

China set to outstrip US in science research output

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File photo shows a woman singing a karaoke song accompanied by piano played by a robot at the Science and Technology Museum in Shanghai. China has rocketed into second place in the number of articles published in international science magazines, according to a report released by the Royal Society in London.

China has shot to [second place in the number of articles published](#) in international science magazines and in a few years will take the top spot from the United States, according to a new report.

"[China](#) has already overtaken the UK as the second leading producer of research publications, but some time before 2020 it is expected to surpass the USA," said the report by the Royal Society in London.

While the top 10 is still dominated by the major Western powers, their

share of research papers published is falling, the report said.

And as well as China, Brazil and India are coming up fast.

"The USA leads the world in research, producing 20 percent of the world's authorship of research papers, dominating world university league tables, and investing nearly \$400 billion per year in public and private research and development," said the report released Monday.

"The UK, Japan, Germany and France each also command strong positions in the global league tables, producing high quality publications and attracting researchers to their world class universities and research institutes," it added.

But while these five countries alone produced 59 percent of all spending on science globally, their dominant position was nevertheless slipping.

China shot up from sixth place in the period 1999-2003 (4.4 percent of the total) to second place behind the [United States](#) with 10.2 percent over the years 2004-08, overtaking Japan.

While the United States remained in the top spot, it saw its share shrink from 26.4 percent to 21.2 percent.

Britain remained third with its share at 6.5 percent, down from 7.1 percent.

In a statement last week after Britain's budget however, the Royal Society welcomed finance minister George Osborne's promise of another £100 million (114 million euros, \$160 million) of capital investment in science.

Japan slipped from second to fourth place, falling from 7.8 percent to

6.1 percent, said the report.

Germany, in fifth place, published six percent, down from seven percent, while France, in sixth, published 4.4 percent, down from five percent.

Rounding off the top 10 were Canada, Italy, Spain -- and India, which pushed Russia out of the top 10, moving up from 13th position.

"China's rise up the rankings has been especially striking," said the report.

"China has heavily increased its investment in R&D (research and development), with spending growing by 20 percent per year since 1999 to reach over \$100 billion a year today," it continued.

That came to 1.44 percent of the country's GDP in 2007, it added.



File photo shows visitors admiring exhibits at the science museum in Beijing. The number of articles from emerging nations published in international science magazines is substantially growing.

"China is also turning out huge numbers of science and engineering graduates, with 1.5 million leaving its universities in 2006," the report added.

Further down the rankings, but making dramatic progress, were Iran and Turkey.

Turkey's improved scientific performance had been almost as dramatic as China's, the report said, noting that it had declared research a public priority in the 1990s.

The country had increased its research and development nearly six-fold between 1995 and 2007, and during the same period, the number of researchers there had increased by 43 percent.

Iran was the fastest-growing country in terms of numbers of scientific publications, rising from 736 in 1996 to 13,238 in 2008.

"The scientific world is changing and new players are fast appearing," said Chris Llewellyn Smith, who chaired the study at the Royal Society, Britain's national science academy.

"Beyond the emergence of China, we see the rise of southeast Asian, Middle Eastern, north African and other nations.

"The increase in scientific research and collaboration, which can help us to find solutions to the global challenges we now face, is very welcome.

"However, no historically dominant nation can afford to rest on its laurels if it wants to retain the competitive economic advantage that being a scientific leader brings."

The Royal Society's findings were published in its report entitled

"Knowledge, networks and nations: Global scientific collaboration in the 21st century".

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