

QRC STATE OF THE SECTOR

JUNE QUARTER 2019



RESOURCES INDUSTRY LOOKING TO LOWER EMISSIONS AND COSTS

Queensland's economy was built on reliable access to low-cost energy and it remains a vital ingredient for the success of the resources sector. Small increases to energy costs can have a large impact on profitability. Energy costs for hard rock mining activities can range between 30-40% of operating costs—for comparison, domestic fuel and power accounts for around 2.6% of the average household's expenses.¹ Unfortunately for resource operators, those energy costs are only set to rise as declining resource quality and deeper ore bodies will drive energy intensity further.²

Queensland's resources sector is trade-exposed and must continue to battle energy costs to remain competitive internationally. However, QRC's members are committed to taking proactive steps towards a low emissions economy. The challenge is to enjoy the lower emissions from renewable energy alongside the reliability and affordability of the existing generation fleet.

“There is increasing pressure on carbon intensive industries by multiple stakeholders”

“Renewable energy is an opportunity in terms of reducing our greenhouse gas emissions”

“We're concerned by power security and costs”

QRC member CEO sentiment survey, June 2019

Renewables and resources are far from mutually exclusive. According to this quarter's QRC CEO sentiment survey, 90% of CEOs consider renewables provides an opportunity for their business. CEOs are rightly concerned that without careful planning, intermittent generation can risk energy security and affordability, yet renewables also provides opportunities to reduce greenhouse gas emissions in their Queensland operations.

Renewables also provide an important new source of demand growth for Queensland's minerals. For example, coal generation facilities require about two kilograms of copper per kilowatt of capacity, whereas solar generations require around 5 kilograms per kilowatt.

Several resource operators are already investing in renewable energy to power parts of the operations. Across Australia, the growth of renewable capacity commissioned in mines has increased dramatically, from less 100 megawatts in 2011 to 1800 megawatts in 2018.

Much of this renewable-powered mining is happening in Queensland. One third of QRC member CEOs said that renewable energy already powers parts of their operations—from solar panels on coal seam gas wells to the solar power used to power their camps.

In Weipa, Rio Tinto invested in a 1.7 megawatt solar farm to displace its diesel power use. At peak, the solar plant covers 20% of the township's daytime demand and saves up to 2.3 million litres of diesel and 1,600 tonnes of carbon dioxide annually.⁴

¹ABS 6530.0 - Household Expenditure Survey, Australia

²Cru International (2019)

³BHP - The Bullish Thesis for Copper

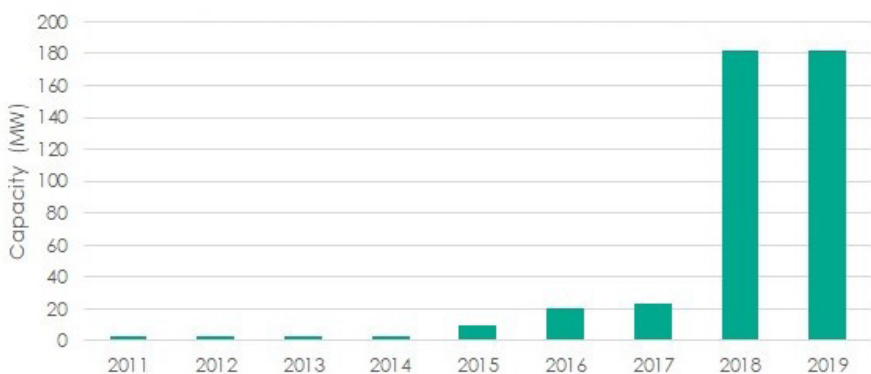
⁴Rio Tinto - Australia's first commercial diesel displacement solar plant start operations

South32's Cannington mine— one of the world's largest producers of silver and lead— opened a 7,200-panel, three megawatt solar farm in December 2018. The solar farm powers the mine's accommodation and airport, with additional power going to mining operations. The solar farm will cut from its operation's annual greenhouse emissions by up to 6,000 tonnes.⁵

Sun Metal's zinc refinery in Townsville now relies on renewable energy for around one third of its power needs thanks to its decision to construct a 124 megawatt solar farm as part of its operations. The solar farm is estimated to reduce greenhouse gas emissions by 229,320 tonnes of CO2 equivalent per annum.⁶

It's not just solar farms in the spotlight, QRC members are working to lower emissions and reduce costs in other ways. For this quarter, 50% of QRC member CEOs said they are likely to consider further investments in fuel switching or energy efficiency activities over the next 12 months.

CHART 1: GROWING ADOPTION OF RENEWABLES IN MINING



Source: RMI

“We're upgrading our power network to improve system efficiency.

We're improving our remote monitoring of process efficiency with a focus on reducing energy usage.”

“We are looking to add batteries in the place of spare turbines”

QRC member CEO sentiment survey,
June 2019

Anglo American has partnered with EDL to use waste coal mine gas as a power generation fuel. Once a waste product, now the gas fuels 108 megawatts of generation capacity across two power stations —delivering reliable, sustainable and affordable energy and significantly reducing greenhouse gas emissions. The projects reduce greenhouse gas emission by about 3 million tonnes per annum or about 2 percent of Queensland's emissions. The projects also help to defer investment transmission network upgrades.

Energy efficiency—sometimes called the fifth fuel—is the cheapest and cleanest energy choice of all. It's no surprise then that resource operators are devoting significant efforts to unlocking those efficiencies. For example, since the 2010, Aurizon has reduced the emissions intensity of its locomotive fleet by 19% by undertaking fuel efficiency initiatives and transitioning its fleet from diesel to electric power.⁷

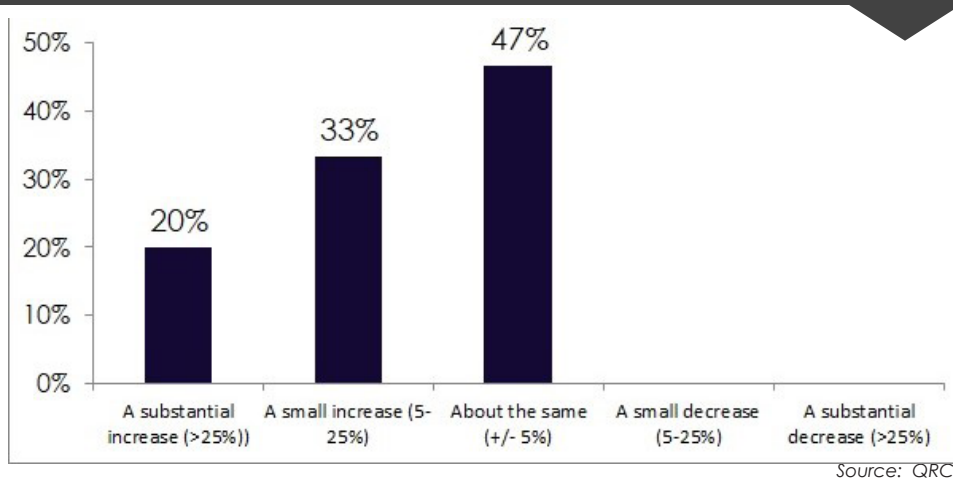
⁵South32 - New solar farm for Cannington

⁶Australian Government Clean Energy Regulator - Year in review

⁷Aurizon 2018 Sustainability Report

It's clear that Queensland needs a range of low and zero emission technologies to deliver a lower emission economy and QRC members have turned their minds to the future. According to this quarter's survey, 40% of QRC member CEOs are already investing in or contributing to research and development of low emission technologies from carbon capture and storage to energy efficiency projects.

CHART 2: 12 MONTH OUTLOOK: QRC MEMBER INVESTMENT IN LOW EMISSION TECHNOLOGIES OR PRACTICES



The focus on low emission research and development is set to build. When QRC CEOs were asked how their investment is likely to change over the next 12 months, 53% reported an increase in research and development activities, with 20% expecting a substantial increase and no respondents planning a decrease.

The Queensland resources industry is clearly committed to being part of the global effort to reduce emissions. Through their operations and investment, QRC members are working to lower emissions and reduce costs by improving energy efficiency, adopting renewable energy, investing in co-generation and the latest low-emission research.

KEY INDICATORS

QRC PRODUCTION VOLUME INDEX

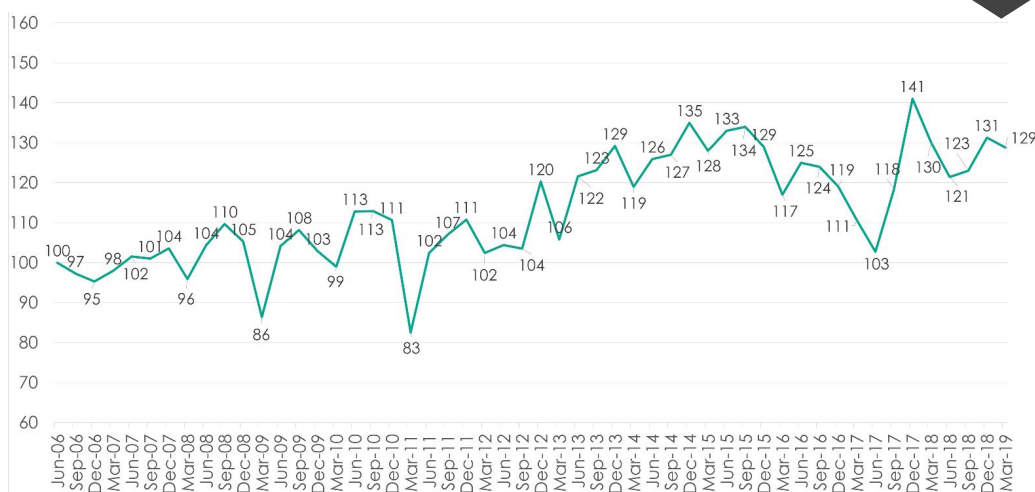
Production eases over the quarter

The QRC's quarterly Production Volume Index tracks changes in the total production of Queensland's major commodity exports—alumina, aluminium, bauxite, coal, copper, gold, lead, LNG, silver and zinc.

The Production Volume Index is weighted by the value of each commodity. This means changes in the volume of coking coal (which is over half of the total index value) has a larger impact on the quarterly index result than, for example, changes in thermal coal volumes (representing approximately 10–15 % of total value).

For this quarter, the QRC's Production Volume Index decreased to 129 points, two points down on the December 2018 quarter, ending the index's three quarters of growth. Despite the decrease, Queensland's resources production is now 29% higher than when the index first began in 2006.

**CHART 3: QRC PRODUCTION INDEX (AS) (MARCH 2019 QUARTER)
(INDEX BASE JUNE 05/06=100)**



Source: QRC, OCE, EnergyQuest, IHS McCloskey

QRC STATE OF THE SECTOR

The mixed production results for this quarter highlights Queensland's diverse resources portfolio. In the March quarter—silver lead the pack achieving a 29% production increase while lead, decreasing by 12%. For Queensland's major commodities—coal production decreased by 3% while LNG production increased by 3%.

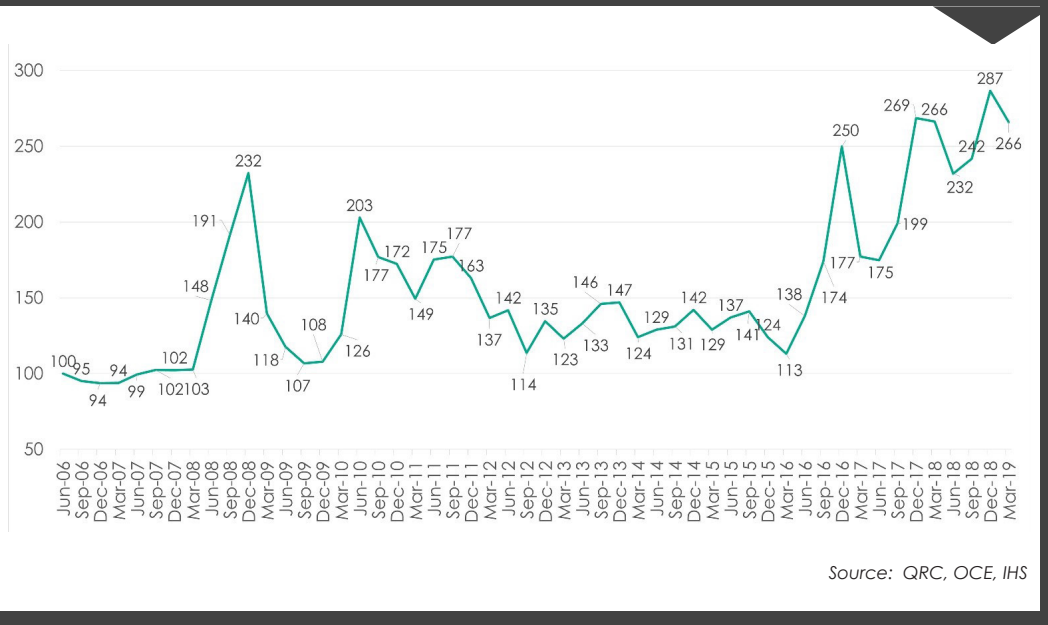
QRC VALUE OF PRODUCTION INDEX

QRC's Value of Production Index reflects changes in the prices of the resources that Queensland produces. The weighted index reflects the same mix of commodities as the QRC production volume index, which includes LNG production from the December 2016 quarter.

Over the March 2019 quarter, the QRC's Value of Production Index increased from 287 points to 266 points — 21 index points below the record of last quarter, but still well above historical levels. Despite the drop in the value of production, this index result shows Queensland's resources production value is still over 2.5 times the size it was in 2006.

For the quarter, steady increases in silver (7%), gold (6%), lead (4%) and zinc (3%) weren't enough to account for decreases in alumina (-18%), aluminium (-6%), bauxite (-3%) and coking (-9%) and thermal coal (-7%). LNG and copper both remained fairly steady over the quarter, achieving slight gains of 3% and 2%.

CHART 4: QRC VALUE OF PRODUCTION INDEX (AS) (MARCH 2019 QUARTER)
(INDEX BASE JUNE 05/06=100)



QRC CEO SENTIMENT INDEX

Each quarter, the QRC prepares its CEO Sentiment Index by surveying its full member CEOs. The survey typically receives between 20-35 responses from mining and energy, minerals processing, contracting, exploration, electricity generation and oil and gas extraction members in Queensland.

Each survey asks CEOs to nominate the extent they expect a series of eleven factors will impact on the objectives of their organisation over the next 12 months. The QRC weights the responses to create a single sentiment value for that factor. The weighting means the factors generating the greatest concern receive the lowest scores and are lower down on the negative axis.

The June 2019 quarter delivered another negative sentiment record for the uncertain and/or poor regulation category — with negative sentiment growing by a further 17% over last quarter's record.

QRC's member CEOs called out several uncertainties driving this result:

“Regulatory hurdles are increasing the burden on mining companies to develop new projects in Queensland. The changes in legislation are not adding value”

“the lack of a cohesive government position on coal mines is affecting public sentiment and that, as a consequence, is affecting investor and financial institutions confidence.”

“The Federal Government's ongoing review of the domestic gas market adds additional uncertainty in the market.”

QRC member CEO sentiment survey, June 2019

Unfortunately, the uncertainty for industry doesn't end at the border. QRC member CEOs point to the global macro-economy as their next greatest concern. Negative sentiment towards the category elevated from 4th to 2nd spot over the quarter and not far off the lows of September 2015—when the EU migrant crisis was in full swing, Australia changed Prime Minister and metallurgical coal prices neared thermal prices.

This time around, QRC's member CEOs pointed to new international challenges:

“We export wholly to China, so we are facing significant uncertainty due to the trade war”

“Uncertainty in macroeconomic environment is causing higher degrees of speculation and volatility in the commodity markets”

“We're concerned world economic issues will cause a slowdown in the Australian economy”

QRC member CEO sentiment survey, June 2019

Finally, the sentiment towards attracting or retaining skilled employees improved for the second straight quarter—dropping from 2nd to 3rd overall. CEOs that are looking to expand their operations or open new operations are finding it particularly difficult:

“Hiring for an extended operational area is proving problematic in terms of quality and expectations of recruits”

“There has been an increase in remuneration paid for specific skills (trades and statutory officials). Skills attraction has become more difficult due to expansion across the sector placing pressure on availability of resources.”

“Labour markets are starting to stretch such that it is becoming not only hard to attract quality people, but to attract anyone at all”

QRC member CEO sentiment survey, June 2019

Supporting the local communities that support us

The recent federal election result demonstrated that resources and jobs were high on the list for many Queensland voters. While it was an encouraging result for the sector, it's no cause for complacency. This quarter's CEO sentiment survey shows us that social licence is still firmly on the minds of CEOs, coming in as the 4th highest concern for the quarter. As one QRC member CEO said:

*"the battle for hearts and minds in the community continues to be a challenge. We shouldn't fool ourselves into thinking the federal election marked a significant change in the general public's at best ambivalent relationship with the resources and energy industries."*¹

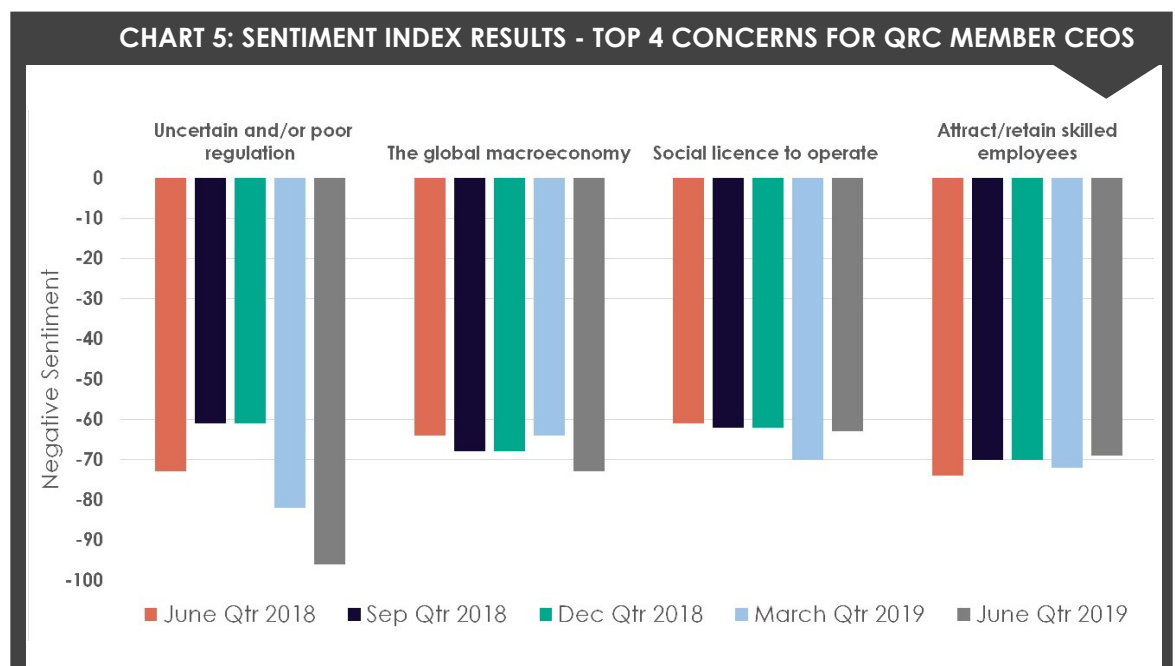
QRC members recognise it is important to understand the nuances of the local area and identify the values residents attach to each community. When QRC sought feedback from community members across 19 regional Queensland towns for the [Listening to the Community](#) project, residents highlighted that they value contributions made to local community facilities, services or causes where companies are not necessarily obliged to make such contributions.

According to the latest CEO sentiment survey, over the past 12 months, 40% of CEOs said their organisations had contributed voluntarily to infrastructure projects throughout regional Queensland. These projects are in addition to the billions paid each year to local and state governments. Projects ranged from training centres in Mackay and Moranbah to local bridge upgrades throughout the Bowen Basin.

Supporting local communities is a great start. But earning trust and acceptance in the industry will ultimately depend not only on the actions of individual companies, but the ability of all interested stakeholders including companies, governments, communities and society more generally to work together.

¹ QRC member CEO sentiment survey, June 2019

Figure 5 illustrates the change in sentiment over recent quarters for our member CEOs' top four concerns.





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