

Mapping and quantification of CRCs' work on decarbonisation



Introduction

The Cooperative Research Centres (CRC) Program provides funding for long-term, industry-led research collaborations aimed at improving the competitiveness, productivity, and sustainability of Australian industries.

Existing CRCs play an important role in developing innovative solutions in response evolving national priorities, bringing together an extensive network of industry, academia and government.

CRCs are currently delivering a broad range of decarbonisation-related activities in line with Australia's suite of decarbonisation policies and strategies and are well-placed to support the Australian Government to realise its emissions reductions targets (a 43% reduction from 2005 levels by 2030 and net zero by 2050¹).

Analysis of the impacts of the research of 12 CRCs and one post CRC (collectively referred to as the 13 CRCs) shows a range of economic, social and environmental benefits, including the potential to enhance current CO₂ abatement. In addition, the report explores the opportunities for Government to better leverage the CRCs and CRC model to realise Australia's emissions targets.



iMOVE CRC



Future Fuels CRC



MinEx CRC



Blue Economy CRC



Future Battery Industries (FBI) CRC



CRC for Transformations in Mining Economies (CRC TiME)



RACE for 2030 CRC



SmartCrete CRC



Future Energy Exports (FEnEx) CRC



Digital Finance CRC



Heavy Industry Low-carbon Transition (HILT)



One Basin CRC



Mining3

Department of Climate Change, Energy, the Environment and Water (2022). *Australia submits new emissions target to UNFCCC*. Accessed August 2023: <https://www.dceew.gov.au/about/news/australia-submits-new-emissions-target-to-unfccc#:~:text=The%20updated%20NDC%3A,net%20zero%20emissions%20by%202050.>



Key Findings

Cooperative Research Centres contribute to Australia’s decarbonisation goals

Australia has a suite of decarbonisation-related policies and strategies aimed at supporting Australia’s national decarbonisation goals. The work of the CRCs is strongly aligned with these goals, but there is significant potential to further enhance their work programs to better leverage their existing and potential contribution to realising net zero outcomes.

CRCs provide a well-established capability that can be harnessed to accelerated effect and greater impact. As government grows its investment in the decarbonisation transformation, the established capability in CRC’s may be an efficient and cost-effective way to mobilise capability and scale quickly. All 13 CRCs see the potential to step up their contribution to the national effort.

The alignment between the CRCs’ decarbonisation priorities highlights the potential for collaborative efforts between CRCs and government to drive toward these goals and ensure the CRCs are addressing the areas of most need.

Distribution of resources toward decarbonisation priorities

49%

or **\$1.12b**
of CRCs collective
resources are
focused on decarbonisation-
related activities.

The CRCs are raising awareness and capacity among the research, industry, and government sectors about the need to, and opportunities and challenges, relating to decarbonisation. They also connect industry with research expertise, providing a framework for accelerated change.



Key Findings

Economic impacts

Seven of the 13 CRCs included in the analysis are projected to provide significant benefits to the Australian economy. Estimates of the full 13 CRCs (by scaling the costs and benefits) are expected to include (for grants awarded 2017-32):

Providing significant value for money

\$1 generated \$5.80

in additional economic output (GDP, NPV7) generated for every dollar of cash and in-kind contributions to the CRCs' decarbonisation work



Generating substantial economic activity

\$4.8b in additional economic output (GDP), (\$1.9 billion NPV7) – significant value for money



Generating significant employment opportunities

3,705 job years

directly related to the research across Australia to 2032, an average of 247 FTE job years per year across Australia money



Raising economic welfare across Australia

\$4.3 billion

cumulative increase in Australian's real income (\$1.7b NPV7)



Leveraging substantial investment

\$3.26 leveraged per **\$1** Australian Government funding



The estimated economic impacts understate the CRCs' overall benefits as they do not account for the associated social and environmental impacts or future benefits not yet able to be quantified.

Key Findings

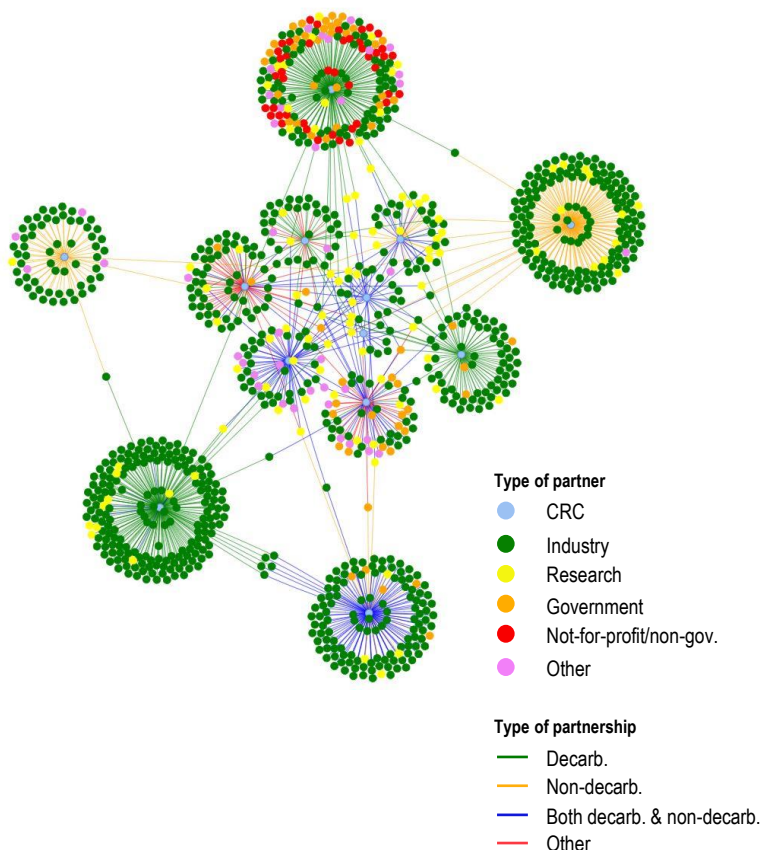
Collaboration and synergies between the CRCs

The CRCs collectively collaborate with a deep and broad network of research and industry partners, in Australia and internationally. These partners are a feature of the CRC model and enhance and extend their impact.

The CRCs' network demonstrates the collective reach of the CRCs. Many of these partners are complementary, enhancing and extending the impact of the CRCs by contributing to the CRCs' research, providing access to facilities, expertise, and funding, supporting impact translation, and by adopting the innovative products and services developed by (and with) the CRCs.

Most CRCs want to collaborate more. Greater clarity as to the limitations and opportunities for collaboration would facilitate further joint work. Further, the acquired knowledge from collaboration should be documented and transformed into best practices for future endeavours.

There is an opportunity for the CRCs and Australian Government to better leverage existing partnerships in the CRC network for decarbonisation-related efforts. These partnerships provide the foundation to leverage expertise across the CRCs and CRCs' partners, share resources, be better informed, have broader credibility and policy influence, and enhance research adoption.

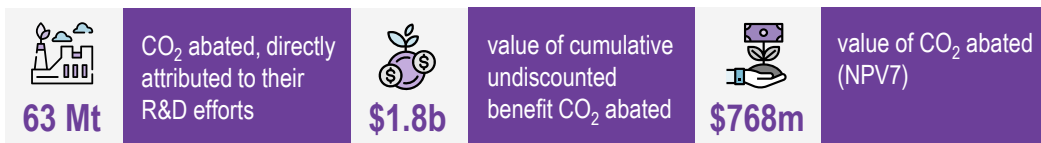




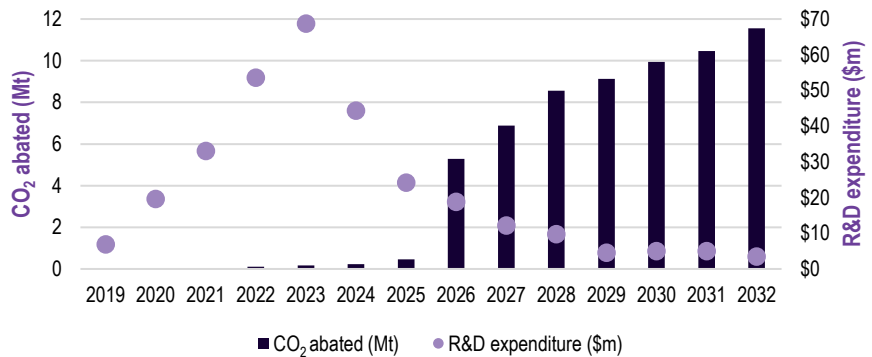
Key Findings

CO₂ abatement impacts

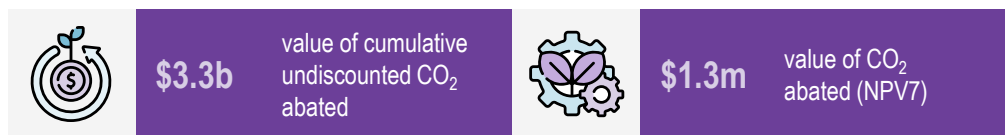
From 2017-32, the 7 CRCs reporting abatement impacts will achieve:



The expenditure required to realise the CO₂ abatement by the 7 CRCs that reported CO₂ abatement outcomes is:




From 2017-32, scaled across the 13 CRCs the expected CO₂ abatement is valued:



These abatement outcomes are the tip of the iceberg for what may be realised as industry continues to adopt the work of the CRCs over time.

There is an opportunity to better understand, consistently map, and harness the decarbonisation impacts delivered by the individual and collective CRCs via the implementation of a consistent decarbonisation measurement tool over time.



Abatement expected to increase rapidly

12 Mt CO₂ to be abated in 2032 alone

18% of the total 16-year assessment period total



Key Findings

Decarbonisation outcomes and impacts

CRCs have contributed to Australia's decarbonisation goals by delivering new products and services, developing reports and other publications, contributing to education and capacity building, enhancing Australia's export opportunities, informing decision-making, and engaging with end users.

As many of the CRCs are in the early stages of their life, it is likely that these impacts will continue to increase over time as end users continue to take up CRC products, services, insights, and advice.



>600

research papers
and reports



494

postgraduate
students trained



483

honours students
trained



Enhanced export
opportunities,
including supply
chain traceability



Better informed
policy decisions,
including legislation,
tax and strategic
planning



Engagement with
end users to
support uptake and
testing of new
processes and trial
proof of concepts

Future opportunities

Realising the full potential that the CRCs can offer in pursuing the nation's decarbonisation goals and net zero targets can be attained through a number of opportunities. Action by Government and the CRCs would support the CRCs to operate more effectively and deliver more impact toward Australia's decarbonisation goals as outlined below.

1

CRCs have the potential to further enhance their collaboration to support greater information transfer, leverage CRCs' expertise, and drive the expanded adoption of CRC outputs. This will create cross sectoral and industry opportunities and ensure that the CRCs are addressing areas of most need.

2

There would be value in the Government exploring incentive structures to encourage increased collaboration on shared initiatives, to extract greater value from the CRC program (e.g. recognising collaboration in reporting, funding projects undertaken by 2 or more CRCs, ensuring contracting does not constrain activity, aligning milestones/reporting with project investment timelines, and supporting CRC responses to changes in the external environment). The CRCs require more clarity on limitations to CRC-CRC collaboration (funding and contractual) to collectively expand strategic planning and develop more effective alliances.

3

CRCs are long-term entities and would benefit from increased flexibility to refresh their priorities as Australia's decarbonisation sector matures, new demands and opportunities emerge, and partners' needs evolve. The CRCs should account for these changes by embedding funding flexibility (funds reserved for emerging opportunities and flexible agreements with partners), program flexibility (allowing changes to delivery and priorities), and governance that supports this flexibility.

4

Providing CRCs with access to/eligibility for additional funding (to scale, collaborate, and develop a critical mass of decarbonisation-related efforts) would better leverage the CRCs' capacity, expertise, and flexibility to drive change and enhance progress toward the national goals. The CRCs require greater clarity on their eligibility for other Australian Government funding programs to create transparency and ensure equity in the application processes, so that CRCs can support more capital-intensive activities (e.g. pilots, demonstration projects), where projects are not already funded under the CRC.

5

There is an opportunity to create a pathway for more strategic coordination and planning to identify opportunities and pursue new/expanded research topics or collaborative projects across the CRC network as they emerge. This could be guided through a dynamic and flexible, decarbonisation-specific reference group or Cooperative Research Australia (CRA). This would allow the Government to better leverage the existing capability and capacity within CRCs and their networks, to accelerate decarbonisation and support Australia to reach its net zero goals.

6

The work of the CRCs typically aligns with more than one Australian Government portfolio, which makes it challenging to communicate the capacity and capability of each CRC and their potential for leverage by the Australian Government. There is a role for coordinated activity led by the Department of Industry, Science and Resources, together with CRA and the CRCs, to ensure that the CRCs' work is communicated across the Australian Government, and that CRCs' capacity is further leveraged to deliver more value. This should grow the brand of individual CRCs and the collective CRC network in delivering decarbonisation outcomes for Australia.