



The Hon Peter Garrett AM MP

Minister for Environment Protection, Heritage and the Arts

C10/2680

Mr Russell Chafer
Secretary
Standing Committee on Industry, Science and Innovation
PO Box 6021
Parliament House
CANBERRA ACT 2600

Dear Mr Chafer

15 MAR 2010

Following an invitation from Ms Maria Vamakinou, Chair of the House of Representatives Standing Committee on Industry, Science and Innovation, I am providing the Committee with my submission to the inquiry into Australia's international research engagement.

My portfolio encompasses diverse research initiatives in fields that include arts and culture, biodiversity preservation, Antarctic policy, wetlands and marine mammal conservation. Because of the international character of contemporary environmental challenges, I have encouraged a strong focus on research that features international engagement. I believe such engagement is an important element in developing policy outcomes based on the best available information.

Australia is also a signatory to a variety of international agreements in policy areas that fall under my responsibility. International research engagement is crucial to ensuring that Australia fully meets its obligations under such agreements and is able to encourage and facilitate other signatory nations to do the same.

Given the importance of innovative research to my portfolio I enthusiastically share the Committee's interest in further developing the processes and structures that will support international research engagement into the future.

If you require any further assistance, the contact officer in my Department is Mr Geoff Richardson, Assistant Secretary, Environment Research and Information Branch. He can be contacted on (02) 6274 2210.

Thank you for the opportunity to contribute to this important inquiry. I look forward to reviewing the outcomes.

Yours sincerely


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Submission to Inquiry Into Australia's International Research Collaborations

Minister for Environment Protection, Heritage and the Arts

1. The nature and extent of existing international research collaboration

Australian Antarctic Division

My Department's Australian Antarctic Division (AAD) leads Australia's Antarctic Program, a highly collaborative and internationally based scientific initiative under which 119 projects were undertaken in 2008-09. These projects involved collaboration with 242 institutions from 28 countries.

AAD's international research collaborations range from informal contacts with researchers based at institutions anywhere in the world, to formal bilateral and multilateral arrangements. Nearly all the projects within the Antarctic Program have some level of international research collaboration, many with international co-investigators and several led by researchers based overseas. The Antarctic Treaty system strongly encourages international collaboration in the Antarctic and Southern Ocean. A recent example of this was the International Polar Year (IPY) 2007-08, with Australian scientists participating in 72 of the 228 endorsed IPY projects. The IPY built on a 125-year history of internationally coordinated study of polar regions.

Australian Marine Mammal Centre

The International Whaling Commission has endorsed a five-year non-lethal whale research proposal for the Australian-led Southern Ocean Research Partnership (SORP) that will direct future non-lethal research activities. This is an international, multidisciplinary research collaboration with a focus on improving the conservation of whales. SORP forms part of the Australian Government's \$32.5 million commitment to national and international non-lethal research and conservation initiatives for whales, and is administered by the Australian Marine Mammal Centre (AMMC), based within my Department's Antarctic Division.

A ship-based joint Australian-New Zealand Antarctic Whale Expedition is currently collecting information on several whale species in the Southern Ocean. This is the largest collaborative whale research voyage ever undertaken and is a SORP initiative. Non-lethal research methods will be employed.

The AMMC also administers the Indo-Pacific Cetacean Research and Conservation Fund (IPF) on behalf of the Australian Government. The IPF is a contestable grant program which aims to attract high quality, innovative and relevant research projects that address research and conservation challenges of interest to the Australian Government, developing countries in the Indo-Pacific Region and the cetacean research and conservation community more generally.

Activity as Part of the Commonwealth Environment Research Facilities Program

The Commonwealth Environment Research Facilities (CERF) is a \$20 million annual research program aimed at improving Australia's capacity to understand and respond to priority environmental concerns.

CERF has a strong 'public good' focus. It promotes research in areas of special strength or need as identified in priority research areas: condition of the nation's environmental assets; threats and risks to our environment; pressures on our coastal environment; and social and economic aspects of our environment. It is also enhancing Australia's environmental research capacity by providing high quality research training for early career researchers, through PhD and post-doctoral support.

In 2009 two CERF teams won Australian Museum Eureka Prizes, the most prestigious awards in Australian science. CERF has featured a variety of international research collaborations. For example, the Applied Environment Decision Analysis hub (AEDA) has forged research links with Technion Israel Institute of Technology; San Diego State University, California; Helmholtz Centre for Environmental Research in Leipzig, Germany; and the University of Helsinki.

Action in Relation to Monitoring the Environmental Impacts of the Nuclear Industry

My Department's Supervising Scientist Division (SSD) is collaborating with the German Radiation Protection Agency on a project involving the collection of air samples worldwide, and subsequent measurement for Krypton-85, a radioactive noble gas. Samples have been collected weekly by SSD staff in Darwin since late 2007 and are sent to Germany for analysis. The major sources for atmospheric Krypton-85 are reprocessing facilities for nuclear fuel, mainly located in the northern hemisphere. As inter-hemispheric exchange is relatively slow, southern hemisphere Krypton-85 concentrations are much lower than northern hemispheric concentrations. . During monsoonal periods the Intertropical Convergence Zone can 'sweep' across Northern Australia, effectively exposing Darwin to northern hemispheric air. The project also indirectly contributes to the development of global circulation models used in climate change modelling.

SSD is also collaborating with Hull University in the UK, working to extend the capability of the river catchment evolution model developed by Professor Tom Coulthard to predict erosion rates from rehabilitated mine landforms. The model predicts the extent of erosion over periods of years to centuries and assesses the likely future environmental performance of these engineered structures. This model can also be used to predict the performance of proposed designs under different rainfall and climate scenarios and thus determine if these designs are likely to be sufficiently stable to protect the environment. The model is run locally by staff trained by Professor Coulthard during his visits to SSD. This leading edge work in the field of geomorphic modelling has resulted in several co-authored publications.

Activity in Relation to Air Quality

The Air Quality section of my Department is in regular contact with international researchers and research agencies to keep abreast of the latest international research developments. They have also established a network of international research collaborators during the Clean Air Research Program (CARP). A number of projects under CARP were peer reviewed by international researchers. Key research organisations and individuals that collaborated in delivering CARP projects included Environment Canada, Health Canada, the Health Effect Institute and international academic institutions.

Activity in Relation to Biodiversity

My Department acts as the Australian Management Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In this role my Department provides international wildlife trade data to the CITES secretariat on an annual basis to assist with collation of statistics related to trade in animals and plants around the world.

My portfolio responsibilities also include managing wildlife specimens seized by Customs under the *Environment Protection and Biodiversity Conservation Act 1999*. Part of the management strategy for these specimens involves a loan scheme. Research facilities, museums and universities may loan seized items from my Department for research or educational purposes. The Department's contribution in this area ranges from supplying items for educational display to providing specimens for biological sampling for DNA research.

I can also report that the Australian Biological Resources Study (ABRS) is in the final stages of developing an Agreement to Collaborate between the European Union (The European Distributed Institute of Taxonomy), South Africa (The South African National Biodiversity Institute) and Australia. This agreement is targeted at joint funding that fosters international science research collaboration and capacity building. ABRS is also in preliminary discussions with the National Science Foundation to establish a similar agreement.

Activity in Relation to Wetlands

As part of my portfolio responsibilities I am responsible for Wetlands and administration of the Convention on Wetlands of International Importance (Ramsar). Australian wetlands experts are members of the Ramsar Scientific and Technical Review Panel (STRP) which undertakes research and provides guidance to Contracting Parties on the implementation of the Ramsar Convention. Australian representation on the STRP is made through the Australian STRP National Focal Point. The National Focal Point seeks to provide input on STRP deliberations to ensure Australia's perspectives are considered in STRP decisions.

Activity in Relation to Arts and Culture

My portfolio encompasses the Australia Council, the Australian Government's principal arts funding body, which is a member of The International Federation of Arts Councils and Culture Agencies and supports its program of international research and dissemination. The Australia Council provides support to the Linkage Projects scheme which is administered by the Australian Research Council. The Linkage Projects scheme supports collaborative research and development projects between higher education organisations and other organisations.

I also hold responsibility for the activities of the National Museum of Australia. The Museum's collaborations tend to be specific and closely targeted, often associated with particular exhibitions or with long-term relationships formed with overseas institutions. The Museum, for example, has collaborated with international colleagues in association with the Cook-Forster Collection at the University of Göttingen, Germany, in association with the 2006 exhibition, *Cook's Pacific Encounters*. It is engaged in a similar collaboration with the British Museum in the *Old things - new histories* project, which like many such exhibition-based projects

will produce not only a joint exhibition but also conferences and publications, and will stimulate and foster further research drawing on the Museum's collection. The Museum's relationship with the Menzies Centre for Australian Studies in London, which acts as a focus for collaborative work with British colleagues, has paid off in various visits, exchanges, grants and research opportunities.

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

Benefits in Relation to the Antarctic Treaty System

Science is often described as the "currency" of the Antarctic Treaty system, with international collaborative research central to this. Australia benefits by engaging in international research by being able to contribute to larger research projects addressing key polar processes and environmental questions that would not be possible alone. The difficulty of working in the Antarctic and Southern Ocean is a strong driver for pooling logistic and scientific efforts to maximise cost effectiveness and maximise outcomes.

Benefits for Cetacean Conservation

In the field of whale conservation Australia and other International Whaling Commission (IWC) members have made significant progress in reshaping the IWC to become a science and conservation-focused organisation, and the SORP is the key scientific program to achieve this. SORP will lead by example, and through the collective efforts of the many partnership countries will demonstrate new ways of providing the priority research results needed by the IWC.

The overall aim of the IPF is to promote positive conservation outcomes for cetaceans in the Pacific and the Indian Ocean regions by supporting priority cetacean research and related activities that are consistent with the priorities of Australia and the nations of the Indian and South Pacific Ocean regions.

Furthermore, information gained from Australian-New Zealand Antarctic Whale Expedition will give greater insight into the little-known facts about how whales interact with sea ice and how they use their environment. This will greatly assist Australia's future whale conservation efforts.

Benefits in Relation to the Commonwealth Environment Research Facilities Program

The international collaboration that has been promoted under the CERF program has produced some outstanding research outcomes. For example, a team of international researchers working with the CERF program's Applied Environmental Decision Analysis hub recently had a groundbreaking paper published in the influential journal *Science*. The paper examined the possibilities for protecting threatened biodiversity by tweaking carbon payment systems to focus on preventing deforestation in biodiversity hotspots.

Benefits in Relation to Monitoring the Environmental Impacts of the Nuclear Industry

My Department's collaborations with international experts in the uranium mining and nuclear energy fields helps to train Australian professionals in leading edge methods and technologies. Collaborations also create the possibility of developing of improved methods for environmental protection worldwide.

With specific reference to the SSD and its collaboration with the German Radiation Protection Agency, the project is highly relevant to climate research in Northern Australia. It collects useful information related to climate monitoring and inter-hemispheric exchange. Although the German Radiation Protection Agency is the main driver of this project, SSD provides the air samples and contributes to data interpretation for the Darwin site.

SSD's collaboration with Professor Coulthard of Hull University is producing leading edge science of international quality. The collaboration has provided Australian Scientists with the skills to use Professor Coulthard's method to assess proposed rehabilitation scenarios for the ERA Ranger mine to ensure that the landform that is finally constructed will provide ongoing protection for the World Heritage values of Kakadu National Park and Magela Creek and flood plain.

Benefits in Relation to Air Quality

Lessons learnt from international research can be applied to Australia to ensure that costly research work is not duplicated and targeted to achieve optimal outcomes. International findings can also be used to inform the design of Australian research.

Benefits in Relation to Biodiversity Protection

My Department engages with the CITES secretariat and committees as well as management authorities of other signatory nations to further develop international knowledge of international wildlife trade issues. This facilitates better management of wildlife trade and strengthens relationships between countries. On a national level the Department's engagement with researchers, universities, museums and other educational facilities in providing specimens through the seized item loan scheme generates opportunities to educate the community about endangered species and CITES.

International collaboration can also help Australia to address some particular aspects of skills shortage. Australia has a shortage of taxonomists and the workforce age is significantly above the national mean. International collaborations encourage overseas expertise to Australia and develops early career capacity building in Australia. This exchange is a two-way-street. For example, Australia is a recognised world leader in biodiversity informatics and international collaboration provides opportunities to export Australian developed ideas around the world.

Benefits in Relation to Wetlands

Australian engagement on the STRP has assisted in ensuring consistency between Australia's international obligations and domestic policy. An example of this is the Australian guidance on describing the ecological character of Australian wetlands, which later informed guidance developed by the STRP. In addition, Australia's active involvement in STRP facilitates capacity building for Pacific Island countries and territories in relation to their in-country implementation of the Ramsar Convention.

Benefits in Relation to Arts and Culture

The international collaborations taking place under the auspices of the Australia Council inform policy development and legislative reform. For example, in the area of protecting movable cultural heritage, such research helps to increase knowledge

and awareness, and provide intelligence and trends relating to the illicit trafficking of cultural property. This collaboration helps strengthen the effectiveness of Australia's implementation of the 1970 UNESCO Convention on the *Means of Prohibiting the Illicit Import, Export and Transfer of Ownership of Cultural Property*

As a knowledge-based institution the National Museum of Australia needs to engage in research in order to understand and explain its collection and fulfil its mission of interpreting Australia to the world. Australia's natural and human history needs to be understood in a transnational context. Sources relating to Australia's history are often held overseas, while the involvement of overseas scholars is often vital for advancing understanding of Australian material or experience. Connecting to the wider world of scholarship is imperative to make the most of the Museum's collection and to foster a better understanding of Australia.

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

For the Antarctic Treaty System

In the context of government "super science" initiatives in the spheres of marine, climate, astronomy and space, all are inherently global scale science challenges where the requirement for international collaboration is well established. No one nation has the capability to unilaterally tackle climate change, ocean sustainability and space science. Australia often punches above its weight in these international collaborations and has accrued significant leverage from its international collaborations. Within the Australian Antarctic science program, the remoteness and considerable expense of conducting research either in the Southern Ocean or on the continent demands collaboration on both intellectual and efficiency grounds. In recognition of this the criteria for scoring science projects within the Australian Antarctic program has quite deliberately encouraged collaboration.

Involvement in international scientific collaboration has always been encouraged within the AAD. The value of these efforts is the opportunity to pool logistical support with other national programs and also to increase overall scientific capability by leading or participating in international research programs that would not be possible to run alone. A strategic approach to the international collaborations undertaken has recently been developed within the AAD and this is beginning to be implemented.

For Cetacean Conservation

In relation to cetacean conservation the key driver of international research collaboration is the Australian Government's determination to effectively promote cetacean conservation through our participation in the IWC process.

For the Commonwealth Environment Research Facilities Program

The key drivers of international research collaboration within the CERF program are largely goal-oriented. That is, if a research hub identifies a possible overseas collaboration that will further its research workplans and goals then it will pursue this partnership. Of course, possibilities for such collaborations are produced by the networks already established and maintained by lead researchers and institutions.

For Research Relating to Monitoring the Environmental Impacts of the Nuclear Industry

For my Department a key driver of international research collaboration in relation to the nuclear industry is to obtain access to new ideas and technologies to ensure that best practice monitoring programs are in place for the protection of the environment for the effects of uranium mining.

For research institutions and researchers international collaborations offer the opportunity to acquire specific skills and methods, and to benchmark Australian capacity against international best practice. Another key driver is the development of networks with such networks often extending well beyond the initial reason for establishing the collaboration. The networks my Department has established with researchers in the field of radiological protection in Europe has led to further collaborations with European researchers on radiological matters associated with uranium mine rehabilitation (Germany has recently completed rehabilitation of the former East German Wismut uranium mine areas). The involvement of the German Radiation Protection Agency with the International Atomic Energy Agency and Comprehensive Nuclear Test Ban Treaty Organisation has further strengthened contacts between my Department's officers and researchers from these two UN agencies.

For Research Relating to Air Quality

At the government level, the key driver is finding answers to key questions to directly inform the development and implementation of effective policies and programs. At the institutional and researcher levels, these entities are aware that their work must be relevant to government agencies and collaboration will facilitate this.

For Biodiversity Collaboration

My Department provides information to the CITES secretariat about wildlife trade on an annual basis. This information is in turn provided to CITES Parties to facilitate better management of international wildlife trade.

The key drivers for the work of the ABRS are the availability of international grants and the protocols developed by Australian Government agencies to allow multinational pooling of grant funding.

For Research Relating to Wetlands

Key drivers are bringing Australian research experience and implementation perspectives to the development of international guidance on wetland management and implementation of the Ramsar Convention.

For Research Relating to Arts and Culture

A driver for international collaborations in the field of arts and culture is to provide current analysis and evidence to support policy development and legislative reform. For example, such research helps targeted compliance and enforcement activities for the protection of movable cultural heritage and enables Australia to achieve more effective results with limited resources.

For the National Museum of Australia the essential impetus to international research is to draw on the most relevant sources or the most relevant expertise, regardless of

location. Individual scholars will consult both material and colleagues in search of knowledge, and the transnational nature of Australia's past makes overseas collaboration necessary rather than desirable. Institutionally, the possibility of bringing Australian material to Australian attention makes international collaboration in research-based exhibitions highly attractive, as the Cook and British Museum projects demonstrate.

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

The chief impediments faced by researchers associated with my portfolio when initiating and participating in international research collaborations are inherent and related to our country's geographic isolation. The tyranny of distance means that international research collaborations are expensive (in terms of travel costs and sometimes exchange rates), time consuming and often simply difficult to organise. Advances in electronic communications and videoconferencing have alleviated these problems to some extent, and I note that the Australian Government's National Broadband Network initiative will only open up more opportunities for this kind of collaboration as internet speeds become faster. However, I appreciate there is no complete substitute for the type of personal, one-to-one contact that underpins successful international research collaboration and prioritising the funding necessary to facilitate this is an ongoing focus for my Department.

Funding and governance problems in partner nations can also make international collaborations more difficult. For example, information sharing between the Australian Government and other parties to CITES is sometimes hampered by difficulties with compliance and enforcement of CITES requirements around the world and the varying ability of party nations to provide robust data on these issues.

Given the necessary limitations on the funding any nation can devote to supporting international research collaboration, it is imperative that a significant proportion of research funding is directed towards addressing contemporary environmental challenges. The CERF program is an example of how my Department has prioritised research that addresses the environmental challenges facing our nation. I have now decided to extend this program and have directed that it particularly focus on biodiversity issues. This includes understanding how ecosystems function, monitoring their health, maintaining and building their resilience, using them sustainably and exploring how to use markets to protect biodiversity.

5. Principles and strategies for supporting international research engagement

My Department has made it a priority to support international research engagement that supports decision making in relation to the contemporary environmental challenges facing Australia. The CERF program is just one example of this approach whereby a significant investment in environmental research was directed towards projects with clear practical application. Support for international research collaboration has been a mark of CERF.

Numerous other initiatives that support international research engagement are being supported within my portfolio. International research engagement is a major part of the Australian Antarctic program and the Australian Government provides incentives for projects with international collaboration. In addition, a more targeted international engagement strategy has just been developed and will be implemented for projects commencing in 2011-12; the next application round.

The AMMC is leading by example, supporting international research collaborations that demonstrate whales do not need to be killed in order to study them.

In relation to Wetlands, research is clearly linked to existing policy and management requirements. For example, my Department ensures that STRP Work Plans address research guidance and provide ongoing meaningful support for on-ground implementation of the Ramsar Convention. International research proposals are aligned with existing and emerging policy obligations and are integrated across biodiversity areas covered by a number of international agreements.

The National Museum of Australia recognises that scholarship is international, and that its staff must develop relationships with colleagues internationally. In engaging in international research collaboration it has operated under several principles. They include the desire to engage in actual collaboration, rather than paying lip-service to the idea by signing but not sustaining agreements. The Museum also has repeatedly ensured that its international collaborations produce outcomes such as exhibitions, conferences, publications of various scales and kinds, exchanges, and the supervision of students. The resources it commits to developing and sustaining such relationships has ensured that the Museum plays a full part in contributing to Australia's standing as a participant in the world of scholarship.