

New Infrastructure Construction to Boost China's High-Quality Economic Development

Lin Li

Party School of the Cpc Huangshi Municipal Committee, Huangshi City, Hubei Province, 435000, China

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Abstract: In recent years, the term “new infrastructure construction” has frequently appeared in a series of policies of the central government and all over the country to promote economic development, which has aroused widespread concern in all sectors of society. “New infrastructure construction”, as a new thing in the economic field, in line with the development trend of the current digital economy and is an important measure to promote the current economic growth and lay a solid foundation for long-term development. Accelerating the “new infrastructure construction” can effectively promote China’s economic transformation and upgrading, effectively impel China’s high-quality economic development, and is also an important momentum for driving a new round of economic growth.

1. Introduction

Currently, the central government attaches great importance to “new infrastructure”. “New infrastructure” is an information technology-based infrastructure construction that combines the characteristics of public products and emerging industries. It represents a new format and is an important measure to promote national digital infrastructure construction. Promoting the “new infrastructure” is not simply an act of stimulating the economy, but the central government has a profound insight into the world’s development trend, accurately grasping the current status of China’s economic and social development, and responding to the continued downward pressure on the Chinese economy in recent years and the impact of the new coronary pneumonia epidemic. Major strategic deployment. We should seize opportunities for strategic development, lay ahead, steadily advance the “new infrastructure”, fully restore the order of economic and social development, and help the high-quality development of my country's economy.

2. Basic Concepts, Main Features and Types of “New Infrastructure”

2.1 Basic Concepts

The so-called “new infrastructure” refers to the construction of new-type infrastructure, as opposed to traditional infrastructure. It is not a new concept. In December 2018, the Central Economic Work Conference clearly stated that it is necessary to accelerate the pace of 5G commercialization and strengthen the construction of new infrastructure such as artificial intelligence, industrial Internet, and Internet of Things. The meeting of the Standing Committee of the Politburo on March 4 this year emphasized the need to accelerate the construction of new infrastructure such as 5G networks and data centers. This year’s State Council’s “Government Work Report” also clearly stated that it is necessary to strengthen the construction of new infrastructure, develop a new generation of information networks, expand 5G applications, build charging piles, promote new energy vehicles, stimulate new consumer demand, help industrial upgrading, and strengthen new towns. Chemical construction.

For the “new infrastructure”, the National Development and Reform Commission's definition is: guided by new development concepts, driven by technological innovation, based on information networks, facing the needs of high-quality development, providing the foundation for services such as digital transformation, intelligent upgrades, and integrated innovation Facilities system. The

traditional infrastructure is based on railways, highways, bridges, airports, water conservancy projects, etc. The core of which is the connection, and then the circulation of various production factors. “New infrastructure” is based on 5G, UHV, intercity high-speed railway and urban rail transit, new energy vehicle charging piles, big data centers, artificial intelligence, industrial Internet, etc. The core content is to enhance data storage, transmission and Computing power to improve the efficiency of the optimal allocation of various production resources, thereby unlocking the potential for economic growth. [1]

“New infrastructure” is based on the deep integration of information technology and manufacturing technology, to adapt to the needs of a new round of scientific and technological revolution and industrial transformation, supported by digitalization and intelligence, through the “full factor” and “full process” of traditional economic activities. “Transformation, thereby greatly improving economic efficiency and enhancing economic growth potential. The “new infrastructure” will help expand demand, stabilize growth and stabilize employment in the short term. In the long run, it will help unlock China's economic growth potential, promote China's economic transformation and upgrading, and enhance its core competitiveness. It is an effective response to the current impact of the epidemic. The important grasp of the adverse effects of the epidemic situation is also an important way to lay a solid foundation for long-term development and promote high-quality economic development. [2]

2.2 Main Features

Compared with traditional infrastructure, “new infrastructure” focuses on making up for shortcomings in economic development, thereby promoting the development of new industries and new areas and enhancing core competitiveness. Specifically, the “new infrastructure” has four characteristics.

The industry involves a wide range. The “new infrastructure” is rich in content and covers a wide range, including 7 major areas such as 5G infrastructure, UHV, big data center, artificial intelligence, and industrial Internet, and involves many key industries such as communications, power, and transportation. For example, 5G provides industrial support for emerging industries such as industrial Internet, Internet of Vehicles, artificial intelligence, telemedicine, and online education, involving many industries such as base station radio frequency, filters, antennas, towers, optical communication equipment, and fiber optic cables. UHV involves dozens of industries such as control and protection, high voltage reactors, transformers, UHV voltage transformers, and substation monitoring.

Emerging fields are the focus of investment. Unlike traditional infrastructures such as roads, bridges, water conservancy, and electricity, “new infrastructure” has a brand-new investment field, focusing on strategic, network-based infrastructure construction. Specific investment areas include the construction of basic networks such as information communication and 5G, the construction of environmental protection infrastructure such as ecological greening and pollution control, the protection of livelihood projects such as education and medical care, and the construction of municipal projects such as smart cities and cold chain logistics.

Drive by technological innovation. In traditional infrastructure, incremental and incremental innovation is the mainstay. Therefore, the development level and quality of traditional infrastructure mainly depend on the scale of investment. The technology used in the “new infrastructure” is pioneering and subversive, and its development level and quality not only depend on the scale of investment, but are also subject to the progress of technological innovation. The stronger the disruption of technological innovation, the faster the industrialization of new technologies, the more new technologies will be applied, and the higher the level of development of new infrastructure.

Take the platform as the main carrier. Generally speaking, in economic activities, roads, railways, optical cables, wires and other facilities mainly play the role of connecting channels. As data becomes an important production factor, the importance of data storage, transmission, processing, and application is increasingly evident. Therefore, the Internet of Things, 5G, data centers, cloud computing centers, industrial Internet, etc. provide data transmission, algorithms, and computing

power services Platform infrastructure has become the key to the development of the digital economy.

2.3 Main Types

The new infrastructure mainly includes three categories: one is the information infrastructure represented by 5G base stations, artificial intelligence, a new generation communication network, cloud computing center, big data center, industrial Internet, Internet of Things, etc.; the other is the major scientific and technological infrastructure, Science and education infrastructure, industrial technology innovation infrastructure, and other representative scientific and technological innovation infrastructure; third, intelligent transportation infrastructure, smart energy infrastructure, and other representative fusion infrastructure.

3. The Significance of “New Infrastructure”

“New infrastructure” includes both digital infrastructure construction, such as 5G networks and big data centers, as well as digital transformation of traditional infrastructure, such as smart parking, smart pipe networks, etc. The starting point and ending point are to promote economic transformation Upgrading and achieving high-quality development are important measures to promote China's future industrial structure upgrade and will ignite a new engine for future economic development.

3.1 It Can Promote Economic and Social Transformation and Upgrading.

Through the vigorous development of “new infrastructure”, it will be beneficial to China's breakthroughs in core technologies in 5G, artificial intelligence, industrial Internet, digital infrastructure manufacturing and other fields, and provide an important material foundation for my country's industrial transformation and upgrading. On the one hand, it will contribute to the comprehensive transformation and upgrading of industrial digitalization. “New infrastructure” can greatly improve the digitalization and intelligentization of production and enterprise management in traditional manufacturing and service industries. It will further improve the efficiency of optimized allocation of production factors, effectively improve enterprise production efficiency, continuously strengthen its core competitiveness, and promote industry Towards the mid-to-high end of the value chain has placed the Chinese economy in a better position in the new round of world competitions. On the other hand, it contributes to the digital transformation of public services. “New infrastructure” can also intelligently upgrade and transform traditional infrastructure such as transportation, energy, water conservancy, and municipal administration, so that these infrastructures can better play their due role. In addition, new formats and models such as e-commerce, online entertainment, and online education will also benefit from the “new infrastructure” and develop towards higher-level and innovative business models. [3]

3.2 It Can Promote the Intelligent Transformation of the Manufacturing Industry.

My country's manufacturing industry is large but not strong, structural optimization and upgrading tasks are heavier, and it is under pressure of rising costs such as labor, corporate profits are constantly being compressed, and new growth momentum is insufficient. There is an urgent need to reduce costs and improve efficiency. At the same time, the smart manufacturing of Chinese enterprises is still in the primary development stage, the level of smart manufacturing is low, and the cost of intelligent upgrade is relatively high. Only a few companies have really entered the smart manufacturing application stage, in the R&D, manufacturing, supply chain, etc. It has the space and potential to promote intelligence and digitization. The deep integration of new infrastructure and manufacturing is conducive to promoting predictive maintenance of equipment and facilities, industrial production process flow, production process visualization, supply chain optimization, realizing network coordination of production factors and intelligent application of production scenarios, shortening product production cycles, and effectively improving enterprise production and Business management capabilities.

3.3 It Can Effectively Drive Investment.

The “new infrastructure” has large demand, large investment and long cycle, and has a strong investment multiplier effect, which will play an important role in promoting investment and stabilizing growth in my country. Take 5G network construction as an example. According to estimates by the China Academy of Information and Communications, my country’s investment in 5G network construction will reach 1.2 trillion yuan by 2025. At the same time, it will also drive the application investment in the upstream and downstream industrial chains and related industries, and it is expected to total more than 3.5 trillion yuan by 2025.

3.4 It Can Effectively Promote the Growth of New Formats.

“New infrastructure” can link data collection, analysis, application, logistics, payment and other related industries into a network, greatly reduce intermediate links, reduce transaction costs, and improve transaction efficiency, thereby effectively promoting the high-end industrial structure and modernization of the industrial system. New industries and new formats provide the driving force. For example, 5G technology will promote the rapid development of intelligent connected cars and autonomous vehicles; the industrial Internet has realized the full connection of all elements, the entire industry chain, and the entire value chain, and will promote the rapid development of the digitalization, networking, and intelligence of the industrial system. . In addition, the popularization of new infrastructure has brought an explosive growth of global data volume, which has laid a solid foundation for the development of new formats such as data mining, big data analysis and its application. [4]

3.5 It Can Promote Economic Recovery after the Epidemic.

The new coronary pneumonia epidemic that occurred early this year has caused tremendous damage to my country's economic development. During the epidemic, anti-epidemic measures taken across the country including restricting crowd gathering, traffic control, and delaying economic activities have led to weakened demand, slowed production, and restricted trade. According to data from the National Bureau of Statistics, in the first quarter of 2020, China’s real GDP fell by 6.8% year-on-year, the nominal per capita disposable income of residents increased by 0.8% (actual decline of 3.9%), industrial added value fell by 8.4% year-on-year, and fixed asset investment fell by 16.1%. The total retail sales of consumer goods fell by 19.0%. In order to stabilize growth and stabilize employment, the government must take measures as soon as possible to restore the economy and stimulate economic growth. Under the circumstances that the current epidemic prevention and control work is not relaxed, and it is difficult to promote economic growth by expanding domestic consumer demand in the short term, the most direct and effective way is to start large-scale infrastructure construction. In the context of diminishing traditional infrastructure benefits, the construction of new infrastructure such as 5G, industrial Internet, and artificial intelligence is bound to become a new bright spot in infrastructure investment.

4. Difficulties and Challenges Facing the “New Infrastructure”

The “new infrastructure” has taken into account many fields such as stable growth, industrial upgrading and benefiting people's livelihood. Not only has it become a key measure to cope with the economic downturn, it will also reshape the future pattern of my country's economic development. However, in the process of developing the “new infrastructure”, it is facing difficulties and challenges in terms of system, technology, capital, and model.

4.1 The Top-Level Design Needs to Be Strengthened.

At present, the direction of development of the “new infrastructure” has been determined, but where to build, how to build, and what to build in concrete needs further clarification. The “new infrastructure” has a strong spillover effect. If there is no practical overall implementation plan to make overall planning, the blind investment and repeated construction of various places without observing the conditions of customers will lead to new overcapacity or hidden risks. For example,

in recent years, many places have built cloud computing centers, data centers, and other projects without considering the market demand and local development. This has resulted in a large amount of idle waste of computing power, equipment, and computer rooms. [5]

4.2 The Technical Shortcoming is the Development of Weakness.

On the one hand, my country's investment in basic research is seriously insufficient. In 2018, my country's basic research investment was 111.8 billion yuan, accounting for 5.7% of R&D expenditure. The difference is about 17% in the United States, 14.5% in South Korea, and 13.1% in Japan. Without sustained, high-level and high-strength basic research investment, it will be difficult to produce original and revolutionary scientific and technological achievements, it will not be able to produce independent development paths and technical standards, and it will be left behind. On the other hand, my country's core electronic components, high-end chips, semiconductor materials and equipment are highly dependent on foreign countries and rely heavily on imports. For example, there are more than 20,000 sensors worldwide, but only 6,000 in my country. The technical shortcomings have become the biggest weakness that restricts the high-quality development of my country's economy.

4.3 There is a Risk of Aggravating Local Government Debt.

In recent years, the downward pressure on my country's economy has continued to increase, and the impact of this epidemic on economic development has further exacerbated the financial burden of various regions, and local finances are facing severe challenges. As for the future investment plans of 25 provinces that have been announced so far, the investment ratio of “new infrastructure” accounts for about 15%. Although the proportion is not high, the capital invested is still several trillion yuan, and the total planned investment in the year alone will reach about 1 trillion yuan. Moreover, due to the various types of equipment used in the “new infrastructure”, its service life is shorter, the technology is updated faster and the energy demand is relatively large, which makes the management and maintenance costs after the construction is also very huge. Therefore, when the debt level of many local governments has reached a relatively high level, the completion of huge “new infrastructure” investments will inevitably further increase the leverage of government debt. If the leverage ratio cannot be effectively controlled and potential debt risks are actively resolved, the systemic financial risks accumulated in the future will continue to increase.

4.4 The Information Security System Needs to Be Strengthened.

Safe and controllable is an issue that must be considered by the “new infrastructure”. Since my country is still at a disadvantage in terms of key core technologies, a large number of equipment and technologies in the “new infrastructure” need to be imported from abroad, such as chips, servers, and operating systems. If there is no perfect information security system, once it encounters extreme situations, it will seriously threaten our national security. [6]

5. Policy Recommendations for the Development of “New Infrastructure”

We must thoroughly implement the spirit of the important speech of General Secretary Jin Ping and the Party Central Committee's decision-making and deployment, correctly understand the importance and urgency of “new infrastructure”, actively explore the policy measures for the development of “new infrastructure”, and give full play to the effective investment in steady growth. The key role is to strive for the “double victory” of epidemic prevention and control and high-quality economic development.

5.1 Strengthen the Top-Level Design.

Unlike traditional infrastructure, the “new infrastructure” industry involves a wide range of technologies, rapid technological development and changes, and greater market uncertainty. It is impossible to copy the development path of traditional infrastructure. Digitalization is not only an important foundation for the modernization of the national governance system and governance

capabilities, but also a powerful driving force for the high-quality development of the economy. For example, during the epidemic situation, some places started earlier because of digitalization, which made the local areas more active and efficient in scientific epidemic prevention, resumption of production and other aspects, which fully reflected the “those who have the digital opportunity.” Therefore, government departments at all levels must comprehensively and profoundly understand the necessity and urgency of “new infrastructure”, pay close attention to and judge the latest trends in domestic and foreign technological and economic development, plan ahead, and do top-level design. The first is to closely integrate the actual economic and social development of the local area and promote the “new infrastructure” in an orderly manner. The layout plan should match the local industrial needs, and it must not be overstretched or overstimulated; Extensive development. To focus on cutting-edge industries, aim at core technologies, and focus on solving key issues such as data fusion, data sharing, and data security, we must achieve accurate classification and accurate construction for different regions, different industries, and different stages. The third is to accelerate the construction of public technology service platform system, vigorously develop the industrial Internet, promote the “cloud platform” of high-tech manufacturing, vigorously promote the digitalization and intelligence of R&D, production, operation, service and other links, and promote the organizational reform of enterprises. Innovative digital transformation and upgrading of business and processes.

5.2 Reasonably Plan the Industrial Layout.

“New infrastructure” should work hard on the word “new”. To accelerate the planning and layout of communication infrastructure construction, promote the deep integration of 5G technology and industrial economy, strengthen the linkage between industry, academia and research, and focus on public services such as smart cities, smart transportation, smart education, smart medical care, smart manufacturing, artificial intelligence and big data, Create application projects with Chinese characteristics. To accelerate the deployment of industries such as big data centers, artificial intelligence supercomputing centers, network security and data information, and the industrial Internet, and promote new industries such as new-generation information technology, intelligent manufacturing, network security, online education, intelligent distribution, and smart medical care to accelerate high-quality Development; we must strengthen the linkage of industry, university and research, increase scientific and technological research, break through key core technologies, promote the autonomy of key components and major technical equipment, and plan a batch of “core screen end network” projects.

5.3 Build a Diversified Investment and Financing System.

“New infrastructure” is a systematic project that promotes economic and social transformation and development. The construction period is long, the investment scale is large, and it is difficult to achieve considerable returns in the short term. Therefore, without effective guidance, it is difficult to attract market funds to participate in the construction. Therefore, it is necessary to strengthen government guidance, actively promote the diversification of investment and financing entities, and organically integrate government sector investment with market investment. On the one hand, we must give full play to the role of financial funds, make good investment plans, and orderly invest in batches to improve the efficiency of the use of financial funds. On the other hand, market access in the field of infrastructure investment should be further liberalized, restrictions should be eliminated, market-based rules should be followed, and more capital, especially private technology capital, should be attracted to participate in the new foundation through industrial guidance funds, PPP models, and REITs models. In the field of investment in facilities, we changed from “I want to invest” to “I want to invest” to form a synergy of funds.

5.4 Strengthen the Construction of Network Information Security.

Network information security is an important foundation for “new infrastructure”. “New infrastructure” will further accelerate the integration of the digital world and the physical world, which means that the security issues generated on the network will also have a greater impact on the

physical world, and even have a direct impact on social stability and national security. For example, if an intelligent transportation system encounters a network attack, it may threaten people's traffic safety; if an Internet of Vehicles is attacked, it may directly cause the car to crash and die. Therefore, we should use blockchain, artificial intelligence, big data and other technologies to strengthen the construction of information security systems, dynamically monitor network activities, identify problems in a timely manner, plug loopholes, and ensure data information security.

5.5 Overall Coordination of “New Infrastructure” and Traditional Infrastructure.

Traditional infrastructure construction is an important support for the development of the industrial economy, and “new infrastructure” is an important foundation for the development of the digital economy. But this does not mean that the two are separated from each other, nor does it mean that the “new infrastructure” will completely replace the traditional infrastructure. On the contrary, “new infrastructure” and traditional infrastructure have a synergistic effect, and the two merge with each other and promote each other. For example, with the rapid development of e-commerce, the market demand for airports, logistics, warehousing and other industries will increase significantly. Therefore, it is necessary to base on the national conditions, focus on the long-term, and take the new into the old, and gradually shift infrastructure investment from traditional areas to emerging areas. At the same time, it is necessary to accelerate the in-depth integration of “new infrastructure” and traditional infrastructure, while vigorously promoting digital industrialization, give full play to the advantages of modern technology to accelerate the digital transformation of traditional infrastructure, so as to promote the overall transformation and upgrading of infrastructure, create efficient, Smart, green, and safe new infrastructure has effectively promoted the high-quality development of China's economy. [7]

5.6 Strengthen the Construction of Talent Team.

Focusing on the transformation and upgrading of industrial informatization, we will effectively strengthen the building of a talent team, and vigorously train and reserve relevant technical and skilled personnel. We should actively rely on colleges and scientific research institutes, lay out in advance, integrate superior majors, take big data, virtual reality, artificial intelligence and other majors as the guide, and focus on cultivating composite technical talents in “cloud, large, physical, and intelligent”. At the same time, it is necessary to highlight precision, adopt a variety of methods, and actively introduce a group of “highly sophisticated and talented” talents.

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