

The UNESCO SCIENCE REPORT 2010

Status of Science, Technology and Innovation in the Arab States

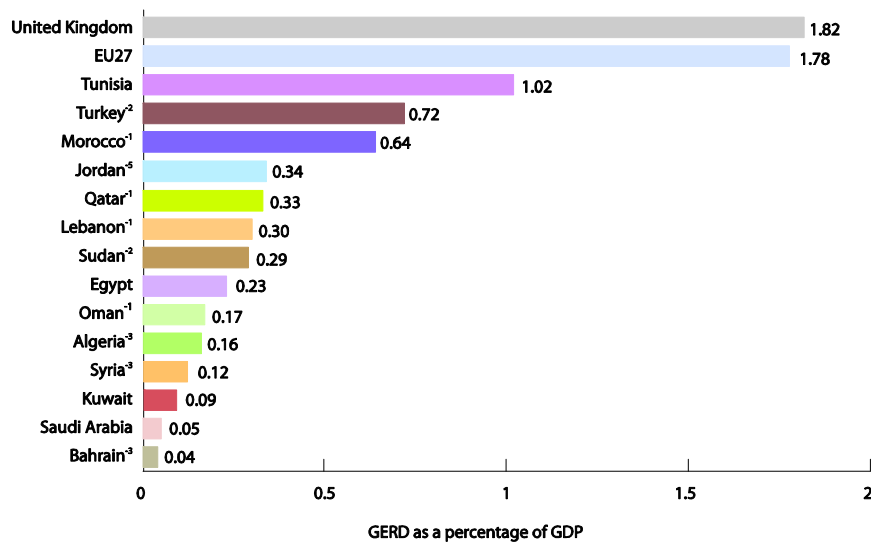
Even oil-rich Arab states need innovation, says UNESCO report

For centuries, Arab States were the hub of groundbreaking science. Now, in light of fluctuating oil prices and the prospect that the oil will run out one day, both oil-producing countries and those dependent on oil imports like Jordan are coming to realize that they will have to invest in innovation to ensure food, water and energy security and develop a knowledge economy. These are some of the findings of the UNESCO Science Report 2010, presented at the Organization's Paris headquarters on 10 November, to coincide with World Science Day. The report presents a global overview of research and development, including a chapter devoted to the Arab States.

The peoples of the Arab states share a language, history and religion, but their societies are very different in terms of natural wealth and their socio-economic systems. Some, notably the Gulf States, are totally dependent on oil and natural gas.

But, despite their wealth, they paradoxically have no solid science and technology (S&T) base and their higher education systems perform poorly when it comes to generating knowledge. The temporary slump in oil prices in 2008, though, acted as a 'wake-up call' for these countries, providing a glimpse of a future without oil revenue and stimulating interest in S&T.

Others, where 70% of the region's population lives, such as Algeria, Egypt, Iraq, Jordan, Lebanon, Libyan Arab Jamahiriya, the Palestinian Autonomous territories, Syria and Tunisia, have modest oil and natural gas reserves, but usually have mature higher education systems, with some of the oldest universities in the Arab world. Egypt, for example, is not wealthy but is nevertheless considered a regional leader in terms of human resources in science and technology and the number of research papers.



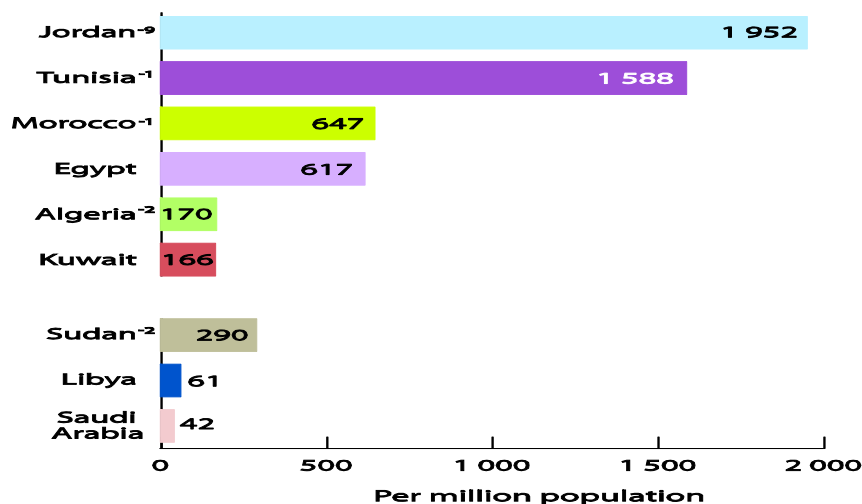
Researchers per Million Population in the Arab region (2007)

There is a third group of countries, including Comoros, Djibouti, Mauritania, Sudan and Yemen, which have underdeveloped natural resources and equally limited human resources, and are among the world's least developed countries.

Gross expenditure on research and development (GERD) has been low in Arab countries for almost four decades, says the report, and is lower than the world average at between 0.1% and 1.0% of gross domestic product (GDP). OECD countries devote about 2.2% of GDP to research and development (R&D). There are signs of change, however. "Basic education is not sufficient to create wealth, to address concerns of food, water and energy security, to provide better health services and better infrastructure. For that science is required," says the report.

intensity, at just over 1.0% of GDP. Tunisia is aiming to devote 1.25% of GDP to GERD by 2009, with business footing 19% of the bill. Meanwhile, Saudi Arabia, whose per capita GDP is the fifth highest in the region, adopted a national plan for science and technology in 2003. It still ranked second to last in 2007, however, in terms of R&D spending as a percentage of GDP (0.05%, ahead of Bahrain at 0.04%).

It is a promising sign that a number of national funds for science, technology and innovation have been set up in recent years. These include the 2008 European Union-Egypt Innovation Fund and two national funds: the Mohammed bin Rashid Al Maktoum Foundation in the United Arab Emirates (2007) and the Middle East Science Fund in Jordan (2009).



Researchers per Million Population in the Arab region (2007)

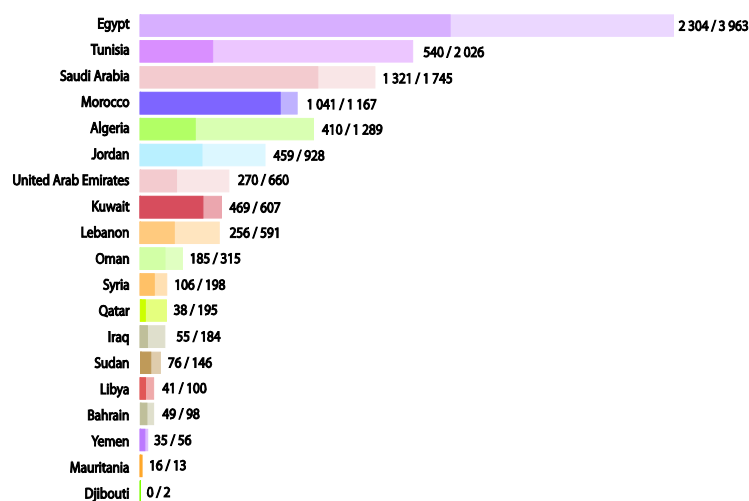
In 2006, Qatar announced that it was raising GERD to 2.8% of GDP over five years. Egypt's GERD has remained stable at about 0.23% since 2007, but the government plans to raise it to 1.0% over five years. Tunisia's GERD has been climbing steadily since 2000 and, in 2007, it was the leading Arab state for R&D

Moreover, an S&T strategy for the entire Arab region is due to be submitted to the Arab Summit in 2011 for adoption. It is expected to propose both national and pan-Arab initiatives in about 14 priority areas, including water, food, agriculture and energy.

Even though they have some long-established universities and an ancient tradition of innovation in science that once revolutionized thinking, the Arab world today counts just 373 researchers per million population, compared to a world average of 1081. Moreover, many of the scientists originating from the Arab world do not contribute to the GDP of their countries, as they reside in the western hemisphere.

(2007), and Lihadh Al-Gazali from the United Arab Emirates, who won the prize in 2008 for her work on genetic disorders.

To make matters worse, says the report, unemployment within the R&D community is high, especially among women researchers, who constitute around 35% of the total researcher community in Arab countries, according to estimates by the UNESCO Institute for Statistics.



Scientific Publications per Million Population (2002/2008)

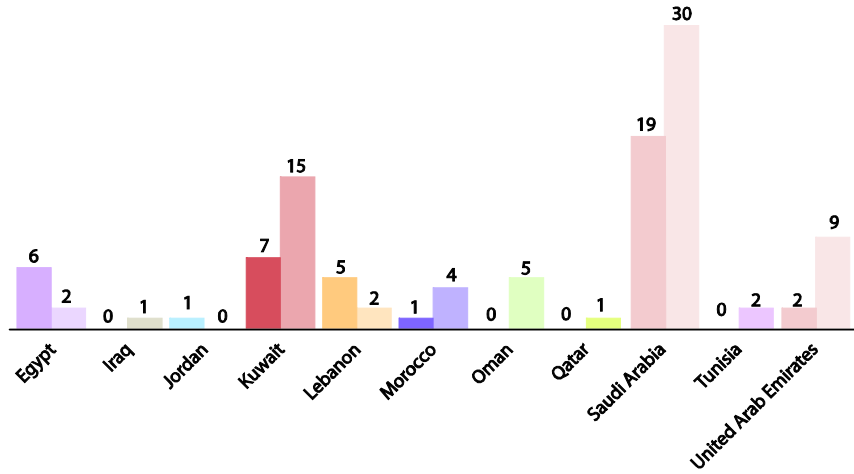
Only one of the world's top hundred highly cited scientists comes from the Arab world, while the region has produced just one Nobel laureate – Egyptian-born Ahmed Zewail, who received the distinction for chemistry in 1999 while working at California Institute of Technology in the USA

Meanwhile, over 30% of the population of Arab countries is less than 15 years of age. Again, this is a double-edged sword for Arab decision-makers. Young populations can stimulate growth and create dynamic societies, particularly if they are well educated and gainfully employed.

Similarly, between 1998 and 2010, only five recipients of the annual L'Oréal-UNESCO Award for Women in Science for Africa and the Arab States came from Arab countries: Egyptian immunologist Rashika El Ridi (2010) and Egyptian physicist Karimat El-Sayed (2004), Tunisian physicists Zohra Ben Lakhdar (2005) and Habiba Bouhamed Chaabouni

However, the fact that Arab governments have been unable to expand the productive capacity to create a repository of jobs may well result in social upheaval. In 2007, the World Bank estimated that the region would have to create over 100 million jobs by 2020 to employ the young men and women joining the employment market.

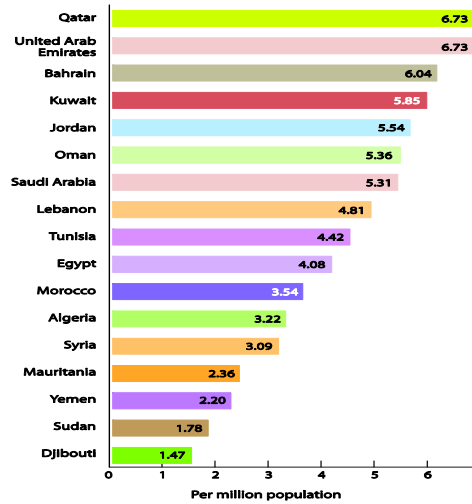
US Patents Granted to Residents of Arab Countries (2003/2008)



There have been initiatives to boost STI in the region, such as the world-class international SESAME synchrotron facility in Jordan, due to come on stream in 2014 under the auspices of UNESCO, and efforts to develop nanotechnology and a high-tech industry in some countries, such as Morocco, Egypt and Saudi Arabia.

But, says the report, with many Arab countries still not possessing a national policy for science, technology and innovation, the private sector often finds itself operating in a policy vacuum that is not conducive to innovation. In 2006, the Arab world represented just 0.1% of the world stock of patents registered at the US, European and Japanese patent offices. The recent development of science parks in Bahrain, Egypt, Jordan, Morocco, Qatar, Saudi Arabia, Tunisia and the United Arab Emirates should help to combat another chronic problem in the region, the lack of public-private linkages for R&D.

With respect to the knowledge economy index, we see that most of the Gulf Countries Council (GCC) countries scores high (> 5.85), while under-developed countries such as Djibouti, Mauritania, Sudan, Yemen have scored less than 2 on a scale of 10.



Knowledge Economy Index for Arab States

(End of Document)

