

## Submission to the Review of Federal Support to R&D Feb. 17, 2011

### General Comments and Answers to the Consultation Questions by Alberta Innovates – Energy and Environment Solutions

#### General Comments

- There are undoubtedly many reasons why Business Expenditures on R&D in Canada lag behind other countries despite generous Federal programs. Rather than continuously bemoaning the fact that industry in Canada does not spend sufficiently on R&D, the focus should be on what one can control - the ca. \$7 billion investment that the Federal government makes in R&D. Programs that support basic research at universities are generally administered well and are effective in building the innovation capacity in Canada (see, however, comment in 5. below regarding the NCE Program). In general, programs that are targeted to encourage industry investment in R&D need a radical overhaul in thinking. It is important to assess whether the programs provide subsidies to what industry would do in any case or support the advancement of technology in a focused manner. Generally the people that administer the programs are good administrators and can fill out forms that demonstrate accountability in accordance with financial requirements. Being accountable, however, is necessary but not sufficient. What is required is the domain expertise, market knowledge and the tools to identify and evaluate business opportunities and select the right companies for R&D development. It is important to emphasize that there are no silver bullets and no cookie cutter approaches but staying power and a focus on the right people to run the programs can move Canada in the right directions on innovation.
- The consultation paper focuses on “Business Expenditures on R&D” or BERD. Figure 1 shows that Canada’s BERD Intensity of 1%, while the US BERD Intensity is around 2% - and implies that this shows that business expenditures in Canada are not at par with similar expenditures in the United States. To get a better picture we should break this down into sectors. It is very possible that the resource sectors where Canada has an advantage may do better than similar sectors in other countries in terms of R&D expenditures.
- The federal government’s focus of its R&D funding appears to be more on regional development, rather than on innovation excellence. The focus should be supporting the industrial sectors that provide Canada with a natural advantage rather than on regional development.

## Answers to Consultation Questions

1. In addition to the R&D activity defined by the OECD, should government be funding other business activities related to the commercialization of R&D? If so, what and why?

***Federal Government funding should extend to pilot and commercial-scale demonstration of new technology in selected areas where Canada has a natural advantage. This is to ensure that R&D moves towards commercialization and that government shares the risk of new technology with industry.***

2. Does Figure 2, the model of business innovation presented above, capture the key structural factors and inputs to innovation? If not, what is missing?

***Figure 2 captures most of the issues emphasis should be on completing the journey and arriving at a destination. A fresh look is needed on how best to: provide the resources (both financial, human, infrastructure); stay the course; and, ensure that clear rules and regulations are in-place so that business can make the necessary decisions.***

3. Regarding capital, is there an adequate supply of risk capital for Canadian firms at each stage of their growth (start-up, small, medium, large)? If not, why not? Where returns on investments are low, what are the reasons and potential solutions?

***Capital investment looks for the best returns with the least risks. Technology is risky and capital markets are loath to invest on unproven but potentially high benefit R&D. Government can work with industry to reduce the risk of adapting new technology. This can only be done successfully if governments develop the capacity to pick winners and be willing to learn from failures.***

4. Regarding ideas and knowledge, do you believe it is important for Canadian firms to perform their own R&D and, if so, what do you believe are the key factors that have been limiting business R&D activity in Canada?

***In some industries outsourcing R&D to developing countries is becoming more and more common. There is a greater bang for the buck – since costs are significantly lower and there may be better R&D infrastructure. But R&D Management should be done directly by Canadian firms ensuring that the technology is transferred back to Canada to capture the benefits from such R&D.***

5. Regarding networks, collaborations and linkages, what are the main impediments to successful business-university or business-college partnerships? Does the postsecondary education system have the right capacity, approaches, and policies for effective partnerships with business?

***Canada needs to do more to encourage business-university linkages – it needs to foster a culture of innovation. But that is not why Canadian BERD is low. Universities focus on***

*training HQP people to conduct R&D – and that is where their focus ought to remain. The National Center of Excellence (NCE) system is a BAD idea especially since the not-for-profit corporations spend the limited funds on prescribed administration.*

*Instead Universities should be encouraged to develop industrial R&D parks to serve as incubators for SMEs providing research support, where applicable. Examples of successful industrial R&D parks include MIT and the Technion, Israel Institute of Technology.*

*IP ownership by universities is a huge barrier to commercialization and universities should be encouraged to STOP focusing on IP and instead focus on transfer of technology to companies; they will be rewarded many times over by companies that they supported and that achieved success.*

6. Regarding the creation of demand for business innovation, what role, if any, do you believe that government should play in being a “first customer” for R&D investments in Canada?

*Government leadership in procurement is not critical. Government should focus on providing the right signals, through policy and incentives, which encourage innovation in sectors that do not require continuous subsidy and can be sustainable in the long-term.*

7. Regarding talent, is Canada producing sufficient numbers of graduates with the right skills to drive business innovation and productivity growth? If not, what changes are needed? Where demand for advanced skills is low, what are the reasons and what changes, if any, are needed?

*Innovation is generally led by young hungry researchers. Canada’s academic community is not well positioned to encourage entrepreneurship and business skills development. A system needs to be developed where graduate students do part of their degree in innovation centers under a mentorship program. The federal government should also encourage young Canadian researchers to study in foreign institutions and bring back innovative ideas. That is how countries like Japan, South Korea, Singapore and China have become leading innovators.*

8. Can you describe whether and how your firm employs students currently enrolled in community colleges, polytechnics and universities, and what government measures could make it easier to work with students during their academic programs and to recruit them after their graduation? With which federal programs supporting business or commercially oriented R&D in Canada do you have direct experience and knowledge? In your view:

- a. Which of these programs are working, and why?

*The Co-op programs over an 8 month period work well and provide good training for the students and benefits for the organizations involved especially in the last few months.*

- b. Which programs are not working, and why not?

*NRC-IRAP, WED needs to be better managed and outcomes focused.*

9. If you have direct experience and knowledge of the SR&ED tax credit, what are your views in relation to the following:

a. Does the current structure of the SR&ED tax credit encourage incremental investment in R&D? Does it free up capital to invest in other aspects of innovation activities in the firm? Does this vary by size, ownership, sector or nationality of firm?

***SR&ED performance measures and outcomes are not well understood and need to be developed and communicated.***

b. What are the strengths and weaknesses of the refundable portion of the SR&ED tax credit for Canadian-controlled private corporations and to what extent does it encourage the growth and commercial success of SMEs?

***Further study is needed to determine the effectiveness of the program. It is likely that direct funding instead of tax credits is more effective provided there is a disciplined and intelligent process to deliver results.***

c. Bearing in mind the improvements being made by the Canada Revenue Agency, are there additional opportunities for change to simplify the administration of the SR&ED tax credit and facilitate the applications process?

***Our sense is that this is not an effective program and is in need of serious overhaul – making it less bureaucratic is necessary but not sufficient.***

10. How could the Government of Canada lighten the administration requirements of its programs on recipients and improve outreach to business?

***See above. Potentially follow the US models for technology commercialization.***

11. How could the Government of Canada be more innovative and responsive to meet new needs or opportunities, and try alternative service delivery-approaches in its programs?

***Stop funding initiatives based on regional development criteria and focus on developing people with domain expertise and the tools to pick winners.***

12. Are there any gaps in the Government of Canada's support to business and commercially-oriented R&D? Do firms performing R&D in other countries have an advantage over Canadian firms because of access to programs that are not available in Canada? What would be the principal features of new programming to fill these gaps?

***Programs are as good as the people that run them and the systems in place to support innovation. Focus on people with good judgment, develop their talent and allow them the freedom- to-operate.***

13. What lessons and best practices can be taken from provincial business and commercially oriented R&D programs, and how should the two orders of government align their programming?

***Provincial agencies have a much better idea of what the sectoral R&Ds are within their province. The Federal government should consider funding qualified Provincial agencies to deliver on commercial R&D. The agencies can then be held accountable for achieving the agreed upon milestones.***

14. Is there a difference between R&D and innovation? If yes, how are they different? Should government focus on R&D or Innovation? What should the balance be?

***The consultation paper appears to equate “R&D” with “innovation”. For example, it defines “R&D” on page 2 – but then suggests, on page 5, that it would be better to use the OECD definition of “innovation”. Innovation includes “R&D” but it also includes other elements, such as business practices, marketing and infrastructure development.***

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