

RESEARCH AND INNOVATION: Are We Going for the Summit or Slip-sliding Away?



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As 2013 ends, is Canada ready to compete in a world where new ideas and technologies are the key to national prosperity and social success? My answer, with apologies for the contradiction, is an optimistic 'No'. Let me explain.

I've just spent eight exciting years as president of the University of Toronto. Thanks to countless faculty, staff, students, volunteers, benefactors, partner institutions and enterprises, it's been a great run on the R&D front. Research income is up 40%. Our total publication output is

2nd worldwide. A sharp rise in spin-off company generation has moved U of T to 3rd place in North America. Our gifted faculty and students have won hundreds of research awards. As well, entrepreneurship is flourishing, with 2/3rds of all invention disclosures now carrying a student or trainee as a co-inventor.

None of this would have happened without meaningful support from our friends in Ottawa. The lift to Canadian universities and research hospitals began when the federal government made visionary new investments after the recession of the 1990s. When another recession hit fifteen years later, a new government bravely sustained those investments in the federal granting councils, the Canada Foundation for Innovation, and the Canada Research Chairs program. It also initiated its own suite of smaller but high-impact programs.

All these investments over 20 years have enabled many Canadian universities to stem a longstanding brain drain and attract or retain outstanding talent. Thus, from the standpoint of R&D excellence, it seems we might

finally have the summit surrounded. Unfortunately, many worrisome trends suggest we are actually at risk of sliding down the mountain, rather than claiming the peak.

Canadian researchers are still winning big international awards, but we haven't seen a research-related Nobel prize since 1994.

Canada still has the world's most perverse formula for offsetting the costs of federal research grants. Small institutions get 80 cents of indirect cost reimbursement for each operating dollar won in granting council competitions. But our most research-intensive institutions receive under 20 cents on the dollar. This is a major disincentive to excellence.

Meanwhile, the proportion of blue-sky research funding by NSERC and CIHR has been dropping as earmarking of priorities gains favour in a misguided effort to drive short-term wins for domestic industry.

The 2011 Jenkins panel, on which I served, recommended a very different set of strategies. First, determine where the NRC's basic research strengths really lie, and protect its

best programs and scientists. Otherwise, reinforce the NRC's mandate in industry-facing and contract-funded research. Then, simplify the framework for SRED credits, and invest the resultant savings to do two things: Rebuild the role of the granting councils as globally-competitive engines for investigator-initiated basic and applied research. And make targeted direct investments in industry-friendly R&D.

In fairness, Ottawa has taken some of these steps, but stakeholders remain unsettled by the lack of an overall game-plan.

Other countries, however, are driving forward with clarity and conviction to boost international R&D competitiveness. Germany's Excellence Initiative has focused billions of Euros on 39 universities out of 390. China has invested massively to raise the research standards of 100 universities, 40 of which will receive special funding to reach world-class levels. Again, note the math: that's 100 universities out of nearly 2500.

Among many other examples, there's France's plan to spend an

additional €19 billion on higher education and advanced research, and excellence-boosting R&D investments in jurisdictions ranging from Brazil to Singapore.

These new initiatives strengthen research universities as a side-effect. They are driven primarily by broader policy objectives, i.e.:

- Ensuring international competitiveness in talent attraction, retention and development
- Supporting breakthrough discoveries that inspire the next generation
- Fostering disruptive as well as incremental innovations that create new industries and offer an edge to established enterprises, and
- Reinforcing the global networks of creativity that are associated with world-class universities and innovation clusters.

Unfortunately, nothing in Canada has recently come close to matching these investments.

Why then am I still optimistic? I become optimistic watching Canadians respond with joy to a Nobel prize in literature just won by an iconic 82 year-old recluse – or remembering

the golden moments of the 2010 Winter Olympics. I take heart, too, from countless conversations with gifted and ambitious students, or with the outstanding young scientists I have met on campuses and in research institutes across this country.

We truly have an army of very talented individuals and teams just waiting for a little more oxygen and better provisions to reach the peak. Ottawa knows exactly what it and the provinces must do. As the 2007 S&T Strategy says: "To succeed in an ever-more competitive global arena, Canada must have researchers, research facilities, research equipment, talent, and firms that are nothing short of excellent by world standards. Canada has built a strong research and talent foundation. Now we must take it to a new level by making strategic choices and focusing our resources where we can achieve the most benefit."

For the sake of successive generations of Canadians, let us hope that more strategic choices and focused investments in research excellence will be made in the very near future.