



# **Innovation-led Prosperity for a Post-COVID Australia**

**2021-22 Pre-Budget Submission**

**Cooperative Research Centres Association  
29 January 2021**

*The Cooperative Research Centres Association acknowledges the traditional custodians of the land on which we operate, the Ngunnawal people. We also acknowledge the traditional custodians of the various lands across Australia upon which Cooperative Research Centres operate.*

*We pay our respects to Elders past, present and emerging and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to our lands and waters.*

**For further inquiries contact:**

Jane O'Dwyer  
Chief Executive Officer  
Cooperative Research Centres Association Inc.  
Unit 2/13 Napier Close Deakin ACT 2600  
02 6260 3988  
[www.crca.asn.au](http://www.crca.asn.au)

## Summary

Industry-led collaborative research enabled through Cooperative Research Centres (CRCs) and Cooperative Research Centres Projects (CRC-Ps) is an Australian success story. The CRC Program is a bedrock of our national innovation system.

It improves the lives of Australians by harnessing our sovereign research capability to create new industries, businesses and products. It leverages government financing with co-investment from industry and universities, returning on average three times the value of the Australian Government's contribution.

It creates new jobs across the country and industry sectors ranging from agriculture to mining and healthcare to manufacturing, growing a highly skilled, industry-ready workforce along the way.

As Australia puts in place the mechanisms and investment for post-COVID recovery and prosperity, investment in cooperative research is an investment that provides known returns to our economy and to the Australian people.

## Policy Recommendations:

1. Incentivise innovation through industry-led research collaboration by establishing an up to 20% R&D tax collaboration premium consistent with recommendation 2 of the 2016 Review of the R&D Tax Incentive.
2. Invest in cooperative industry-led research and innovation to grow our economy and create new industries and jobs by growing the investment in CRCs and CRC-Ps by \$50 million a year over the forward estimates, with new investment focused on the National Manufacturing Priorities and economic and social benefits aligned to Australia's national interest.
3. Invest in an industry-ready workforce and jobs for the future by establishing an Industrial PhD program that goes beyond internships to ensure students are based in industry or a CRC for the majority of their program. Extend the Research Training Program to enable Industrial PhDs that are industry-led and industry-based. Expand upon Recommendation 2 of the 2016 *Review of the R&D Tax Incentive* to include a tax offset for companies who invest in PhD students.

## Background

Cooperative research brings Australian ingenuity to life and is a strategic investment by the Australian Government.

Industry-university and research institute cooperative research is the bedrock upon which a successful innovation economy is built, and a successful innovation economy is critical to future national prosperity and the generation of high-value jobs for Australians.

The Cooperative Research Centre Program is an Australian success story that has for more than 30 years translated research into action. Cooperative Research Centres place industry at the heart of the research enterprise, tapping into the world-leading research capacity of Australia's universities and research institutes to solve problems, create new products and new industries that Australia exports to the world. They create commercial, economic and social benefit.

The most recent impact assessment of the CRC Program, undertaken by Allen Consulting in 2012, conservatively estimated that by 2017 the program would have contributed:

- \$14.5 billion in direct economic impacts from CRC produced technologies, products and processes; and<sup>1</sup>
- a net benefit to the economy of around 0.03 percentage points of additional GDP growth per annum since 1992.<sup>2</sup>

According to the 2015 Miles Review of the program, *Growth through Innovation and Collaboration*, more than 1200 industry partners from large, small and medium enterprises have participated in cooperative research through the CRC program and over 12,600 patents are held. CRCs have produced more than 3,600 industry-focused PhDs, more than half who have gone on to work in industry.

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<sup>1</sup> The economic, social and environmental impacts of the Cooperative Research Centres Program, 2012, The Allen Consulting Group

<sup>2</sup> Growth through Innovation and Collaboration: A Review of the Cooperative Research Centres Programme, March 2015, David A Miles AM

### Investing in Success – Case Studies

In December 2020, Orica announced it will lead the worldwide commercialisation of software developed by the CRC for Optimising Resource Extraction (CRC ORE). The Integrated Extraction Simulator enables the rapid optimisation of a mine's extraction process, reducing energy and water use while producing more pure ore. This software can increase the value of a major mine by up to six percent.<sup>3</sup>

The Autism CRC developed and rolled out in 2020 the first National Guidelines for the Assessment and Diagnosis of Autism Spectrum Disorders. It aims to make the practice of assessing and diagnosing autism clearer and more consistent throughout the country so that individuals and their families receive the best possible care.

The Cancer Therapeutics CRC's licensing announced in 2018 with Pfizer for two advanced programs delivered a \$20 million signature payment along with the potential for a further \$650 million in milestone payments. In addition to the licensing deal, a two-year multi-million-dollar research collaboration with Pfizer is being managed by the CRC. Two discoveries have now commenced clinical trials and if successful these discoveries could be used to treat breast, prostate and lung cancers. The treatment would also be worth up to \$400 million for the CRC and its participants.<sup>4</sup>

SmartSat CRC has just announced a \$6.5 million project with the South Australian Government to build a satellite in Adelaide to service the needs of South Australia and deliver space-derived services to the state.

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<sup>3</sup> <https://www.crcore.org.au/news/news/orica-to-take-the-reins-on-integrated-extraction-simulator-ies-digital-technology>

<sup>4</sup> <https://cancercrc.com/second-cancer-therapeutics-crc-discovery-enters-clinical-trials/>

## Discussion and Recommendations

### 1. Incentivise collaboration with a commercial focus

Approximately 30% of Australia's spend on R&D is through the indirect measure of the R&D Tax Incentive (R&DTI). Although there is a modest amount of collaboration with universities and research institutes through the R&DTI already, it is not a focus of the Incentive.

We believe incentivising collaboration through the introduction of up to a 20% collaboration premium consistent with Recommendation 2 of the *Review of the R&D Tax Incentive*, would be an effective mechanism generating new collaboration between industry and research institutes and foster a culture of innovation.

We also support the recommendation in the review to apply the collaboration premium to the cost of employing new STEM PhD or equivalent graduates in their first three years of employment.<sup>5</sup>

As of 2015, six OCED countries (Belgium, France, Iceland, Italy, Japan and Hungary) provide an R&DTI for collaboration.<sup>6</sup>

#### Recommendation:

Incentivise innovation through industry-led research collaboration by establishing an up to 20% R&D tax collaboration premium consistent with recommendation 2 of the 2016 Review of the R&D Tax Incentive.

### Invest in Success

The Allan Consulting Impact Assessment concluded that the CRC Program has generated a net economic impact to the community that has exceeded its costs by a factor of 3 to 1. Each dollar the government invests in the program is boosted by more than three dollars of co-investment by industry and research organisations.

Investing in the CRC program is investing in success and provides a known pathway to support post-COVID prosperity. An investment of \$50 million per annum over the forward estimates would return the program to its long run average level of funding and capacity for economic impact – right at the time of greatest need for the Australian economy.

Such an investment could create 2 new fully fledged CRCs per year, or one new CRC and up to 8 new CRC-Ps. Given the extraordinary impact of COVID-19 on the Australian population, we recommend that the additional funding be sharply focused on post-COVID recovery

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<sup>5</sup> [Review of the R&D Tax Incentive \(asbfeo.gov.au\)](https://www.asbfeo.gov.au/review-of-the-r&d-tax-incentive)

<sup>6</sup> [R&D Tax Incentives: Evidence on Design, Incidence and Impact](#), Appelt, S. et al OECD Science, Technology and Industry Policy Papers

through alignment to the National Manufacturing Priorities, and economic and social benefits aligned to our national interest.

Recommendation:

Invest in cooperative industry-led research and innovation to grow our economy and create new industries and jobs by growing the investment in CRCs and CRC-Ps by \$50 million a year over the forward estimates, with new investment focused on the National Manufacturing Priorities and economic and social benefits aligned to Australia's national interest.

## Create a world-leading, industry-ready, innovative workforce

Investment in Industrial PhDs puts industry at the heart of the Government's scientific agenda. We propose the creation of a PhD program that requires candidates to spend the majority of their PhD undertaking research for an industrial organisation partnered with their university. This produces commercially applicable research, gives industry an ability to co-create research education that meets their needs, and creates a highly skilled, industry-ready workforce.

We propose that a new Industrial PhD scheme be established under the Research Training Program (RTP) that extends some RTP scholarships to industry with experience in postgraduate research who are partnered with a university for programs where students spend the majority of their time in industry. We propose that companies that host PhD programs through such an initiative have access to tax offsets through the R&D Tax incentive.

Currently, CRCs host a significant portion of PhD candidates undertaking industry-led research in Australia, with around 400 current students and some 3600 alumni. A small number of Australian universities also offer Industrial PhDs which include an industry internship.

Expanding the number of Industrial PhDs is a strategic investment in Australia's innovation capacity that we believe strongly aligns with government priorities.

Recommendation:

Invest in an industry-ready workforce and jobs for the future by establishing an Industrial PhD program that goes beyond internships to ensure students are based in industry or a CRC for the majority of their PhD. Extend the Research Training Program to enable Industrial PhDs that are industry-led and industry-based. Expand upon Recommendation 2 of the 2016 *Review of the R&D Tax Incentive* to include a tax offset for companies who invest in PhD students.

### Industrial PhDs in the United Kingdom

The United Kingdom has a system of Collaborative Training Partnerships which partners PhD students with firms for mutually beneficial research.<sup>7</sup> Partners help fund the PhD students, supported by R&D tax incentives.<sup>8</sup> The UK also offers PhD's through industry-focused Doctoral Training Centres that aim to improve the UK's human capital, targeting skill gaps, as well as ensuring that graduates are highly employable. One specific scheme is the Engineering Doctorate (EngD), which focuses on applied research in engineering and physical sciences. A 2015 review of the EngD program found 91% of graduates remained working in industry and evidence suggested that firms made major R&D cost savings from their partnership with the EngD program.<sup>9</sup>

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<sup>7</sup> <https://bbsrc.ukri.org/skills/investing-doctoral-training/collaborative-training-partnerships/>

<sup>8</sup> <https://www.gov.uk/guidance/corporation-tax-research-and-development-rd-relief>

<sup>9</sup> [Understanding the EngD Impact](#), 2015, Kitagawa, F. AEngD and EPSRC