Research and Innovation Key to Addressing Global Challenges

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In an increasingly complex and interconnected world, bold and strategic advances in research and development are vital to addressing our most fundamental human challenges.

Whether the issue is food security, access to safe reliable water supplies, infectious disease or climate change, today's global challenges go far beyond what one country, one university or one industry can solve.

We've entered a new era of technological change that is altering the way scientists do research and how the next generations of knowledge workers will be trained. New global networks enable researchers to collaborate in new and innovative ways that draw on ideas from around the world on a daily basis. The result is that today's pre-eminent research is defined at the international level, with ideas, people and solutions flowing across national, corporate and academic disciplinary boundaries.

But in this rapidly evolving "innovation ecosystem", Canada's lagging performance in R&D, notably our private sector investment, threatens to undermine wealth and job creation – and ultimately our standard and way of living. Despite a better-than-average overall economic performance in relation to major trading partners and recent public investment in science and related infrastructure, our overall national expenditures in R&D remain below the G7 average.

Canada can and must do better than settle in as a mid-level innovator. So how can we create greater value from the science, technology and innovation taking place across this country?

Invest in talent. We need to increase our number of highly qualified and innovative people, especially master's and PhD graduates. Continued support for programs such as the Canada Research Chairs, Canada Excellence Research Chairs, Vanier Scholarships for graduate students and Banting Post-Doctoral Fellowships helps to build research capacity and attract thought leaders from around the world.

Increase public-private partnerships for global economic and social value. Increasingly, companies, government agencies, communities and NGOs are reaching out to universities to help solve pressing problems and create new products and processes.

Such research partnerships build on strategic university strengths to create national and international collaborations, as well as train the next generation of researchers.

Increase private sector investment in innovation. Canada's overall business expenditures on R&D lag behind those of international competitors. We need to increase partnerships between companies and universities and improve capacity to transfer new knowledge to the marketplace. The challenge is to create partnerships that benefit both private industry and public universities, while preserving the very different mission and values of each and respecting the strengths of each. But with safeguards in place to protect academic freedom, these challenges can, and must be, met.

Create and connect clusters of innovation. Strategic clusters of talent, investment and industrial engagement opportunities are forming on campuses across Canada and are key to enhancing R&D capacity and productivity growth. With these clusters, researchers from universities, industry and government join forces with international collaborators, bringing many perspectives to bear on today's S&T challenges.

Create a national framework for funding major science facilities. Canada is home to more than a dozen major science projects that provide world-class opportunities for research, training and commercial development, while delivering major long-term economic returns.

As the magnitude and costs of these projects increase over time, providing operational funding to ensure their success is beyond the scope of any one university, province or federal department or agency. National public policy that addresses this challenge is imperative to ensure that these national "idea factories" continue to be engines of discovery and innovation.

At the University of Saskatchewan, we are working with our partners to address these challenges and opportunities.

For instance, we've built upon our historic strengths in medical imaging, crop development, and animal and human infectious disease research to create a dynamic life sciences cluster that now includes two of Canada's major science facilities – the Canadian Light Source synchrotron and the new $140-million International Vaccine Centre (InterVac), a facility specially designed to handle diseases such as pandemic flu, West Nile and 'mad cow' disease. The latter disease alone has had an economic impact to Canada of more than $6.5 billion.

These two world-class facilities, funded by all three levels of government including the City of Saskatoon, attract top researchers, foster business-researcher linkages, and create national and international research collaborations. The estimated economic impact to Canada of these two research investments, based on 2012-13 forecasts, will be more than $80 million per year, with almost 800 jobs created.

Investments such as these in research talent, partnerships and clusters will be critical to ensuring Canada can compete and prosper in the global economy of the 21st century.