science and technology strategy and projects, optimized the regional innovation environment, and improved the regional innovation service. In 2005, *Implementation Plan for Deepening the Reform of Science and Technology System* was published by General Office of the CPC Central Committee and General Office of the State Council, which put forward the plan to build an innovation management system with overall coordination. In this plan, 'innovation governance' was formally proposed for the first time in China. In 2016, the central government published *Outline of the National Strategy of Innovation-Driven Development*, which proposed the objective to be a leading science and technology innovation country by 2050.

In innovation governance mode, multi-level, polycentric, and network management modes are integrated. The separation, blocking and overlap among each fields, departments and industries are relieved by the interactions among the subjects and factors of innovation. A major difference of innovation governance from innovation management is it concerns more about overall innovation, which classifies the factors like technologies, industries and society into subjects of innovation, makes overall plan for infrastructures, resources, activities, environment, and openness of innovation to create a better ecological environment for innovation. Furthermore, it intends to accomplish the transformation from 'sole scientific and technological development' to 'overall innovative development', through which the synergy among each region can be achieved. In innovation governance, the

government takes the responsibility of regulation, starts to construct the integrated innovation system including innovations of technologies, organizations, social process, finance, institution etc. In addition, it shifts from governing the factors to governing the industrial chain, innovation chain, value chain etc., as a result, the macro management of innovation system can be realized. In conclusion, innovation governance has made a higher objective of local government's role, responsibility, and the way of governance.

V. CONCLUSION

The transformation from science and technology management to innovation governance is an inevitable trend, it is also the intrinsic requirement of economic and social development. Both the government and society are required to update their concept of management, meanwhile both internal and external drive are needed to construct a multi-level governance system including state system, regional system, state-region synergy system, as well as a polycentric, multi-agent and democratic consultation system. Furthermore, it requires better cultivation for all the innovation subjects, complete government's governance functions like overall coordination, construction of a governance structure with the integration of government, industries, universities, research institutions and market.

References

- [1] Freeman, C. Technological infrastructure and international competitiveness [R]. Paper presented to the ad hoc group on Science, Technology and Competitiveness, 1982.
- [2] Freeman, C., 1987. *Technology Policy and Economic Performance: Lessons from Japan*. Pinter, London.
- [3] Winter S, Nelson R. An Evolutionary Theory of Economic Change [J]. *Social Science Electronic Publishing*, 1982, 32(2).
- [4] Michael P. The Competitive Advantage of Nations [M]. 1990. Porter M. E. The competitive advantage of nations. New York: Free Press, 1990: 168-293.
- [5] Cooke P. The New Wave of Regional Innovation Networks: Analysis, Characteristics and Strategy [J]. *Small Business Economics*, 1996, 8(2): 159-171.
- [6] Nelson, R. (ed.) (1993), *National Innovation Systems. A Comparative Analysis*, Oxford University Press, New York/Oxford.
- [7] Lundvall. National Innovation Systems — Analytical Concept and Development Tool [J]. *Industry & Innovation*, 2007, 14(1): 95-119.
- [8] Xin Fang. The reform of science and technology system in China — Three decades of change and unchangeability [J]. *Studies in Science of Science*, 2012(10): 3-5.