ENRICO SACCHETTI

The LIGO equipment and observatories were jointly designed and operated by Caltech and MIT scientists.

TESTING TIMES

President Donald Trump has dismissed global warming as a hoax, attempted to slash the number of migrants entering the country, and proposed multi-billion dollar cuts to federal research funding. A large number of key science advisory positions remain vacant, and many of those that have been appointed by the Trump administration have dubious scientific credentials. These measures starve research institutions and make the country's commanding scientific position even more vulnerable.

While the United States is still the global leader in publication output, its share of papers in the Web of Science database has fallen from 30.7% to 25.6% between 2005 and 2015. Its share of the top 1% of highly cited papers has further eroded, from 55.8% to 43.9%.

Since 2012, the country's contribution to the Nature Index has also declined in both relative and absolute terms. At the current pace, China could overtake the US as the top contributor to paper authorship in the index within a decade.

Concerns over the declining science leadership of the US are not new. In 2007, the US National Academy of Sciences published a bleak report suggesting that shrinking investment in research and development, could have worrying ramifications for the country's economy and standard of living.

The report, drafted by a committee of university presidents, CEOs, presidential appointees and Nobel laureates, warned: "Without a renewed effort to bolster the foundations of our competitiveness, we can expect to lose our privileged position." Its recommendations for increased federal investment in basic research, support for outstanding early-career researchers, and preferential visas for high-skilled immigrants with science PhDs, were a sound blueprint for action, but programmes have stalled under Trump's administration.

Now there is pushback. Congress has rejected the deep cuts proposed by Trump, recommending instead an increase in spending for basic research. And the scientific community is beginning to secure its political footing (S10).

Researchers in the US continue to produce brilliant science. In 2016, a US-led collaboration detected gravitational waves emanating from the collision between two giant black holes — a Nobel-winning discovery in physics (S21). The enormous advantage in wealth, population size and quality of education has made the US the envy of other countries, but, without concerted effort, it risks squandering its scientific supremacy.

Smriti Mallapaty
Senior editor, *Nature Index*

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