

EGYPT

Hot STI issues

- Enhancing involvement of the business sector in R&D and innovation.
- Improving the supply of human capital in S&T through a better education system and increased attractiveness of research careers.

General features of the STI system: Egypt is a diversified middle-income economy and one of the most developed and dynamic economies in North Africa and the Middle East. It is richly endowed with natural resources (fertile plains of the Nile valley, coal deposits, oil and gas resources) and benefits from a central location for international traffic (Suez Canal). Although agriculture contributes significantly to GDP, economic growth has been driven by the expansion of industrial and services activities. Recent economic reforms have permitted growing inflows of FDI and strengthened the presence of multinationals. The ICT sector has particularly benefited from liberalisation. In 2010 revenues from telecommunications services accounted for 3.7% of GDP, on par with Japan and well ahead of the United States (Panel 2). The number of mobile cellular telephone subscribers exploded between 2005 and 2010 (Panel 3). In spite of an underdeveloped mortgage market, the banking system has expanded and opened up new funding opportunities. In 2011, Egypt ranked among the top five remittance recipient countries. The USD 14 billion in remittance inflows help to sustain more demand than national production capacities can meet. The country's R&D capabilities and infrastructures are poorly developed. Firms' contribution to R&D is negligible (and no reliable data are available). The relative number of patents is very low (Panel 1^(f)). Firms tend to innovate by adapting imported technologies and absorbing

foreign knowledge through international collaboration. Egypt produces 39% of its scientific articles and 24% of its PCT patent applications with foreign counterparts (1^(q) (r)). Human resources in S&T are poorly developed: only 22% of persons in employment were in S&T jobs in 2007 (1^(v)) and the researcher population is small and shrinking (from 49 000 to 36 000 FTE between 2007 and 2009).

Recent changes in STI expenditures: Egypt's GERD was a low 0.21% of GDP in 2009. After having increased in parallel to GDP from 2005, R&D expenditures decreased sharply in 2009 and GERD intensity fell below its 2005 level (0.24%). The global crisis and the Arab Spring events, which spread to Egypt from January 2011, have had profound political and economic consequences. However, the government has reinforced its commitment to S&T, increased the research budget significantly, and sets a target for GERD of 1% of GDP.

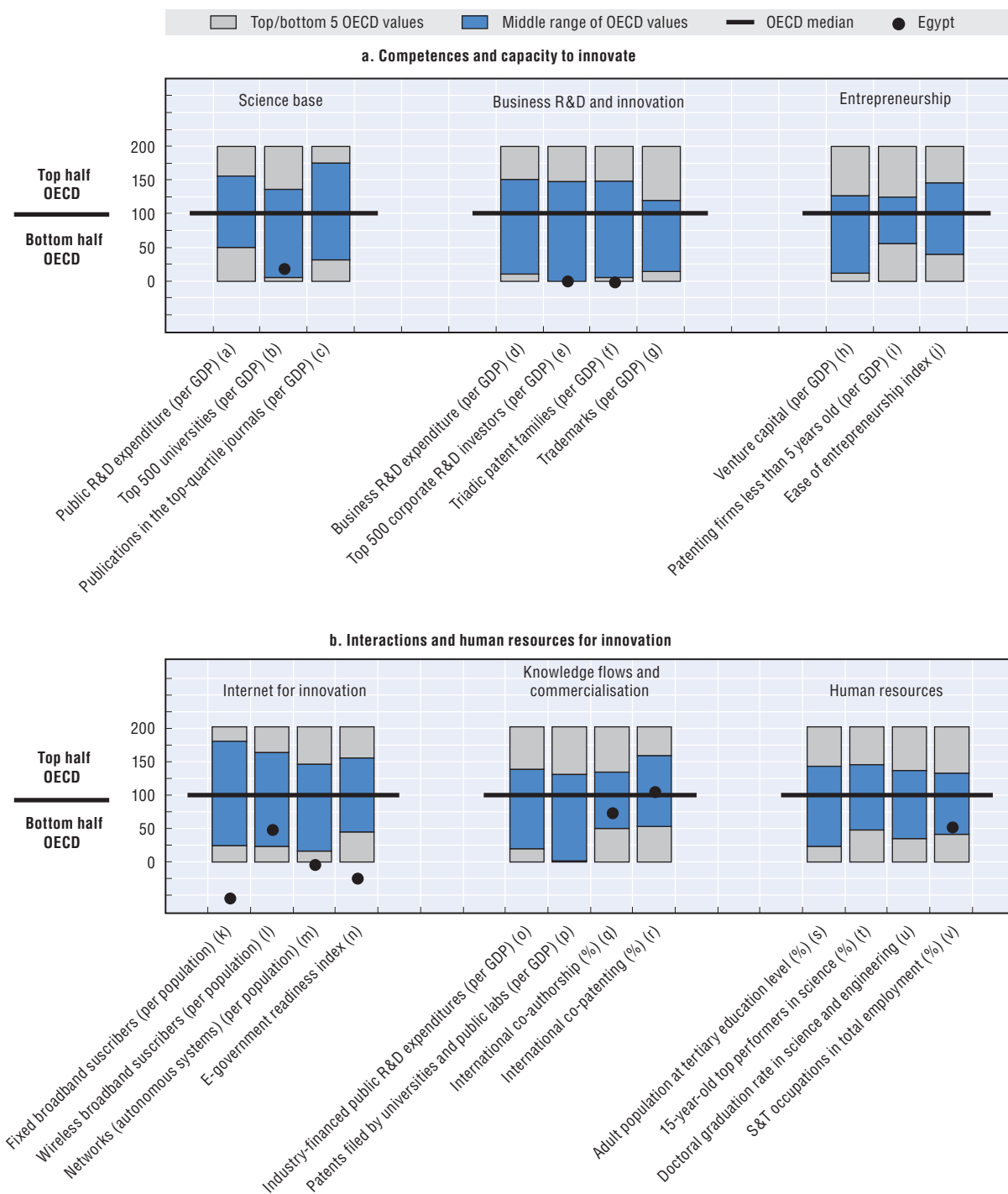
Overall STI strategy: Following an overall evaluation of the national S&T system (2006), Egypt launched the Decade for Science and Technology 2007-16 in order to foster co-operation with developed economies and to strengthen national S&T capabilities. The Developing Scientific Research Plan 2007-16 was introduced to restructure S&T governance, to improve national S&T capabilities (investments and human resources), to develop a complete value chain from research to commercialisation, and to disseminate S&T culture across society. The Plan

Key figures

Labour productivity, GDP per hour worked in USD, 2010 (annual growth rate, 2005-10)	n.a.	GERD, as % of GDP, 2009 (annual growth rate, 2005-09)	0.21 (+3.5)
Environmental productivity, GDP per unit of CO₂ emitted in USD (annual growth rate, 2005-09)	2.68 (+3.0)	GERD publicly financed, as % of GDP, 2009 (annual growth rate, 2005-09)	n.a. n.a.

Figure 10.12. **Science and innovation in Egypt**

Panel 1. Comparative performance of national science and innovation systems, 2011



Note: Normalised index of performance relative to the median values in the OECD area (Index median = 100).

Source: See reader's guide and methodological annex.

StatLink <http://dx.doi.org/10.1787/888932690358>

adopted a sector- and technology-oriented approach. In February 2012, a new strategy was announced, primarily to foster the commercialisation of research.

STI policy governance: STI policy governance has undergone major changes since 2007: creation of the Ministry of Higher Education and Scientific Research which designs research policies; creation of the Higher Council for Science and Technology (HCST), a consultative body for setting S&T strategy and priorities; restructuration of the Academy of Scientific Research and Technology (ASRT), as policy advisor in charge of assessment and evaluation; and transfer of ASRT funding competences to the newly established Science and Technology Development Fund (STDF), which provides financial support on a competitive basis.

Science base: The bulk of research activities are carried out within universities, most of which have been established recently. Over-regulated and heavily centralised governance, as well as the lack of a clearly defined strategy, remain major obstacles to the formation of an efficient public research system. In addition few researchers in universities and PRIs are young, and many are absorbed by teaching assignments and heavy administrative duties to the detriment of research activities.

Business R&D and innovation: The contribution of the business sector to R&D and innovation is essentially insignificant. There is now greater policy emphasis on the involvement of the private sector and the commercialisation of research outcomes geared towards economic and social needs.

Knowledge flows and commercialisation: Promotion of academia-industry collaboration has been the main policy instrument for increasing the business sector's contribution to R&D and innovation. Many STDF programmes and grant schemes under the Research, Development and Innovation (RDI) Programme encourage proposals by consortia of companies, universities and PRIs. Various infrastructures have been established to support public-private partnerships, such as the Zewail City of Science and Technology, inaugurated in 2011, which encompasses a university, research centres and a technology park. The Faculty for Every Factory

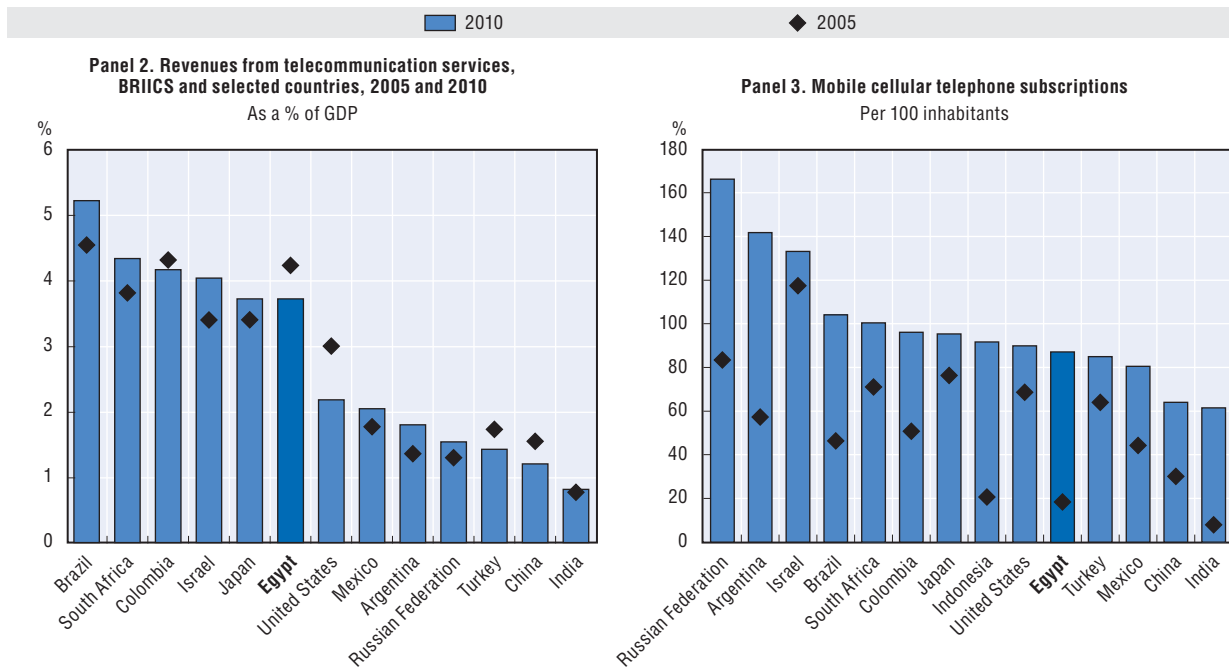
Programme also aims to accelerate knowledge flows between academia and industry by supporting the hiring of researchers by companies.

Globalisation: The expansion of scientific and research collaboration with developed economies is one of the priorities of Egypt's current STI strategy. The RDI programme was launched in 2007 with a USD 13.4 million grant from the European Union to foster linkages between academia and industry, but also to ease Egypt's integration in the European Research Area through participation in the Seventh Framework Programme. Egypt has also signed bilateral agreements for the funding of joint research projects and mobility programmes (e.g. the German Egyptian Research Fund GERF or the US-Egypt Science and Technology Joint Fund). As part of the objective to improve the quality of the national research system, programmes such as the Road to Nobel and the Reintegration grants have been introduced to attract highly qualified foreign and national expatriate researchers.

Human resources: The government's efforts have focused on improving the quality of the education system. A National Strategic Plan for Pre-University Education Reform (2007/08-2011/12) was introduced to develop a system that would be more responsive to the requirements of a knowledge-based economy. The Higher Education Reform Strategy (2002-17) aims to improve the quality and efficiency of the higher education system, notably through the Higher Education Enhancement Programme Fund and the development of more efficient higher education funding mechanisms and the establishment of a National Quality Assurance and Accreditation Agency.

Green innovation: Egypt suffers from serious water scarcity and is threatened by desertification and permanent soil damage. The development of new and renewable energies and the shift away from current oil dependency have been identified as a national STI policy priority. A strategy adopted in 2008 aimed to diversify the production of energy and increase consumption of renewable energy produced especially from wind power.

ICT sector in Egypt, BRIICS and selected countries, 2005-10



Note: BRIICS=Brazil, Russian Federation, India, Indonesia, People's Republic of China, South Africa.

Source: ITU (International Telecommunication Union), World Telecommunication/ICT Indicators, 2011.