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Inquiry into Australia's Future in Research and Innovation
PO Box 6021
Parliament House
CANBERRA
Canberra ACT 2600

To the Members of the *Joint Select Committee on Trade and Investment Growth*

Re Submission to the Inquiry into and report on Australia's Future in Research and Innovation

Background

I have experience in international and domestic research as a University-based researcher and in a government research and development corporation. My field of research expertise is environmental change and natural resource management. I have worked with many agencies, different disciplines and countries, predominantly in Australia but also in Singapore, China and Indonesia.

I am currently working with Defence, academic and business to develop a strategic military geography group. Recent interest in research and trade is related to current and future technologies and management of military training areas. It is clear that there are opportunities for internationally sharing Australian research and technology in the area of managing the Defence estate and environmental information. This submission reflects my desire to contribute, through an integrated consideration of some of the complex problems, to the Committee's work and terms of reference. It represents my own view and not that of my employer or the others mentioned.

Submission Key Points

In my brief submission to the *Joint Select Committee on Trade and Investment Growth* I wish to raise awareness or provide evidence to the Committee of:

- a) the value of domestic and international **research higher degree training in environmental and management** and
- b) the **reporting of impact of investments** in research and development
- c) the rapidly **changing nature of knowledge and commercialisation needs**
- d) the need for **maintaining standards and seeking improvements** (so called red tape) and the serious risk of allowing an erosion of these relative to the Australian communities' social and environmental expectations
- e) a few **barriers** to cross-border exchange of capability, technology and knowledge
- f) a few **suggestions** to enhance investment in research and in the extension (including commercialisation) of research results

Discussion and Suggestions

Domestic and international **research higher degree training in environmental and natural resource management areas is highly prospective**. From my experience in Singapore, Indonesia and China there is a great demand and awareness that these capabilities (management

of the environment and natural resources) are not well-developed in the places and times when they most at threat. Australia has a track record in environmental and agricultural research and development. There has been a deepening demand for Australian knowledge (courses, PhD scholars, consultancies) in environmental and management driven by; 1) recognition that as the populace becomes wealthier they expect better conditions, and 2) an economic transition from manufacturing to service economies (the expressed policy intent in China). Australian exports of environmental, commons governance and natural resource management expertise should be more strongly supported given its track-record and growing value in the region.

The Australian trade and investment brand is a complex responsibility. I wish to draw the committee's attention to the challenge that is about this brand being clean and uncontaminated, ethical and responsible, sustaining excellence in environmental management (especially during droughts and other hard times), having strong and enforceable health and environmental protections (that are fair to others and future generations), a reputation for paying attention to sustaining assets (like the Great Barrier Reef) and making clear and ongoing investment by/with farmers and other land managers in the foundational processes of soil, water and biodiversity. Australia can market products domestically and to the world on this 'green credential' that is underpinned by traditions and scientific efforts that policy needs to nurture and protect. Australia cannot (should not) seek to compete at low values and through degrading environmental and social outcomes.

The Rural Research and Development Corporations have developed a culture of careful and responsible investment in agriculture that in the last twenty years has included a way of **reporting in the impact of investments**. It explains, using a narrative the social, environmental and economic impacts of investments in people, markets, technology and governance¹. It provides a convincing case for investment (including public and private) and for ongoing improvement. I suggest the Committee endorse the use of the RRDC TBL ROI model¹ and seek to spread it more widely to enhance investment in Australia. It will help avoid the perverse outcomes where narrow evaluations are used.

The rapidly **changing nature of knowledge and commercialisation** means ideas, experiences and concepts are changing and being responsive is critically important. However some conservative ideas, evidence-based and precautionary are still appropriate and valuable. Examining issues in a sustained way, carefully and completely has become rarer and more valuable. It is important to recognise that new value exists in old things and that a fraction of all values are expressed in the market-place. Ross Garnaut's conservative framework for assessing the benefits and costs of action² should be more widely endorsed in Australia. I teach this framework of value and benefits change to Defence force junior staff. They say it helps them to think strategically about the long-term benefits of actions taken now. I suggest the committee also carefully considers and recommends investments with the long-term and the full range of values in mind.

There is some fashion in calling hard-won protections from pollution and environmental degradation "red tape". I think it is perhaps disrespectful to the systems and the public servants who developed them. The case for removing red tape is rarely based on a body of evidence and the assessment of the consequences of the risk. In investigations that my students and I have conducted in Australia and China, the complaints about "red tape" from companies, lobby groups and individuals were most often self-serving; the benefits were being won privately and costs shared with the public or future generations. I suggest the Committee consider the impact of derogatively labelling the public good protections and outcomes of government and public servants as 'red tape'.

¹ Pearson, S., Chudleigh, P., Simpson, S., & Schofield, N. (2012). Learning to invest better: Using ex post investment analysis on agri-environmental research and development. *Research evaluation*, 21(2), 136-151. Available on-line or free by request.

² Garnaut, R. (2008). The Garnaut climate change review. *Cambridge, Cambridge*. <http://www.garnautreview.org.au/chp1.htm>

Australians have high expectations of government protections to water, soil, biodiversity and air. These expectations are often in excess of the standards embodied in 'red tape' and there is continual pressure to improve the standards. For example, the Committee can anticipate that many Australians will be increasingly concerned about policies that increase the risk of endocrine disrupting chemicals in drinking water or the extinction of another species or the loss of recreational opportunities environments or chemical contamination of food and soils. It is more acceptable to Australians to see improvements; to 'raise the bar' rather than 'cut the tape'. In addition improvements have spin-offs as additional value in international trade. Free trade is not necessarily a race to the bottom unless standards are allowed to be eroded.

The Rural RDCS and other **government research and education investors are focused to invest in Australian research** and this parochial approach seems particularly strong in Australia. Australian Centre for International Agricultural Research's excellent soil and agricultural R&D is a notable exception. When most University and government departments try to broker international research collaborations it is excruciating because the timeframes, program rules and accounts all act as barriers. It is nearly impossible and the transaction costs are high. The Committee should examine innovative opportunities for internationalising some co-investments (as trials and with checks) to facilitate cross-border exchange of capability, technology and knowledge. This should be a priority where small collaborations at critical points in careers could make a difference. For example, following completion international PhD students return home and there should be a mechanism to support sharing the spin-offs of research.

In addition, businesses, the Australian government and research institutions need to expand the New (reverse) Columbo Plan if Australia is to benefit from the massive investment in STEM in China or the emergence of Indonesian STEM. This requires a different kind of scientific engagement that is not well supported by Universities. Academic exchanges need more support to countries like Indonesian and China and research projects involving comparison or international components should be fostered.

Finally, I would like to make some suggestions to enhance investment in research and specifically in the extension (including commercialisation) of research results. The Universities should be supported as they develop a way to report impact of their various investments. The financial models of University research and education can be evaluated using the TBL ROI framework described earlier; this would foster an awareness of the conversion of research *inputs* to *outcomes* where possible. That earlier engagement with users fosters innovation, commercialisation and creates a more virtuous loop. I recognise this does not suit 'blue sky' research or some of the humanities and so other policy measures are needed to sustain aspects of the sciences and arts.

In conclusion, I welcome the opportunity to make a submission to the Committee. I am of course happy to provide further information on these points: the value of research higher degree training in environmental and management; the improved way to report investments impacts in research and development; rapid changes in values and their consequences; risks to the expectations Australians hold about standards of environment, social and health protection; barriers and suggestions to improve knowledge exchange and investment.

Cheers,

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