Australian & New Zealand Association
for the Advancement of Science (Inc.)
www.anzaas.org.au

Chair
A/Prof P. Adam
School of Biological, Earth and Environmental Sciences
UNSW SYDNEY NSW 2052
tel 02 9385 2076
fax 02 9385 1635
email P.Adam@unsw.edu.au

Secretary
Mr R Perrin
ANZAAS INC
University of Adelaide
Adelaide SA 5005
tel 08 8303 4965
fax 08 8177 1732
email secretary@anzaas.org.au

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

Email: scin.reps@aph.gov.au

Inquiry into Business Commitment to Research and Development

This submission has been prepared on behalf of the Australian and New Zealand Association for the Advancement of Science (ANZAAS) Inc. For over 100 years ANZAAS has sought to promote the development and maintenance of Australia's capacity to conduct scientific research and the public appreciation of science. It has been used by Governments as a sounding board and source of comment. ANZAAS welcomes the opportunity to make a submission to the Inquiry.

Summary

1. Research and development (R & D) in the private sector in Australia is poorly funded compared with the public sector.
2. Arrangements for R & D in the primary industries necessarily differ from those in secondary and tertiary industries.
3. Australian R & D is cheap by world standards. This should be exploited.
4. The Cooperative Research Centre program should be expanded.
5. Schools of Business Management should give proper attention to innovation.
6. An encompassing scheme of awards for successful R & D should be considered.

Importance of R & D to Australia

Historically, research and development played a vital role in Australia's economic and social development. Without research, primary industries (in both the agricultural and mining sectors) could never have become the great drivers of national development. Australian research and technological innovation have lead to internationally important advances in industry, medicine and pharmacology.

Today we live in a world of rapid technological change in which we will be increasingly challenged by issues of sustainability.

The 'traditional' primary industries will continue to be an important part of the economy, but if they are to remain internationally competitive and to meet society's expectations of sustainability they must be innovative. Despite being part of the global economy, the immediate environment in which these industries operate is uniquely Australian. While there is a need to remain abreast of, and draw from, research overseas, much of the research needed for these industries will necessarily have to be conducted in Australia.

There has been an increasing diversification of industry in Australia. While some of the older 'heavy' industries have declined, new industries in IT and biotechnology have developed. While it would be possible to import technologies in these fields, this would be to ignore the depth of talent and originality amongst Australian scientists and the opportunities to develop new export based industries.

Despite the importance of R & D to economic development, Australian industry investment in R & D has, by OECD standards, been low and remains low. However, it needs to be acknowledged that, over many years, there has been substantial public investment by State and Federal governments in R & D which has yielded both public benefits and benefits for individual industries and companies.

The Committee has posed three questions:

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

While there can be no doubt as to the economic benefits of R & D, questions can be asked about the balance between public and private sector investment.

For some industries, public organizations may be the most effective and efficient means of conducting R & D. The obvious example is agriculture, where individual farmers could not fund research. While major agribusiness has an important role in R & D, there is a need for independent research. In Australia and other developed countries, government agency research has been essential for agricultural development. Not only has there been a tradition of government research, there has also been a tradition of take-up of research by producers. Part of the reason for this success has been the work of agricultural extension officers; this may be a model for other industries.

While the research has been conducted through government agencies (CSIRO, state Agricultural departments) at least part of the funding has been raised through levies on producers.

This model is less appropriate for manufacturing and tertiary industries where individual companies are seeking competitive advantage through unique products, There may be some generic issues in emerging industries where new small companies could contribute to a research funding pool.

Intellectual property and products rich in information, such as machine tools, can be exported easily and do not suffer from the tyranny of distance. They are therefore particularly valuable to Australia.

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

Over the years governments of both persuasions have introduced various measures to stimulate R & D investment. While there has been debate about the relative merits of different schemes the fact remains that none resulted in levels of R & D spending comparable with that in other advanced western nations.

It would appear that there are deeply engrained cultural reasons, both for the low investment in R & D, and for the low take-up of outcomes. We are not able to explain what these are, and why they are not manifested in other small developed nations (such as the Scandinavian countries or Eire). While it is desirable to have an appropriate tax regime to encourage research investment, mechanisms to safeguard intellectual property and facilitate award of patents, and certainty of process these in themselves do not appear to have been sufficient to stimulate R & D investment. Perhaps in part there has been an attitude that research is the role of government institutions, perhaps it reflects an inherent conservatism (although various other much publicized corporate adventures do not suggest that Australian business is markedly risk averse!) There are exceptions to every rule, and there are shining examples of Australian industry which has developed and exploited new inventions – cochlear implants being but one case.

Greater publicity needs to be given to these successes. We would also suggest that one initiative which may be desirable would be a change in company reporting requirements such that investment in R & D has to itemized and explained in annual reports. Some companies indeed already highlight their R & D, in other cases it is not clear from Annual Reports whether R & D is conducted, let alone what it is. If R & D were routinely documented it would be easier for shareholders to question directors on progress in this field.

Several large companies have opened and closed excellent research and development facilities in Australia in the last half century. This suggests that they were not seen as core activities by their companies.

It needs to be stressed that Australia has an extremely talented pool of scientists across a range of disciplines. At present salaries in Australia in many science and technology fields are relatively low by international comparison (this hasn't always been the case). These low salaries and poor career prospects are one factor leading to a brain drain, but this situation can be turned to advantage. Currently we have a competitive advantage – both for existing companies and for overseas companies relocating research operations to Australia. We need to seize this opportunity while we can.

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

Overcoming the cultural suspicion of research and development as a 'proper' use of company funds (indeed making the change from 'cost' to 'investment') will be a major task.

The Cooperative Research Centres (CRCs) are an Australian initiative that has been extremely successful. The Chief Scientist, Dr Robin Batterham, in his report 'The Chance to Change' (November 2000) in recommendation 14 urged 'Expand the CRC program to encourage greater SME access and to facilitate stronger networks between the SET base and industry, nationally and internationally. Investment $150 million over five years.' The paper 'Backing Australia's Ability' (2001) proposed 'expanding the Cooperative Research Centres Program with an additional $227 million and encouraging greater access by small and medium enterprises.' It is not clear to us whether these suggestions have been carried out.

We are not familiar in detail with curricula at Australian business schools, but greater emphasis on innovation in the education of the next generation of managers would be desirable.
Increased dialogue between scientists and business, and promotion of industrial R & D as a career goal for scientists and technologists should also be encouraged.

Publicity for successful outcomes of R & D should be increased. There are already a number of awards which provide acknowledgement for successful R & D, but a more encompassing scheme (on the lines of the Queen's Awards for Industry in the UK) could be considered.

Prepared by:
Associate Professor Paul Adam
Chair
ANZAAS.
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Address for correspondence:
Dr R S Vickery
22/2 Pacific Street
BRONTE NSW 2024
Phone: 02 9369 2705
Email: vickery@mpx.com.au