

nature INDEX 2018 JAPAN

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STALLED AMBITION

A sense of crisis quickened by China's stunning rise has surrounded Japanese science since Nature Index's 2017 Japan supplement highlighted the country's faltering research performance.

This year we report continued decline: a further 3.7% drop in Japan's contribution to high-quality scientific output in 2017 deepens the 19.6% decrease recorded between 2012 and 2016. It doesn't bode well for "Society 5.0", the nickname for Japan's ambition to become a 'super-smart' society. But without the budgetary or human resources to match China, how to stop the drop?

One answer is to boost research productivity. Japan has plenty of scope for that, as the normalized metric introduced in this supplement reveals. Looking at performance relative to the volume of publication output gives a clearer picture of the comparative

effectiveness of Japan's research effort. Normalized weighted fractional count is derived by dividing a country or institution's WFC in the Nature Index by its total number of natural sciences articles in Elsevier's Scopus database. On this measure, Japan overtakes the United Kingdom to move from 5th to 4th place among the world's leading producers of high-quality scientific output in the index.

The bad news for Japan is that it performs worse than 29 other developed economies in the amount of high-quality research it produces per R&D dollar invested. It remains to be seen whether the reforms described in this issue will yield strong enough results for Japan to remain a leading science nation, let alone become the 'super-smart' society of its aspirations.

Catherine Armitage
Chief editor, *Nature Index*

Resistance to reform

S52: Moves to make Japanese universities more agile and dynamic are being met with a stubborn adherence to tradition.

Calling Rikejo

S59: The under-representation of women in Japanese science will not be solved without a change of general work culture, says neuroscientist, **Noriko Osumi**.

Partners in discovery

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Strength from weakness

S61: Plans for a next-level society will demand a much bigger pool of expertise to bring the real and cyber worlds together.

Pillars of a smart society

S62: Meet some Japanese scientists whose work in bionics, autonomous cars, and cyber-commerce, exemplifies the nation's planned trajectory.



Facing down disaster

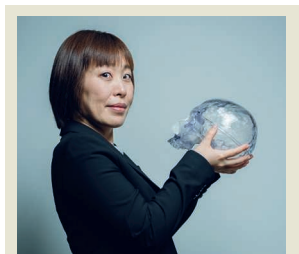
S66: The frequency of natural disasters makes research into warning and mitigation an obvious national priority.

Short-term generation

S67: Almost half of early-career researchers can only hope for a temporary employment contract, so the government wants companies to step in to improve their prospects.

The tables

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IRWIN WONG

ON THE COVER

Kanako Harada's bionic humanoid is among the inventions aimed at transforming Japanese society.

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