



Cooperative Research Centres Committee

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Boosting the Commercial Returns from Research Submission by the Cooperative Research Centres (CRC) Committee

To whom it may concern,

Thank you for the opportunity to make a submission in response to the discussion paper on *Boosting the Commercial Returns from Research*. On behalf of the CRC Committee I am pleased to provide the following input.

The Cooperative Research Centres (CRC) Programme

The Cooperative Research Centres (CRC) Programme is an Australian Government grant programme designed to deliver significant economic, environmental and social benefits to Australia by supporting industry-driven research partnerships between industry and researchers which address major challenges that require medium to long-term collaborative efforts.

The programme supports industry-led, national and international research collaborations which develop real world solutions that improve the competitiveness, productivity and sustainability of Australian industries. The programme supports research across all disciplines and industry sectors. CRCs develop new technologies and products, create new markets and export opportunities and build capability and capacity for industry through targeted education and training activities.

The programme was officially launched in 1990, and since then 209 CRCs have been funded, with the Australian Government committing \$4 billion in funding. Participants in CRCs have committed a further \$12.3 billion in cash and in-kind contributions.

The programme has delivered significant benefits to Australia, contributed directly to improving skills and expanding research capacity; increased innovation in business, government, research and the community sector; and boosted collaboration within Australia and between Australia and other countries.

In 2012, the Allen Consulting Group undertook an evaluation of the economic, social and environmental impacts of the CRC Programme for the period 1991 to 2017. From new products, processes, technologies, and services it was estimated that almost \$14.5 billion of gross direct economic impacts have accrued as a result of the CRC Programme. The study found the programme generated a net economic benefit of \$7.5 billion dollars. Overall, the findings indicated that the CRC Programme has been able to generate a benefit that exceeds its costs by a factor of 3.1. The study also found that the programme has delivered a range of non-monetary environmental and social benefits.

The Cooperative Research Centres (CRC) Committee

The Cooperative Research Centres (CRC) Committee is an independent advisory committee. Its role is to provide recommendations to the Minister for Industry about:

- applications for CRC funding;
- performance, monitoring and review of individual CRC's activities during their period of operation; and
- the planning, monitoring and evaluation of the CRC Programme.

Details on the current composition of the CRC Committee, its Terms of Reference and guidelines on code of conduct, conflict of interest and confidentiality can be found at www.business.gov.au.

Boosting the commercial returns from research

In response to the issues and options raised in the discussion paper *Boosting the Commercial Returns from Research* issued by the Department of Education and Department of Industry, it is the view of the CRC Committee that improving Australia's overall global position in innovation, science, technology, engineering, research and education is critical and system wide changes can be made to boost commercial returns from Australian research.

The Committee notes that this issue is complex and is not a simple fix but offers the following points to boost the commercial returns from Australian research:

- Decisions should be made from a solid evidence base by collating data and undertaking or commissioning research that supports changes to boost commercialisation in the research sector.
- Look at the 'whole of the system', identify and define impediments exactly, and how they could be removed or mitigated in the Australian context, noting international models and successes. This could include consideration of international work such as Nesta in the UK and the Kaufman Foundation in the USA which contain valuable examples and ideas.

- Create relevant data sets to identify ‘best practice’ and ‘worst practice’ so that Government can make informed decisions and implement policies based on evidence to support and allow the research system to mature.
- Encourage collaboration by Australian organisations with public institutions around the world to improve the quality of dialogue and what is fed into policy.
- Provide a stable and consistent research and innovation policy with a long term view, industry focus and appropriate funding alongside tax and investment incentives.

CRCs boosting the commercial returns from research

The following examples demonstrate the effectiveness of CRCs in attracting new investment, deliver innovative ‘real world’ products and services and boosting commercial returns of Australian research:

- *Capital Markets CRC* has achieved a world first development in market surveillance and fraud detection technology. This technology is recognised as one Australia’s great achievements in the IT industry and is used by 30 exchanges and regulatory customers globally and 50 broking firms in 30 countries.
- *CRC Mining* has developed the ‘SmartCap’, a baseball cap that measures brainwave activity and warns drivers and heavy machine operators of drowsiness and fatigue. SmartCap is being commercialised by CRC spinoff company EdanSafe Pty Ltd and has an important future in haulage transport, aircraft and rail industries.
- *Oral Health CRC* has developed a product which helps prevent and reverse dental decay known as Recaldent™. This product has had a large impact on oral health in Australia and internationally, earning US\$400 million in global sales per year.
- *Vision CRC* has developed high oxygen permeable soft contact lenses developed in partnership with CIBA Vision and Novartis AG. The product has generated \$2 billion in global sales and has returned over \$150 million in royalties to the CRC and partners and over \$100 million in research fees.

Creating stronger incentives for research-industry collaboration

The CRC Programme plays a critical role in supporting industry-led, rather than science pull, collaborations between researchers, industries, communities and governments. It has both the scale and time frame to tackle major challenges facing Australia.

Participant organisations are diverse and include businesses ranging from multinational corporations to small and medium enterprises, universities and research institutions, governments at Federal, state and local levels, international partners, not-for-profit organisations, industry associations and community groups.

A key strength of the CRC Programme is the flexibility it provides for SMEs to engage with CRCs as either participants or through third party arrangements. Collaborating with a CRC offers SMEs a flexible way to access pre-competitive research and development, new export industries or exclusive licenses to manufacture and can lead to the development of spinoff companies. In turn, SMEs assist CRCs to build critical mass, overcome fragmentation caused by distance, and bring together resources and share risk and knowledge.

The CRC Committee strongly believes that the CRC Programme is a key driver for Australian innovation and will continue its role in improving the productivity and competitiveness of Australian industries. Medium to long term collaborative research and industry focussed education and training activities are core elements of the work of all CRCs and the programme has a strong reputation in delivering solutions for industry challenges and industry ready graduates.

Established companies should be encouraged to become more involved in innovation as they have the cash flow to commercialise research outputs. The committee believes that the focus should be on providing funding for the development of technology and encouraging large companies to increase their engagement with innovative technology based SMEs. For example, large companies will benefit by having access to the SME products and/or services while providing the SME with access to trial sites, facilities and funding. As a result, the SME can flourish without the burden of dealing with large company policies and procedures and can concentrate their efforts to further develop the technology rather than having to spend time, effort and resources trying to raise money. Industry investment in CRCs should be encouraged to facilitate these outcomes.

The consolidation of existing programmes that focus on collaboration with industry to increase their scale and effectiveness is not supported as a 'one size fits all' approach is not the most effective way to support collaboration and commercial outcomes – a suite of complementary initiatives would provide more flexibility to meet the needs of the sector.

The Committee strongly supports a review of the calculation methodology for research block grant funding to provide greater incentives for collaboration and commercial outcomes. The grants provided under the research block grant schemes are driven entirely by metrics and lead to certain behaviours within universities. The Committee does not believe that rolling Category 4 (Cooperative Research Centres) research income in to Category 1 (Australian competitive grants) research income is the solution to drive collaboration, but rather the entire scheme should be reviewed with a new collaboration category established with industry collaboration attracting extra loading.

Consideration should also be given to the R&D Tax Incentive to incentivise collaborative research with commercial outcomes. The margin between the levels of incentive would need to be big enough to encourage a change in approach by companies as to how they conduct their research.

The Committee also believes that a Prime Minister's Prize for Innovation and Industry Engagement should be established to sit alongside the PM Science Prize to bring prestige to collaborative and commercially focussed research.

Supporting research infrastructure

The Committee notes that targeted investment in world-class research infrastructure will support Australia's capacity to innovate; assist Australian researchers; and allow Australia's industries to increase their productivity through new products and processes.

Infrastructure that supports industry focussed collaborative research should be prioritised and use of infrastructure should be determined by the quality of the work proposed and the degree of commitment by the industry end user to take up the results and commercialise products. The Committee is supportive of

the development of a roadmap to identify Australia's long term infrastructure investment priorities and notes that these priorities should be linked to priorities for Australian research.

The Committee supports the introduction of tax incentives to allow overseas capital to come into Australia. Engaging large companies with capital to invest in R&D provides benefit due to the government budgetary constraints as there will be an inevitable shortage of public support for technical innovation. What is needed is a small government investment to encourage large companies and funding managers to unleash far greater resources than direct grant funding.

Providing better access to research

The CRC Programme provides flexible arrangements for governance, IP management and participant engagement. The Committee has worked with the department to establish best practice frameworks and flexibility for CRCs. This method has provided sufficient guidance for CRCs while allowing flexibility in design to suit the needs of individual CRCs and industry sectors. CRCs span a significant number of industries of significance to the Australian economy and engage broadly to ensure connectivity within the sector in which they operate.

The Committee believes that appropriate governance, IP and commercialisation arrangements are essential to the uptake and utilisation of CRC research. CRCs have a strong track record in solving problems for business and in the commercialisation and utilisation of research outputs. Over the last few years, the Committee has placed increasing emphasis on the need to develop strong governance and appropriate IP arrangements at the beginning of the life of a CRC. With sound participant agreements and well developed IP arrangements CRCs are best placed to maximise commercial outcomes.

The Committee is supportive of changes to the IP system that makes it easier for industry to commercialise new products and initiatives that incentivise collaboration and commercialisation, including access to research undertaken by publicly funded research agencies.

Increasing industry relevant research training

In order to keep Australia's most talented individuals engaged they should be provided with pathways into both local and global opportunities. This can be achieved by ensuring a strategic international engagement in science, research and innovation and providing support for emerging industries.

The Committee is strongly supportive of industry relevant research training and opportunities for PhD candidates to gain industry exposure as this will increase collaboration and will help boost commercial returns from research.

The CRC programme plays a key role in improving the successful transfer of knowledge from university and publicly funded research agencies to industry by providing opportunities and incentives for secondments of PhD students and increased post-doctoral positions. CRCs generally have arrangements in place to ensure PhD students are involved with relevant industry or end-user participants, and some CRC post-graduate programmes include modules to provide industry, research management or entrepreneurial training, such as the 'Balanced Researcher' programme developed by the Invasive Animals CRC.

Industry or end-user co-supervision of post-graduate students is prevalent within CRCs and recruitment of PhD graduates into industry is a key objective of the CRC model. Students enrolled in institutions involved in CRCs have the opportunity to work with world class researchers and core research activities are undertaken by post-docs. In this regard, CRCs offer unique opportunities for early and mid-career scientists to not only undertake cutting edge research but to work directly with industry and see the real world application of their research.

Measurement of outcomes

The Committee is supportive of a review of metrics relating to the measurement of research impact and incentives to increase collaboration and the commercialisation of new products.

It is important that an appropriate instrument is developed to measure impact, collaboration and industry engagement; one that fairly treats impact and benefits of research from all disciplines; that will have real impact on improving the connections between industry and research; and changing the culture within the research sector. Such a measure should be separate but sit alongside ERA. With increased competition for government funding and the requirement to demonstrate efficient and effective use of public money, it is important that a clear and unambiguous cause and effect measurement of the impact of research is established.

The CRC Programme has undertaken a significant amount of work in developing an impact assessment tool and an impact monitoring and evaluation framework which provide a valuable basis on which to measure the benefits from CRCs.

The Impact Tool enables CRCs to articulate the planning they have put into developing and implementing their research programmes, including the assumptions made and the risk management strategies proposed or implemented. It also enables the department and the CRC Committee to test the expectations and assess the performance of a CRC once it is in the CRC Programme. The Impact tool is intended to enable CRCs to identify and make a realistic, transparent and defensible assessment of the intended impacts and benefits of the proposed CRC in a way that is clear, robust and simple to understand.

Capitalising on the Medical Research Future Fund

The Committee is supportive of the Medical Research Future Fund and notes Australia's strong performance in research and commercialisation in the medical sector.

Thank you for the opportunity to make a submission on this matter. The CRC Committee would be happy to expand on any of the points above should you require further information.

Yours sincerely