

# ANALYSIS OF CHINA'S INNOVATION POTENTIAL DEVELOPMENT

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Currently, one of the main factors of successful growth of the economy of a country is the active development of the innovation potential, which refers to the ability to create, develop, implement and disseminate useful innovations (new knowledge, ideas, technologies, goods, services, management methods, processes, socio-cultural patterns, etc.). This article identifies the definition of a country's innovative potential, analyzes current trends in the innovation potential development of China, points out the impacts of innovation potential development on the Chinese economy, and proposes possible directions and ways to form an innovation system with Chinese characteristics.

**Key words:** innovation; innovation potential; national innovation system; China; R&D; the 14th Five-Year Plan.

## АНАЛИЗ РАЗВИТИЯ ИННОВАЦИОННОГО ПОТЕНЦИАЛА КИТАЯ

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В настоящее время одним из основных факторов успешного роста экономики страны является активное развитие инновационного потенциала, под которым понимается способность создавать, разрабатывать, внедрять и распространять инновации (новые знания, идеи, технологии, товары, услуги, методы управления, процессы, социокультурные модели и др.). В данной статье определено понятие инновационного потенциала страны, рассмотрены современные тенденции развития инновационного потенциала Китая, проанализировано влияние развития инновационного потенциала на китайскую экономику, предложены возможные направления и пути формирования инновационной системы с китайской спецификой.

**Ключевые слова:** инновации; инновационный потенциал; национальная инновационная система; Китай; НИОКР; 14-я пятилетка.

In the economic literature, “innovation” is interpreted as the transformation of potential scientific and technological progress into reality embodied in new products and technologies. In other words, innovation can be called the process of using new products and technologies in production, which is the result of human intellectual activity, which has unique characteristics that improve performance and influence the improvement of the level of development of certain areas of human activity. A country's innovative potential refers to the ability to create, develop, implement and disseminate useful innovations (new knowledge, ideas, technologies, goods, services, management methods, processes, socio-cultural patterns, etc.). The components of innovation potential include:

- the achieved level of scientific and technological development (availability of scientific and technological base, own and acquired developments and inventions, as well as the possibility and ability to implement the results of scientific activity in production);
- availability of the necessary institutional basis for the implementation of innovative projects and their implementation (the level of development of market institutions);
- infrastructure (provision of the country with the infrastructure necessary for the passage of innovation at all stages of the innovation cycle);
- human resources (educational level of human resources, which also includes the level of innovation culture);
- investment (effectiveness of investment in innovative projects);
- conditions (prerequisites and constraints) of the and external environment, reflecting the interaction of innovation potential with other subsystems of socio-economic potential of economic systems [1].

Thus, innovation potential can be considered as a system, which contributes to the functioning of all mechanisms for the implementation of innovative activities. The innovation policy of a country plays an important role in the formation and implementation of the innovative potential of the country.

China is a country that has made a great leap forward in R&D and innovation, relying on those areas, which can create and implement new goods, services and technologies, occupying the leading position in the world markets. This dramatic breakthrough by China in the development of its innovations has been called by analysts the “Chinese innovation miracle”. This is mainly credited to its specific programs of modernization of science and technology emerged to carry out modernization. The Chinese government adopted a number of documents defining science policy and building a national innovation system: the State Program for Long- and Medium-Term Planning of Science and Technology Development 2006-2020; the Planning Program for Improving the Quality of Science in the Country in 2006-2010-2020; State long-

term and medium-term planning program for talent development 2010-2020; China's Five-Year National Economic and Social Development Plan 2021-2025 (the 14th Five-Year Plan). Moreover, the "Torch" program is one of the main programs that was aimed at creating a favorable environment for innovation, regarding innovation clusters; business incubators; Seed investments; and Venture capital funds.

Among them, innovation clusters play an increasingly important role in the implementation of innovation potential, because it is known that different industries develop faster if they are concentrated in one geographical area. Therefore, China has started to deliberately concentrate on resources, benefits and infrastructure for innovative businesses in certain places. Many technology parks have appeared, and the first one, the famous Zhongguancun, was founded in the 1950s as a scientific center of the Chinese Academy of Sciences. In the early 80s, non-state innovative organizations began to appear there, the first of which was the Advanced Technology Support Service consulting company. It was from Zhongguancun that China's technology giants – Lenovo, Founder Group and many others – emerged. So, the first companies like China Telecom, Hengjiweiye have contracted with Technopark and negotiated different projects, and invested money to develop solutions that are useful to them.

Later, other specialized economic and technological development zones were created to support innovative entrepreneurship and attract foreign direct investment, including venture investment: Donghu (in Wuhan) – optoelectronics; Zhongjian (in Shanghai) – integrated circuits and pharmaceuticals; Tianjin – biotech and new energy sources; Shenzhen and others. These zones also provide many incentives for businesses, with a profit tax of only about 15% plus various tax deductions for businesses that spend at least 6% of profits on R&D and at least 10% of staff, office and equipment rent is subsidized [2].

Incubators are an important element in the whole innovation system of China. The largest incubators in Zhongguancun, which include Innovation Works, Legendstar, Tsinghua Science Park, Huailongsen International Enterprise Incubator, etc., produce over 3,000 startups annually [3].

Apart from that, China's venture capital (VC) market today is one of the signs of the country's innovation development at its current stage. In 2018, according to PitchBook, China accounted for about 30% of global venture capital investment [2]. In 2022, China's regulatory crackdown on tech companies, coupled with a stringent zero-COVID policy has denied investors confidence in the country's startups. According to GlobalData, the VC financing deal volume in China fell to 3,755 and the disclosed funding value registered a drop to 57.4 billion US dollars, which accounted for 13.6% and 14.1% share of global VC funding volume and value, respectively [4].

Due to the implementation of innovative potential, China has demonstrated unprecedented economic growth in its history. China has also become the second largest economy in the world, the largest industrial country, the largest exporter of goods and the largest country in the world in foreign exchange reserves. China's GDP grew from 150 billion US dollars in 1978 to 17.94 trillion US dollars in 2022, and its GDP per capita rose from 156 US dollars in 1978 to 12,732 US dollars in 2022. The country's middle class accounted for over 30 % of the total population. China's trade in goods increased from 21 billion US dollars in 1978 to 6.31 trillion US dollars in 2022. Foreign exchange reserves rose from 170 million US dollars in 1978 to 3.13 trillion US dollars in 2022. This shows that China is a major stabilizer and driver of global economic growth [5; 6].

It should be noted that during the 14<sup>th</sup> Five-Year Plan period, a number of directions would be concentrated on high-quality development. Meanwhile, considering that one of the main elements of the structure of innovation potential development is sustained investment in R&D, during this period, the average annual growth of investment in R&D until 2025 should be 7%. This indicator is comparable with the national GDP growth rate, which in 2025 would increase from 10,829 billion US dollars to 15,470 billion US dollars [7; 8].

However, the main task of the 14<sup>th</sup> Five-Year Plan is the acceleration and gradual development of digitalization of the economy, which affects the provision of all the necessary conditions for the creation of a digital society and digital government. Thus, there are certain achievements to date, which are planned to increase, where the added value of the major sectors of the digital economy reached 7.8% of China's GDP by 2020 and is expected to increase to 10% by 2025, and the added value of new industries to 17% of GDP [8].

In conclusion, China is entering the era of innovative globalization. It seeks to take the lead in shaping the architecture of this innovative globalization, creating and providing some or other conditions for its development on the basis of a comprehensive transformation of the national economy and social sphere, as well as the formation of its own innovation system. This system not only must be highly competitive and interact with foreign innovation systems to the maximum extent and with maximum effect, but also must be flexible and adaptive, which is especially important in the context of growing global instability. Thus, in order to form this innovation system, *on the one hand*, the government should not impede the introduction of innovations by creating barriers to their diffusion, it should develop a new economic policy and create a new system of innovation and production to meet the requirements of advanced and watershed scientific and technological innovation so as to facilitate the transition to a new path of innovation development and a new model of "Chinese innovation". *On the other hand*, Chinese enterprises should

ensure high quality in both the factors of production and the products they produce. This challenges strategic thinking, economic policy and the innovation system of the past in order to bridge the technological gap.

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