

25 January 2010

The Secretary of the Committee
House Standing Committee on Industry,
Science and Innovation
Parliament of Australia

Dear Sir/Madam

Re: Inquiry into Australia's international research collaborations

James Cook University (JCU) welcomes the Inquiry into international collaborations, which are a fundamental feature of the conduct of research and research training. In one way or another almost all research is international; e.g., because the subject of inquiry is innately transnational, and/or because the research contributes to understanding in more than one country, and/or because the research relies on cross-national comparisons, and/or because the research is informed by work carried out in other places. Inherently, then, most research conducted in Australia has an international character but it is fair to say that government support for international collaboration in research, in the recent past, has been limited and this has been a constraint upon the realisation of opportunities for transnational partnerships. The research community has welcomed new initiatives that signal a wish to engage more in international research collaborations.

1. THE NATURE AND EXTENT OF EXISTING INTERNATIONAL RESEARCH COLLABORATIONS.

JCU expresses an international outlook for research and research training through our Statement of Intent – “A brighter future for life in the tropics, world-wide”. In support of this intent, staff of the University engages heavily in research with overseas collaborators. For example, between 2006 and 2009, there were 95 research grants administered through JCU that involved international collaborators, based at 117 institutions around the world. Partnerships with researchers in the USA, UK, New Zealand, PNG and France were the most numerous amongst these funded projects. The total value of the research grants amounted to A\$10.2 million. Of course, many JCU staff are involved also in grants administered through other institutions.

Between 2004 and 2007, JCU staff published 1007 articles (HERDC categories A1, B1, C1, E1)) that had at least one other author based overseas. Our co-authors were based predominantly in the USA, UK, Germany, New Zealand and China.

The Australian Research Council Centre of Excellence for Coral Reef Studies (CoE), based at JCU, is an exemplar of international research collaboration. The Centre is recognised as a world leader in coral reef research and in the provision of science for the sustainable management of coral reefs. The CoE's exceptional international standing has resulted in literally hundreds of collaborations and interactions with international researchers and their institutions. This can be illustrated through the Centre's co-authorships, workshops, visits, and editorial board memberships, in addition to activities such as international research exchanges, memorandums of understanding, and joint funding of research and research fellows. For example, between 2005 and 2007, more than 300 of the CoE's 391 journal articles included international co-authors. In 2007 alone, these co-authors came from 162 institutions in 36 countries. Major international collaborations through the CoE include those with:

- The Beijer Institute for Ecological Economics – an international research institute under the auspices of the Royal Swedish Academy of Sciences.
- The Stockholm Resilience Centre
- The World Bank Global Coral Reef Targeted Research (CRTR) Program
- The Nature Conservancy.

CoE researchers have also been major contributors to the work of intergovernmental organisations such as the International Union for the Conservation of Nature (IUCN), the World Bank, UNESCO, and the Intergovernmental Panel on Climate Change, all of which are involved in key global declarations, World Heritage designations, and endangered or threatened species status decisions.

Some specific examples of international linkages through the CoE include:

- A 2007 capacity-building workshop for East African coral reef managers sponsored by the World Bank Global Environmental Facility (GEF), the CoE, and a consortium of government agencies and NGOs.
- A joint workshop with the GEF Coral Reef Targeted Research and Capacity Building for Management Project on "Connectivity and population resilience - sustaining coral reefs during the coming century". Twenty-eight of the world's leaders in the field of coral reef connectivity, from 7 different countries, participated. The longer-term impact is improved design of marine parks.
- A workshop in Kenya on Coral Reef Indicators of Land-Based Pollution. Scientists and reef managers from eight countries participated (Australia, Comoros, Italy, Kenya, Netherlands, Tanzania, UK, USA).
- Studies on property rights, marine tenure and resource management in Melanesia.
- Design of education materials on environmental issues for the PNG Department of Education.
- In the Philippines, the CoE has made an enormous contribution to establishing the National Integrated Protected Area System (NIPAS) and the Fisheries Code. Perhaps more importantly, they served as models for future expansion of this approach nationally in the Philippines, and throughout the world.

Post-graduate research training is a particularly important element of international collaboration. International collaborations can be formalised through co-tutelle agreements, but in many cases the collaboration is more informal, such as when a member of staff recommends study at an institution overseas to a student.

For JCU, international research students have emerged as a very significant component of our research training programs. Since 2005, 12 students have enrolled at JCU under co-tutelle agreements, but there are many more students who have arrived from overseas to study for higher degrees exclusively at JCU. Between 2004 and 2008, for example, international HDR students increased from 22% of JCU's total research student load of approximately 600 EFTSL (940 enrolled students) to more than 35%. The international reach of our post-graduate research programs is well exemplified by the ARC Centre of Excellence for Coral Reef Studies – see Figure 1.



Figure 1. The ARC Centre has attracted and supports PhD students from around the world, a result typical of several areas of research strength at JCU.

2. THE BENEFITS TO AUSTRALIA FROM ENGAGING IN INTERNATIONAL RESEARCH COLLABORATIONS.

As noted in the preamble to this submission, research is innately international; collaboration with researchers overseas, accordingly, improves both the efficiency and effectiveness of research.

More specifically, some of the benefits to Australia from international collaboration include:

- International excellence in research, a demonstrated driver of competitiveness, cannot be achieved in isolation. It is generally accepted that Australia produces around 2-3% of the world's knowledge and so cooperation with international partners has the potential to improve access to some of the other 97% of new knowledge being generated around the world.
- Many of the research challenges are of a magnitude and complexity that collaboration amongst nations is essential to their resolution.
- International collaboration helps in setting performance benchmarks, with the consequent effect of raising the bar in terms of research outcomes (e.g., all Australian research higher degree theses are externally examined and more than 50% of examiners come from overseas).
- Collaboration in research can distribute the associated costs, providing benefits in terms of the resources available.
- Engagement and collaboration with international partners extends the access of Australian researchers to global networks, affording better access to innovation.
- International collaborations encourage mobility of Australian researchers, exposing them to research innovations in a more timely and stimulating way than through the research literature alone.
- International collaborations and partnerships assist Australian researchers in gaining access to technologies and infrastructure not available locally.
- International collaborations underpin the mobility of post-graduate students, who have bolstered Australian higher degree enrolments in a period of declining domestic demand and skills shortage in some areas of national importance such as the physical sciences and engineering.
- Participation in international research collaborations is an investment in stronger international relations.
- Doctoral students are future leaders and many of today's international research students will become people of influence in their home country, with strong links back to Australia.

3. THE KEY DRIVERS OF INTERNATIONAL RESEARCH COLLABORATION AT THE GOVERNMENT, INSTITUTIONAL AND RESEARCHER LEVELS.

The drivers at the respective levels are as follows.

Government

- Productivity improvements, based on cutting-edge innovation
- Efficiency and effectiveness of investment in research
- Access to international networks
- Quality assurance
- Co-investment and cost-sharing
- International relations

Institutions

- Reputation
- Efficiency and effectiveness of investment in research
- Access to international networks
- Quality assurance
- Co-investment and cost-sharing
- Staff and student recruitment

Researchers

- Reputation
- Access to international networks
- Access to research infrastructure
- Post-graduate research student recruitment

4. THE IMPEDIMENTS FACED BY AUSTRALIAN RESEARCHERS WHEN INITIATING AND PARTICIPATING IN INTERNATIONAL RESEARCH COLLABORATIONS AND PRACTICAL MEASURES FOR ADDRESSING THESE.

The advent of digital communications has overcome to a significant extent the tyranny of distance, making international collaboration in research much easier. However, effective collaboration still requires some face-to-face contact, research in science and medicine demands time spent in laboratories overseas, research in many disciplines requires travel to field sites and archives in other countries, and travel is required for access to specialist research infrastructure.

In the not too distant past, the costs of participation in international research were not well supported. Additionally, grant rules militated against international collaboration; e.g., costs incurred by international partner investigators on ARC grants had to be met by their institution, not the ARC grant.

There have been some significant changes recently, which have begun to address these impediments. For example, the ARC grant rules have been amended to allow for some costs incurred by international collaborators to be funded. Another significant initiative is the International Science Linkages Program, under which there are several bilateral and other research funding schemes. The fact that there is provision to fund international conferences, symposiums and workshops is a notable feature of this program. Also of note are new funding programs that support mobility, particularly of early and mid-career researchers – the Future Fellows scheme and the new Super Science Fellowships. The changes to the Higher Education Act that permit universities to waive the fees of international students enrolled under a co-tutelle agreement or who win a competitive stipend scholarship are also welcome.

More could be done, however. The funding available under the International Science Linkages Program is modest and relatively few projects are funded in each round. Additionally, the geographical scope of the funding under this program is mostly constrained to a small number of countries; broadening the geographical scope would be advantageous.

Participation by research staff in international networks and events is limited by access to travel funds. Most research institutions offer some level of support for conference attendance, but in many instances the full costs of participation are not covered. Non-conference travel (e.g., for fieldwork, visits to overseas laboratories) can be even more difficult to obtain. *Resources to facilitate the outward movement of Australian researchers would lift the level of international engagement.*

Significant resources in support of research are available internationally, through the EU, for example. Progress has been made in terms of improving access and eligibility for Australian-based researchers to participate in some of these programs, and the *efforts to expand such access should continue.*

The post-graduate research training arena is one in which a good deal more progress can be made. As noted above, international HDR enrolments have been significant in moderating the effects of a national decline in domestic post-graduate enrolments. However, high fees for international students and a very modest number of government-sponsored scholarships aimed at attracting the best and brightest international students limit the potential. There are approximately 10,000 international students doing higher degrees by research in Australian universities, but only about 300 International Postgraduate Research Scholarships are awarded annually. These are the scholarships most attractive to outstanding students.

New Zealand has eliminated international fees for research students and Australia should consider the same. Australian Universities should be further assisted to attract the highest calibre international research students. Such students are operating in a genuinely global market for their enrolment; it does not serve Australia well to discourage them through high costs. *Co-tutelles are gaining favour internationally and there is a role for the Australian Government to facilitate wider access to this formal arrangement for international collaboration in research training.* Other strategies that should be considered include:

- Making Australian Postgraduate Awards (APA) available to International Postgraduate Research Scholarship (IPRS) recipients.
- Allowing universities to award Australian Postgraduate Awards on merit to international applicants in areas of research strength within each institution and in areas of national need, especially disciplines in which is difficult to recruit qualified Australians; e.g., engineering.
- Extending the IPRS-funded PhD candidature to three and a half years with a possible extension to four years. This is consistent with the recommendations made by the Government's response to the House of Representative's inquiry into research training and research workforce issues "Building Australia's Research Capacity"
- Increasing the number of IPRS recipients as part of the Research Workforce Strategy (RWS). This is consistent with the recommendation made by the House of Representative's inquiry into research training and research workforce issues "Building Australia's Research Capacity".
- Developing a competitive scheme to facilitate ongoing collaboration between Australian trained international research graduates and their supervisory team when the graduates return to their home country.

5. PRINCIPLES AND STRATEGIES FOR SUPPORTING INTERNATIONAL RESEARCH ENGAGEMENT.

International collaboration in research is essential for Australia to maintain leadership in innovation, an essential foundation for productivity improvements. Accordingly, Australia must:

- Collaborate with nations in pursuit of solutions to complex challenges.
- Seek to improve access by Australian researchers to international research networks, technologies and infrastructure.
- Achieve improvements in the efficiency and effectiveness of investment in research through international collaboration, including co-investment.
- Improve access to our research, as a stimulus to investment in Australian innovation and to support our obligations to offer solutions to nations that are less well-off.
- Engage in international collaboration to ensure levels of productivity and quality of Australian research is of a standard to deliver leading-edge innovations.
- Facilitate participation in international research training, as a source of human capital for Australia and particularly for nations that are less well endowed.

Five broad strategies are required:

1. Increase the financial resources available to support Australian researchers in international collaboration.
2. Make Australia a much more favourable destination for international post-graduate students.
3. Develop a long-term strategy for international partnerships in support of specialised research infrastructure.
4. Negotiate in support of improved participation for Australian researchers in major international research funding programs.
5. Integrate international relations policy with research policy, with a view to leveraging investment in Australian innovation and supporting our obligations to lesser developed nations.

Thank you for the opportunity to offer these comments to the Committee. James Cook University looks forward with interest to the release of your findings.

Yours sincerely



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