

# National Research Council chief defends industry-driven direction under Harper government

BY TOM SPEARS, OTTAWA CITIZEN FEBRUARY 27, 2013

OTTAWA — Canada has turned into one of the world's big spenders in science research, but without much benefit to our economy, says the president of the National Research Council.

Time to change that, John McDougall believes.

McDougall has swung the NRC in new directions since Prime Minister Stephen Harper appointed him nearly three years ago: More effort at solving problems of industry, less “curiosity-driven” work with no obvious, immediate application.

This has unsettled some of his own scientists, who have complained that science proceeds best when it's not directed by short-term industrial goals.

Some outsiders have warned of a possible loss of science ability, including Nobel Prize winner John Polanyi. Rolf-Dieter Heuer, head of the CERN particle physics lab, urged the federal cabinet to support “the richness of basic science and the importance of basic science” when he visited NRC in 2011. He didn't mention NRC by name, but NRC's \$900-million budget puts it at the heart of federal science.

In October, members of the House of Commons Industry Committee challenged McDougall to justify the changes.

Now McDougall has responded that Canada's economy can't wait for slow advances.

As science investment has grown in Canada, “our productivity and competitiveness, as measured by various organizations in the world, has been going in exactly the opposite direction,” he said in an interview.

“The primary reason for that is entirely speculative ... But it would appear that Canada's balance is quite different from other countries.”

That means we're good at academic research, he says. We're not so good at putting new knowledge to work.

“We're not doing the things that take technology and ‘productize’ it.” (He makes exceptions to that: We're strong in informational technology and in space-related industries such as robotics and building satellites.)

And he argues the answer lies in involving industry with the research from the start “rather than shoving it down their throat and hoping they'll take it.”

For example, one new “flagship program” at NRC is to develop wheat that will resist cold and drought better than today’s, require less fertilizer, and produce greater yields.

“The timeline for this kind of thing is in the order of seven or eight years, which left to normal — I’ll call it traditional approaches — would typically be 20,” he said.

Across NRC research, “the whole agenda here is to make those things happen faster. So if you just left people going along, doing whatever it is that they might do, it may or may not happen,” McDougall said.

“But if you put a directed effort toward something, then you can probably accelerate the process.”

“Really the discovery part of everything we’re going to do for the next couple of decades is already discovered. You know the science but you don’t necessarily know what you’re going to do with it.” With a given problem properly framed, “then you can go hunting for the science from the discoveries that have been made, that you can in fact apply to achieve that end.”

“So it doesn’t mean you want to stop doing discovery research, right? Which is just the new knowledge generation. Because you’re going to want that down the road too. But if you really want value out, you want to pursue particular agendas. You really want to know: What is the challenge? What is the problem?”

There are more NRC success stories, the president says. The NRC is helping to develop underwater remote-controlled vehicles to inspect things on the ocean bottom. Think of flying drones, but under water.

And there’s progress on new translation software that independent analysts have rated as among the world’s best, he says.

With nearly 4,000 employees, the NRC has a wide range of field from keeping our official time signal to plant biotechnology, construction materials, molecular sciences, mining, aerospace, marine bioscience, astrophysics and more. Canada’s space program and nuclear research began at NRC.

Like other federal departments, it has had budget cuts and job losses in the past year.

McDougall strongly believes it’s possible to direct research efficiently, citing the case of wheat.

“Yes you actually can (plan to make wheat better). What you can’t say is how you’re going to do it. So what you can is: What sort of things should we be trying to sort out in terms of productivity or resilience to environmental stress or the need for nutrient addition?”

“What that can do is focus your effort.”

“In any innovation there’s a flash of insight that you cannot predict. But you can definitely say, I’m looking for things that will help” to achieve a goal.

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