

10 April 2025

Reference Panel  
Strategic Examination of Research and Development  
Department of Industry, Science and Resources,  
Canberra. ACT  
Lodgement: [Strategic Examination of Research and Development: discussion paper](#)

## **Submission on the Strategic Examination of Research and Development Discussion Paper**

Dear Panel Members

### **Introduction**

Cement Concrete & Aggregates Australia (CCAA) welcomes the opportunity to provide input on the Strategic Examination of Research and Development Discussion Paper issued 12 February 2025.

### **About CCAA**

Cement Concrete & Aggregates Australia is the voice of the heavy construction materials industry in Australia.

CCAA members produce the majority of Australia's cement, concrete, and aggregates, which are crucial to Australia's building and construction sectors. These materials support the development of our nation's transport, energy, water, housing, defence, and social infrastructure. The industry generates approximately \$15 Billion in annual revenues and employs approximately 30,000 Australians directly and a further 80,000 indirectly.

### **Recommendations**

**CCAA makes the following specific recommendations:**

- 1. That implementation of government policies should encourage a closer liaison between industry and academia especially in the design and realisation of research.**
- 2. That a concentration on societal needs as expressed in national sectoral strategies, such as the construction and maintenance of infrastructure, should guide the allocation of funding for research and development**
- 3. That increased uncertainty and risk involved in many research and development efforts, should be acknowledged through enhanced funding opportunities.**
- 4. That it should be recognised that investment in research and development at tertiary institutions concurrently develops a skilled and knowledgeable workforce providing potential technical staff for manufacturing industry.**
- 5. That clear guidelines for the apportionment of intellectual property, respecting that commercialisation of research outcomes, can only be achieved through the participation of sponsoring entities.**

## Introduction

Research and Development (R&D) is vital to the cement and concrete Industry for several reasons. It fuels innovation, allowing companies to create unique products and services that differentiate them in the market. It also enhances efficiency by optimising processes and reducing costs. Furthermore, R&D helps in addressing customer needs and preferences more accurately, leading to increased satisfaction and loyalty.

A fundamental requirement for the cement and concrete industry is R&D to ensure the quality and performance of heavy construction materials. Our members have engaged in specific programs over time to maintain the safety and resilience of the Australian construction industry. In more recent times, the cement and concrete industry has also utilised internal and external resources to address the environmental issues of sustainability and the circular economy to benefit the built environment.

## Cement and Concrete Sector Motivation

The report *Decarbonisation Pathways for the Australian Cement and Concrete Sector*<sup>1</sup> (VDZ, 2022) emphasises the critical role of R&D in driving the decarbonisation of the cement and concrete industry by 2050. It identifies ten key innovation areas that require R&D focus, ranging from the beneficiation of fly ash and alternative fuels with biomass to the implementation of advanced carbon capture technologies, and improvements in energy efficiency.

R&D is highlighted as essential for the successful implementation of identified pathways that will reduce emissions across the value chain. The report underscores the need for continuous R&D efforts to improve the mix design and technology used in concrete, develop CO<sub>2</sub>-efficient cements, and further innovate supplementary cementitious materials (SCMs) to reduce the clinker factor and carbon footprint of concrete production.

The report stresses the importance of collaborative R&D efforts between industry, government, and research institutions. By fostering partnerships and leveraging expertise from various stakeholders, Australia can accelerate the commercial application of low-carbon technologies and ensure that emerging innovations are adapted to local industry conditions. Public funding and policy support are identified as crucial to overcoming cost and operational hurdles in developing and implementing these new technologies.

In summary, the report acknowledges that sustained and targeted R&D efforts will be essential to address technical challenges, enhance technological readiness, and facilitate the transformation of the cement and concrete sector towards a net-zero future.

## Challenges in Research and Development

Despite its importance, effective research and development faces several challenges:

### Relevance of Research

A close relationship fostered between industry and academia leads to a greater understanding of industry needs and academic capability. The best investment in R&D efforts is one which firmly addresses an industry challenge enabling a return to all project participants. In the Australian construction industry, there is limited interplay between the important nodes of industry and academia, leading to limited application of research outcomes and sub-optimal returns for invested research funds.

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<sup>1</sup>[https://www.ccaa.com.au/CCAA/CCAA/Public\\_Content/SUSTAINABILITY/Decarbonisation\\_Pathways\\_Report.aspx?key=2b452a7b-5b70-4e78-b0d3-1a829e5bd319](https://www.ccaa.com.au/CCAA/CCAA/Public_Content/SUSTAINABILITY/Decarbonisation_Pathways_Report.aspx?key=2b452a7b-5b70-4e78-b0d3-1a829e5bd319)

To facilitate an informed liaison between industry and academia, a national strategy can provide an overall guiding framework for outcomes and investment. For the construction sector, there has been no coordinated long-term strategy beyond the National Research Infrastructure Roadmaps since 2006. This has led to funding gaps, the redirection of internal funding or capability and a disjointed effort in developing new technologies to meet the needs of a developing Australia.

### **High Costs**

Research and Development is often associated with high costs, including expenses related to personnel, equipment, and materials. The complexity of R&D projects, with concomitant uncertain timeframes and outcomes, needs intelligent investment through a stable mechanism that can deal with the increasing costs over the life of the project.

Competitive R&D grant funding for Australian universities increased by 140% from 2001 to 2022 while the funding for indirect costs (such as administration, utilities, maintenance, taxes) of R&D grew only by 49% over the same period<sup>2</sup>. In meeting the increasing indirect costs, tertiary institutions are re-directing funds that could be directed to the R&D effort, curtailing more extensive exploration of the issues under investigation.

### **Reinforcement of Australia's Manufacturing Sector**

Characteristic of many nations with a strong R&D culture, the manufacturing sector plays a crucial role in translating R&D to commercial success. However, Australia has a lower R&D intensity and contribution to Gross Value Added (GVA) compared to peer countries, increasingly relying on SMEs for investment in R&D expenditure (BERD). These SMEs are facing escalating challenges with capital and cash flow, compared to larger corporations, as well as access to advanced technologies.

To better facilitate the translation of new and emergent technologies, policies to strengthen the growth of the manufacturing sector (such as Future Made in Australia) should recognise the role of all levels of sector of converting R&D to commercial success.

### **Uncertainty and Risk**

R&D involves a high degree of uncertainty and risk. Not all projects lead to successful outcomes, and it can be challenging to predict the commercial viability of new innovations. This can also lead to an uncertain timeline in bringing technology to market. Those involved in supporting, undertaking, and executing developmental outcomes need to be cognisant of this uncertainty and provide an environment where risk and uncertainty is accepted.

### **Intellectual Property Issues**

Protecting intellectual property (IP) is a critical concern in R&D. Apportionment of intellectual property can be both time-consuming and costly. Companies must navigate complex IP laws and regulations, secure patents, and defend against potential infringements. It is further observed that negotiations regarding commercialisation of technology can be made more complicated through the non-recognition that a research provider may not be able to offer the required channel-to-market that may be provided by a commercial enterprise.

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<sup>2</sup> Figure 12, page 21, *Strategic Examination of R&D discussion paper*, [industry.gov.au](http://industry.gov.au), accessed 27/03/25

## Development of a Skilled Workforce

Australia lacks key skills that are needed for research translation and commercialisation, including in engineering, sales and marketing and product development. In 2019–20, 45% of Australia's R&D workforce was in the business sector, which is far lesser than the OECD countries at 68%<sup>3</sup>. Further, the participation in R&D efforts of tertiary students results in the development of skills and knowledge which are attractive for employers, especially in the technical aspects of industry.

## Conclusion

CCAA welcomes the contemporary examination of research and development in Australia. We remain supportive of the terms of reference of the independent expert panel and would encourage the consideration of our recommendations.

For further information, please contact me on 0418 627 995 or [Michael.Kilgariff@ccaa.com.au](mailto:Michael.Kilgariff@ccaa.com.au).

Yours sincerely

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<sup>3</sup> Figure 28, page 35, *Strategic Examination of R&D discussion paper*, [industry.gov.au](http://industry.gov.au), accessed 27/03/25