

# Chief Scientist

Dr Robin Batterham

**Canberra Office**

c/- Department of Education, Science and Training  
16 Mort Street  
CANBERRA CITY ACT 2600 AUSTRALIA  
GPO Box 9880, CANBERRA ACT 2601  
Tel: 61 2 6240 7880 Fax: 61 2 6240 9153  
Email: chief.scientist@dest.gov.au

**Melbourne Office**

c/- Rio Tinto Limited  
55 Collins Street  
MELBOURNE VIC 3000 AUSTRALIA  
GPO Box 384D, MELBOURNE VIC 3001  
Tel: 61 3 9283 3016 Fax: 61 3 9283 3419  
Email: robin.batterham@riotinto.com

---

**The Inquiry Secretary**

House of Representatives Standing Committee on Science and Innovation  
R1 Suite 116  
Parliament House  
CANBERRA ACT 2600

**Inquiry into business commitment to research and development in Australia**

I am writing in response to your request of 17 July 2002 to make a submission to the inquiry, in particular to respond to these three questions:

- What would be the economic benefit for Australia from greater private sector investment in R&D?
- What are the impediments to business investment in R&D?
- What steps need to be taken to better demonstrate to business the benefits of higher private sector investment in R&D?

Endless debate on tax incentives at significant occasions such as the Innovation Summit (February 2000)<sup>1</sup> ranges from no incentive needed as the 'big end of town' does what it needs to do anyway (certainly it is the case, but the offer of an incentive can influence at the margin as for example, the location of the HIs melt plant at Kwinana, WA) and at the 'small end of town' when companies such as Vision Systems seek incentives proportional to R&D/sales. Common across the range is that all companies need to make a profit to grow. But there are cases where investment at the expense of short-term profit may be needed to initiate the virtuous cycle of high profitability sustained by higher R&D.

Government measures now in place through *Backing Australia's Ability* initiatives include the 175 per cent Tax Concession Premium for additional R&D and the R&D Tax Rebate for small companies. However such tax incentives focus on yearly earnings and hence short-term profits rather than investments in research infrastructure that might generate larger spillovers.

In my understanding 80 per cent of companies in any industry, be it in agriculture, mining or in services just survive or achieve marginal growth at best. It is in the top 20 per cent that there are significant opportunities for growth. I see the challenge for Australia to move 10 per cent into the high growth category. I want some 50 000 small to medium sized

---

<sup>1</sup> <http://www.innovation.gov.au/industry/summit/index.html>

enterprises (SMEs) to grow from 1-20 employees to aspire to grow as have Cochlear, ResMed, Memtec and Radiata (the honour roll of Australian born global companies). I see the challenge as can we retain Australian equity and grow them into a \$200-500 million turnover before they are grabbed by an overseas interest? Our honour role is impressive but can we generate ten times that number as we are now growing?

Under yesterday's economy competitive advantage was primarily built on physical assets, be they natural or man made. In today's knowledge based economy these physical assets, while still important, are no longer central to competitive advantage. Increasingly a country's economic and social development depends on its ability to generate, distribute, understand and apply knowledge. Investment in R&D is only part of investment in innovation – investment in capital equipment, people, market development, systems and other intangible assets is now vital.

*What would be the economic benefit for Australia from greater private sector investment in R&D?*

- In my view the links between science and big business are working well. Those between science and the SMEs that make up half of the economy, less so. By growing 10 times the number of home grown globally focused companies, the chances of Australia creating a global brand of the ilk of Nokia, increase significantly. The result would be a massive increase in export dollars. Australia's aim should be to get as many of our companies as we can to the top end of the scale for global SMEs. From that position they can either be sold at a handsome profit, or else go on to become a world brand. Either way the benefit is great for Australia.
- Australia's spin-off rate of 3.3 (new companies formed in the 1990s per US\$ billion of R&D in publicly funded organisations) compares less than favorably with Canada at 7.4 and the US at 12. We can and should exceed the American figures.
- Investment in Cooperative Research Centres is seen as particularly beneficial given their focus (should be) on commercial outcomes.
- The challenge also lies in encouraging young clusters to grow. One example is Melbourne's \$150 million Monash strip that encourages bright young companies and university research to create new business opportunities. Sometimes the clusters develop around an industry or an idea, even though the companies may be scattered widely. AUSTMINE, consisting of 130 firms spread across the country, now earns \$2 billion annually through exports on mineral know-how. Clusters are a key strategy to allow SMEs to move away from the preoccupation of day to day survival and move more to the strategic horizons. Note, however it can take a decade to reap the rewards.

*What are the impediments to business investment in R&D?*

- With a process of employee share ownership that encourages researchers to invest in their own business there will be new sources of available capital. With flexibility in superannuation provisions researchers will not lose their financial base when they pass through a failure, a step quite common in the process of commercialisation.
- It is vital that Australia develop the teaching and promotion of entrepreneurship and business skills to science and engineering students, and, that of the scientific method to business students. A change must also begin in schools and when the words 'cashflow, assets and wealth' are seen as equal to the words 'care, service and entitlement' students will identify new opportunities not only for themselves but also the nation. I acknowledge the comment by Erik Hoffer: *In a time of drastic change it is the learners who inherit the future. The learned usually find*

*themselves equipped to live in a world that no longer exists.* One notes the recent UK initiative to inculcate enterprise as a necessary part of early years in education.

- Lower the costs of innovation by providing for changes in the taxation treatment for venture capital. Offer R&D tax credits for companies to lower the costs of undertaking R&D, noting the advice offered by Jim Fox of Visions Systems that to be effective it needs to be around 15 cents in the R&D dollar.
- Consider the lack of scale in Australian businesses (a \$30 million spend on R&D was adequate to enter a company into the top 10 of Australian company spends in 2001) as Australian industry seeks to join the global economy. Acknowledge the reality that even successful industry strategies may take a decade or so to achieve significant returns.
- Above all, consider carefully the targeted approach in both Israel and Finland where much of the government assistance for R&D is by direct injection of cash to firms to undertake R&D.

*What steps need to be taken to better demonstrate to business the benefits of higher private sector investment in R&D?*

- Performance measurement, and particularly standardising performance measurement, is a contentious issue both in Australia and internationally. Simple outcomes measures are not yet available. The challenge is to design a system that establishes performance outcomes, rather than the easier to measure inputs. Establish some surrogates for productivity: sales per employee and value added per employee rise with R&D per employee in sectors dependent on R&D.
- There is still a certain reticence in the laboratories and boardrooms of high technology companies to engage with the wider community by explaining and sharing both their vision and excitement, and, the potential of new business opportunities.
- Communicate stories linking science to innovative practices to new products/marketing, perhaps by adding to CSIRO's extensive communications program to inform the Australian public of discoveries to that by which the science and its returns to the Australian economy become the focus. Only when Australia effectively communicates the role of R&D as that of generating technical advances, which drive the flow of innovative products and services, will the changes needed be no longer be radical!
- Target large scale R&D by encouraging multinationals to invest in Australia via special deals such as offsets programs (90 per cent of R&D would otherwise be in the country of head office), by encouraging States and Territories to focus on their niche areas of expertise to collaborate for both their advantage and that of Australia. Company size and its ownership have a significant effect on R&D intensity in some sectors and shed light on reasons for companies' performance/differences.



Robin Batterham  
30 August 2002