



## Australian Academy of Technological Sciences and Engineering

Australian Academy of Technological Sciences and Engineering Limited - Incorporated in A.C.T - A.C.N. 008 520 394

Ian McLennan House, 197 Royal Parade, Parkville, Vic. Australia 3052

Telephone: (03) 9347 0622 International: 61 3 9347 0622 Fax: (03) 9347 8237

Website: <http://www.atse.org.au>

PO Box 355, Parkville, Vic 3052

*President*

*MA (Tim) Besley AC FTSE*

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

Dear Secretary

The Australian Academy of Technological Sciences and Engineering is pleased to accept the invitation of the Committee to make a submission to the Inquiry into Business Commitment to R&D in Australia.

Our comments are summarised under the three questions posed by the Committee.

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

The Academy is unable to quantify this benefit, but accepts that the strong correlation between investment and R&D, which characterises business activities in some countries, is indicative of a causal relationship. It was noted, however, that expenditure on business R&D in Australia rose on average by approximately 5% a year through the 1990s (*Australian Science and Technology at Glance 2002*, Chart 27) and that this indicates a healthy rate of growth, although as a proportion of GDP, Australia spending is still well behind that of most OECD countries. As the Australian Government notes, however, for example in connection with greenhouse gas emissions and the Kyoto protocol, Australia is far from being a typical OECD country and so comparisons with economies of OECD countries may be quite inappropriate.

For example, much of Australia's productivity is in the mining and agriculture sectors that are mature and unlikely to provide more than marginal returns on innovation. Areas such as biotechnology, pharmaceuticals and ITC, however, offer better prospects but this is often not appreciated by Government (both politicians and officials) or investors, whose experience lies in the older industries.

Some consideration was given to the fact that a number of substantial business operations in Australia are foreign-owned. This is often advanced as the reason that spending on business R&D in Australia is at a comparatively low level. On the other hand, a study by the IR&D Board in 1990 entitled 'Industrial research in Australia' found that during the early 1980s, at least, foreign-owned companies doing R&D in Australia were likely to spend more on R&D than comparable Australian companies. This suggests that, if there were to be a substantial increase in business R&D activity, we might expect to see a substantial proportion of the benefit go off-shore. This observation suggests that more careful targeting might be appropriate than exhortation or broad Government support for R&D if we are to see benefits in Australia. Many small business fund innovation by means of personal investment and/or savings, so support for them would need to be of quite a different kind to that appropriate for a major mineral resource company.

As a matter of interest, the Academy would observe, that the cost advantage to a multinational company of doing R&D (in salaries and availability of highly educated stable workforce) is plain for all the world to see, but has not brought in a flood of R&D initiatives by globalised industries. This may be due to the advantages of doing R&D close to manufacturing plants and major markets, where the feedback loops are short.

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

Australia is not alone in experiencing extreme pressure on businesses to perform in the short term by investors seeking quick returns. Recognition of business R&D as an investment (as it is described by the Committee, we were pleased to see) is conspicuously lacking from the public debate.

In a recently-published article concerning the development of direct smelting (as opposed to blast furnace) techniques, researchers from Rio Tinto observed that the time scale for developing new technology is 'more like 20 years than 3-5 years' (Dry, Batterham, Bates and Price, *ATSE Focus* No. 123, July/August 2002, pp 8-17). While this may represent an extreme examples, where the cost of established technology has been written off and new entrants face significant entry barriers. Turning to another example, Cochlear took fifteen years from concept to commercial product. We submit that the general point has wide validity: R&D that leads to new products is seldom fast. This is a point that needs to be recognised by innovators, their shareholders and Governments seeking to stimulate R&D activity.

Parallel points about the need for consistent Government policy in support of R&D have been made in a recent article. The author is Jonathon West, an Australian economist currently holding an appointment in the business school at Harvard University and also a Board member of the Australian Graduate School of Management (*The Mystery of Innovation; Aligning the Triangle of Technology*,

Institutions and Organization, *Australian Journal of Management*, Vol. 26 special issue, August 2001; see the 2001 listings under [www.unpan.org/asia-analyticalreport.asp](http://www.unpan.org/asia-analyticalreport.asp)). 'All successful innovating nations', says West, 'have found some mechanism for supplementing the predicted under-investment by private firms in research and invention'. This suggests that, contrary to conventional wisdom, Australia is not alone in suffering under-investment in R&D by business, but may be taking inadequate steps to integrate existing investment with investment in basic research, and fiscal measure that could promote innovation.

A more specifically financial point that the Academy wishes to make is financial support for R&D is often entered in the after-tax statements by companies, while their performance overall is judged by markets on the basis of their pre-tax figures. Unless R&D can be shown to be leading to profits, it is likely then to be seen as peripheral to the company's main efforts, possibly even as cosmetic.

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

The answer to this question would depend very largely on an analysis of the submissions which your Committee has received. The Academy would be very pleased to undertake this analysis and prepare a report for your Committee. In undertaking this analysis the Academy would seek to demonstrate that

- R&D can pay off;
- sustained effort by companies is needed; and
- appropriate Government support can ensure that R&D is effective.

The study would look at selected successful and unsuccessful cases, analysing the personnel, finance and business acumen needed to bring about a desired outcome

Yours sincerely

*original signed by Mr Besley*

M A Besley