



***Employment, Education and Training Act 1988***

Expanding the Research Base in  
Private Industry and Improving  
Interaction in Research across  
Sectors—Developments since 1988:  
Advice of the National Board of  
Employment, Education and Training  
and its Australian Research Council

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**NATIONAL BOARD OF  
EMPLOYMENT, EDUCATION AND TRAINING**

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CHAIR: Peter Laver

The Hon Kim C Beazley MP  
Minister for Employment, Education  
and Training  
Parliament House  
CANBERRA ACT 2600

Dear Minister

In July 1988 your colleague, the Hon J S Dawkins, MP, then Minister for Employment, Education and Training, referred through the National Board to the Australian Research Council several matters arising from *Higher Education: A Policy Statement*.

On behalf of the Board, I am pleased to forward to you the advice of the Council on its activities during the intervening period which have sought to promote expansion of the research base through the private sector and to improve interaction between researchers in the private sector and those in higher education institutions.

The Government's white paper (pp.91-92), asked the Council to consider several methods for extending links between higher education and industry. I note that two of these have been employed: the provision of matching funding between higher education and industry - through the Collaborative Research Grants Scheme - and promotion of greater movement of researchers between higher education and industry - through the Australian Research Fellowships (Industry) Scheme.

I understand that another initiative, the Australian Postgraduate Research Awards (Industry) Scheme has also proven successful. Its first graduates are now being produced, and it is hoped this will generate interest in industrially oriented research at the postdoctoral level.

Initiatives taken in other portfolios including, in particular, the Co-operative Research Centres Program, have also contributed to strengthening the links between higher education and industry.

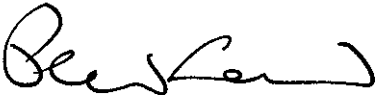
The Board, which considered the advice at its meeting on 29 and 30 June 1992, noted that the Council has not attempted to address the underlying factors of industrial infrastructure

and the low level of industrial research and development, which continue to constrain the full utilisation by industry of the resources available in the higher education.

In view of his responsibilities, I am sending a copy of this letter and the accompanying advice to your colleague, the Minister for Higher Education and Employment Services.

I should draw your attention to the requirement in the *Employment, Education and Training Act 1988* for formal advice to be tabled in both Houses as soon as practicable.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Peter Laver', written in a cursive style.

Peter Laver

3 July 1992

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**NATIONAL BOARD OF  
EMPLOYMENT, EDUCATION AND TRAINING**

**CHAIR: Professor Max Brennan, AO**

Mr Peter Laver  
Chair  
National Board of Employment, Education  
and Training  
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Dear Mr Laver

I have attached for the consideration of the Board advice from the Australian Research Council on the Expansion of the Research Base. This reference was drawn from *Higher Education: a Policy Statement* (the White Paper), and was formally referred to the Council, through the Board, in July 1988.

The Council's response to the reference points out that there have been many initiatives since 1988, including new ARC programs such as the Collaborative Research Grants Program, directed towards increasing research cooperation and activity with the private sector. The Council's advice describes progress to date, and states the Council's commitment to continuing developments for this purpose.

On behalf of the Council, I ask the Board to forward ARC advice to the Minister in response to the reference of July 1988.

Yours sincerely

M H Brennan  
15 June 1992



On 12 July 1988 the Minister for Employment, Education and Training asked the National Board of Employment, Education and Training to advise on ways to promote the expansion of the research base throughout the private sector and to improve interaction between the organisations and sectors involved in research. The then Chair of the National Board referred the matter to the Australian Research Council for appropriate action. This report outlines relevant initiatives and developments since 1988.

The benefits of intersectoral research collaboration are now more widely known, both within higher education institutions and the private sector. Among the many benefits are an increased awareness within the higher education sector of the needs of industry and business, and the facilitation of the marriage of the research expertise of the higher education sector and the technological and developmental expertise of the private sector. The resultant improvements in the research commercialisation process can lead to significant economic benefits for the country, including increased innovative and business activity and increased employment.

There are now many more collaborative arrangements in place than in 1988, when this matter was referred to the Board by the Minister. The increased level of interaction is as much due to interest from the higher education sector as from industry and Government. The emphasis placed by the Council on encouraging research collaboration, by means of the provision of financial incentives for cooperation through its programs, has also had a considerable effect in bringing the sectors closer together.

The problems restraining research collaboration which existed in 1988 have been partially overcome, but unfortunately still persist to a considerable degree. In the private sector, the major problems are the lack of an industrial infrastructure and a consequent low level of research and development, and a lack of awareness of the research capabilities of higher education institutions. The private sector in fact often seems not only unaware of what research is being done in institutions, but even when a certain awareness is built up, it can tend to be sceptical of the role institutions can play in helping with a particular problem. In higher education, academic researchers working in basic and applied science and technology research are often unaware of the full process of commercialisation and of how the private sector can be of benefit to them in the further development of their research.

Difficulties have also arisen in negotiations over the ownership of intellectual property. There is a need for all parties—institutions, industry and researchers—to understand better the rights and roles of each contributor to the collaboration.

Though these difficulties persist, considerable progress has been made in recent years. Schemes encouraging collaboration, such as those of the Council discussed below, not only assist actual collaborative projects by providing funding, but also help promote the idea of collaboration beyond the people actually involved.

One of the reasons for increased private sector involvement in research in recent times has been the availability of the 150 per cent tax deduction for research and development. Council wishes to re-iterate that the recent decision to reduce the 150 per cent rate to 125 per cent will undoubtedly impact adversely on the rate of development of collaboration between the higher education sector and industry, as well as having an adverse effect on the level of research performed within industry at a time when

industrial research activity has not yet reached the level of other developed countries. Council has already made its views on this matter known, in the context of its comments on the Block and Coghlan Reports.

Council has also previously expressed its concern about the establishment of an Australian Technology Group (ATG). It can only be hoped that the nature of the ATG eventually set up will enhance interaction between higher education researchers and the private sector.

The Council has adopted a number of strategies to address the two aspects of the Ministerial reference. The Council is addressing the first aspect, the promotion of the higher education research base, by means of the Council's publicity strategy. The strategy, which is currently being developed by Council, includes the publication of booklets and other materials that can be distributed to researchers in industry and in Government research organisations to make them more aware of the scope and depth of research undertaken in higher education institutions.

To address the second aspect of the reference, the improving of interaction between the organisations and sectors involved in research, the Council has initiated several programs which specifically encourage joint research between the sectors. The programs are:

- Australian Postgraduate Research Awards (Industry) (APRA (I));
- Australian Research Fellowships (Industry) (ARF(I)); and
- the Collaborative Research Grants Program.

## The Collaborative Research Grants Program

The Collaborative Research Grants program, funding for which was obtained in the 1991 Federal Budget, is designed to encourage greater research collaboration between higher education institutions and industry by offering research grants on a matching funding basis. \$2.3 million was made available for the scheme in 1992, and funding will increase in subsequent years to reflect demand for the grants.

Applications for the first round of collaborative grants closed on 24 February 1992. One hundred and seventy one applications for collaborative research grants were received for the first round, seeking \$12.9 million in funding. The applications were spread over a wide range of fields, from Engineering to Humanities.

The outcome of the first round was that forty-one grant proposals were approved. This represents a success rate of 24 per cent.

The discipline of Engineering (23 per cent) has won the greatest share of collaborative funds, followed by Applied Sciences and Technologies (19 per cent) and Chemical Sciences (16 per cent). It is worth noting that Social Sciences won 9 per cent of the funds allocated, with five projects being approved for funding.

The distribution of 1992 collaborative research grant funds between the fields of research is:

<i>Field of Research</i>	<i>% of Funds</i>	<i>No. of Projects</i>
Physical Sciences	7	1
Chemical Sciences	16	9
Earth Sciences	11	4
Information, Computers and Communication Technologies	4	3
Applied Sciences and Technologies	19	8
Engineering	23	9
Biological Sciences	10	4
Rural Sciences	2	1
Social Sciences	9	5

The approved grants include collaborative research with companies such as BHP Exploration, Woodside Offshore Petroleum Pty Ltd, Australian Manganese Company Ltd, Merz Australia Pty Ltd, GMH, Tubemakers of Australia Ltd, AWA Ltd, Cyanamid Australia Pty Ltd, Queensland Alumina Ltd, Copper Refineries Pty Ltd, Bisalloy Steels Pty Ltd, Progen Industries Ltd, Electrodrive Pty Ltd, Western Biotechnology Ltd, Chemical Engineering Contracts Pty Ltd, Taylor Ceramic Engineering and Flexichem Pty Ltd.

The approved grants also include collaborative research with Authorities such as SECV, Telecom, Shortland Electricity, SEC WA, Geraldton Port Authority, and the Bread Research Institute.

Other collaborating organisations for the approved grants are Royal Guide Dogs Association of Australia, Vic Employers Chamber of Commerce and Industry, Small Business Development Corporation of Victoria, NSW Department of School Education, Tasmanian Floricultural Association, Queensland Law Society, Australian Defence Industries Ltd and Australian Mineral Industries Research Association (AMIRA).

The Industry collaborating partners for the grants recommended for funding will bring a minimum additional \$2.35 million to the program. It should be noted that the level of funds available for 1992 means that over \$10 million of guaranteed industry research funding cannot be taken up.

The interest shown in the Collaborative Research Grants Program has been very encouraging, especially given the limited timeframe in which to submit applications in the first round. A pleasing outcome from the first round was that institutions from the former advanced education sector have had seven projects recommended from thirty-five applications, representing a success rate of 20 per cent. These grants attract to institutions an additional \$0.348 million through the 35 per cent infrastructure loading.

The Council will consider ways to enhance further the research linkages between industry and higher education and ways in which to increase awareness of the scheme (along with the APRA (I) and ARF(I) programs) within industry. As a first step, guidelines for the next round of grants have been distributed to members of the Australian Industrial Research Group.

A 1991 report prepared in the United States, called *Industrial Perspectives on Innovation and Interactions with Universities*, deals with the success of the different types of research interaction between industry and higher education. The report commends as most successful the kind of one-on-one collaboration promoted through the Council's Collaborative Research Grants Program:

The working relationship between the industry scientist and the university scientist is crucial to recognising a potential product or a goal, assessing the appropriate time frame, identifying the risk and 'marketability' of an idea . . . Almost all interviewees agreed that one-to-one research collaboration is the most likely type of university-industry interaction to foster communication of innovative ideas.

## Australian Postgraduate Research Awards (Industry)

The Australian Postgraduate Research Awards (Industry) program started in 1990. Two hundred and ninety-seven awards will have been offered in the first three years of the scheme's operation. One hundred and eight new awards have been offered for 1992. Though interest in the scheme in its second year (1991) was not as strong as expected, there was a substantial increase in applications for 1992. Council will continue to monitor interest in the program in relation to the resources provided to it.

## Australian Research Fellowships (Industry)

Twenty-five Australian Research Fellowships (Industry) have been offered since the scheme began in 1990. There has been a considerable growth in interest in the scheme since 1990, with applications increasing by 87 per cent over the two years. Seven awards were offered for 1992.

In 1991 the Centre for Technology and Social Change (TASC) was commissioned by the National Board of Employment, Education and Training to undertake an investigation of the factors which constrain and promote proposals under the APRA(I) and ARF(I) schemes. TASC's report was recently completed. Though generally very supportive of the schemes, the report makes a number of recommendations for change. One of the major recommendations is that the schemes need to be promoted more widely, especially in industry. Council will consider the recommendations in time for any changes to be made to the programs for the next round of applications.

In addition to the programs already discussed, the Council has responsibility for the Key Centres of Teaching and Research program, which has also brought together researchers from the different research-performing sectors for joint projects. The grant provided by the Commonwealth for Key Centres is modest and a large proportion of these centres obtain the bulk of their funds from industry sources, indicating a high level of interaction with industry.

It is also relevant to note that other Council programs not specifically targeted towards fostering collaboration between higher education institutions and the private sector, such as the Large and Small Research Grants programs and the Special Research Centres program, frequently support research involving interaction between the sectors. For example, an average of 21 per cent of Large Grant projects ending in 1990 in the physical, biological, marine and earth sciences and 48 per cent of engineering and applied science projects also attracted industry funding.

The Council is also developing the concept of a new element of the Research Infrastructure Program, which would provide support for the infrastructure requirements of joint research ventures with industry located at higher education institutions.

All these joint research programs, in fostering interaction between the sectors, also have the effect of promoting in the private sector the research undertakings of the higher education sector, and thereby work towards satisfying the first aspect of the Ministerial reference. The more research collaboration takes place, the more the sectors involved will become aware of the possibilities and benefits of collaboration.

Council has asked the Research Grants Committee to consider how the selection process for research grants might incorporate consideration of the benefits of the direct application of research results, and of other benefits identified in the Council's Mission Statement, while preserving the primacy of excellence as the criterion for a successful proposal.

The joint research programs described above will continue, and their outcomes will be monitored by the Council. The Council is keen to encourage research collaboration, and will expand its programs as far as possible to achieve this, while retaining its emphasis on the support of high quality basic research across the full range of disciplines other than medical and dental research.







