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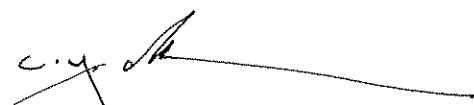
Dear Ms Vamvakinou

Thank you for the opportunity to make a submission to the Standing Committee's inquiry in Australia's international research collaboration.

Please find attached a submission from the Department of Primary Industries and Resources South Australia, endorsed by the Department of Further Education, Employment, Science and Technology. The submission may be made public.

Further elaboration or clarification of any aspect of this submission should be directed to Andrew Rasch, Senior Policy Officer, Science and Information Economy Directorate on 08 8207 8709 or [andrew.rasch@sa.gov.au](mailto:andrew.rasch@sa.gov.au)

Yours sincerely

  
Carolyn Anderson  
Director  
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Encl.

**Inquiry into Australia's international research collaboration**

**House of Representatives Standing Committee on Industry, Science and Innovation**

**Submission by:**

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Department of Primary Industries and Resources South Australia***

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**Endorsed by:**

***Science and Information Economy Directorate, Department of  
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**February, 2010**

## Introduction

Australia rightly strives to adopt and use the best available innovations and discoveries to retain a high living standard and generate wealth for the Australian society. Given our small population base, however, Australia is a minor contributor to global research and generates only a small amount of the new innovation and technologies delivered to the world by the scientific community. While some might argue that we 'punch above our weight' in research and innovation, we are still heavily reliant on international research to keep Australia near the forefront of technical development and expertise. Local adaptation of international research will always be necessary for Australia to receive maximum benefit from any local implementation.

To continue to capture this benefit in the future, particularly as the cost of research and scientific discovery escalates, it is critically important that the Australian research community maximises its international research collaboration. There is a need to increase the number of collaborations at all levels and the Australian Federal and State Governments can play a key role in encouraging and facilitating international research engagement. In some sectors, valuable opportunities will be lost without such support as an important niche in the world economy for Australia is likely to be developed through small to medium enterprises (SMEs) that find it more difficult to fund international research collaboration..

This paper is primarily focused on a discussion on public / government research engagement issues, but many aspects would also likely apply to the company R&D engagement environment which also needs to be considered.

## Discussion against Terms of Reference

### **1. The nature and extent of existing international research collaborations.**

Existing international research collaborations in South Australia have taken on a number of different forms commencing at the highest level with a number of Memorandums of Understanding (MoUs) between the South Australian government and other regional governments. These MoUs facilitate information exchange and access to overseas knowledge and expertise. Engagement in joint R&D projects has enabled local researchers to leverage local efforts with the resources from overseas jurisdictions resulting in larger and more diverse research projects than might be undertaken independently.

The most effective of these MoUs is the agreement between South Australia and the Province of Manitoba, Canada, where there are four existing collaboration projects operating and a number planned for implementation in the near future when funding arrangements can be finalised. This collaboration program is very successful overall and momentum has been created between the two states, which is driving a wider range of new opportunities for science collaboration.

Probably the greatest numbers of international science collaboration projects are generated at the researcher and scientist level. Individuals have identified unique and beneficial international collaboration opportunities through interaction with visiting scientists and from attendance at international seminars and conferences. The activities of these research collaborations are generally quite targeted and linked to existing R&D projects, which are often funded from non-government sources. This linkage ensures they are providing direct benefit to South Australia and are often giving important access to technologies and intellectual property (IP) that possibly would not be available otherwise to the Australian science community.

Australian aid programs have also been a source of funding for international R&D projects. Given their intrinsic aid-focused nature, however, these are mostly not true science collaboration opportunities as the personnel, agency and government receiving support are contributing little towards the advancement of scientific knowledge. These programs are a significant contributor to the development and maintenance of scientific expertise in the Australian science community. State governments that have traditionally provided most of the research inputs to these programs are becoming more reluctant to provide these resources on an in-kind basis and are seeking significantly higher levels of cost recovery if they are to participate.

International technical consultancies can also have a limited local industry benefit and often only offer professional science development opportunities and a mechanism to create income that may or may not be reinvested in local science and research programs.

## **2. The benefits to Australia from engaging in international research collaborations.**

As indicated in the introduction, the overarching driver for Australia's engaging in international research collaborations is our need to be linked as frequently and as best possible with research activities in the rest of the world. We are not in a position to solely generate all the advanced technological needs to sustain the wealth and development of Australia and close collaboration with international research partners provides us with a range of benefits.

Benefits to Australia include:

- Earlier and more rapid access to unique and new technologies that are beneficial to Australia (ability to adapt more easily to new discoveries through early engagement);
- Opportunities to be partners in the development of critical IP that might otherwise not be available for exploitation and use in Australia. Access costs are also likely to be lower;
- Improved professional development of Australian scientists and researchers;
- Linkages to international researchers that can potentially be used as significant resources for Australia's benefit in times of critical need;
- Australia as a potential location for science education and research sabbaticals is enhanced; and
- Better potential to fill research employment vacancies in Australia with high quality scientists through the reputation and experience of international research agencies that have previously worked with Australian organisations.

### 3. The key drivers of international research collaboration at the government, institutional and researcher levels.

There are many different drivers for research collaboration, some unique to these different levels and others having a significant impact and importance at all levels. The following table highlights some of the potential drivers for international collaboration and their likely relevance to government, research institutes and individual researchers.

| Driver                                                                                                                                                  | Government | Institution | Researcher |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|------------|
| Early access to new technologies and processes                                                                                                          |            | ✓           | ✓          |
| Access to enabling IP including earlier access, lower cost access, less restrictive access or in some cases access that would otherwise not be possible | ✓          | ✓           | ✓          |
| Enhanced competitive advantage for national research funding                                                                                            |            | ✓           | ✓          |
| Strategic gains across broad range of policy objectives                                                                                                 | ✓          |             |            |
| Creating better linkages to international expertise that could be highly beneficial to Australia in the management of bio-security incursions           | ✓          | ✓           |            |
| A better globally linked Australian science community for evidence based policy development by Government                                               | ✓          |             |            |
| Access to unique facilities and equipment                                                                                                               |            | ✓           | ✓          |
| Exchange scientist opportunities – refreshing scientific thought and ideas from new environments                                                        | ✓          | ✓           | ✓          |
| Complementary science programs – added value to local outcomes for the same local investment                                                            |            | ✓           |            |
| Improved funding support for programs                                                                                                                   |            | ✓           | ✓          |
| Human resource opportunities – creating relationships that would help in attracting international scientist to Australian jobs                          | ✓          | ✓           |            |
| Revenue generation through consultation                                                                                                                 |            | ✓           |            |
| Personality match                                                                                                                                       |            |             | ✓          |
| Personal interest in science area                                                                                                                       |            |             | ✓          |
| Travel and international experiences                                                                                                                    |            |             | ✓          |
| Highly complementary work with direct local relevance / application                                                                                     |            | ✓           | ✓          |

Many of these drivers alone would often not be a compelling or high value reason for collaborative research but a program that can combine benefits and has a strong driver in all three sectors / levels will generally be successful in delivering value to Australia.

#### **4. The impediments faced by Australian researchers when initiating and participating in international research collaborations and practical measures for addressing these.**

Following are some of the identified impediments faced by Australian researchers in developing and implementing international research collaboration opportunities. Many appear minor in nature but when combined with others create a serious impediment that limits our opportunities and the enthusiasm of researchers for engagement in this area.

- For public research agencies the pressure to deliver against Federal and State Government priorities leaves little time and resources to work on international science collaboration; programs such as ARC Linkage International and the International Science Linkages program are vital to offset the added costs and complexity of establishing international collaborations;
- In research organisations there is often a low value and poor benefit philosophy attached to international science collaboration;
- Mechanisms and procedures to leverage against existing Australian industry and government investment are not being fully explored or developed;
- Cultural differences and work philosophies between Australia and the collaborating country can lead to very different outcome expectations that take time and effort to fully understand and address in a successful science collaboration program;
- Research and commercial linkages are often not fully explored through the lack of poor business sense in many research environments;
- Restrictive international travel policies and conditions in some organisations are an impediment to international developments;
- A poor recognition that there is a longer lead time and increased upfront cost in the development of international relationships that will be fruitful and beneficial; and
- Most science collaboration opportunities need to offer some funding upfront to be effectively developed and implemented. This can be a serious impediment in many cases, particularly when there is little or no seed funding available to do the upfront work for the development of good collaboration projects.

#### **5. Principles and strategies for supporting international research engagement.**

High-quality outcomes from international science collaboration are not achieved without good and thorough planning at all stages of the program. The additional cost of detailed and specific planning with international partners prior to project commencement needs to be recognised and evaluated in relation to the benefits of potential science collaboration opportunities. All international research collaboration opportunities, particularly for public funded research organisations, need to undergo rigorous evaluation against the potential value add from the engagement flowing to the Australian economy, research outcomes and local industries.

As a broad principle the Federal Government should consider a program that can provide funds for the seed development of international science collaboration. Without such a fund many research opportunities that require little more than a 'kick start' to be beneficial in the long term will not be developed or implemented. The best value for government investment is potentially in this area of seed funding for project exploration and evaluation. A balanced investment across the science and innovation spectrum, from blue sky research to application of applied technologies, should be considered as all sectors are important in retaining Australian science skills and expertise.

Government and institution level agreements between international research organisations are beneficial, provided they are supported with a regular budget that will allow researchers to confidently and effectively communicate with international partners on the development of collaborative projects.

The most beneficial and high value international science collaborations flow from those situations where a strong personal relationship is developed between the collaborating scientists. Technical exchange programs at the research level are a key to the development of these long-term relationships and often only a small amount of funding support is necessary to bring visiting scientists to Australia for participation in a science program.