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Canadian Prime Minister Stephen Harper (left) and finance minister Joe Oliver announced the budget.

POLITICS

# Canada pushes applied research

*Budget increases government partnerships with industry, but plays down basic science.*

BY MARGARET MUNRO

With six months to go before the next Canadian election, the reigning Conservative government has introduced a budget that emphasizes applied research and scientific collaboration with industry.

The 518-page proposal, released on

21 April, will take effect in the coming weeks. It spells out how Prime Minister Stephen Harper's government plans to balance its budget this year — at the same time pledging plenty of new spending in years ahead.

The Canada Foundation for Innovation would receive Can\$1.33 billion (US\$1.09 billion) in new money for university and hospital research facilities, to be doled out

over six years beginning in 2017. The budget also includes a modest 2% hike for the country's research-funding councils, much of it targeted for areas "that will fuel economic growth".

David Robinson, executive director of the Canadian Association of University Teachers in Ottawa, calls the plan a missed opportunity. "The government continues to miss the fact that real innovation and scientific advancements are driven by long-term basic research, not short-term market demands," he says.

***"There's a trend to use universities as surrogates for industrial research."***

Much of the promised funding for research is destined for industrial partnerships. This is in keeping with other Conservative policies, some of which have strained relationships between the government and scientists.

The Harper government has been criticized for micromanaging how research money is spent and for how science is communicated. "Muzzled" federal scientists are no longer free to discuss their research findings with the media without clearance from the government (see *Nature* 483, 6; 2012). And funding for basic-research and federal science programmes such as the Experimental Lakes Area, an acclaimed freshwater research centre in northwestern Ontario, has been cut as the Conservatives have boosted spending on applied research.

"There's a trend to use universities as surrogates for industrial research," says Paul Dufour, a fellow at the Institute for Science, Society and Policy at the University of Ottawa, and a science-policy consultant.

The trend continues in the latest budget. The proposal includes Can\$119 million over the next two years for the National Research Council's "industry-partnered research and development activities"; Can\$46 million per year, starting in 2016, to the research-granting councils in part to "support their growing interactions with the private sector"; and Can\$56.4 million over four years, starting in 2016, for business-related internships for graduate students.

Although the budget allocates just Can\$10 million in new money this year for the government's "world-class advanced research" initiatives — which include ▶

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► projects in physics, space technology and astronomy — it pledges to invest more than Can\$200 million per year in new and expanded programmes starting in 2016.

Dufour says that the research landscape has become “a bit of a dog’s breakfast” with the Conservatives’ targeted research initiatives. And he notes that the focus on industrial research has not improved Canada’s overall research and development performance.

The Organisation for Economic Co-operation and Development (OECD) reported in November that Canada has dropped out of the top ten research and development performers, ceding ground to more aggressive countries such as Taiwan. The OECD also reports that Canada has seen one of the sharpest declines in the percentage of gross domestic product spent on research.

#### ELECTION TOPIC

Opposition parties hope to make science an issue in the October election, but their criticism might be blunted by initiatives such as Harper’s Can\$243-million, ten-year commitment to the Thirty Meter Telescope (TMT), announced earlier this month and highlighted in the budget. The international observatory is to be constructed on the summit of Mauna Kea in Hawaii.

“You can rest assured the TMT will be trotted out during the campaign as evidence that they are investing in research that is probing the origins of the Universe,” says Scott Findlay, a biologist at the University of Ottawa and founding member of Evidence for Democracy, a group that pushes for more science-based decision-making in government.

The budget also commits Canada to supporting the International Space Station until 2024, an extension that the United States and Russia have already committed to.

As the election nears, the government is expected to start announcing projects financed by its Can\$1.5-billion Canada First Research Excellence Fund, which aims to put Canadian universities “among the best in the world for talent and breakthrough discoveries”. Applicants must spell out the strategic relevance of proposed projects and their potential to “create long-term economic advantages for Canada”.

Many of Canada’s university presidents enthusiastically endorsed the fund when Harper announced details in December. And some were quick to applaud the new budget’s provisions. “They will benefit Canada and Canadians now and for years to come,” says David Barnard, president of the University of Manitoba and chair of the Association of Universities and Colleges of Canada. ■



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Pope Francis says that humanity “has slapped nature in the face”.

#### SOCIETY

# Vatican hosts climate meeting

*Religious leaders and scientists gather to discuss moral implications of global warming as Pope drafts key letter.*

BY EDWIN CARTLIDGE

Pope Francis has drawn attention for his progressive teachings on sexuality, contraception and abortion. Now he and the Catholic Church are tackling another contentious issue: climate change.

This week, scientists, religious figures and policymakers gathered at the Vatican to discuss the science of global warming and the danger posed to the world’s poorest people. The meeting came as Francis prepares an encyclical letter to bishops on climate change for release this summer, ahead of United Nations climate negotiations in December. The Pope’s strong feelings on the matter are apparent: in January he said that people were “mostly” responsible for recent warming and that they have “slapped nature in the face”.

Two scholarly Vatican groups that advise the Pope on scientific issues organized the meeting. One, the Pontifical Academy of Sciences, has held several related conferences, including a 2011 meeting on melting glaciers

and another last year on sustainable development. But the climate gathering this week is the first at the Vatican to include religious leaders as well as scientists.

Roughly 20–25 individuals representing religions such as Protestant and Orthodox Christianity, Judaism and Islam joined a similar number of scientists. Nobel Prize-winning chemist Paul Crutzen, climatologist James Hansen and former UK Royal Society president Martin Rees were scheduled to attend, along with UN secretary-general Ban Ki-moon and Italian President Sergio Mattarella. All participants were asked to sign a statement “on the moral and religious imperative of sustainable development”.

Peter Raven, a botanist at the Missouri Botanical Garden in St Louis and an organizer of the meeting, says that such messages are crucial for winning public support for policies to reduce greenhouse-gas emissions. “The only way politicians can put binding agreements in place is if they are convinced that enough people care about the problem,” he