

Submission by European Commission's Directorate General for Research and Innovation
in response to the consultation document '*Vision for a Science Nation – Responding to
Science, Technology, Engineering and Mathematics: Australia's Future*'

Introduction

The European Commission's Directorate General for Research and Innovation would like to express their appreciation for the opportunity offered by the Australian Government to respond to the consultation document a '*Vision for a Science Nation – Responding to Science, Technology, Engineering and Mathematics: Australia's Future*' and herewith submit some comments related to section 4 of the document on International Engagement.

Summary

We fully support the Australian government's intention to both develop an international science engagement strategy and establish a global science and innovation collaboration programme. Our intention is also to develop our cooperation in research and innovation with Australia since our respective objectives – as defined by Australia in the consultation document and by the EU with the *Horizon 2020* programme – are quite similar, i.e. to address science excellence, competitiveness and global challenges, mainly through research and innovation projects and mobility schemes.

At EU level the key instrument for engagement with Australia is the framework Programme *Horizon 2020*. This is the EU's research and innovation funding programme with a budget of close to €80 (\$A115) billion over the period 2014-20. *Horizon 2020* is fully open to Australian participation on the basis of co-investment and provides Australia with great opportunities to access European excellence, its cutting edge research, its world class facilities and infrastructure, and provides tremendous funding leverage.

However, to take full advantage of these opportunities there needs to be means to support Australian engagement in *Horizon 2020* projects and networks. But since the termination of the International Science Linkage Scheme in 2011, there is now no general scheme to facilitate international engagement by Australia. As a result, engagement in research and innovation between Australia and the EU has become more of a challenge and accordingly the number of instances of collaboration appears to be declining.

We fully recognise that it is completely up to the Australian Government to decide how its international cooperation will be designed and organised. Nevertheless we would like to propose that (i) the European Union and its Member States be included among Australian priority partners and (ii) Australia provides adequate means to Australian researchers and innovators to allow for even closer cooperation in research and innovation between Europe and Australia.

We note that this is fully in line with the Chief scientist's report that specifically recommends the establishment of a fund for strong government-to-government linkages as a basis for international collaboration, with a focus on, among others, further developing STEM relationships with the EU.

We therefore hope there will be specific and sufficient resources behind the global science and innovation collaboration programme to significantly strengthen Australia's international engagement with Europe in research and innovation to the mutual benefit of both Australia and the EU.

Why is collaboration with the EU essential?

Research is now a global activity and it is crucial for scientists to be internationally engaged to remain at the cutting-edge of research.

Overall, the EU, including its Member States, is clearly Australia's leading research partner. The number of joint publications involving Australian and European researchers is more than fifty percent higher than that between Australia and the United States. The EU is a world leader in research and innovation and is responsible for more than 20 per cent of global expenditure on research (Eurostat, OECD, UNESCO 2013), for more 32 % of all high impact publications (Scopus database 2010) and more than 27 % of world patent applications (OECD 2011). Collaborating with Europe therefore can provide Australia with access to excellence, critical mass and high impact research.

Horizon 2020 also tackles the societal challenges faced by Europe to improve citizens' quality of life. Many of these are global in nature and need to be tackled at a global level if they are to be successfully addressed. Moreover, they have close commonality with Australia's recently adopted nine cross-disciplinary research priorities, namely: food, soil and water, transport, cybersecurity, energy, resources, advanced manufacturing, environmental change and health.

Reasons for Australia to engage with the European Union vary depending on the perspective or level this is viewed from and include e.g.:

- National level: Joining a critical mass of research in areas of strategic importance to Australia and matching Australia's own research priorities, engaging in international standardisation projects for innovative technologies, using science as an instrument of soft diplomacy...
- Institutional level: taking a strategic approach to gain access to more excellence and facilities, using the huge funding leverage opportunities to the institution's advantage...
- Laboratory / Department level: improving the research quality of the team, seeking opportunities for the commercialisation of technologies...
- Company level: using research collaboration as part of a market access strategy, gaining recognition / credentials in the European market...
- Personal Level: developing networks, gaining experience and skills...

Collaborating with the EU through Horizon 2020 provides opportunities to meet all these motivations.

Opportunities offered by the EU to Australian for research and innovation collaboration

EU and Australia have a solid track record of cooperation over the past 20 years. Australian participation in previous EU Framework Programmes (FP) has grown strongly: from the 53 collaborative research projects with Australian partners during FP5 (1998-02) to 169 signed projects under the recent FP7 (2007-13).

While the number of projects may not appear to be that large, the total investment in the projects involving at least one formal Australian partner in FP7 is over €1.4 billion (\$A2.1 billion) with over €0.9 billion (\$A1.3 billion) invested by the European Commission and €67 million (\$A98 million) coming from Australian sources.

Also under FP7 there have been 157 International Marie Curie Fellowships involving Australia, with 76 Australians going to Europe and 81 Europeans visiting to Australia for up to two years and all funded by the EU. There were also 71 International Research Staff

Exchange Scheme (IRSES) projects, involving 257 staff movements by Australians visiting Europe and 538 European researchers and support staff coming to Australia.

Horizon 2020 is the EU's research and innovation funding programme with a budget of close to €80 (\$A115) billion over the period 2014-20. As such it is the world's largest and most open financial programme for research and innovation and provides abundant opportunities for new bilateral research and innovation cooperation for the benefit of society.

While *Horizon 2020* does support curiosity driven research, it focuses its support towards innovation and close-to-market activities. It aims at creating business opportunities and innovative products that can be commercialised. For Small and Medium Sized (SME) companies, not only are there specific measures to support their engagement in all stages of the innovation cycle, but 20 percent of the overall budget should be allocated to SMEs. This essentially means that all EU collaborative projects now need to include substantial SME engagement from Europe and outside Europe, including Australia.

How to strengthen EU-Australia research and innovation collaboration?

Collaboration with Australia under *Horizon 2020* to date has been quite modest and declining in engagement compared to FP7. So far there are 15 signed collaborative projects (Research and Innovation Actions and Coordination and Support Actions) involving a total investment of €125 (\$A184) million, with Australia contributing €2.7 (\$4) million to the research effort, of which €0.3 (\$A0.4) million is supported exceptionally by EU funds. In addition, there are 6 MSCA Global Fellows coming to Australia and 7 Research and Innovation Staff Exchange (RISE) projects signed involving 9 Australian partners.

The European Commission is keen to increase overall scale, scope and strategic character of Australia-EU research cooperation under *Horizon 2020* compared to the past. From the awareness information sessions conducted in Australia since the launch of *Horizon 2020*¹ it is clear that there is a strong interest in participation from throughout the Australian research community, but the lack of adequate means provided by Australia for participation of Australian scientists is resulting in a major impediment to collaboration through Horizon 2020.

This is in part because since the termination of the International Science Linkage (ISL) Scheme in July 2011, there has been no general scheme to facilitate international engagement by Australia. It is hoped that the proposed global science and innovation collaboration programme will fill this void.

The European Commission nevertheless very much appreciates the means provided for Australian researchers to participate in *Horizon 2020* by the Australian government², in particular *The National Health and Medical Research Council (NHMRC) – European Union (EU) Collaborative Research Grants Scheme*³ which has been in existence since 2001. Thanks to the \$A4 million in funds made available, 9 out of the 15 joint collaborative projects selected to date involving Australian researchers in *Horizon 2020* covered by the scope of the NHMRC-EU scheme.

¹ At some 26 separate occasions to over 1700 persons

² Also the \$A400,000 *ad hoc* funding provided by the *Australian European Union Collaborative Program 2014* and the Connecting Australian and European Science and Innovation Excellence (CAESIE) bilateral project.

³ <https://www.nhmrc.gov.au/grants-funding/apply-funding/nhmrc-european-union-collaborative-research-grants>

Given the potential scale of the collaboration with the EU, we fully support Australia launching an overarching international science engagement strategy and a global science and innovation collaboration programme. In our view, Australian researchers should be in a position to take a long-term strategic approach to the engagement to fully capitalise on the benefits of it, progressively building and deepening the relationship. This requires stable and consistent policy settings, as well as funding availability for Australian researchers to take full advantage of the opportunities offered for international cooperation by the European Framework Programme *Horizon 2020* and the creation of new commercial opportunities.
