

China edges past US in research

It is a mantra that plays readily to US competitive fears: Asia, led by China, is on track to displace the United States as the world's science and technology powerhouse. That message is loud and clear in the 2012 edition of Science and Engineering Indicators, a nearly 600-page snapshot of the state of global research that looks at education, academic infrastructure, the knowledge-based workforce and international markets. Yet some policy experts say that the trends reveal opportunities for partnerships that could benefit the United States.

“Our country needs to worry about science and innovation when so much is being done out of the country. Long-term, this might be harmful to our competitiveness,” says Ray Bowen, chairman of the US National Science Board, which produced the report and oversees one of the US government's main research funding agencies, the National Science Foundation (NSF).

The report finds that by 2009, the combined research and development (R&D) investment from a group of ten Asian economies including China and India, had caught up with that of the United States. “One hopes that the new data will help to reinforce the message that the US government (as well as industry) needs to keep R&D investments at the top of its priorities, despite current fiscal constraints,” says Claude Canizares, vice-president for research at the Massachusetts Institute of Technology in Cambridge.

Yet Ron Hira, an engineer and science-policy expert at the Rochester Institute of Technology in New York, says that the real problem is that the United States invests too little in R&D, but that its ability to channel that investment into high-tech manufacturing has been declining since 2000. Hira says that India and China have been more proactive in protecting and fostering high-tech industries. In the United States, “we have a surplus of researchers doing endless postdocs”, he says. “The worry is how that translates into economic growth.”

Henry Sauermann, who studies science and innovation at the Georgia Institute of Technology in Atlanta, says that the United States may need to alter its perspective. The indicators suggest that intellectual property and trained personnel are increasingly likely to come from Asia and developing countries. The United States should take advantage of Asian ideas and expertise rather than thinking of itself as a producer of value that may be lost, says Sauermann. For example, US researchers could make greater efforts to read Chinese publications and collaborate

with Chinese institutions. “Increasingly we see China paying for research and putting it out there for everyone to use. That’s an opportunity.”

Caroline Wagner, a science-policy expert at Ohio State University in Columbus, says that it is important to be aware that much of the science done in developing countries is not captured by the report, which covers only research published in journals that are indexed by Thomson-Reuters — fewer than 10% of the world total, she estimates. The remainder is likely to be in languages other than English, and benefits its country of origin — through research on Brazilian fruit trees or fungus in China, for example — but not necessarily other members of the global economy, such as the United States. “There’s an awful lot of unseen science,” she says (*Nature* 26-1-12, vol 481, p 420).