

Egypt

Egypt is a lower middle-income economy that has grown little in per capita terms since 2011. High inflation, public debt, high unemployment rates and social inequalities pose important challenges.

In this context, the government has committed to increase the level of investment in S&T in order to sustain growth and improve the quality of life. This is set out in the National Strategy for Science, Technology and Innovation for 2015 2030. There are plans to increase GERD, which was 0.7% in 2013, to 1%. The global crisis and the events of the Arab Spring strongly affected economic policy.

Hot Issues: Improving direct and indirect knowledge transfers

The contribution of the business sector to R&D and innovation has been almost insignificant. The National Strategy for Science, Technology and Innovation for 2015 2030 emphasises the need to foster the commercialisation of research and involve the private sector in technology transfer and research activities. Several programmes and grant schemes from the Science and Technology Development Fund (STDF) and Academy of Scientific Research and Technology (ASRT) are dedicated to promoting collaboration between academia and industry. The Research, Development and Innovation (RDI) Programme, introduced in 2007, allocated EU funding of EUR 11 million for 2007 2010 to foster linkages between academia and industry through the EU Egypt Innovation Fund (EEIF). The programme was continued in 2011 with an additional EUR 20 million grant. The STDF and ASRT Demand-Driven Projects (DDP) is designed to address the needs of the private sector by financing universities and PRIs (with grants of up to 10 million Egyptian pounds – EGP) each for a maximum period of three years) to perform applied research in collaboration with private beneficiaries. Other measures include infrastructures 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.

Addressing challenges of STI globalisation and increasing international cooperation

In recent years, Egypt has put strong emphasis on the development of international partnerships, in particular with developed countries, and on the integration of its innovation system in global knowledge networks. The previously mentioned RDI programme was designed to ease Egypt's integration into the European Research Area by explicitly ensuring Egypt's participation in the European Union's (EU) Seventh Framework Programme. Moreover, STDF provides grants for joint research by promoting researcher mobility on the basis of bilateral agreements with various countries, including the US, UK, Germany, Russia, France, Italy and Jordan. For instance, the German-Egyptian Research Fund (GERF), started in 2011 and still active as of May 2016, amounts to a total of EUR 1 million per year from each side and provides grants up to EUR 200 000 each for joint projects. Finally, re integration grants from the STDF have provided funding for Egyptian researchers who have obtained a PhD degree abroad to return and perform research in Egypt (maximum of EGP 1 500 000 for up to three years).

Improving overall human resources and skills

Skills shortages, particularly in science, technology, engineering and mathematics (STEM), weaken the potential of Egypt's STI system. The National Strategic Plan for Pre University Education 2014 2030 is introducing reforms to the higher education system to address these shortcomings. Moreover, the Higher Education Enhancement Programme (HEEP), financed by the World Bank and EU over 2013 2017, aims: to expand access to education, particularly for girls, through the construction of new schools; to improve the quality of student learning by increasing the quality of teaching and pre service training; and to enhance the efficiency of the education system, in

particular by introducing mechanisms to improve teacher motivation and accountability. To date, while participation in education, including higher education, has risen, educational quality remains weak throughout the system. At graduate level, recent initiatives, such as the ASRT grants and Scientists for New Generation (SNG) in particular, offer grants for training a new generation of graduates to master's degree, in order to bridge the gap between scientific research and the national labour market, which requires a high set of skills, getting good opportunities for cooperation with leading scientists and participating in research projects in scientific fields of national interest.

Building a broad innovation culture

The government aims to promote a broad innovation culture to involve society at large, as outlined in the strategy of the Minister of Scientific Research. Some specific initiatives introduced include the establishment of science clubs, science museums and digital libraries and specific school programmes. The ASRT launched a Children University programme, to be implemented in cooperation with Egyptian universities, with a view to developing the Egyptian children's skills and raising participation in university studies in a variety of fields, such as health, energy, diversity, environmental humanities, Egyptology and art areas of age. It also aims to raise awareness among youth about universities' role, academic culture and educational perspectives. It also aims to help universities be more responsive and open to the society.

Selected Highlights: New challenges

Egypt suffers from water scarcity and desertification, and permanent soil damage threatens parts of its territory. The development of new and renewable energies and a shift away from its current oil dependency have consequently been identified as a national STI policy priority. Green innovation has also received wider attention: a strategy adopted in 2008 aimed to diversify the production of energy and increase the consumption of the renewable energy produced, especially from wind power. Recently, at the beginning of 2016, the new Sustainable Development Strategy: Egypt Vision 2030 (SDS -Egypt 2030) addresses the challenges raised by the development process in Egypt. These challenges include the scarcity of natural resources such as energy, land and water (in addition to environmental degradation); human resources development including population, health, and education; the inadequacy of the governance system; and the absence of systems that foster creativity and innovation. The strategy adopts a number of goals and targets, in order to transform these elements into incentives for development, instead of being major challenges. Public research was also oriented towards impelling social challenges in the area of health, food security and agriculture.

STI policy governance

The Developing Higher Education and Scientific Research Plan 2015-30 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 the society. Since 2007, STI policy governance has undergone major changes: the Ministry of Higher Education and Scientific Research and the Higher Council for Science and Technology (HCST), a consultative body for setting S&T strategy and priorities, were created, and the Academy of Scientific Research and Technology (ASRT) was restructured. The objective for the institution is to function as a policy advisor in charge of assessment and evaluation while previous funding competences now fall under the newly established Science and Technology Development Fund (STDF) and the Academy of Scientific Research and Technology (ASRT). In 2016, the Ministry of Higher Education and Scientific Research adapted its strategy (STI- Egypt 2030) to achieve the goals of knowledge, scientific research and innovation pillar. The strategic vision for knowledge, innovation, and scientific research focuses on accomplishing three main objectives within the next 15 years, i.e. creating a stimulating environment for the localisation and production of knowledge, activating and developing an integrated national innovation system and linking the knowledge applications and the innovation outputs with national priorities. Egypt has also made efforts to improve the system of evaluation of research organisations, in particular through the HEEP, and of private sector innovation, with the Egyptian Science, Technology and Innovation Observatory (ESTIO) attached to ASRT. The ESTIO published evaluation reports in 2010, 2014 and 2015 that assess the

performance of research centres, universities and private sector centres based on various STI indicators, including R&D expenditure and personnel, patents, publications, and indicators of students and personnel mobility.

Clusters and regional policies

The Research and Innovation programme (RDI) conducted with the EU also provided financial support for the establishment of innovation clusters. A corresponding call for proposals with funding of EUR 4 million was launched in the third trimester of 2013. A recent more nationally oriented cluster initiative (E KTAs) with a budget of EGP 10 million aims to pool and network national competences in universities, research organisations, NGOs and industry. A national program of technological incubators also exists with STDF funding. Finally, the Information Technology Industry Development Agency supports innovation in ICT by funding incubators and incentives for start ups.

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[5] <https://www.innovationpolicyplatform.org/sti/e-outlook>

[6] https://www.innovationpolicyplatform.org/system/files/STIO%20Key%20messages_0.pdf

[7] http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-innovation-outlook-2016/egypt_sti_in_outlook-2016-57-en

[8] http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-innovation-outlook-2016/sti-country-profiles-reader-s-guide_sti_in_outlook-2016-44-en

[9] http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-innovation-outlook-2016/methodological-annex-to-the-2016-oecd-sti-outlook-country-profiles_sti_in_outlook-2016-95-en