

Research on the Realization Path of High-quality Development of Science City from the Perspective of Cooperative Governance: Take Western China (Chongqing) Science City as an Example

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Keywords: cooperative governance, science city, high-quality development, governance subject, governance content, governance mode

Abstract: Science city is a regional economic spatial form that combines innovative high-tech industries and basic urban functions, and is an important carrier of national strategic frontier scientific research. The construction of national science city faces complicated and changeable governance environment, and how to promote the high-quality development of science city has become an urgent problem to be solved. Based on the perspective of cooperative governance, this paper frameworks and analyzes the construction of science city from the three dimensions of governance subject, governance mode and governance content, and takes the science city of western China (Chongqing) as an example, and deeply studies the high-quality development road of science city. According to the research, the governance subject of science city mainly involves public sector, market organization and social organization, and all kinds of subjects play an important role in the construction of science city; The important contents of science city construction include optimizing business environment, constructing “technology + finance” ecosystem, and accelerating technology transformation efficiency; regional government linkage, industry-university-research cooperation and political school cooperation are the important breakthrough to alleviate and explore the governance pressure of science city governance. In order to further promote the high-quality growth of science city, it is proposed that the high-quality development of science city should be promoted from the aspects of promoting multiple subjects to participate in the construction of science city, regional linkage development, and gathering international innovation resources.

1. Introduction

Science city is an endogenous and innovative high-tech industry and an economic space form with both basic urban functions. Science city of the overall positioning for “science” and “city” interactive integration, efficient coordination, at the same time have “science center” “science park” and “science and technology innovation center” multiple meaning, so is the national basic, strategic frontier carrier of scientific research, is a high level of landmark scientific research

institutions as the innovation initiative and conform to the characteristics of scientific innovation of specialized institutions and mechanism. Through the scientific research system of independent innovation activities, then through the accelerator, incubator to promote achievements, in turn through high-tech industry system to realize the transformation of scientific research achievements and industrial diffusion, science city construction forms research institutions and high-tech industry coexistence of the integration of the development of the network structure. In this way to form a science and technology highland to promote the high-quality development of regional economy, optimize the layout of national innovation regional system, and promote the construction model of innovative country.

As the innovation highland, industrial highland and talent highland of national innovation-driven development, science city can not only meet people's growing demand for material and cultural environment and living facilities, but also provide a steady stream of various innovation elements for the development of national technology industry. The science city can meet the major national strategic needs and regional economic development needs, accelerate the agglomeration of high-end innovation resources, and promote original innovation, high-tech technology innovation, research and development of key generic technologies and the development of strategic emerging industries. The science city can also attract science and technology innovation industries to gather, form high-tech industrial clusters, and accelerate the industrial transformation of scientific research achievements. However, there are still some problems in the construction of science city, such as less investment in basic research, weak independent innovation ability, single construction and operation mode, lack of sustainable development vitality of risk enterprises, and government support to be strengthened.

In order to solve these problems, the developed science cities provide useful experience in practice. Japan's Tsukuba Science City has built a number of industrial innovation networks around key areas, initially forming a development model of high-tech industries such as leading risk enterprises, regional resource integration and cross-regional resource integration, thus avoiding the problem of similar leading innovation industries. Newcastle Science City is committed to making everyone in the science city a part of technology and innovation, providing development opportunities, creating a cultural foundation and innovative atmosphere. The French Sacre Science City is promoted through the cooperation of the government and private institutions. In view of the problem of insufficient support, the French Sacre government provides clear and continuous fiscal and tax preferential policies for land, low-interest loan tax reduction and exemption for the construction of the science city. In the early stage of the construction of Copenhagen Science City in Denmark, the government focused on planning and guiding industrial positioning, doing a good job in infrastructure construction, building a whole-country talent training mechanism, building a whole-chain incubation service system, and strengthening the deep integration of industry, university and research. It can be seen that promoting the high-quality development of science city is one of the important means for countries around the world to promote regional innovation and build innovative cities.

As a "city of science and innovation highland", science city has the mission and responsibility of promoting high-quality economic development through scientific and technological innovation. At present, there have been many studies on the science city, but the research on how to effectively govern the science city is relatively weak, and few studies apply the theory of cooperative governance to the construction of the science city. Studies have shown that there are various modes in the construction of science city, and various subjects participate frequently. However, the construction of science city has quite high-end and complexity. The current research theme is more for specific fields or subjects. For such a strategic action as the construction of science city, the reference value is still not enough. Therefore, this paper expands the theory of cooperative

governance to the field of science city construction, carries out special and in-depth research on the cooperative governance of science city, fully coordinates and integrates various subjects, resources and platforms, and explores the breakthrough point of the construction of science city theoretically. This study selects western China (Chongqing) science city as the case study object, the cooperative management theory in the development of science city, the key factors of science city development, in the analysis of the western (Chongqing) science city innovation value chain and operation mechanism, learn from domestic and foreign science city innovation resources integration experience, refining the reality of high level construction international science city path, promote the construction of science city innovation system countermeasures, provide reference for deepening the theory and policy of national science city.

2. Literature Review

2.1. Relevant Research on Cooperative Governance

Cooperative governance is based on network theory and system theory, emphasizing that the governance process of multiple subjects is complex, the governance structure tends to be networked, and the decision-making system tends to be complicated. Cooperative governance also pays particular focus on the connection between different types of organizations and the management of policy processes, emphasizing the impact of interactions between organizations and the environment on the efficiency of public services. Milward et al. (2000) believes that the larger, more complex and more lasting cooperation network, the clearer cooperation agreements and management institutions, which are clearly defined within and between the organization [1]. Bovaird (2010), when discussing the form of cooperation in developing the public service procurement market, noted that the public-private partnership is not just a form of marketization, but has become a recognized form of organization and system [2]. Whether it emphasizes the use of agreements and institutions to standardize cooperation mechanisms, or the use of innovative relationship models to strengthen cooperation, it is to carry out cooperation activities within the framework of the established mechanisms.

In order to make cooperative governance effective under the conceived framework, two basic issues must be clarified. First, clarify the scope of subjects of cooperative governance, that is, which subjects of cooperation belongs to the category of “cooperative governance”. Kirk et al. (2012) believe that cooperative governance includes not only the cooperation between the public sector and the private sectors, but also between different levels of the public sector [3]. However, Ansell et al.(2008) point out that cooperative governance focuses on the cooperative relationship between the government and society, focusing on how the public sector and the public and the third sector can cooperate [4]. Bielefeld (1994) believed that this has derived various types of political and social cooperation, which can be divided into the four modes of “separation autonomy”, “integration autonomy”, “integration dependency” and “separation dependency” type [5]; Brinkerhoff (2002) believed that according to the analysis framework, the partnership, contract relationship, extension relationship, operational and gradual annexation relationship [6]. The second is to clarify the resource exchange attribute of cooperative governance, that is, which kind of resource exchange of the subject belongs to the category of “cooperative governance”. Some scholars believe that cooperative governance is mainly applicable to the government's purchase of public services. Wang (2014) believed that the government can exchange its financial resources with the market resources owned by the society, and the resources exchanged between the two sides are limited to their own physical resources [7]. However, some scholars believe that cooperative governance is derived from the exchange of physical and chemical resources. Jing (2014) believed that cooperative governance occurs more in the process of policy making, with the exchange of power resources between

subjects, such as the public power and legitimacy of the government, and the social power and legitimacy of the society [8].

According to this study, government, social organizations, market organizations, public-private partnerships, and network structure are all important elements of cooperative governance. Cooperative governance takes the promotion of public interest as the value orientation, and realizes the equal status of participants through the multi-directional interaction structure. It pays special attention to the establishment and maintenance of cooperation modes among multiple subjects. The process is not only the exchange and sharing of materialized resources, but also the allocation and application of power resources. This process is mainly reflected in the government, society and the market and other entities in the policy formulation and implementation, equal consultation and joint action, and continue to create public interests.

2.2. Related and Research on the Construction and Governance of Science City

The science city is a strategic layout to implement the concept of innovative development, participate in global scientific and technological competition, and lead new drivers of development. Scholars have conducted exploratory studies on the function, characteristics and operation mechanism of the science city. Science City breaks industrial boundaries and forms network relationships, and industry-university-research relationships are close, which can form innovation clusters. The system structure of Science City is developing towards a composite type. With the enhancement of the connection between individual organizations, the connection between organizations is diversified, the utilization efficiency of innovative resources and material information is improved, and it has the advantages of high degree of networking, strong structural stability and high resource allocation efficiency.

Science city is a typical model of national and local innovation, and is gradually becoming an important carrier for the concentrated development of scientific and technological innovation. At present, the research on the construction and governance of science city mainly focuses on the following three aspects:

First, start from the connotation of science city, and analyze the direction of comprehensive planning and construction. Qin et al. (2008) pointed out that Sista Science City in Sweden adopts the triangle (production, official and science) spiral model to expand the science park into a science city, and is responsible for the industrial, commercial and community development of the whole region [9]. Zhu et al. (2020) from the perspective of promoting the organic integration of science and city, summarized the characteristics of site location, functional layout, personnel composition, cultivation and operation, and further proposed innovative ideas and planning response [10]; Yuan et al. (2013) believe that the combination of scientific development and urban diversity is the connotation of science city construction, and analyzed the relationship between science city construction subject from the external connection and internal network [11].

Second, focus on the relationship between the government and the market and the society, and analyze the innovation path of multi-subject cooperation. Chen et al. (2009) believed that in the construction of science city, the market and the government forces should be handled correctly, and the environmental construction of small and medium-sized enterprises should be strengthened [12]. In addition, the coordination between non-governmental institutions and the government and harmony can also promote the cluster development of science cities. Qiu et al. (2019) believed that the management mode of “small government” has the dual advantages of government control and social autonomy [13]. Huang et al. (2020) believed that some scholars also explore the joint development path of science cities from government departments, enterprises and social organizations [14]. From the perspective of governance, an important guarantee for the

development of science city is the governance foundation of establishing consensus and checks and balances. Zeng et al. (2013) believed that the government, education, scientific research institutions and industry are the main cornerstone for the successful development of science and technology park ecosystem [15].

Third, try to build the mode and mechanism of innovation subject cooperation, and realize the normal governance of the science city. The operation mechanism of the innovation system includes the interactive learning mechanism of various innovation subjects, the innovation resource integration mechanism, the spatial agglomeration mechanism, and the informal connection mechanism, etc. Chen et al. (2006) believed that innovation system of different research perspective emphasizes the close relationship between the innovation subject and innovation environment, the value of the innovation chain attribute, the key role of collaborative innovation, which to build a high level construction of China in western China science city research framework provides a theoretical basis, for the innovation subject cooperation mode research provides the mechanism analysis tool [16]. Zhang et al. (2019), from the perspective of science and technology management system, put forward three high-tech park management and control modes, including diversified and decentralized, highly centralized and decentralized and centralized and coordinated mode, and further proposed that science cities should set up multi-types of collaborative governance institutions to promote innovative development [17]. Sun et al. (2020) summarized the model of building regional innovation ecosystem, including the development model of risk enterprises, regional resource integration and cross-regional resource integration [18]. Ding (2015) believed that in order to make the mode of operation effectively, the construction of innovative mode of operation mechanism is the key, the government and the market play the leading role of different forms in the operation mechanism, multi-subject to establish effective cooperation mechanism, the types of scientific differentiation between subjects is an important aspect of the multi-subject cooperative governance mechanism [19].

To sum up, the existing studies analyze the subject types and interactions in the construction of science city. However, there are still the following aspects to be deeply analyzed: First, the relative lack of theoretical support, the failure to find the theoretical guidance in the construction of a science city, and the theoretical analysis of multi-subject cooperation is insufficient. Secondly, the analysis of the relationship and role of governance subjects is not in-depth. At present, most of the case studies at home and abroad in science city are describing the activity characteristics of innovation subjects, and the key influencing factors have not been deeply explored from the qualitative perspective, and an effective governance network or mechanism has been established. In view of the above aspects, this paper takes the cooperative governance as the theoretical basis, establishes the analytical framework of the cooperative governance of the science city, and explores the way and path of building a high-quality science city in the way of case research.

3. Analysis Framework and Case Selection

3.1. Analysis Framework

Zhao et al. (2022) believed that cooperative governance is generally analyzed from the aspects of theoretical basis, governance types, modes or characteristics, governance subject and mutual relations, governance means, organizational form or way, and the focus and main grasp of governance [20]. The core of the cooperative governance mechanism is to solve the three basic problems: who will govern? What is governance? How to govern? Wang (2012) believed that it is reflected in the level of the governance mechanism, namely, the governance subject, governance content and governance mode [21].

According to the theory of cooperative governance, the fit of the innovative development of

science city at the level of cooperative governance is analyzed, and the subject, mode and content of the innovative governance of science city are specifically analyzed by the subject, mode and content of cooperative governance.

The subject of governance is to study who should participate in governance. According to the structure of social organization, governance subjects can be divided into three types: public organization, market organization and social organization. Public organizations include political party organizations, government organizations, public institutions, quasi-administrative organizations, etc. Market organizations are market entities such as enterprises, individual industry and commerce, and trade associations engaged in trade activities in the market. Social organizations are independent governance subjects engaged in non-profit activities and public services aimed at the public interest. Governance main body leads the economic development and social construction, plays a leading role in social management, and mainly assumes the leading role of efficient regional economic development.

The research scope of the governance content is to clarify which business areas should be included in the governance content category, and what appropriate and effective strategies should be adopted to achieve the governance goals. Only by clarifying the work to be done and exploring more effective governance content can the action develop towards the goal and expectation and achieve the practical benefits of better results. Therefore, governance content is an important result-orientation of cooperative governance.

Governance mode answers the question of how to complete governance more efficiently and scientifically. How does each governance subject directly allocate benefits, how does multiple subjects interact to complete tasks, and how to make decisions and arrangements. In order to enable multiple subjects to form an efficient and convenient interactive network and form a joint action capacity, specific cooperative procedures and institutional arrangements are needed. The governance mode undertakes the important functions of communication, arrangement and sharing resources among the governance subjects.

The specific connotation of cooperative governance is shown in Table 1.

Table 1: Connotation of cooperative governance.

Dimension	The main body of governance	Governance content	Governance mode
core problem	Who participates in governance will be more appropriate	What kind of governance content is more effective	How to carry out the activities more efficiently
primary coverage	Main types of subjects involved in governance	Programme identified in cooperative governance	The basic way of interaction between the subjects
Specific elements	Public sector, enterprises, social organizations, etc	Specific affairs of economic and social development	Inter-governmental cooperation and public-private cooperation

From the perspective of cooperative governance, the governance subjects of a regional science and technology may include the government, the party working committee management committee, enterprises, universities, scientific research institutions, innovation grass-roots organizations, etc. The content of science and technology governance may include gathering basic research and development platforms, gathering innovation incubation resources, gathering scientific and technological innovation talents, gathering exchange and cooperation platforms, and gathering large scientific research institutes. In terms of governance mode, it generally includes the construction of scientific research and innovation complex, government-school cooperation, regional government cooperation, and school-local joint meetings, etc.

3.2. Case Selection

At the beginning of a new round of scientific and technological revolution and industrial transformation, and the growing internal demand for cities gathering high-end elements and promoting transformation and reform, global megacities and urban agglomerations continue to evolve, and the new type of urbanization continues to develop. Many new science cities have been built around the world that carry the concentrated development functions of scientific and technological innovation, gather a large number of resources and elements, have distinctive characteristics of The Times, and have significant radiation effects on cities and regions. This article is selected according to the following factors: (1) obvious location advantages. Science city is the development center of national regional economy and an important gathering place of regional scientific and technological innovation. It should be an economic center city located in an important transportation hub, belonging to a national important center city and relatively mature industrial development. (2) High national strategic status. Cities that should be selected attach great importance to, have important strategic position and have prominent advantages in economic development functions. (3) They are in the fast track of economic development. Select the key cities in the development period, provide policy suggestions, clarify the influence mechanism of high-level science city construction in advance, layout and plan the realization path of high-quality development of science city in advance, so as to seize the strategic commanding heights of regional development. Choose cities in the period of development and reform of the management mechanism, rather than science cities with complete and mature systems, and help them to prevent and improve and solve the problem of unbalanced and inadequate development of science cities. (4) Case data is rich. There are official statistical yearbooks, accurate and effective and accessible data, and authoritative government announcements. Cities with official information release channels and relatively sound statistical system are selected to ensure the reliability and richness of research data.

Based on the above selection criteria, the western China (Chongqing) Science City was selected as the research object. As a national historical and cultural city, Chongqing is located at the intersection of Belt and Road and the Yangtze River Economic Belt. It is a comprehensive transportation hub in southwest China. Chongqing is not only one of the national central cities, but also the economic center of the upper reaches of the Yangtze River in China and an important national modern manufacturing base. The Western China (Chongqing) Science City has policies and strategies such as national independent innovation demonstration zone, pilot free trade zone, national high-tech zone, Comprehensive Bonded Zone, China-Europe freight train (Chongqing), and the new land-sea corridor in western China. In addition, western China (Chongqing) Science City also gathers rich innovation resources, and is in a critical period from high-speed growth to high-quality development, facing the historic opportunity of transforming from an industrial city to an innovative city and a smart city. Therefore, western China (Chongqing) Science City is a very representative research case.

4. Case Analysis

4.1. Governance Subject

4.1.1. The Public Sector

In January 2020, the sixth meeting of the Financial and Economic Commission of the CPC Central Committee clearly proposed to promote the construction of the Chengdu-Chongqing economic circle and form an important growth pole for high-quality development in western China. In order to further clarify the construction of the western science city, the CPC Central Committee

and The State Council issued the Outline of the Construction Plan of the Chengdu-Chongqing Economic Circle on October 20.

As an important governance body of Science City, the government has assumed important responsibilities to serve the construction of Science City. The Standing Committee of the Chongqing Municipal People's Congress voted to authorize the Chongqing High-tech Zone to exercise administrative powers, which provides a legal guarantee for the efficient operation of the Chongqing High-tech Zone. The Chongqing Municipal Party Committee and the Chongqing Municipal Government will fully support the high-quality development of the Chongqing Science City, vigorously promote the comprehensive construction of urban development planning, scientific and technological innovation guidance, the introduction of high-end talents, industrial structure adjustment, mechanism and system reform, and ecological and environmental protection, and plan and build a science city at a high level. In the 2020 Chongqing International Venture Capital Conference, the Management Committee of Chongqing High-tech Zone issued 64 financial policies covering four aspects, including financial support, development of equity investment to promote innovation and entrepreneurship, promoting the development of science and technology and finance, and encouraging enterprises to list and support them, so as to fully support the construction of Western China (Chongqing) Science City.

4.1.2. Market

As the main position of the construction of the Chengdu-Chongqing Twin Cities Economic Circle, Chongqing High-tech Zone is constantly using "high-tech speed" to create an excellent business environment, giving enterprises "suitable soil, nutrients and sunshine", and comprehensively accelerating the construction of the Western (Chongqing) Science City.

First, state-owned enterprises are specialized to promote the construction of a science city. Chongqing High-tech Development and Construction Investment Group Co., Ltd. has integrated the resources of four state-owned enterprises, including Open Investment Group Co., Ltd. and a logistics company, to become the main platform for building a high-standard science city. The four well-known state-owned enterprises in Chongqing have been transformed from separate districts and operated independently to subsidiaries operating according to their business functions, and will mainly undertake the functions of infrastructure construction, asset management, land development and renovation within the science city. Through the integration of resources of state-owned enterprises, personnel and administrative costs are saved, so that each company can give full play to its advantages and build a science city with high standards with professional and systematic thinking. At the same time, China Electronics Chongqing Information and Innovation Industry Demonstration Base has been built, Southwest Information and Innovation Technology R&D Demonstration Center and China Electronics (Chongqing) Software Industrial Park have been built. Effectively gather enterprises such as information and innovation industry, modern digital city and big data, and cultivate and establish an information and innovation industry highland in the western (Chongqing) Science City by initiating the establishment of the Southwest Information and Innovation Industry Ecological Alliance.

Second, large and medium-sized enterprises should gather in the science city, develop core enterprise science and technology projects, and boost the industrial upgrading and high-quality development of the science city. A number of world-renowned enterprises such as HP, Foxconn, Peking University Founder, Intel China Chongqing Innovation Center have landed in science city one after another. Headquarters is located in Chongqing science city millet Huaxi, and the construction of the related assets —— such as created the millet financial science laboratory, millet financial call center, at the same time construct millet group main business, create wisdom millet ecological chain industry cluster, also inspired the upstream and downstream related industries

gradually close to Chongqing. Anshi Asia Pacific has set up a 3D printing public service platform in science city, and set up an additive thinking, industry and education integration training base; accelerate the construction of an advanced manufacturing ecosystem; using industrial simulation, additive industry and other new technologies to provide systematic transformation and upgrading programs for Chongqing automobile, motorcycle, general machinery, electronic information and other industries; deepening supply-side reform, Enhance the competitiveness of traditional industries in Chongqing; accelerate the digital transformation of Chongqing manufacturing; cultivate and strengthen new forms of industrial service industry in Chongqing High-tech Zone, it is helpful to (Chongqing) Science City to build a national influential industrial highland integrating the development of “production, learning, research, government and gold” of additive manufacturing. Since 2020, 288 investment projects have been introduced in the core area of science city, with a contract investment of 312.1 billion yuan, including 30 world top 500 enterprises and 22 listed enterprises.

4.1.3. Social Organizations

Social organizations in the governance subject mainly include non-profit public institutions, such as education, scientific research, sports, culture, medical and health care and other industrial institutions. Social organizations in the science city mainly include scientific research institutions, universities, incubators, etc.

First, scientific research institutes are leading the steady construction of major scientific and technological infrastructure. Half of the state key laboratories in Chongqing are within the science city; the first batch and the only national applied mathematics center in Chongqing; and the number of R & D (science and technology services) institutions increased to 295. Jinfeng Laboratory, located in western (Chongqing) Science City, is undergoing the final commissioning work before commissioning, and the first pathological spatiotemporal omics research platform jointly built by China with Huada Group will be officially put into use soon. The Chongqing Institute of Advanced Pathology, led by academicians of the Chinese Academy of Sciences, has also been renovated. Jinfeng laboratory provides an important reference value for the construction and development of scientific research institutions, and it provides a very convenient program and platform from basic research to clinical transformation. To get through each link of one-stop comprehensive service, it need to explore and evaluate the industrial value, then introduce market resources for matching and docking, and finally complete the whole chain integration by introducing venture capital, and finally build it into a national competitive scientific research service platform.

Second, a large number of scientific research institutes and famous universities gather with the western (Chongqing) Science City. The Xuefeng Mountain Energy Equipment Safety Field Science Observation and Research Station built by Chongqing University is listed on the newly approved list of the National Field Science Observation and Research Station, marking a new breakthrough in the construction of the national science and technology innovation base of the science city. The Chongqing Big Data Research Institute of Peking University will gather and cultivate scientific and technological innovation talents in the Western (Chongqing) Science City, overcome the core scientific and technological problems of big data intelligence and digital transformation, and promote industrial digitalization and digital industrialization. Xidian University, Beijing Institute of Technology and University of Electronic Science and Technology have opened in the western (Chongqing) Science West Yong Electric Park. The implementation of these universities and research institutes, which gather a large number of professionals, will help Chongqing build a science and technology innovation center with national influence. The 28 universities and more than 200,000 teachers and students of the science city will provide inexhaustible impetus for the joint construction and development of the science city. In the process of building the science city, the

interaction between university, university and research institutes has been continuously strengthened to promote the construction of scientific and technological innovation projects. The science city will open up the channel of industrialization and application of scientific research achievements in universities, build a base for college students' innovation and entrepreneurship, provide practical convenience for students' science and technology innovation cause, and make the science city become a fertile ground for college students to innovate.

Third, science and technology business incubators will strongly enter the science city to promote the transformation of scientific and technological achievements. Science city created the incubator cluster, and to forge a good incubation chain, aid and support the development and growth of small and medium-sized enterprise of science and technology, cultivating high-tech enterprises and entrepreneurs, the physical space, a series of specialized entrepreneurial innovation services and related facilities sharing to provide science and technology enterprises and entrepreneurial team. According to the needs of enterprises, the advantages of university disciplines, seed investment and capital assistance, Chongqing Maker Home has created a chain structure of —— incubator from years of attempts. Over the years, the home of the focus on new materials, new energy areas such as cutting-edge, constantly explore the valuable value of colleges and universities, continue to promote the university science and technology results in innovation business incubation work, raising many high-tech enterprises, specialized, new enterprises, actively explore can change the scientific and technological achievements in holding incubation, etc. With the help of science and technology business incubator, Chongqing Science City will be further built into the cradle of high-tech companies, a training base for talents in Chongqing's dual entrepreneurship, and a new demonstration carrier for the transformation of scientific and technological achievements.

4.2. Governance Content

The science city improves the business environment. Chongqing Science City gives full play to the functions of the national independent innovation demonstration zone and the free trade experimental zone, and improves the operating conditions for opening up to the outside world in enterprise management, trading, financial services and talent training. The science city promotes the transformation and development of “delegating power, delegating power, regulating and providing services”, strive to build an equal, open and just market, fully mobilize the “small government affairs and large business” system and the management and operation resources of small and medium-sized enterprises, and build a legal, international and convenient operation and development environment. In order to further optimize the development environment of enterprise opening to the outside world, Chongqing Science City planning and construction science theme park, science and technology hall, scientific research avenue, such as infrastructure construction projects, national technology innovation and development management center “high-tech enterprise corporation”, lead billions of industrial construction projects, promoting modern teaching, health care, style facilities, “people’s livelihood security project construction”, build “technology, ecological” innovative entrepreneurial ecosystem.

The science city builds a “technology plus finance” ecosystem. Financial services will support the development of science and technology, and science and technology will help the financial service innovation. It also uses big data analysis, block chain, artificial intelligence and other cutting-edge means to build a sound risk monitoring and early warning system, and actively and steadily carry out financial service innovation. In order to shape the technology innovation ecosystem of “technology + financial services”, promote the in-depth integration of innovation chain, production line and capital chain, and develop the high-tech city into a more attractive national technology entrepreneurship service center. Chongqing guide bank finance subsidiary and

other long-term funds for enterprise development investment funds, vigorously support the use of “loan + forward equity” innovative technology credit, guide financial institutions performance single measures, training “technology + financial services” technology innovation ecosystem, guide more capital actively participate in the Midwest (Chongqing) science and technology city construction, speed up the construction of economic policy “depression”, “financial services highland”, innovation and development “treasure”.

The science city promotes the development of the whole industrial chain. Different from the general strategic emerging industries, promote the quality of traditional industries of various high-tech park or characteristic industrial park, southern China science city development group co., LTD., also carries the national strategic height of major scientific development task, it will be a major original research, basic technology innovation in China, place and important gathering point, also symbolizes the our country in major science and technology and a professional innovation of the highest level, and it is a high-end industry chain development of technology research and development base and industrial practice base. For example, when building the biomedical industry, Chongqing Science City has accelerated the construction of scientific facilities such as supercyclic material science experimental device, medical heavy ion treatment and research device, and guided the projects such as germplasm creation big Science Center and Chongqing Center of China Natural Population Biological Resource Bank to produce first-class original results. In terms of industrial practice, Chongqing Science City aims at four focus industrial clusters: high-tech services, green and low-carbon and intelligent manufacturing, life and health, and the new-generation of information technology, accelerates the upgrading of green, intelligent and high-end industries, and creates a new engine for high-quality development.

Construction of multi-functional urban communities. On the one hand, Chongqing Science City, based on science and technology, strives to achieve a batch of "zero to 1" original achievements in the fields of material science, material science and life science; on the other hand, focus on high-quality development, accelerate the transformation and application to form a batch of “physical quantity”, promoting the deep integration of intelligent technology, life technology and low carbon technology, and make more contributions to promote the high-quality development of the city. As science and technology innovation power and industry agglomeration, science city is synchronous high standards to promote city construction, city center, science avenue, science city talent community landmark projects to speed up the construction, science valley key on high-end electronic products, software and hardware development, cutting-edge materials, information integration, high-end manufacturing information technology, big data and other high-tech research and development enterprises. Chongqing Science City also focuses on cultivating integrated and innovative industries, including 5G + industry, artificial intelligence, blockchain, urban brain, online services, energy Internet, UAV and intelligent logistics. Chongqing Science City has built a “Science and Technology Research and Development Innovation Center” and “high-tech enterprise headquarters” in Chongqing. It is a gathering place of high-end talents integrating humanities, wisdom and science and technology, and it is also the gathering carrier of innovation resources of “one city and many parks”.

The science city strengthens high-quality development of the ecological environment and public services. While focusing on the development of major scientific innovation, strategic emerging industries and high-tech industries, the science city also pays attention to the construction of high-quality ecological environment and urban public service facilities such as medical care, education and culture, highlighting elements such as innovation, ecology and livable. The science city provides a high-quality working, learning and home living environment for all kinds of residents, and has become a yearning place for high-quality talents from all over the world. In terms of living, science city lays out residential land, combined with rail stations to lay out youth

communities and rental apartments. In terms of public services, the science city will coordinate the layout of international schools and international hospitals, and build a 15-minute street public service circle and a 5-minute community life service circle. In addition, the science city will also build a “sponge city”, establish a high-quality urban safety system, promote the construction of new infrastructure such as 5G and artificial intelligence, and integrate the landscape and scientific atmosphere into the urban construction.

4.3. Governance Mode

4.3.1. Regional Governments Will Jointly Build Scientific Cities

First, the municipal governments should cooperate to promote the public integration of social affairs. The regional governments have signed a cooperation agreement to jointly promote the high-quality development of the Western Science City. First of all, promote the rational flow and efficient agglomeration of human resources, building a regional employment and entrepreneurship market, and deepen the talent exchange and cooperation mechanism, to promote the fair and sustainable development of the social security level, forming the integration of human resources and social security services. Second, the government cooperation to jointly promote the development of characteristic sports projects, further improve the level of sports competition, strengthen the exchanges of sports talents, gradually formed the science city sports cooperation and development of the professional talent training system. Third, the government cooperates to establish a tourism product development cooperation mechanism, integrating the natural and cultural heritage resources, create high-quality cultural research and study tourism route products, jointly build a science city characteristic cultural tourism corridor.

Second, district and county governments jointly to build a high-quality science city. In order to achieve high-quality development of science city, the government needs to strengthen coordinated governance and promote the in-depth development of economic, social and ecological integration. The high-quality construction of the science city needs a common platform to break through the single regional governance model, enhance the ability of local governments to interact and make decision-making and resource sharing, and form an effective coordination between the district governments within the science city. For example, in the Framework Agreement on the Coordinated Development of Ecological Civilization and the Coordinated Development of Environmental Protection of the Western (Chongqing) Science City (hereinafter referred to as the Agreement), the five district governments in the science city made suggestions together, and it was finalized and signed. The agreement defines four mechanisms, including rotating convenor, liaison officer, regular consultation and special cooperation, establishes special cooperation groups, scientifically determines the roadmap and timetable, refines and quantifies work tasks, promotes relevant cooperation work respectively, and ensures that all work is implemented in place.

Third, the management committee of high-tech Industrial Park, the district government and China State Construction Corporation jointly signed a cooperation agreement. They conduct multi-level cooperation in equity investment and infrastructure construction, urbanization and ecological progress, the establishment of industrial funds, water utilities, and the renovation of rundown areas to share the benefits of development.

4.3.2. Construction of Industry-University-Research Cooperation

First, market enterprises and universities to jointly build an industry-university-research cooperation base. For example, Chongqing High-tech Development Group has signed a contract with Chongqing University. The two sides have carried out all-round cooperation in talents, science

and technology, achievements and industries by focusing on their respective advantages and high-quality resources. Both parties will make it clear that Chongqing University will serve as a member of the decision-making consultation and project review expert database of High-tech Development Group, and will provide decision-making consultation for building a high-quality science city and project review. The two sides will jointly build an industry-university-research cooperation base, set up a high-level talent training platform of “integration of industry-university-research institutes”, and carry out cooperation in personnel training, scientific and technological cooperation and transformation of achievements. Industry-university-research cooperation promotes the continuous innovation of enterprises. Through resource sharing, universities have completed technological transformation, and enterprises have also realized technological innovation.

Second, scientific research institutes and universities to jointly build science laboratories. For example, the FPGA China Innovation Center and Chongqing University of Posts and Telecommunications jointly build a joint laboratory. The joint laboratory software and hardware platform will be built using Intel’s latest products, and the FPGA Innovation Center will also provide subsequent technical support from the laboratory. Intel certified guidance teachers will provide full guidance, and a large number of internship and training opportunities will also be provided by the FPGA Innovation Center. All these measures are conducive to the innovation of Chongqing University of Posts and Telecommunications in cultivating outstanding talents, internship, entrepreneurship and employment. In addition, FPGA Innovation Center also attaches great importance to the training of teachers, to meet the market needs and learning cutting-edge technologies as the focus of solving practical problems, to improve the ability of teachers in academic teaching and practice training guidance, and to explore how to establish a leading AI teaching system in China.

4.3.3. Government-School Cooperation to Seek Common Development

Western (Chongqing) Science City has introduced high-end research and development platforms such as Chongqing Science Center of Chinese Academy of Sciences, Chongqing Big Data Research Institute of Peking University, Chongqing National Applied Mathematics Center and so on. The number of municipal incubators in the core area of the science city has increased to 16, introducing 304 R & D institutions above the municipal level, and the number of key laboratories above the municipal level to 92. A number of research platforms, including Chongqing Microelectronics Industry Technology Research Institute of TC and China Natural Population Biological Resource Bank, have been put into operation. High-level landmark scientific research institutions provide a source of innovation for the Western (Chongqing) Science City, and also provide an inexhaustible impetus for the high-quality development of science and technology in the science city.

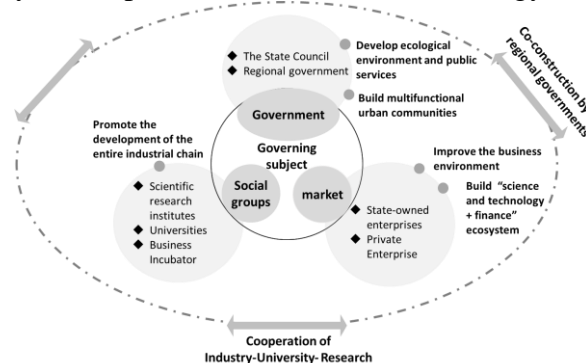


Figure 1: Western China (Chongqing) Science City Cooperative Governance Network.

The cooperative governance network of science city is shown in Figure 1.

5. The Key Path of High-Quality Construction of Science City

Through the above case analysis, the key path of high-quality construction of science city can be extracted from three aspects: governance subject, governance content and governance mode.

5.1. Governance subjects: Promote Multi-subjects to Build a Scientific City

The government should establish a modern science and technology governance system rooted in the thought of cooperative governance, adaptation and the development of science city. It also should strive to build major national scientific and technological infrastructure and innovation platforms, and introduce policies to gather first-class scientific and technological innovation entities and high-end talents. In photoelectric information, future medicine, advanced energy, space technology and other key core technologies, new energy vehicles, integrated circuits, aerospace industry advantages, promote science city universities and scientific research institutions and market main body jointly develop technical research, reasonable division of labor, efficient collaborative build national laboratory, big scientific equipment and a batch of major scientific research and innovation platform, build national important science and technology innovation center.

The science city management organization should comprehensively promote the linkage of the “three districts”, promote the deep integration of learning city, industry, city and city creation in communities, parks and campuses, comprehensively build the innovation ecosystem around the university town through a series of activities, and build a professional, high-quality and branded school-local collaborative innovation carrier. It should make the collaborative innovation and achievement transfer and transformation into a model of university-local collaborative innovation and a benchmark for the achievement transfer and transformation, meet the needs of universities and institutes, promote the deep integration of enterprises, universities, universities and research between universities and enterprises, and contribute to the high-quality development of the science city.

5.2. Governance Content: Focus on Gathering International Innovation Resources

As the frontier position of national basic strategic scientific research and innovative application research, the science city plays an irreplaceable role in gathering cutting-edge innovation resources, gathering cutting-edge scientific and technological talents, building a cutting-edge innovation platform, and creating a high-quality innovation environment. On the one hand, in the period of opportunity of the world scientific and technological revolution and national innovation strategy, the Science City should clarify the implementation of capital investment policies and strive for national key innovation resources or major innovation subjects; On the other hand, attract high-end innovation elements to gather in the Western Science City, give full play to the research and innovation resources of the Science City, build an innovation chain around the industrial chain, and open up the whole chain of innovation and development around the layout of the innovation chain. In addition, Science City should also formulate and implement subsidy policies for the introduction and construction of major innovation infrastructure, vigorously introduce science and technology venture capital funds, effectively implement preferential policies, and stimulate the vitality of enterprise innovation.

5.3. Governance Methods: to Strengthen Interconnected Development Among Regions

The science city should promote the innovation and coordinated development of regional science cities. Centering on building an economic center and a scientific and technological innovation center with international influence, science cities should be jointly developed together with innovation carriers such as high and new technology industrial parks and science cities in other regions. Science city should be around integrated circuit new energy vehicles and other important industries, further with other science city in nearby fusion, key technology, science and technology park to deepen cooperation, joint construction of national technology (engineering) research and development center, national business incubator, conspiracy to build high standard science device, joint cross-district national laboratory (group), foster world-class high-tech industrial cluster, with “one city more garden” mode jointly build scientific innovation belt, form mutual promotion, complementary advantages of cross-regional integration development mode.

6. Conclusion

Based on the theory of cooperative governance, this study analyzes the path of high-quality development of science city. The study reached the following conclusions. First, the participation of multiple subjects is a necessary condition for the high-quality development of the Science City, and multiple subjects can bring diversification and facilitation of resources. Second, the construction content of the Science City is affected by the development of the Science City itself and the external environment, and it is the result of negotiation among multiple subjects. Third, the diversified cooperation methods promote the efficient integration of science city resources, which is the guarantee to ensure the efficient transformation of resources. In the future, in order to promote the high-quality development of national science city, it is necessary to actively adapt to environmental challenges, strengthen the willingness of cooperation and governance entities to cooperate, and jointly introduce and effectively implement globalization-oriented strategic measures through appropriate cooperation methods.

Acknowledgements

This paper is attached to “Research on the Realization Path of High-level Construction of Western (Chongqing) Science City from the Perspective of Cooperative Governance” [2021NDQN47] funded by Chongqing Social Science Planning Youth Project; “Research on Policy-driven Mechanism and Path for High-quality Development of National High-tech Zones” [SWU2109517] funded by Fundamental Research Funds for the Central Universities.

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