SOUTH AFRICA

South Africa's innovation system is in transition. R&D intensity, with gross domestic expenditure on R&D (GERD) at 0.92% of GDP in 2005, is now broadly in line with the country's income level, and growth in GERD has been robust in recent years, with real expenditure doubling from 1997 to 2005. Business funds 44% of GERD, down from 56% in 2001, contrary to trends in transition economies such as China. However, South Africa has a core of strong innovative business enterprises, and the share of GERD performed by the business sector (58%) is similar to or higher than some OECD countries with higher R&D intensity, such as Italy, Spain and Canada. The ratio of business expenditure on R&D to GDP stood at 0.53% in 2005.

The current level of human resources for science and technology (HRST) is quite low. However, the share of science and engineering graduates in new degrees awarded is growing, which may help strengthen future stocks of HRST.

The level of R&D funding from abroad appears exceptionally high: at 13.6%, it is the highest of all non-OECD countries considered. This may be due to South Africa's special position and competence as a host for major international medical research undertakings, especially related to HIV/AIDS. On other indicators, South Africa's integration in international R&D activities is quite moderate.

South Africa accounted for 0.3% of the world's scientific articles in 2005, down from 0.4% in 1995, and accounted for 0.1% of triadic patent families in 2005 as in 1995. This is relatively low compared to the other countries considered.

The *OECD Review of Innovation Policy: South Africa* (2007) noted that a key challenge for the development of a knowledge-based economy in South Africa is a shortage of human resources, which is partly a legacy of the apartheid regime. Two areas in particular are emerging as concerns for innovation performance: the first is the gap between the supply of design, engineering and related managerial and technical capabilities and the demand for such resources generated by the increased rate of investment in the economy; the second is the capacity of university research to expand to meet demand, given the ageing of the research population and the weaknesses in the human resource "pipeline" of replacement cohorts.

A further challenge is to strengthen innovation capabilities across a wider range of economic activities, including those of SMEs. This is vital for more knowledge-intensive, higher value-added and productivity-enhancing economic activity. Building on the existing contribution of business to R&D, as well as its activities in design, engineering and associated management activities, and supporting the accumulation and diffusion of knowledge resources throughout the economy, will be central to spreading economic activity and success more widely.

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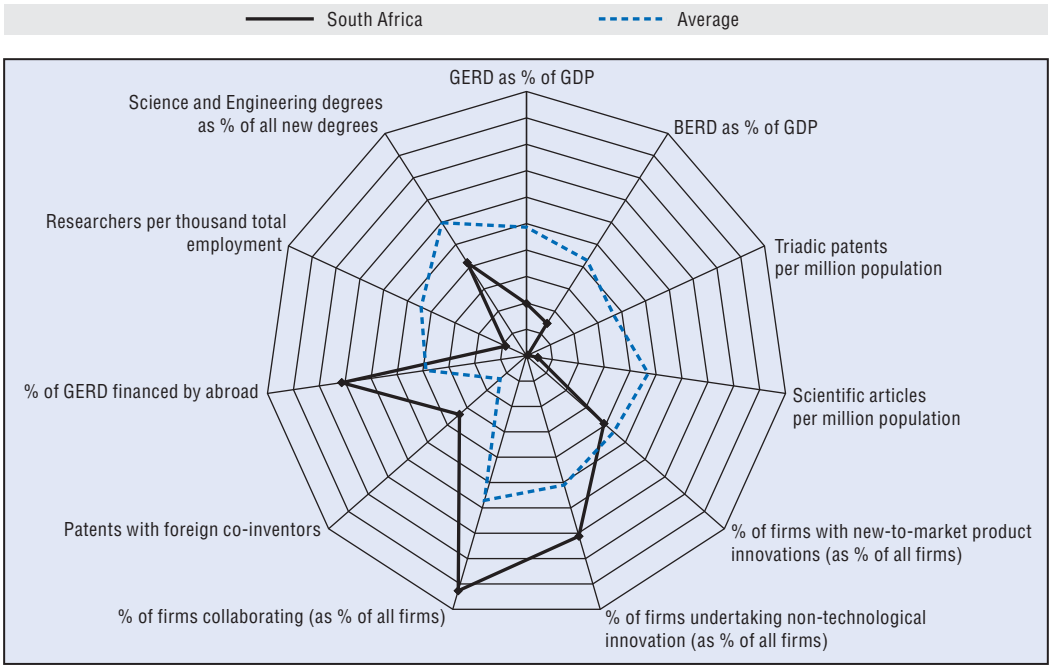
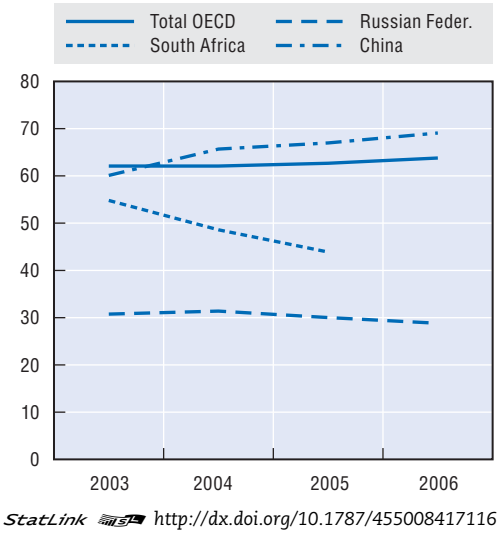
Science and innovation profile of South Africa



StatLink http://dx.doi.org/10.1787/455008367655

Percentage of gross domestic expenditure on R&D financed by the business sector



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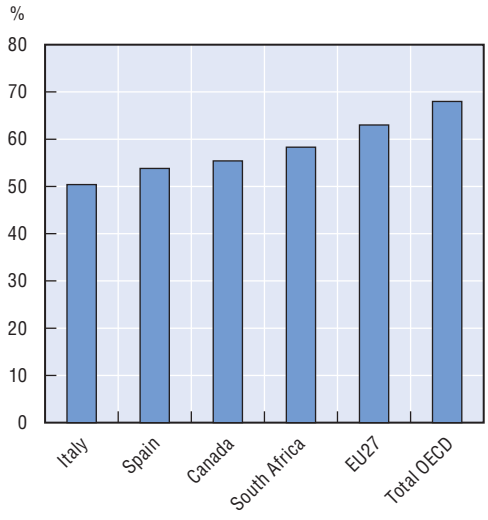
Share of gross domestic expenditure on R&D performed by the business sector, 2005



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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.

Table of Contents

Boxes

Tables

Figures