

The new geography of science

Science is growing globally and researchers increasingly collaborate globally. The rise of China alongside the Asian 'tiger' economies and the forecast expansion of India are changing the balance of world research capacity. The balance of research competency is shifting too and the conventional domination of 'western' research-based economies and ideas is no longer a certainty.

Bibliographic data are critical in charting this changing geography. Drawing on some recent studies for the UK Office of Science & Innovation, we will review the research growth of China over the last ten years. China has invested most heavily in physical sciences and technology but is now moving into bio-medical sciences. The quality of its output was variable but is rapidly improving.

China's growth is often seen as a challenge to Europe and the US, couched in terms of competition. Iran's science growth is even faster than China's, though based on a much smaller starting platform. But the emergence of research strength in the Far East, and perhaps also in the Middle East, also presents an unprecedented range of opportunities.

Research collaboration is reflected in rapidly diversifying co-authorship of journal articles. Collaboration across borders now represents up to 40% of domestic output in Europe. Analyses also show that this collaboration frequently has much greater impact than the domestic research base of either partner. It provides real value

The literature is not enough, however openly it can be accessed. Collaboration enables sharing of innovative knowledge but – more importantly – it also provides access to ideas and understanding. Different cultural approaches may create new approaches to science. To be successful we need to know not only what people are doing but why they are doing it and how they go about solving research problems.

The internet should allow access to international collaboration for a wider range of researchers. There are signs in current analyses that this is happening. That should affect our interpretation of outcomes and our strategy for research support. But science is very conservative. A key role will be enabling these researchers to track their way across the complex global landscape to find the most valuable information and the most fruitful partnerships.