



Queensland Mining Equipment, Technology and Services

10-Year Roadmap and Action Plan

Updated June 2023



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Foreword

Queensland's mining equipment, technology and services (METS) sector delivers innovative, world-first solutions to assist the global mining and energy industries to improve operational efficiencies and environmental management.

The Queensland Government's Queensland METS 10-Year Roadmap and Action Plan (roadmap) is part of the \$3.34 billion Queensland Jobs Fund and recognises the importance of this sector to our economy and our regional communities.

Queensland's METS sector contributes over \$3.07 billion to our economy, including \$442.5 million in exports. It currently supports 26,700 local jobs, while its products and services enable many more jobs within the resources and energy sectors.

To assist METS companies to capitalise on emerging opportunities from the transformation of the resources sector, the Queensland Government is showcasing our local capabilities to the world. We're supporting projects focusing on global industry challenges including automation, mine rehabilitation, reducing emissions throughout the resources supply chain and providing assistance to trial new technologies in partnership with resource companies as a first step to commercialising innovative solutions to industry challenges. We're also positioning our METS companies to take advantage of future opportunities by assisting them to improve their ESG performance and upskilling their cyber security capabilities.

The sector's economic contribution is expected to surge as the world's move towards net zero emissions by 2050 creates increased demand for the State's world-class critical minerals and unprecedented opportunities for Queensland's world-leading METS companies. New initiatives within this roadmap reflect the changing landscape of the resources sector and complement Queensland Government plans including the Queensland Resources Industry Development Plan, which aims to build a resilient, responsible and sustainable resources sector; the Queensland Energy and Jobs Plan, which aims to grow renewable energy supply chains in Queensland; and the Queensland Battery Strategy, which aims to grow Queensland's battery value chain. Queensland's METS companies are expected to be integral in the delivery of these plans as Queensland transition to a net zero emissions future that supports jobs, industries, communities and our environment.

To date, the roadmap has assisted:

- » 48 METS companies to secure an increase of \$24 million in sales and capital investment and 25 full time jobs through late-stage accelerator programs
- » 104 regional companies to work with industry experts to build their capabilities
- » over 200 METS companies, resource companies and researchers to collaborate in commercialising innovative mine waste management projects
- » 5 companies to facilitate commercialisation of products and services through the \$1 million Queensland METS Collaborative Project Fund (Collaborative Fund)
- » 36 businesses to export to new markets, including the United States, India and Chile, through dedicated METS Export Hubs in Toowoomba and Mackay
- » 40 METS companies to promote their business capabilities in international and interstate markets.

This roadmap update builds on these successes and aims to commercialise local innovations, strengthen supply chains and create sustainable jobs for the future.

By backing Queensland's METS companies with these opportunities, we will lead the development of responsible solutions for the global energy and resources industries.

Vision

By 2027, through innovation and collaborative partnerships, Queensland's globally competitive METS sector will lead the development of responsible solutions for the energy and resources industry worldwide.

Strengths

- » World-class education and training facilities, and a highly skilled, agile workforce
- » Internationally recognised research institutions focused on energy and resources
- » Natural clusters of expertise able to rapidly respond to industry challenges
- » Highly regarded METS companies able to deliver innovative world-class capabilities to domestic and international customers
- » Ability to respond to increasing domestic and international demand for unique, innovative technologies that can increase productivity while reducing costs, improve safety and environmental performance
- » Proximity to domestic and Asian supply chains.

Challenges

- » Addressing labour and skills shortages
- » Understanding and responding to decarbonisation drivers for customers in domestic and international supply chains
- » Strengthening the resilience of domestic and international supply chains
- » Business capability gaps, particularly in management improvements, data management, internal business systems, export skills and knowledge of international markets
- » The cost of doing business in Australia compared to overseas
- » The need to improve collaboration and understanding across the METS, resources and research sector ecosystems to ensure that the latest productivity, safety and environmental solutions to industry challenges are developed and adopted as quickly as possible
- » Access to funding and investment capital
- » Understanding cyber security risks resulting from increased adoption of integrated Industry 4.0 and cloud technologies.

Table 1.0 10-year strategies

Strategy one	Strategy two	Strategy three	Strategy four
<p>Increase innovation and commercialisation</p>	<p>Increase collaborative business opportunities</p>	<p>Develop Sector Capabilities</p>	<p>Promote sector capabilities and investment opportunities</p>
<p>Continue a regional, state and national-level accelerator pathway for Queensland METS companies seeking to commercialise new products or processes, including those focussed on decarbonisation.</p>	<p>Develop and promote clusters of expertise in resource and tailings management, critical mineral processing, environmental protection and social performance.</p>	<p>Continue to provide a concierge service to assist Queensland METS companies identify the most appropriate, local, state and federal government programs to support their business.</p>	<p>Promote Queensland’s METS sector in domestic and international markets by:</p> <ul style="list-style-type: none"> • promoting the sector at national and international trade shows • sharing information about Queensland’s METS sector • utilising social media channels to encourage peer to peer learning within the sector • creating marketing materials, case studies, media and events to highlight the successes of Queensland’s high performing METS companies.
<p>Identify policy and project facilitation gaps and work across government to ensure alignment of key objectives.</p>	<p>Develop tools to support decarbonisation and emissions reduction strategies of METS companies.</p>	<p>Develop a tailored skills plan that addresses capability skills gaps to meet current and future skills needs.</p>	<p>Facilitate international trade opportunities for Queensland’s METS sector through collaborations with Trade and Investment Queensland and Austrade.</p>
<p>Develop an economic evidence-based profile of the Queensland METS sector to inform economic impact analysis and consideration of appropriate industry assistance.</p>	<p>Deliver the METS Collaborative Fund supporting industry led solutions that improve the productivity, competitiveness and innovative capacity of the Queensland METS sector targeting environmental, social and governance (ESG) principles and reprocessing of mine tailings.</p>		

Case studies

Collaboration supports resource innovation

The Collaborative Fund aims to drive collaboration to address resources sector challenges.

A partnership between METS Ignited, the Commonwealth Growth Centre, and the Queensland Government, this fund provided up to \$1 million to facilitate the commercialisation of innovative products and services for use in Queensland's resources sector. The Queensland Government's funding leveraged a further \$1.6 million in industry funding supporting five METS projects. Outcomes to date from the Collaborative Fund include approximately

84 full-time equivalent jobs secured, expansion of two hard rock mines located in Central and Far North Queensland, and the establishment of two new companies to target opportunities resulting from the successful delivery of their projects. Participants acknowledged that the program reduced the funding risk associated with developing new, innovative technologies.

Collaborative Fund case studies

Mount Carbine historic mine waste transformation project

In July 2020, the Mount Carbine historic mine waste transformation project secured \$220,000 in funding from the Collaborative Fund to undertake a 9-month program to optimise the scale-up application of ore sorting technology (up to 1 million tonnes of waste per year). The aim was to prove the economic viability of mine waste re-treatment by recovering industry-critical tungsten minerals at the Mount Carbine tungsten mine in Far North Queensland.

The project partners comprised of EQ Resources (EQR), CRONIMET, the University of Queensland, TOMRA Sorting Pty Ltd and DAS Mining Solutions. The project was successfully completed in August 2021 and provided EQR with the confidence to complete a Bankable Feasibility Study (BFS) using the results of the project's work in December 2021. As a result of the positive results from the BFS, EQR was able to raise \$6 million to fund an expansion and early works program which was completed in the first half of 2022.

The success of the project has supported the doubling of production at Mount Carbine and approximately 65 full-time jobs. It has also enabled EQR to secure \$600,000 funding from the Advanced Manufacturing Growth Centre to significantly ramp up the industrialisation of the solutions developed through the support of the Collaborative Fund.

AI in minerals exploration

Queensland start-up, OreFox, successfully collaborated with QMinerals Ltd and Ironbark Marketing to further commercialise its cutting-edge proprietary AI technology to gain further knowledge of QMine's Mount Chalmers deposit near Rockhampton. A key aim of the project was to accelerate deposit discovery and improve mining efficiency at Mount Chalmers.

As a historical producing mine, there was significant potential to increase the known mineral endowment and add new economy mineral opportunities.

OreFox explored the use of its proprietary technology and deep learning systems to gain further insights from Mount Chalmers' geochemical data. The samples were analysed against OreFox's extensive geochemical signature library which contains data from thousands of global economic deposits. The system looks for obvious correlations in the data, hidden patterns, clusters and relationships, across massive data sets.

OreFox was able to develop more informative data for the Mount Chalmers' project which enabled QMinerals to rapidly improve the effectiveness of its drilling program and successfully increase the project size for the company by defining new areas of potential mineralisation.

The project has the potential to increase exploration activity in Queensland, particularly for new economy minerals and could be applied to numerous other historical mines and deposits.

As a result of the above successes of the Collaborative Fund, the Queensland Government, through its Queensland Resources Industry Development Plan, will invest an additional \$2.67 million over three years in the Collaborative Fund. This funding will continue to drive collaboration in Queensland's resources sector to address emerging priorities including environmental challenges, emissions management, renewable energy, and improving mine site safety.



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