New Infrastructure Construction and High-quality Urban Development

Jinyan Yi *

Shanghai New Epoch Bilingual School, Shanghai, China

* Corresponding author: 1808020510@stu.hrbust.edu.cn

Abstract. Infrastructure construction, as a solid foundation to support the city's comprehensive service function, plays an indispensable role in the city's economic prosperity, social progress and the improvement of environmental quality. It not only provides the necessary material conditions for the daily operation of the city, but also the key driving force for the outward expansion and internal optimization of the city. In view of its importance, an in-depth study of the relationship between China's infrastructure construction and urban development is of great guiding significance for us to accurately grasp the current situation of urban construction and scientifically plan the future path of urban economic and social development. This paper aims to deeply explore the core concept of new infrastructure construction and its unique advantages, and take this as a starting point to analyze the role of infrastructure construction in promoting urban economic vitality in detail. At the same time, combined with the actual situation of the current urban agglomeration, it reveals various problems and challenges that the new infrastructure may face in the process of promoting the high-quality development of urban agglomeration. On this basis, this paper puts forward the far-reaching impact of new infrastructure on high-quality urban development, to provide valuable reference and enlightenment for the sustainable, healthy and high-quality development of urban agglomerations.

Keywords: Infrastructure construction, high-quality development, urban.

1. Introduction

In today's post-epidemic era, the central government has repeatedly mentioned speeding up "new infrastructure" in many meetings, and at the same time, the market is also paying close attention to the hot spot of "new infrastructure", which some people regard as a new "stimulus plan". It is true that accelerating the "new infrastructure" has the function of expanding domestic demand and ensuring the realization of the economic growth target in 2020, but the so-called new infrastructure is not new, but it is a continuous policy to promote China's high-quality development [1].

Urban infrastructure construction is the basic material condition for urban construction and social coordinated development, and the perfection of infrastructure is also an important factor to measure the level of urban development and civilization. With the gradual modernization of China and the continuous emergence of emerging urban agglomerations, the demand for urban infrastructure is also gradually increasing. The construction of urban infrastructure is of great value to meet the basic living needs of citizens, and the construction and improvement of these infrastructures are of great significance for improving the quality of life of citizens and showing the development of China's cities. The study of urban infrastructure needs to understand the situation of urban infrastructure in various places, the economic location of urban infrastructure, etc. Such surveys allow for an assessment of the capacity or functionality of a facility to develop plans for future improvements and expansions.

In addition, municipal facility surveys can also help identify potential safety hazards and environmental issues, and provide a basis for urban planning [2]. The purpose of the municipal facilities survey is to understand the existing infrastructure of the city, including roads, bridges, drainage systems, water supply systems, energy networks, etc. Through the survey, it is possible to assess the degree of aging and capacity of the facility to develop future improvement and expansion plans. In addition, a municipal utility survey can help identify potential safety hazards and environmental issues and inform urban planning. The importance of municipal utility surveys cannot be overstated.

If there is no accurate infrastructure survey data, future urban planning will not be reasonable. Rational infrastructure planning is the basis for ensuring urban development and determines the daily standard of life of city residents. Infrastructure surveys can be conducted through a variety of methods and techniques, among which the more advanced one is known as GIS, which is a powerful tool for conducting municipal utility surveys and planning. By overlaying various facility data on the map, the distribution and status of facilities can be visually displayed. GIS can also conduct data analysis to help identify bottlenecks and improvement opportunities for facilities. In addition, municipal facility surveys also require the collection and analysis of large amounts of data, such as traffic, power supply, etc. Each department collects such data on a regular basis and conducts systematic research based on this.

2. The Connotation and Characteristics of New Infrastructure Construction

The new infrastructure is an infrastructure system that provides services such as digital transformation, intelligent upgrading, and integrated innovation for the needs of high-quality development guided by new development concepts, driven by technological innovation, and based on information networks [3]. At the 19th National Congress of the Communist Party of China, Chairman Xi proposed to promote the deep integration of the Internet, big data, artificial intelligence and the real economy. This means that as China gradually enters a new stage of economic growth, it is urgent for China to systematically promote the transformation of new infrastructure. The transformation of infrastructure can not only promote the interaction and connection of public resources in the material form, but also break through the relatively independent and scattered nature of cities.

It has the adaptive form of endogenous new kinetic energy such as networking, intelligence, and informatization, to improve the progressive ability of marginal diffusion from the inside of the city and the superposition effect of the agglomeration behavior outside the city. Different from traditional infrastructure, new infrastructure not only has the characteristics of pioneering, basic and quasi-public goods common to traditional infrastructure, but also has the characteristics of high technical content, rapid iteration, ubiquitous support, strong application empowerment, fast depreciation, integration and innovation, and intelligent leadership.

At present, studies have shown that the investment in "new infrastructure" based on a new generation of information technology will bring substantial value-added to related industries, which will lay a solid foundation for China to master its core competitiveness in the global industrial transformation. The relevant meetings of the central government have repeatedly emphasized the need to "accelerate the construction of new infrastructure", which can not only provide new opportunities for the high-quality development of China's economy, but also help to further solve the problems of "unbalanced and inadequate" regional development in China in the new era.

Compared with traditional infrastructure such as transportation, water supply and power supply, post and telecommunications, etc., the new infrastructure also has similar public service characteristics. However, from the perspective of technical architecture and operating model, there are still large structural differences between new infrastructure and traditional infrastructure. New infrastructure usually contains more intangible assets such as intellectual property, patents or digital assets, and the contractual structure in the investment process will be more complex, and the asset owner and investor will need to refine the attributes of their assets, so the financing agreement of the project will be quite different from the traditional one. Therefore, for the reform and innovation of infrastructure, it is also necessary to solve several problems such as strategy, technology, collaboration, and empowerment.

3. The Impact of Infrastructure Construction on the Urban Economy

Each round of urban transformation will inevitably give birth to new infrastructure technology changes and promote the transformation and upgrading of traditional infrastructure. Today, with the rapid rise of the fourth industrial revolution, new infrastructure such as 5G, high-speed rail, new energy, big data, artificial intelligence, and industrial Internet is becoming the key technology and material guarantee for a new round of scientific and technological revolution and urban industrial transformation. As an important cornerstone of China's economic and social development, new infrastructure is an important starting point for stabilizing economic growth under the new situation and an important decisive factor for the high-quality development of urban agglomerations.

The 2019 Central Economic Conference redefined "new infrastructure" as the construction of 5G, artificial intelligence, industrial Internet, and the Internet of Things [4]. In the economic development of the new era, the construction of new infrastructure plays a key role. Marx believed that infrastructure provides general and common production conditions for the entire social production process, and that the construction of infrastructure is conducive to circulation, is extremely necessary for capital, and has the function of promoting the growth of productive forces. Keynes believed that the government's investment in infrastructure can increase social employment opportunities and social demand, thereby driving economic growth. With the continuous development and improvement of relevant theories, the polarization effect of infrastructure construction on the attraction of capital and labor has become a consensus among economists.

It is widely recognized that infrastructure construction has a positive impact on and promotes long-term economic growth. Infrastructure construction accelerates the accumulation of capital, and the construction of infrastructure and the development of surrounding industries have brought positive effects on economic growth and labor employment, so the construction of infrastructure has an important role in promoting the economic development of a country.

4. The Structure and Direction of China's Infrastructure Construction Transformation in the New Era

When the infrastructure construction develops to a certain extent, the expansion of the scope and the increase in quantity will gradually be limited by the economic structure, which will bring a diminishing return to scale, resulting in the emergence of diseconomies of scale. Currently, to eliminate this negative impact, the transformation of infrastructure construction has become an indispensable task for China's high-quality development in the new era.

In the study of infrastructure construction, domestic scholars believe that infrastructure construction in a general sense can be divided into three dimensions: physical infrastructure, service infrastructure and digital infrastructure, among which physical infrastructure is mainly in the form of transportation infrastructure, industrial infrastructure and energy infrastructure, service infrastructure includes education, medical care, pension, finance and other fields, and digital infrastructure is manifested as ecological companies such as the Internet and informatization [5].

In the new era, the direction of China's infrastructure transformation and development is roughly as follows: the informatization transformation and upgrading of traditional physical infrastructure, the scientific and technological support of service-oriented infrastructure construction, and the intelligent construction of digital infrastructure construction.

5. Problems and Challenges Faced by New Infrastructure in the High-quality Development of Urban Agglomerations

Compared with traditional infrastructure, new infrastructure has the characteristics of strong technology intensity, high technical content, and great difficulty, and there are still great shortcomings and deficiencies in the fields of chips, sensors, servers, and operating systems in new infrastructure. Due to the localized nature of new infrastructure development, local governments have become the

main body of planning and important participants in investment and construction, and they all hope to accelerate economic and social transformation and development through new infrastructure. However, when some traditional industries are transformed into intelligent networks driven by local policies, the high-tech content of new infrastructure has brought high technical barriers to this group, resulting in the failure of the project to move forward smoothly. In addition, blind investment in new infrastructure will also lead to the reduction of investment in other fields, affecting the quality of construction or the level of intelligence, and ultimately leading to a decline in social and economic benefits. When promoting the construction of new intelligence, if ordinary users do not understand the new technological achievements or how to use them, it will also lead to idle and waste of resources and generate additional costs.

At present, there are still not many application scenarios for new infrastructure projects, and the project profit model and return on investment cycle are uncertain. The application scenarios of new infrastructure are closely related to high technology. There are few application scenarios for 5G networks, and there are still few related applications such as the Internet of Things, AR, VR, holographic projection, artificial intelligence, and unmanned driving that are compatible with 5G, resulting in the demand for 5G networks that have not been fully released. To prevent the lack of application market after construction, the new infrastructure should be built according to market demand. Technological breakthroughs and business models are needed to give full play to the utility of new infrastructure, continue to operate smoothly, and broaden application scenarios. How to connect the new infrastructure in different cities and different fields from one "point" to a systematic "network" requires a strategic plan for infrastructure planning from the perspective of long-term development, fully considering the mechanism of interaction between various new infrastructure and traditional infrastructure, and the coordination of the rights and responsibilities of local government infrastructure construction in different cities, so as to realize the multiple optimization of infrastructure layout, structure and quality, and provide an important driving force for high-quality economic development [6].

Many regions are now facing the same problem: the top-level design of urban buildings has not yet formed a systematic pattern, and there is a lack of unified planning. The long-term effective operation mechanism of urban agglomerations is not fully developed, the degree of intensive co-construction and development is low, and the phenomenon of emphasizing construction over operation is prominent. At present, there are many problems that the new infrastructure and urban development have not yet been completed, resulting in the problem that although the new infrastructure has been built, it cannot be fully put into use. At the same time, some areas have oversupply due to excessive attention to the construction itself, resulting in idle equipment and waste of resources.

In the process of continuous construction and improvement of new infrastructure, the "new" of new infrastructure is a major "difficulty" in construction, and in the new infrastructure projects of urban agglomerations, it is necessary to pay attention to how to plan technology, application scenarios, funds, security, collaborative governance and other issues, and constantly explore and improve various measures in new infrastructure, so as to realize the amplification, superposition and multiplication effect of infrastructure construction on the high-quality economic development of urban agglomerations. To achieve the goal of constructing and improving new infrastructure, the relevant authorities usually take the following measures [6].

Local governments need to focus on four aspects when planning investments and participating in the construction of new infrastructure.

6. Conclusion

Combined with the needs of the construction of new smart cities and the development of the digital economy, adhere to the overall situation, systematization, marketization, and enterprise thinking, carry out scientific planning, overall layout, and promote the development of large networks, big data,

large platforms, large services, and large industries with the ideas of "both soft and hard" and "virtual and real co-management".

Build a modern infrastructure system and support the exploration and construction of business models and application scenarios of new infrastructure. To promote the overall construction of new infrastructure and build a modern and intelligent infrastructure system, first, it is necessary to optimize the layout, strengthen risk early warning capabilities and prevention, and second, adhere to the concept of green development, establish a problem-oriented approach, and clarify the division of responsibilities of various departments, to provide a solid guarantee for high-quality economic development.

Strengthen the construction of network and data security, and improve the capacity of urban governance. The operation of new infrastructure needs to be premised on cyber security and data security, and it is important to further understand the complexity and security of cyber security. Enterprises need to vigorously develop the cyber security industry, build a cyber security ecosystem, establish data security management systems and operation specifications for new infrastructure-related application scenarios, and clarify the requirements for data security compliance in the new infrastructure environment to ensure the orderly flow and security of data.

Strengthening the construction of new infrastructure is not only conducive to improving the urban governance system, but also deeply empowering the city's social governance capabilities, improving the intelligence of the city, optimizing the coordination mechanism of the city, promoting the intelligent transformation and development of the city, so that the city can more effectively face future risks and uncertainties.

References

[1] Zhang Lijuan. Study on the impact of digital infrastructure construction on the high-quality development of new urbanization -- The empirical evidence comes from the "Broadband China" pilot policy. Contemporary Financial Research, 2024, 7 (03): 45 - 58.

[2] Zhang Bingbing, Shen Manhong. Fiscal Policy support for eco-innovation: A literature review. Journal of Zhejiang University (Humanities and Social Sciences Edition), 2022, 52 (01): 39 - 50.

[3] Ma Rong, Guo Lihong, Li Mengxin. Research on the mode and path of new infrastructure construction in China in the new Era. Economist, 2019, (10): 58 - 65.

[4] Liu Baolin. The National Development and Reform Commission held a press conference in April to introduce the macroeconomic performance and respond to hot issues. China's Classics, 2021, (09): 26 - 35.

[5] Fang Hong. New infrastructure has boosted the high-quality development of urban agglomerations in China. The People's Forum, 2022, (22): 70 - 77+111.

[6] Zhang Xiaomin. Jin Wei. We will promote high-quality economic and social development by building new infrastructure projects. Macroeconomic Management, 2021, (11): 85 - 90.