



EC-Australia

S&T COOPERATION ROADMAP

2009-2010

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1. EC - AUSTRALIA COOPERATION OVERVIEW

In 1994, Australia became the first country with which the EU signed an S&T agreement. Since then, cooperation has been active and steadily increasing in diverse areas, such as Health, Food, ICT and others.

Both parties regularly meet at a Senior Official level under the Joint Science and Technology Cooperation Committee (JSTCC). In addition, a well established dialogue platform (the Forum for European-Australian Science and Technology Cooperation - FEAST) promotes cooperation at the level of researchers and research stakeholders which raises awareness for cooperation in areas of mutual interest and benefit.

Cooperation in science, technology and innovation is an objective with the Partnership Framework which was announced on 2 April 2008 by the Prime Minister of Australia, Kevin Rudd, and President of the European Commission, José Manuel Barroso.

European Union - Australia Partnership Framework

- The EU-Australia Partnership Framework was adopted on 29 October 2008. The Framework agrees to on-going collaboration in the fields of innovation, science and research; identifies long and medium term objectives; and outlines actions for immediate implementation.
- Specifically, the Framework agrees to build on the outcomes of the 10th JSTCC meeting and intensify support for an innovation, science and research partnership between Australia and the EU, including new opportunities for strategic research partnerships under the European Commission's Framework Programmes for R&D.
- The implementation of the Action Plan of the Australia-EU Partnership Framework will be reviewed on a regular basis and reported to the EU-Australia Ministerial troika consultations. Hence, monitoring and review of this Roadmap should form an input to reporting arrangements under the Partnership Framework.

Areas of Cooperation

Research cooperation between Europe and Australia has always been intense. More than 100 Australian organisations participated under the 6th Framework Programme (2002-2006) and this trend continues under FP7 (2007-2013).

Areas of cooperation are as diverse as Health, Food/Agriculture and ICT. These three domains account for 80% of current cooperation within the thematic areas of FP7. In addition, participation is high in both the Infrastructures (radio-telescope SKA-Square Kilometre Array project) and the Mobility Programmes (Marie-Curie and IRSES).

By contrast, Australia-EC collaboration is under-represented in areas such as Environment, Energy, Nanotechnologies and the Social Sciences and Humanities.

Australia was one of the first countries to put online a researcher mobility portal linked to the European Commission's EURAXESS site¹. This Australian portal², the development of which was funded by the Australian Government, is successfully promoting researcher circulation between Europe and Australia.

Dialogue Platforms

As established by the S&T agreement, both parties regularly meet at Senior Official level under the JSTCC which provides a formal mechanism to monitor S&T cooperation. The 10th JSTCC took place on 29-30 September 2008 in Brussels and this Roadmap has been developed as an outcome from that meeting.

Australia is also the first country with which the EC established a bilateral platform for cooperation - the co-funded FEAST³. This initiative has been extremely active in profiling and promoting cooperation opportunities in areas of mutual interest and benefit and was recently renewed for a further 3-year period until 2011.

Funding and Support Mechanisms

The European Research Framework Programme is the primary tool to support EC-Australia cooperation in Science and Technology. Australia, however, supports this cooperation in various ways.

Australia has dedicated funding to support cooperation with the EU: the Australia-Europe Research Collaboration Fund, a component of the International Science Linkages (ISL) program (AUD \$4 million 2008-2011)⁴; and the National Health and Medical Research Council (NHMRC) - European Union Collaborative Research Grants program (AUD \$1 million available under each call)⁵.

Many areas of Australia-EU cooperation fall within the objectives of CSIRO's National Research Flagships program⁶. In 2008, CSIRO received government approval to broaden the use of the Flagship Collaboration Fund (more than AUD \$100 million over seven years) for international collaboration and is working on building collaboration with Europe in some of these areas.

Moreover, during 2008 the Australian Research Council has opened up its fellowships to international candidates for all schemes, providing funding for eligible organisations to promote collaboration, movement and networking between Australia-based and overseas researchers⁷.

Australia's participation in the EU Framework Programme is underpinned and reinforced by its strong bilateral research cooperation links with a number of EU Member States. Priority countries for Australia's bilateral engagement include the United Kingdom, France and Germany, with strong links also with other European partner countries such as Italy, Spain, the Netherlands and Scandinavian countries. There are also emerging opportunities for cooperation in the EU's new Member States.

¹ <http://ec.europa.eu/euraxess/>

² <http://www.mobility.org.au/>

³ <http://www.feast.org/>

⁴ <http://grants.innovation.gov.au/ISL/>

⁵ <http://www.nhmrc.gov.au/grants/types/granttype/strategic/austeu.htm>

⁶ <http://www.csiro.au/partnerships/NRF.html>

⁷ <http://www.arc.gov.au/>

In the area of industry engagement, it is likely that there also is significant but "hidden" Australian involvement in EU R&D through the participation of large multinational corporations (MNC) in the Framework Programme and other collaborative initiatives in the EU. MNCs source and integrate their intellectual property and know-how from their R&D and innovation activities in many countries, including Australia.

This means that there are complex and indirect channels via which Third Countries, such as Australia, make a contribution to R&D and innovative activity in the EU that should not get neglected. In addition, given the growing importance of innovation-focussed industry-academic collaboration to addressing global challenges, this aspect of current Australian-EU collaboration and the potential to expand it in relation to key thematic areas is included in the Roadmap.

Finally, in terms of cooperation mechanisms all avenues will be explored in particular the Twinning support mechanism that, if successful, could be envisaged in several thematic areas of mutual interest and benefit.

2. ROADMAP: EC-AUSTRALIA S & T COOPERATION

2.1. Monitoring and Review

This Roadmap is a dynamic tool - to be updated and amended as appropriate to respond to emerging opportunities and priorities - to reflect the state of the on-going relationship in scientific and research cooperation between Australia and the EC.

A conference by videolink is proposed in mid-2009 to take stock of progress against the Roadmap.

2.2. Conferences and Workshops

Australia will look to participating in key EU Research conferences and workshops, to increase visibility to the European research community and promote opportunities for collaboration.

- ICT 2008 Conference - Lyon, 25-27 November 2008
- European Conference on Research Infrastructures - Versailles, 9-10 December 2008
- “Changing Research Landscapes – *10 Years of Women and Science*” - Prague, 14-15 May 2009.

Emerging opportunities in both Australia and Europe will be identified and promoted. This Roadmap also identifies several thematic workshops to be undertaken during 2009 (refer to thematic summaries).

2.3. Health

Achievements

- There has been strong Australian participation in FP6 & 7.
- NHMRC mechanisms facilitate participation in FP7.
- A success rate of 10/26 applications (twice the average) reflects the strong quality of investigator-driven participation in a wide range of health research areas including:
 - Genetic environment (heart, cancer)
 - Genetic epidemiology
 - Genetic factors for osteoporosis
 - Malaria (2 projects)
 - Health and behaviour (healthy living)
 - Assisted health care needs

Agreed activities 2009

- ***Workshop on Healthy Ageing and ICT:***
This multidisciplinary workshop is agreed as a joint initiative, to be organised by the Australian Academy of Technological Sciences and Engineering and the French Academy of Sciences. The workshop will be held in Paris in October 2009 and will include five equivalent academies on the European side.
- ***WP 2009:*** Calls of interest include malaria and cancer genomes research in which Australia has expertise. Australia proposed to look at the "Cancer genome atlas" international fora.

Suggestions for new activities

- Topics of mutual interest
 - Diabetes
 - Health economics
 - Healthy ageing
 - Malaria
 - Colorectal cancer
 - Heart disease
 - Neurodegenerative diseases
 - Impacts of climate change on health
- Multilateral initiatives: at regional level (Asia-Pacific) and collaborations with New Zealand and the Wellcome Trust.

2.4. Food, Agriculture, Biotechnologies

Achievements

- There were nine participations by Australian researchers in 2007 FP7 calls in food, agriculture and biotechnology (FAB), with a high 75% success rate.
- Australia has made full use of the Biotechnology National Contact Point initiative.
- FEAST support for information days has encouraged participation in FP7.

Agreed activities 2009

- **Twinning:** The EC and Australia agreed that Twinning would be the main new tool for cooperation in this area. Officials will meet via videoconference in February 2009 to identify suitable projects and advance the arrangements. Australian funding to participate in this *Twinning* pilot has been approved under the International Science Linkages program.
- **BioNCP:** FEAST to reinforce its involvement
- **FP7:** To increase Australian expert evaluators involved in EC programs, it was agreed that EC could proactively advise where specific skill sets/experts were required.
- **Thematic areas in Non Food Agriculture:**

Crop Biofactories - Australia currently has formal links in this area with the FP7 through the ICON 'Green Oil' project and is very active in this research.

Bio-refining and 2nd generation bio-energy (ligno-cellulose including bio-waste, and algae) - Energy Transformed Flagship. Australian forestry bioscience is already working in FP7 via TRANSFOR (Transferring Research between EU and Australia-New Zealand on Forestry and Climate Change) which addresses scientific issues related to "forestry and climate change". A secondary aim is to strengthen research partnerships through staff exchanges and networking activities between three European- research organisations from France, Portugal and United Kingdom and two organisations from Australia and New Zealand.

Suggestions for new activities

Australia is keen to pursue interdisciplinary collaboration on cross-cutting themes - agriculture/climate change/environment/energy.

Areas of interest

- **Productivity gains in food production**
 - Coordinated global response to wheat selection using 'integrated cross' technology to target environment x productivity x trait genetics (*Wheat "Square Kilometre Array"*)
 - Nutrient use efficiency
 - Drought, acidity, salinity tolerance and disease resistance
 - Global alliances e.g. with New Zealand and SE Asia on food production
- **Food and Health**
 - Food Structure and Design
 - Obesity and Health
 - Bioactives and bioactive micro/Nano encapsulated incorporation in foods
 - Modified Starch – e.g. BarleyMax
 - Omega 3 FAs in food and feed plants

- ***Aquaculture and sustainability of fish feedstock***

Cross-cutting opportunity with the FAB Thematic Area through aqua-feed production from traditional agricultural (non-fish) sources to enhance fisheries sustainability.

- ***Animal health***

- Foot and mouth disease and parasitic infections in livestock
- Effects of climate change impacts on the spread of animal disease
- In this areas, Australia and Europe have long-standing collaboration because of the international links on PC4 Animal Health research, diagnostics and surveillance facilities:
 - Australia's Animal Health Laboratory (AAHL) is the international reference laboratory for many animal, and more recently, zoonotic viral diseases. There is a major research program under way at AAHL using gene silencing to increase the natural resistance of poultry to Avian Influenza
 - Thus, explore possible opportunities for links within the EU Framework programmes, in synergy to the current bilateral collaboration with Member States.

2.5. Information and Communication Technologies

Achievements

- Australia co-matches 90% of funding for participation under FP7.
- However, noting that participation of Australia had been below potential in the first calls in FP7, there is a need to increase Australian participation in FP7. The challenge is to raise awareness on both sides.

Agreed activities 2009

- The ICT 2008 Conference, Lyon (25-27 November 2008) provides an opportunity for Australia to further develop its link with key EU players in the field of ICT. Australia will send a delegation.
- Potential for strengthening cooperation in INCO-TRUST and ARTEMIS - noting possibility of small amounts of funding (accompanying measures) being made available for participation of industrial countries such as Australia.
- Possible participation of Australia in networks of excellence in areas of mutual interest.
- EC indicated that it would look to include Australia in coordinated actions to build relationships in key areas of mutual interest and explore potential for new areas of cooperation.
- **WP 2009:** Call of interest - Challenge 3 - Components, Systems, Engineering: Photonics (Canada, Russia, USA and Australia).

Suggestions for new activities

- **Mobility:** Explore researcher exchange models.
- **"European-Australian ICT Research Collaboration Project":** This proposed project that would be funded by Australia, was outlined by National ICT Australia (NICTA) for further consideration and response by DG INFSO:

The project will support an Australian ICT research capability map and network to strategically link Australia with FP7 projects. The project targets EU FP7 collaboration in INCO-TRUST and ARTEMIS. The outcomes of the project include:

- research collaboration with Europe in the areas of security and trust in distributed ICT systems and trustworthy embedded systems;
- engagement with INCO-TRUST international collaboration workshops and technical workshops;
- research and student exchange; and
- Development of strategic partnerships for future EU FP7 proposals.

Areas of interest

- ICT and Ageing technologies
- Internet of the future
- Computer communication networks
- AI/machines/cognitive systems
- ICT biomedical/life sciences
- Database information/retrieval
- ICT security
- Embedded systems
- Software and services innovation

2.6. Nanotechnology S&T, Materials, Production (NMP)

Achievements

- While participation has been limited under both FP6 and 7, there is good potential in materials, nano for agriculture, nanosensors for security.
- Australian participation in IMS (Intelligent Manufacturing Systems) ended in 2006 but the door remains open for reengagement.
- Australia is a participant in the International Dialogue on responsible research and development of nanotechnology.

Agreed activities 2009

- Australia will work with Future and Emerging Technologies (FET) to scope out how best to engage with FET Platforms in future.
- **Nanotechnology Workshop** – The EC is keen to see Australia's continued engagement and agreed to host a meeting in Europe involving EU and Australian participants in early 2009 (EC to fund its participants) to discuss in further detail priorities and common interests in future collaboration in nanotechnology. Australia will consider how this could be funded from their side. The objective would be to develop interactions aimed at building interest for collaborative research applications under FP7 in 2011.

Suggestions for new activities

- **WP2010:** "Impact on nano-particles on health and the environment" (planned coordination with US)
- **IMS:** Explore potential for Australia's reengagement in IMS
- **Nanotechnology Research:** Sustainable production (manufacturing, agriculture, mining, environmental technologies)
- Cooperation with Europe could increase by building on existing linkages and participation in European networking activities such as workshops and seminars (e.g. through coordination actions). Australia is also participating in the OECD programme on the safety testing of manufactured nanomaterials and will be collaborating closely with Europe in this regard.

Areas of interest

- Nanomaterials
- Quantum-based nanotechnology
- Electronics/photonics
- Nano-biotechnology
- Nanosafety/Testing of manufactured nanomaterials
- Nanometrology

2.7. Environment

Achievements

- There is a great alignment of priorities but no significant participation by Australia in FP7
- 10 partnerships between Australia and EC under FP6 on Climate change/water technology/desertification
- There is an identified need to improve dialogue at institutional level

Agreed activities 2009

- **Climate Adaptation Research:** Explore cooperation in this area under COST Actions
- **Interdisciplinary collaboration on cross-cutting themes:** explore opportunities in agriculture/climate change/environment/energy (e.g. marine environment)

Suggestions for new activities

Areas of interest

- **Climate research:** Integrated approaches (climate/agriculture)
 - climate systems modelling
 - Model climate events (regional/local levels)
 - drought preparedness
 - impact of climate change on the spread of diseases
- **Interdisciplinary research:**
 - Drought
 - Food security
 - Baseline carbon accounting
 - Innovative financial risk; reinsurance; commodity trading
- **Water Management:** semi-arid areas climate modelling
- **Global soils initiative**

2.8. Energy

Achievements

- Australia is participating in two FP projects in the areas of large-scale wind power integration (SafeWind) and biofuels (BIOMAP).

Agreed activities 2009

- **Bio Refinery** – Call under FP7
- **Carbon Capture and Storage:**
 - Explore potential for multilateral cooperation – India, China, US, AUS - and cooperative approaches (CSIRO highlighted Energy Transformed National Research Flagship).
 - Note work undertaken through the Carbon Sequestration Leadership Forum of which Australia is a member.
 - The Australian Government announced the establishment of the Global Carbon Capture and Storage Institute in September 2008 and will contribute AUD \$100 million per annum towards its operations.
- **Interdisciplinary collaboration on cross-cutting themes:** explore opportunities in agriculture/climate change/environment/energy (see also 2.7 Environment).
- **Need for thematic dialogue:** to involve DG Transport and Energy also.

Suggestions for new activities

Areas of interest

- **Mitigation:** sustainable agriculture, forestry, 'carbon neutral catchments', soil, energy
- **Alternative energies:**
 - Solar
 - Biorefining, bioenergy
- **Alternative fuels:**
 - Biofuels
 - Petroleum substitutes
 - Hydrogen separation
- Solar thermal technologies
- Photovoltaics research

2.9. Social Sciences and Humanities

Achievements

- It is noted that the 10th JSTCC meeting was the first time at which Australian Social Sciences and Humanities were represented, and accordingly cooperation between EU and Australia in this thematic area is not as advanced as other areas.
- Nevertheless, bilateral links between European and Australian scholars are quite active, although it was noted that there were no successful applications among the 41 Social Sciences and Humanities projects in FP6/FP7 in which Australia was a co-applicant. It will be important to examine the reasons for this outcome.

Agreed activities 2009

- Work is needed to identify strategic opportunities for cooperation through a ‘scoping study’ to be funded by Australia through the International Science Linkages program, the outcomes of which should include:
 - a greater understanding of the framework programs to enhance the likelihood of successful participation in future activities;
 - the identification of institutional linkages which would enhance Australia-EU collaboration;
 - an opportunity to learn from past experiences involving Australian participation in Framework Programmes;
 - the identification of Australia strengths as far as they relate to the EU;
 - the identification of established links with researchers in EU member states;
 - the identification of linkages to other thematic areas (e.g. climate, environment, energy, health); and
 - participation in initiatives such as COST actions, which can act as pre-cursors for FP activities.

FEAST will complement this activity through a stocktaking audit of Australian engagement under FP7, culminating in a series of regional workshops and input to FEAST’s web-based information on Best Practice Strategies and Tactics (BEST) and the Impact Monitoring System (IMS).

Australia and Ireland are working together to conduct two series of co-funded workshops to be held in both Australia and Ireland during 2009 on topics which explore the Humanities and Social Sciences’ roles and agendas in developing the knowledge economy. The lead agencies are Irish Research Council for the Humanities and Social Sciences and the Australian Academy of Humanities.

Suggestions for New Activities

- Connecting social sciences and humanities with other thematic areas such as environment, climate change, energy and health (e.g. social impacts of climate change)
- Building/harnessing innovation
- IP rights
- Social inequalities
- Governance and ethics
- Gender equality
- Migration studies
- Citizenship and civics
- Comparative and Foresight studies (noting EC interest in Australia’s engagement with and expertise on Asia)

2.10. Mobility of Researchers

Achievements

- **Individual Actions:** The participation in both in-coming and out-going Marie Curie Actions has been very strong and balanced. Marie Curie - 9 Incoming/9 outgoing Fellows.
- **IRSES⁸:** Australia's participation in the first round of the International Research Staff Exchange Scheme (IRSES) has been very strong and its success rate very high. The Australian Government has allocated funding under the International Science Linkages program to provide support for Australian participants in IRSES (administered by the Australian Academy of Sciences). The second call for IRSES opened in November 2008.
- **EURAXESS portal⁹:** The Australian Government provided funding to FEAST for the development of an Australian Researcher Mobility Portal which is linked to the European Commission's EURAXESS portal. The Australian Researcher Mobility Portal encourages mobility of researchers to and from Australia and thereby ensures a balanced flow of researchers between Australia and Europe.
- **IDEAS Programme:** During the first call of ERC Starting Grants two researchers with Australian nationality/residence based in Europe have been selected for funding. FEAST promotes opportunities in the IDEAS programme to Australian researchers.

Agreed activities 2009

- **IRSES:** Australia will ensure the distribution of information on the next IRSES call through FEAST. The Australian Government will provide funding through the Academy of Science for Australian participants in IRSES and will encourage co-funding by host institutions.
- Australia will promote participation in other institution-driven schemes like Industry-Academia Partnerships and Initial Training Networks (ITN) through FEAST.
- **EURAXESS:**
 - The EC agrees to provide greater visibility for the link to the Australian Researcher Mobility Portal on EURAXESS, in the form of a direct country link under the Links section of the site;
 - EC agrees to work in close coordination with Australia as it develops the Links section of the EURAXESS portal to highlight international cooperation opportunities. This will be further enhanced by the establishment of an Australia Access 4EU project.

Suggestions for new activities

- Australia is prepared to co-fund a "PhD Workshop" and seeks EC commitment to cooperate in this activity:
 - The conference should bring students and their supervisors together on a particular agreed topic of global importance to encourage networking and to bring in industry.
 - The conference could rotate between Europe and Australia and could also be held in Asia.
 - It was noted that COST offered to provide funding for up to 10 European participants under its PhD Retreats programme.

⁸ ec.europa.eu/research/fp7/understanding/marie-curieinbrief/swapping-staff_en.html

⁹ ec.europa.eu/euraxess/

2.11. Research Infrastructures

Achievements

- **FP6:** Australia's participation has been high and substantial - 12 partners in 6 existing RI projects. The focus has been exclusively on radio astronomy.
- Australia's participation in PrepSKA.

Agreed activities 2009

- **ESFRI Roadmap.** Analyse alignment of "Strategic Roadmap for Australian Research Infrastructure" with ESFRI to identify common priorities. ESFRI identifies 35 future projects (including SKA) and is keen to encourage Australian participation in other projects (e.g. Life Watch, ITER).

Suggestions for new activities

- It was noted that COST can facilitate workshops on research infrastructures (e.g., radio-astronomy) - follow-up opportunity.

2.12. Science in Society

Achievements

- **FP7:** Australia is participating in two projects - Intellectual Property Rights governance in the field of pharmaceutical innovation (Innova-P2); and gender equality (PRAGES).

Agreed activities 2009

- **Women in research policy dialogue:** There was in principle agreement to an Australia-EC policy dialogue on this theme - noting particularly the FP 7 PRAGES project which includes an Australian component. Joint workshop could be held late 2009 to review research findings. EC identified possible co-funding support.
- Australia will sponsor participation of a high level speaker for “Changing Research Landscapes – 10 Years of Women and Science”, in response to an EC invitation. This EU conference will be held in Prague on 14-15 May 2009.

Suggestions for new activities

Areas of interest

- Governance
- Ethics (code of conduct on Responsible Research in Nanotechnologies and Nanosciences)
- Education and gender
- Attraction of Young People into Science is identified as a common challenge for Australia and the EU.

2.13. International Cooperation Capacities Programme

Achievements

- FEAST is regarded as a very successful project highlighting, promoting and facilitating collaborative research between the Australian and EU research communities. EC regards FEAST as a benchmark for other bilateral cooperation projects. Australia and the EC entered into a third co-funding arrangement with FEAST for three years from 2008.

Agreed activities 2009

- **Access4EU:** Australia endorses FEAST's participation in the development of an application led by Germany (IB-BMBF) to host an Access4EU Australia project aimed at building greater reciprocity in European-Australian research and innovation cooperation.
- **Inco-Net Pacific:** Australia is a partner in the development of the INCO-NET PACIFIC application led by France (IRD).
- Over the next three years FEAST will focus on promoting greater industry engagement in EU-Australia cooperation and strengthen its thematic approach, supported through its role as National Contact Point Coordinator. Particular attention will be paid to those areas nominated by JSTCC as being currently weak or under-represented in cooperative activity (Nanotechnology; Energy; Environment; Humanities and Social Sciences).

Suggestions for new activities

- Adopt a greater thematic networking role within Australia aimed at strengthening the effectiveness of the National Contact Points (NCP) by:
 - Extending NCP nominations to all relevant FEAST staff;
 - Allocating thematic responsibilities for NCP activities amongst FEAST staff;
 - Strengthening the operational links between NCPs with thematic responsibilities and key players in Australia's research and innovation system.
- Strengthen the business-facing component within existing budget and work package of the current FEAST contract. This component would aim to promote stronger European-Australian cooperation in innovation, with due regard to the opportunities and constraints faced by businesses seeking to be more active in international cooperative R&D – particularly in relation to the priorities set by JSTCC.
- Place priority on exploring the best ways of sharing expertise and experience at a regional level as part of the current work package structure.
- Raise awareness in Australia of the science in society dimension to FP7 whilst also raising awareness in Europe of Australia's areas of strength in the science in society domain (ethics, regulation and regional expertise etc).