

# Mining transitions and climate change:

a research synthesis to inform CRC TiME strategy

The Australian mining sector is entering a time of rapid change as the physical, social, and financial impacts of climate change become increasingly apparent. To navigate these changes and maintain a viable future for Australia's mining sector, industry, communities, and government decision-makers need a clear understanding of climate change risks and opportunities associated with these impacts, how these vary across different scenarios, and how different mining ecosystem organisations consider climate change.

## KEY FINDINGS

- **Diverse climate change impact needs more attention:** Overlooking the diverse impacts of climate change can risk stranding substantial assets and communities. For example, the financial impacts of climate change are more significant than the direct physical impacts, yet they receive less attention within the sector. The new framework aims to raise awareness and provide a better understanding of diverse impacts.
- **Transformation of the mining sector is inevitable.** In every climate change scenario, from reducing greenhouse gas emissions to adapting to extreme climate change consequences, the mining sector will transform. Those who understand opportunities and undertake early transition could benefit substantially.
- **More discussion is needed.** Many mining-related organisations examined within this project, and likely outside too, are engaging with climate change and support the transition to a low carbon economy. Yet, climate change discussion is underdeveloped, overlooking significant risks and opportunities such as climate impacts on mine closure.
- **First Nations perspectives need to be integrated.** First Nations perspectives are currently absent from many climate change discussions, with their livelihoods often stereotyped as being 'vulnerable' or 'resilient' to climate change. These gaps undermine the potential value that First Nations knowledge can bring to climate adaptation.

This project provides a new framework of climate impacts on mining systems. It analyses risks and opportunities under different scenarios, examines organisations' perspectives, and reviews First Nations perspectives. The integrated findings will assist CRC TiME and the broader mining industry to better support those navigating mining transitions and climate change impacts to plan for a vibrant future.



## THE CHALLENGE

The diverse impacts of climate change are the most significant factor driving transformations in mining economies and communities. However, many mining-related organisations have a limited understanding of the diverse scope of climate impacts across the sector. Most existing analysis takes a relatively narrow approach, looking at only one industry or climate impact and excluding other significant factors. Climate impacts on mine closure are rarely considered. To manage the substantial risks and opportunities of climate change to the sector, organisations and researchers could benefit from a comprehensive framework that builds on leading research and industry frameworks.

## THE OPPORTUNITY

CRC TiME is well-placed to provide a knowledge base and partnerships to assist governments, regional communities, and industry mitigate the risks of climate change.

This framework helps understand the impacts, risks, and opportunities of climate change for the mining sector. This includes for on-site mining operations, post-mine futures, and the social-economic-environmental context of the mining industry. The examination of regional implications has provided knowledge of their intensity and where they may differ.

The literature review helped with understanding First Nations perspectives. Integrating the findings will provide a platform to support organisations and communities with navigating mining transitions and climate change impacts.

## OUTCOMES

The project aimed to support CRC TiME to integrate consideration of climate change into its research and impact programs. It recommended that CRC TiME:

1. Develop a climate change statement and policy representing best practice and helping to reduce risks across diverse stakeholder needs.
2. Ensure future projects across CRC TiME and the broader industry support resilient post-mining economies by considering climate change and incorporating it into existing systems, processes, and frameworks.
3. Prioritise research and development that addresses critical knowledge gaps on climate change and mining, most notably the financial impacts of climate change on mining projects, climate change impacts on mine closure and post-closure outcomes, and the incorporation of First Nations knowledge into the broader discussion of climate impacts and responses.

## NEXT STEPS

Five research needs have emerged for CRC TiME through this project:

- Develop a Mining Transition Pathways Toolkit to support organisations and regional communities to assess their unique climate risks and opportunities across the mining lifecycle, examine transition pathways, and develop community-

centred transition strategies through broad stakeholder engagement.

- Develop a case study compendium of climate-smart industry best practice across the mining lifecycle, including closure.
- Identify shared preferences for mining and governance to mitigate and adapt to climate change by conducting broad stakeholder engagement across industry and regional communities.
- Develop a full version of the Australian Mining Climate Atlas to serve as a resource for regional mining stakeholders in planning for future responses to mining transitions.
- Centre First Nations knowledge and perspectives to create place-based climate mitigation and adaptation strategies in the mining sector across CRC TiME research.

## PROJECT PARTNERS

The University of Queensland; CSIRO

## PROJECT PUBLICATIONS

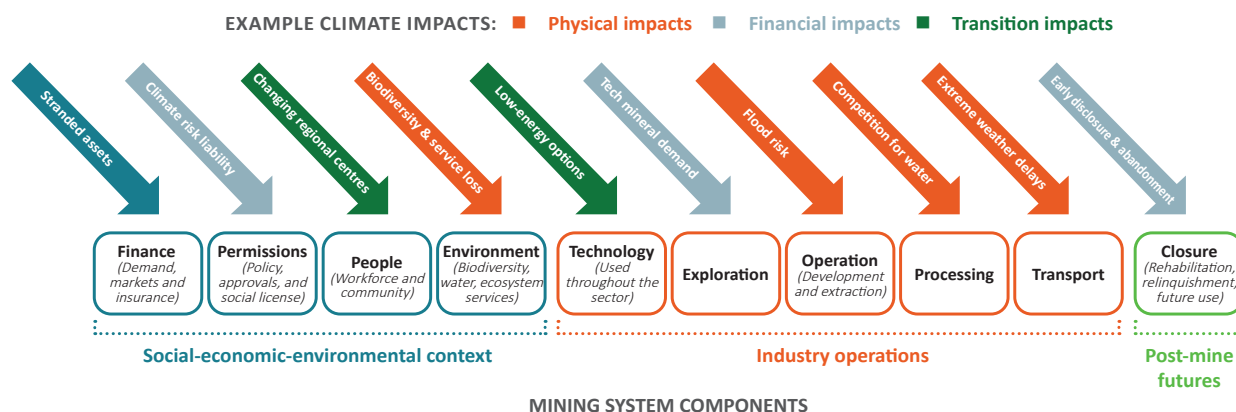
[REVIEW FULL REPORT](#)

Maher, R., Buchan, R., Littleboy A., Maclean, K., Molyneaux, L., Stringer, M. and Valenta, R. (2022). Mining Transitions and Climate Change: a research synthesis to inform CRC TiME strategy. CRC TiME Limited, Perth, Australia.

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**This framework shows three types of climate change impact across the mining system. It can be used by industry, government, and research to analyse climate impacts for specific regions, communities, or organisations.**



## ABOUT US

The Cooperative Research Centre for Transformations in Mining Economies is part of Australia's national innovation ecosystem. Our diverse partnership brings scale, collaboration and coordinated investment to tackle the most complex mine closure and post-mine transition challenges. Together we're rethinking what's possible to improve outcomes for people, communities, the environment and industry.

We acknowledge the traditional custodians across all the lands on which we live and work, and we pay our respects to Elders both past and present.