

Inquiry into Australia's international research collaboration

House of Representatives Industry, Science and Innovation Committee

Submission from Scientific Services Division, Department of Environment, Climate Change and Water NSW

Introduction

The Department of Environment, Climate Change and Water, NSW (DECCW) conducts research to support the development and implementation of NSW Government policy and statutory responsibilities.

As a state government environment agency, our focus is broad and research is not our primary focus. The majority of our research effort is in non-commercial applied research aimed at supporting government priorities.

The following sections briefly address the specific terms of reference of the inquiry and are based on the experiences of the Department's Scientific Services Division (which has about 300 scientific and support staff).

Inquiry terms of reference

The nature and extent of existing international research collaborations

DECCW is currently or has been recently involved in a number of international research collaborations:

Name of program	International Institution	DECCW scientist	Scope of program
Surface Elevation Table (SET)	US Geological Survey, USA	Drs Neil Saintilan and Kerrylee Rogers	Monitoring estuarine wetland level changes in the light of sea level rise, in 16 countries (www.pwrc.usgs.gov/set/)
Journda Basin Long Term Ecological Research	USDA-ARS Jornada Experimental Range, USA	Dr David Eldridge	Animal-soil feedbacks on desertification
Various	New Mexico State University, USA	Dr David Eldridge	Carbon storage in shrub-encroached woodlands
Various	Rey Juan Carlos University, Spain	Dr David Eldridge	Shrub encroachment, desertification and ecosystem stability in deserts
Various, including under Latin American Science and Technology Development Program (CYTED)	Rey Juan Carlos University, Spain	Dr David Eldridge	Impacts of European rabbits on Mediterranean systems Ecosystem assessment for arid systems: a global initiative (www.cytcd.org)
UK-Australia Collaboration into Micropollutants in Water	Department of Environment, Food & Rural Affairs, UK	Dr John Chapman	Investigating the impacts of endocrine-disrupting chemicals and other micropollutants on health of humans, ecosystems

			and wildlife, in 4 countries
Joint Remote Sensing Research Program	Landcare Research New Zealand	Tim Danaher	Methods for correcting satellite imagery
Japanese Australian Dust Experiment (JADE)	Japanese Government	Drs John Leys and Xihua Yang	Test theories on dust generation and impacts
Investigating wind erosion	Oxford, Salford and Loughborough Universities, UK; University of Cologne, Germany	Drs John Leys and Xihua Yang	Investigating wind erosion and generation of dust
Phylogeny and genetics of freshwater mussels	University of Alabama, USA	Dr Hugh Jones	Investigating the phylogenetic variability and genetics to determine taxonomy of Australian freshwater mussels
Replacing invasive rats with native rats	Landcare Research New Zealand	Dr Dan Lunney	An ARC grant, led by Dr Peter Banks, UNSW, to investigate replacing invasive species of rats with native species to rehabilitate areas within Sydney national parks
Development of lysosomal stability assay for Sydney Rock Oyster	University of North Carolina, USA	Dr Tony Roach	Development of a new bioassay technique for an Australian species for an ARC project 'Assessing and understanding ecological changes in highly disturbed estuaries: addressing the complexity of multiple stressors', led by Dr Emma Johnson, UNSW
Investigate how similar chemicals from different sources interact with complex food chains in Australia	University of Antwerp, Belgium	Dr Tony Roach	Contrasted the accumulation of organobrominated compounds which are used in industry and formed as by-products of industrial processes with the closely related chemicals formed naturally by sponges, algae and microbes
The Soil Moisture Ocean Salinity Satellite (SMOS)	European Space Agency, France	Dr Greg Summerell	Helping to calibrate instruments on the SMOS, by ground-truthing, with the University of Melbourne, University of Adelaide and Flinders University

The DECCW contribution to these projects is mostly in-kind (payment of salaries of involved staff, provision of facilities, etc.). Funding is typically by Australian research funding bodies (e.g. Australian Research Council), universities, catchment management bodies and, most often, from the overseas partner organisation or overseas funding bodies.

The benefits to Australia from engaging in international research collaborations

- Ability to access new ways of doing research and/or new methods and hypotheses that have been developed overseas

- Learning from and gaining a different perspective on similar problems and issues from different environments
- Adding value to existing information by reference to international experience
- Ability to attract foreign investment to, and improve the cost-effectiveness of, research by involving international collaborators
- Developing the next generation of researchers by providing students with opportunities to work in different institutions
- Facilitating the exchange of information and the development of research networks
- Making science more accessible to those involved in policy and protected area, emissions and natural resource management (e.g. by involvement of policy and management in designing and overseeing the programs, by publicising the results through synthesis brochures and seminars through involved organisations)

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

- The need to access the best available methods and approaches used by researchers and institutions
- The ability to adopt alternative, sometimes superior, approaches to tackling problems
- Leveraging funding for research through collaborations
- Showcasing the individual's and the institution's research, and disseminating this research within a broader context
- The need to become involved in collaborative work and to develop relationships in order to secure research funding
- The need to increase the international standing of individual's research, which is critical if they are to progress within specialised career classifications. This is specifically important for those researchers employed under the NSW Government's research scientist classification which required them to develop a national and international reputation.
- International agreements, law and policy obligations (e.g. Stockholm Treaty on Persistent Organic Pollutants; migratory bird and wetland agreements such as CAMBA, JAMBA, ROKAMBA, Ramsar)

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

- Cost: Technology increasingly allows for easy and cheap communication between collaborators no matter where they are located. Nevertheless the costs associated with undertaking or supporting overseas work or bringing overseas collaborators to Australia for extended periods can be a barrier.
- Scale: The relatively small financial basis of most Australian environmental research means most programs cannot afford to support international collaborations
- Time: Collaborations take time to build and need ongoing support – the tendency of funding groups to lose interest in particular issues after one or two projects are completed means ongoing support is hard to obtain

Principles and strategies for supporting international research collaborations

- Improved collaboration between government, university and/or business sectors in regard to research generally (local as well as international), e.g. the fora run by the NSW Chief Scientist and Scientific Engineer (<http://www.chiefscientist.nsw.gov.au/Current-Activities/The-University-Government-Business-Forum.aspx>)

- Promote the value to organisations of overseas placements with research organisations and placement of overseas scientists within organisations, and international collaboration generally
- Encourage reciprocal secondments
- Be more flexible in allowing researchers to collaborate with overseas institutions, by, for example, supporting overseas postings, providing a small amount of seed money to support overseas postings, allow staff to be considered at work while visiting overseas institutions, having staff who can assist in arranging international collaborations
- Initiate direct Memoranda of Understanding with similar organisations overseas
- Mentor younger researchers in how to foster international collaborations