



## How Canada can become a more innovative nation

### Plenary: The Outlook for Canada's S&T/Innovation (STI) ecosystem: Risks and Opportunities CSPC 2015: November 27, 2015

*Panelists:* **Janet Halliwell**, Principal, JE Halliwell Associates Inc.; **Gerard Kennedy**, CEO, Alpha Healthcare; **Ken Knox**, Chair, Science, Technology, and Innovation Council (STIC), CEO, Knox-Vannest Inc.; **John Knubley**, Deputy Minister, Innovation, Science and Economic Development Canada; **Roseann O'Reilly Runte**, President, Carleton University; **Dave Watters**, President and CEO, Global Advantage Consulting Group Inc.

### Takeaways and recommendations

#### Challenges

- ✓ Overall decline in innovation/R&D funding
- ✓ No national innovation objectives
- ✓ No industry sector strategies
- ✓ Inadequate understanding of the structure of the private sector
- ✓ Too narrow a focus on R&D, including scope of SR&ED
- ✓ Little effective federal coordination or federal/provincial coordination
- ✓ Inadequate data on innovation performance

#### Recommendations

- ✓ An innovation strategy must be an export strategy
- ✓ Rebalance direct and indirect (e.g. SR&ED) support for R&D
- ✓ Canada needs to significantly increase R&D investments, more in line with OECD average
- ✓ Need improved collaboration, information sharing and relationship building among innovation stakeholders to improve Canada's innovation performance
- ✓ Universities should focus more on providing the skills that industry needs (e.g. experiential learning, co-ops, etc.)
- ✓ Increase support for research in the social sciences (represents 64% of university graduates)
- ✓ Look at ways to make it easier for the private sector to navigate Canada's 70+ innovation funding programs (e.g. consider consolidating programs)

**The policy issue:** There has been no shortage of high-level reports raising the alarm about Canada's innovation challenges and lacklustre investments in R&D. Over the past 10 years Canadian R&D investments have consistently declined and are now 35% less than the OECD average. In addition, the number of Canadian research-related jobs has declined 14% in just the past four years, including the loss of over 40,000 research personnel in the private sector. The decline in Canada's overall expenditures on R&D is now the second worst among 34 OECD countries. Only Luxemburg ranks lower.

"I think we need to worry about Canada's poor and declining innovation performance ... Our OECD competitors are really leaving us in the dust. We need to understand more deeply the reasons underlying our competitors' better performance and their practices and try to remedy the situation," said Watters, who had held senior Assistant Deputy Minister positions in several government departments, including Finance Canada.

Canada currently spends about \$30.6 billion annually on R&D, or about 1.55% of its GDP. Where other OECD countries have increased R&D spending by 13% over the past decade, Canada's has seen its investments plunge 23%.

It's a message Knox said elected officials need to hear. "We can continue to spend the same amount as we have but if we don't do that as a percentage of our own growth we're falling behind, and if we don't do that as a percentage of what our competitors are we're really falling behind."

To match the OECD average of 2.4% of GDP, Watters said Canada would need to increase R&D spending by 35%, or \$81 billion over the next five years. This would require increased investments of \$32.4 billion by the higher education sector, \$40.5 billion by the private sector and \$8.1 billion by governments and not-for-profits. "Obviously, financially we can't support that, and have to manage expectations as we seek to improve the system," said Watters.

**The first step to addressing these challenges is for Canada to adopt an innovation strategy that is an export strategy**, one that grows Canadian technology-based companies in global markets and creates jobs, said Watters. International trade agreements are an important component of this, he added, but now we need to identify specific new markets to exploit them, particularly for Canada's SMEs.

"My view when considering improvements to Canada's innovation ecosystem is to give a priority to job creation, especially for youth and other disadvantaged groups."

On the good news front, Canada ranks highest among OECD nations for the proportion of adults with a college or university degree. Unfortunately, as Knox pointed out, "we're not hiring the graduates we're producing."

Despite the scale of the challenge, Halliwell said having a science-friendly government is a good first step. "I believe there's a renewed sense of optimism that we can and should do better."

**The options:** Knubley said **an innovation strategy needs to link both science and economic objectives**, and is encouraged by the government's decision to change the name of the Industry Canada department to Innovation, Science and Economic Development (ISED).

Knox said government has an important role to play in supporting the innovation ecosystem, especially in striking the right investment balance. **"We're saying as a council (STIC) to the elected officials we need to address this indirect and direct funding of business (research) because clearly what we have done for the last decade around SR&ED (Scientific Research and Experimental Development tax credit) and other things hasn't worked to get our businesses to where they need to be,"** said Knox.

For Kennedy, a former Ontario cabinet minister turned entrepreneur, public investments in innovation need to produce meaningful and measurable outcomes—the most important outcome being "durable jobs", particularly in new sectors such as clean tech. "You want a startling figure, stop looking at innovation and look at how many of our natural resources are running out ... We can't live off those resources for much longer."

**Creating durable jobs will require innovation policies that incent companies to invest and Canadians to become more entrepreneurial**, he said. "Innovation has to be about enterprising ... With no offence to the folks who invent things, the part that matters more now is getting this stuff into practice, and it has to happen here."

Too often, Canadian R&D investments lead to the innovation or company being sold to another country which creates little or no value here over the long term, said Kennedy. "If we paid for it through Genome Canada or somewhere else, what are we able to get as a durable return? ... And unless we know that upfront, there isn't going to be an agenda that (ISED) Minister Navdeep Bains can sell to Canadians."

The big issue for Canada is one of culture, and Kennedy said we'll fail by just trying to mimic the "extremely profit-driven" approach of the U.S. He said Canada needs a culture that fits our mixed economy, and a government that is willing to take both risks and responsibility for outcomes. "We need enterprising that is done everywhere," including the not-for profit sector.

Post-secondary institutions are playing a bigger role in promoting entrepreneurship. "Every single strategic mandate agreement submitted by a university in Ontario a year ago to the provincial government included entrepreneurship and activities, like the one we have at Carleton where in every major faculty students can minor in entrepreneurship," said O'Reilly Runte.

She said **government needs to create conditions that encourage entrepreneurship. That means adopting proven approaches, such as locating incubators on campuses "where action is happening"** and supporting networks that bring institutions together to work on big challenges. Incentives can also work, such as national competitions that reward entrepreneurship, particularly in priority areas such as the environment, clean tech and digital technology.

That "carrot approach" also needs to come with a few sticks, added O'Reilly Runte. For example, students should be required to take mathematics in their final year of secondary school, which gives them more options in university to pursue science, engineering or physics. "Don't close the door before they even have the chance to peek behind it and see what's behind that door."

#### **References:**

State of the Nation 2014 – Science, Technology and Innovation Council; [www.stic-csti.ca](http://www.stic-csti.ca)

Canada's 2015 S&T/Innovation Ecosystem Roadmap – Global Advantage Consulting; <http://globaladvantageconsulting.com>