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China

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CHINA

China's R&D intensity reached 1.42% of GDP in 2006, thanks to a rapid, decade-long increase in R&D expenditure. The government intends to have R&D intensity reach 2% by 2010. Owing to the market-oriented reforms of the R&D system since 1985, industry's share of GERD rose to 69% in 2006, a similar level to that in Finland, Germany and Sweden.

China has the world's second largest stock of human resources for science and technology (HRST), just after the United States and ahead of Japan. Its share of university graduates with degrees in science and engineering is 39.2%, almost twice that of the OECD average. On the other hand, the overall level of tertiary attainment is still quite low, even by developing country standards, and the number of researchers per 1 000 total employment is very low, at about one-tenth of the level of Finland, the world leader.

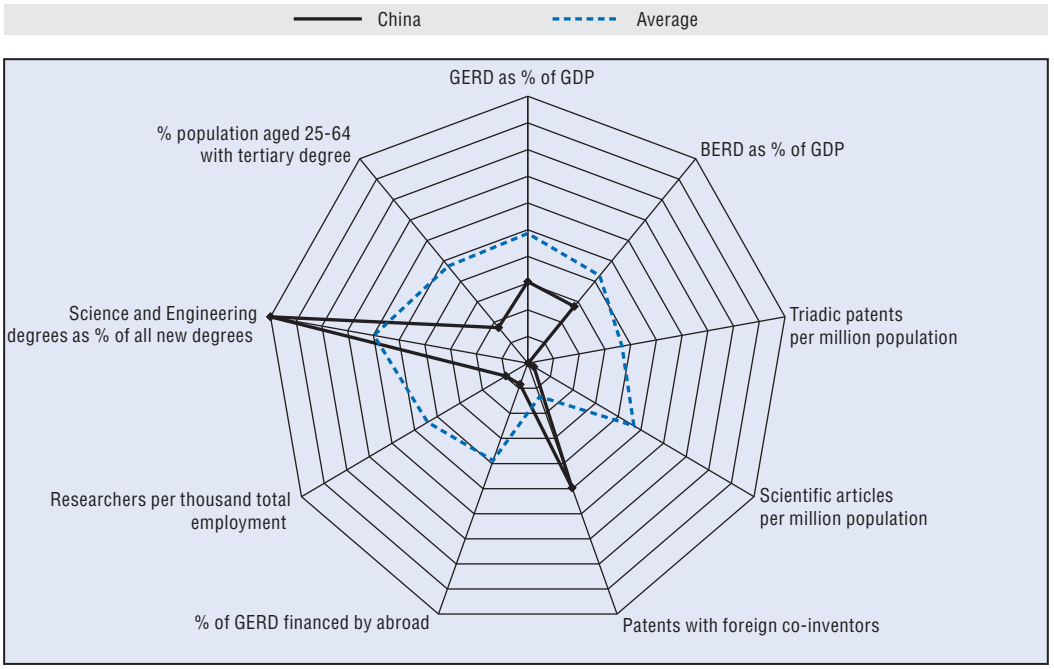
Production of triadic patent families and scientific articles is still very low on a per capita basis. Foreign inventors own a large share of invention patents granted in China, and foreign-owned firms account for an increasing share of high-technology exports. In absolute numbers, however, China entered the top 15 for triadic patent families in 2005. It also accounted for 5.9% of the world's scientific articles, up from 1.6% in 1995, in fifth place behind the United States, Japan, Germany and the United Kingdom.

Only a small share of gross domestic expenditure on R&D is funded from abroad. However, motivated by the availability of quality HRST and a large domestic market, inflows of foreign R&D investment have increased strongly in the past years, and funding from foreign firms based in China and abroad is estimated to account for 25% of business enterprise R&D. This is set to continue, as multinational firms consider China a prime destination for future R&D investment. While foreign ownership of Chinese inventions held abroad is still at 47%, it has decreased from 55% in the early 1990s, owing in part to a marked increase in domestic patenting activity.

The Medium and Long-term S&T Strategic Plan (2006-20) provides a blueprint for further developing China's innovation capacity and for becoming an innovation-oriented country by 2020. However, achieving these strategic objectives requires not only high investment in R&D, but also overcoming the weaknesses in the innovation system and improving government innovation policies and instruments. A priority is to improve the framework conditions for innovation, particularly with respect to the environment, the infrastructure for financing R&D, entrepreneurship and small and medium-sized enterprises, corporate governance, and the protection of intellectual property rights.

As noted in the *OECD Review of Innovation Policy: China* (2008), the government will need to move away from a top-down approach, reduce over-reliance on public R&D funding programmes and adopt a view of innovation that goes beyond high-technology sectors. Innovation governance and system efficiency could also benefit from improved co-ordination between the central and regional levels and across agencies.

Science and innovation profile of China



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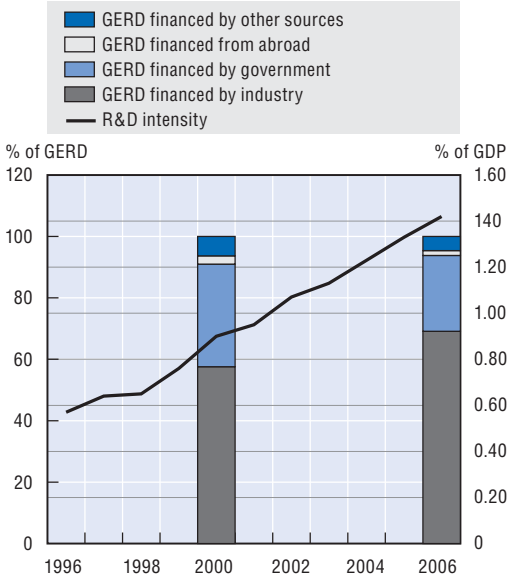
R&D intensity and the structure of gross domestic expenditure on R&D, 1996-2006



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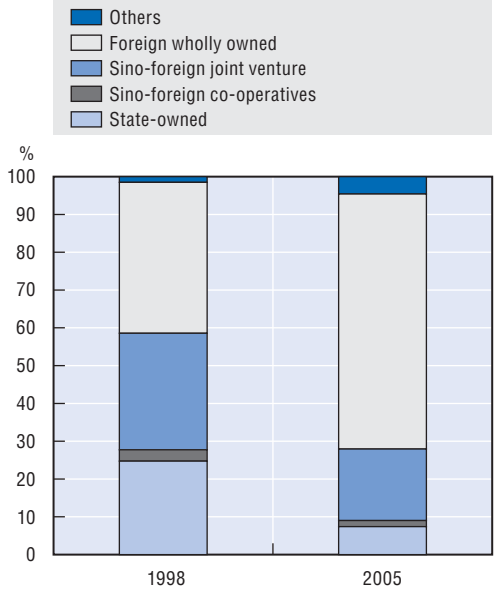
High-technology exports by firm ownership



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Chapter 3

Science and Innovation: Country Notes

This chapter complements Chapters 1 and 2 by providing an individual profile of the science and innovation performance of each OECD country, as well as observers to the OECD Committee on Science and Technology Policy (Brazil, Chile, China, Israel, Russia and South Africa), in relation to their national context and current policy issues. The graphs enable countries to see some of their relative strengths and weaknesses as compared to other countries' performance.

The common indicators in the first (radar) graphs were selected on the basis of current policy issues. They focus on research and innovation inputs, scientific and innovation outputs, linkages and networks, including international linkages, and human resources. A standard set of indicators is used; however, when data are not available, alternative indicators may be applied. The annex provides a full list and description of the indicators, methodological notes and data sources.

For each indicator in the radar graph, the country with the maximum value is set at 100, taking into account all OECD and non-OECD countries with available data. The average is calculated by taking into account all OECD countries with available data (non-OECD countries are excluded from the average). The annex provides further details.

The radar graphs are accompanied by country-specific figures that further illustrate national characteristics and underpin policy-specific comments. The selection of comparator countries in these graphs aims to highlight the general position of the focal country and, in some instances, data on other countries may also be shown.

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