

Japan maintains research funding boost...

[TOKYO] Despite an austere budget that reflects Japan's struggling economy, the government has yet again agreed to increase science and technology spending for the 1998 fiscal year, beginning on 1 April. Overall science expenditure across all ministries will increase by 4.9 per cent, with particularly increased support for basic science.

The overall increase in the research budget is relatively modest compared with past increases. But science has fared reasonably well considering that public spending for other areas, such as agriculture, forestry and fisheries and overseas development assistance, has plunged dramatically.

The increase in science spending is also in line with Japan's five-year plan for science and technology, under which the government has promised to increase spending on research by 50 per cent between 1996 and 2001.

The total government budget of ¥77,670 billion (US\$595 billion), an increase of 0.4 per cent from the budget for the current fiscal year, is the smallest increase in recent years. The figures, which were approved by the cabinet at the end of December, have yet to be approved by the Diet (Japan's parliament) in its regular session, which starts on 12 January.

This is the first budget compiled under the terms of the Fiscal Structural Reform Act, which came into effect in November. The act seeks to cap major spending commitments in

order to hold government deficits to 3 per cent of gross domestic product by 2003, and encourages budgeting restraint.

But science spending, particularly in basic research, has increased. Life sciences have done particularly well, with brain- and genome-related research gaining substantial budget increases (see table). This is in line with last year's opening of the Brain Science Institute and this year's planned opening of the Genome Frontier Research Institute, both backed by the Science and Technology Agency (STA) and the Institute of Physical and Chemical Research (RIKEN).

STA's total budget, however, has fallen by 0.2 per cent largely because of cuts in support for nuclear research. This is the first time in STA's history that nuclear research has not ranked top in terms of spending. Basic research, with an 11.8 per cent spending increase, becomes the largest category in STA's budget. Spending on nuclear research will fall by 4.9 per cent, and the budget for the Nuclear Power and Fuel Corporation, hit by scandals over nuclear accidents, will be cut by 10 per cent.

The overall budget for the Ministry of Education, Science, Sports and Culture (Monbusho) has decreased by 0.4 per cent, as a result of cuts in support for education, but its expenditure on scientific research has increased by 5.1 per cent. Postdoctoral fellow-

Highlights of Japan's science and technology budget 1998 (in billion yen: US\$1 = 132 yen)

Science and Technology Agency (STA)		
Total budget	733.1	-0.2%
General R&D budget	581.1	+1.7%
Space	17.6	-1.7%
SPring-8	15.6	-19.1%
Human genome	6.7	+162.5%
Brain research	13.3	+33.7%
STA fellowships	3.6	+16.1
Nuclear power	76	-11.7%

Ministry of Trade and Industry (MITI)

Total R&D budget	492.7	+4.3%
Agency for Industrial Science & Technology	169.2	+4.4%
New Industry R&D	30.0	+6.8%
Joint research with universities	2.2	New
Human Frontier Science Programme*	4.2	+5%

*includes 2.6 billion yen from STA

Ministry of Education, Science, Sports and Culture (Monbusho)

Grants in aid for scientific research	117.9	+5.1%
Japan Society for Promotion of Science	41.5	+8.1%
(postdoctoral fellowships)	(16.1)	(+11.6%)
Joint research with industry	106.5	+5.0%
Academic information network	36.4	+0.4%
Centre of excellence programme	12.7	+12.8%

... as science escapes cuts in South Korea

[TOKYO] Recent stock market and currency turmoil has hit South Korea's economy hard, but despite this the government has approved a five-year science and technology innovation plan designed to increase government-funded research and development to boost economic growth.

Under the plan, approved last month by a senior government committee headed by the deputy prime minister, South Korea will increase the government expenditure allocated to R&D from 3.9 per cent to at least 5 per cent by 2002.

The government had previously planned to increase its total expenditure by 5.7 per cent next year, with R&D expenditure increasing by 12.3 per cent to 3,088 billion won (US\$1.82 billion). But the International

Monetary Fund has asked for a 10 per cent cut in total government expenditure as part of its financial rescue package, and at least 10 trillion won is expected to be cut from the 1998 budget.

Government officials and academics expect infrastructure and construction budgets to bear the brunt of the cuts, according to Yong Hwan Kim, director of the policy planning division of the Ministry of Science and Technology.

The new five-year plan follows on the heels of the special law on science and technology innovation approved last July. The law was a response to severe criticism of South Korea's R&D policy, which was said to be grossly inadequate for fostering innovation.

The plan is designed to stimulate innovation-led

economic growth and industrial development by modernizing South Korea's science and technology capability, bringing it up to the level of advanced industrialized countries.

Kim acknowledges that this will be "quite difficult" in the current economic climate, but argues that improving and increasing basic research is essential for future prosperity.

The academic community has welcomed the plan. But researchers will not escape the economic upset completely unscathed. The dramatic fall in South Korea's currency is making it increasingly expensive to buy scientific equipment from overseas.

The general budget cuts will be decided by the National Assembly next month.

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ship schemes at Monbusho, aimed at increasing the number of Japan's postdocs to 10,000 by the end of the decade, have been given increased funding. But national universities face budget cuts, resulting in a substantial increase in university tuition fees from 1999.

Both Monbusho and the Ministry of Trade and Industry (MITI) will receive increased spending to promote collaborative research between universities and industry.

One area to receive a marked increase in spending is the drive to curb global warming, following the adoption of the Kyoto protocol which sets targets for reducing greenhouse gases (see *Nature* 390, 649; 1997). At the Kyoto conference last month, Japan agreed to reduce greenhouse-gas emissions by 6 per cent from 1990 levels between the years 2008 and 2012. The Environment Agency will receive increased spending for efforts to reduce its greenhouse gases, and MITI will be allocated funds for reducing energy expenditure and for more research into alternative energy sources.

The budget plan's critics claim that reducing greenhouse gases to the required level will mean that Japan's energy production must become more dependent on nuclear power. This, says one MITI official, will require 20 additional nuclear-power reactors to be built. But with considerable cuts in spending on nuclear power, many believe that would be impossible.

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