

# **The development of Chinese innovation capacity**

## **Abstract**

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In recent years, a proposal has been put forward by the Chinese government aimed at making China become one of most innovative countries by the year 2020. And a series of policies and initiatives such as the “national mid- and long-term plan for the development of science and technology” are being implemented. These policies greatly accelerate the development of basic science & frontier technologies, which meanwhile enhance the progress of national innovation capacity. In order to achieve the aim, an indicator system should be set up to evaluate the current situation, identify the gap to major innovative countries, and monitor the evolution process of Chinese innovation capacity. Besides, the national innovation capacity of China in 2020 is forecasted as well, taking into account both Chinese development trends and the long-term influence of S&T policies.

In a broad sense, national innovation capacity means the capability of a country to successfully integrate all the innovative resources and effectively transform them into national wealth. It greatly determines the structure and progress of national industries, which ultimately influence a nation's competitive advantage and sustainable development. An indicator system is developed in the paper, which aims to capture the nature of national innovation capacity and evaluate China's recent progress in innovation capacity as well.

The indicator system covers four dimensions of innovation, which are input, throughput, innovative conditions, and diffusion (social and economic influence). Meanwhile, both innovation scale and efficiency should be considered. Input measures the R&D expenditure of a country in terms of GERD and the number of researchers. Throughput measures intermediate outcomes of innovation in terms of scientific papers and patents. Innovative conditions indicators reflect the macro innovative environment, including the penetration of internet and personal computers. The diffusion indicators consider the social, economic and environmental influence of national innovation in terms of GDP per capita, technology balance of payments, energy intensity, and CO<sub>2</sub> intensity. Data are collected from 38 countries during the years 2000 to 2006, including major innovative countries and important developing countries. The Delphi method is introduced here to identify the weight of each indicator.

The results showed that China has made significant progress in terms of innovation capacity. In 2000, China ranked 28<sup>th</sup> among 38 countries, while in

the year 2006, China jumped to the 17<sup>th</sup> position. From 2000 to 2006, the top 4 countries in terms of national innovation capacity did not change, with the USA ranked first with the following countries of Japan, Sweden, and Germany. In 2006, the other top 10 countries were the United Kingdom, Korea, France, the Netherlands, and Luxembourg. However, in term of the four subsectors, China performed quite differently, which demonstrates the advantages and disadvantages of China in the capacity-building process of national innovation.

At the end of the paper, the future development of Chinese innovation capacity is forecasted, based on the previous development trends and the long-term influence of current policy measures implemented by the Chinese government. I anticipate that in the year 2020 China will become one of the innovative countries in the world, ranking after the USA and Japan and equal to Germany and South Korea.