AURIZON

2018 CONCISE SUSTAINABILITY REPORT

Delivering for a sustainable future

CEO MESSAGE

Managing Director & CEO Message

In the past year, I have focused on building a strong and sustainable business that will create value for our employees, communities, customers, and shareholders.

Part of that strength is being open and transparent about the social, environmental and economic aspects of our business.

It's also about creating a safer, more inclusive workplace, delivering services efficiently, and looking after the regional communities where we operate.

We will continue to support local businesses and bring more roles closer to our operations, and by investing in new technology, we will ensure safety remains our core value.

To read our full 2018 Sustainability Report, visit aurizon.com.au/sustainability.

I welcome your feedback on our 2018 Sustainability Report. Please send any comments to sustainability@aurizon.com.au.

Andrew Harding
Managing Director & CEO

COMMUNITY

Being a Regionally Focused Company

Our operations span Queensland, New South Wales and Western Australia and, given the nature of our business, we recognise the importance of contributing as partners in the communities where we operate.

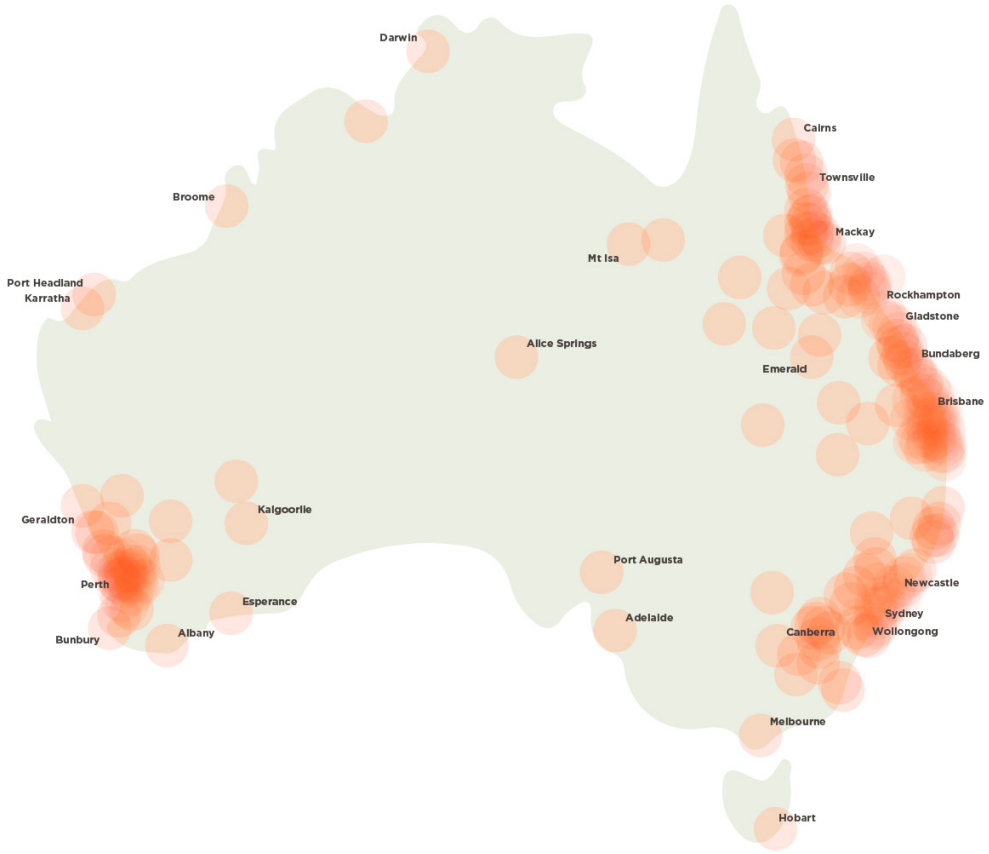
With approximately 75% of our employees and their families living and working in regional centres, we are focused on understanding our important role in sustaining strong communities.

We contribute to these communities through providing employment opportunities, contracting local providers and suppliers for services such as equipment hire, accommodation and office services. These communities also benefit from the flow-on effects from our employees and their families who buy groceries, attend local schools and use local services.

In FY2018, we spent an estimated $1.3 billion on goods, services and contractors as part of our operations, creating sustainable value for these small towns and regions.

Our employees also play a part in helping build vibrant, sustainable and resilient regional communities through sponsorships and contributing to community activities and services.

Figure 1 — Aurizon's FY2018 Regional Spend



Note: One bubble indicates > $100,000 spend

FUTURE OF COAL

Aurizon's Role in Australia's Coal Transportation

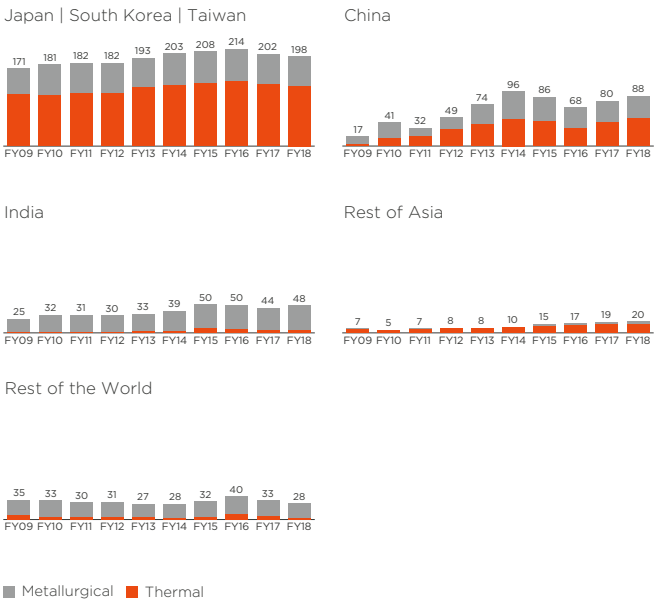
Our Company plays a significant role in Australia's coal supply chain, with more than two-thirds of Australia's coal exports using our network and/or carried by our above rail business. We also haul coal for a number of customers for domestic energy use.

Seaborne Coal Demand

Seaborne demand for metallurgical coal (for steel making) and thermal coal (for energy generation) drives Australia's coal exports. From this demand base, we assess the requirement for imported coal, taking into account a nation's ability to service coal demand using domestic reserves. For some nations, almost all coal demand is serviced by imported volume, such as India (for metallurgical coal) and Japan (for both metallurgical coal and thermal coal). China produces about 95%[1] of its coal, but turns to imported supply when cost effective or seeking a specific coal type or quality.

With Asia importing almost all Australian coal, their current and future demand underpins supply. China, India, Japan, South Korea and Taiwan (in decreasing order) take about 60%[2] of global coal trade.

Figure 2 — Export Destinations for Australian Coal (million tonnes)[3]

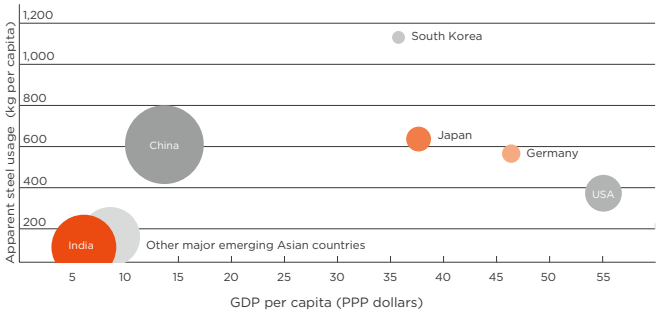


The Future of Seaborne Metallurgical Coal

Metallurgical coal is used to produce steel. Listed below are three key drivers that will continue to underpin Australia's success in the global seaborne metallurgical coal market.

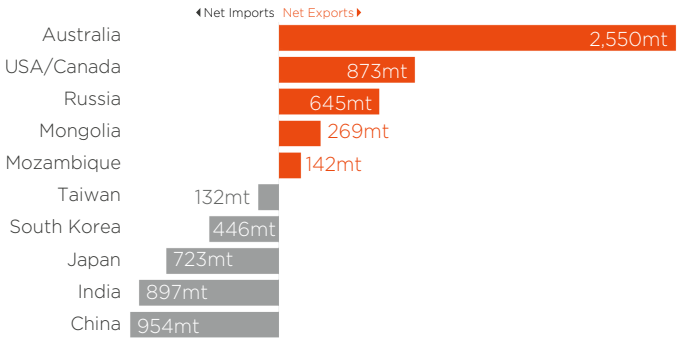
Increasing Demand for Steel in Asia

Figure 3 — Per Capita Steel Usage vs. Per Capita Income, by Key Countries[4]



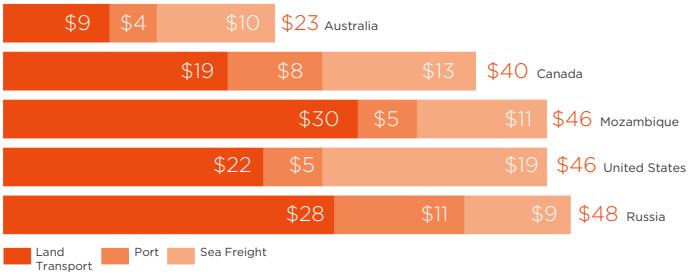
Scarcity of Metallurgical Coal

Figure 4 — Aggregate Metallurgical Coal Trade Balance, by Major Countries (2018-2030)[5]



Australia's Export Infrastructure Advantage

Figure 5 — Land Transport, Port and Sea Freight Costs from Major Metallurgical Coal Export Countries to India (USD/t)[6]



[1] International Energy Agency, *World Coal Information 2017.*

[2] International Energy Agency, *World Coal Information 2017.*

[3] Japan, South Korea, Taiwan, India, China, Rest of Asia (FY2015 – FY2018), Rest of World (FY2015 - FY2018):Australian Bureau of Statistics (Customised report). Rest of Asia (FY2009 – FY 2014): Office of the Chief Economist. Rest of World (FY2009 – FY2014): Australian Bureau of Statistics (Customised report) and Office of the Chief Economist. Note: Metallurgical coal for Rest of Asia (FY2009 – FY2014), only includes hard coking coal, with other metallurgical coal captured in Rest of World.

[4] World Bank (GDP per capita PPP, 2016 data), World Bank (population, 2016 data) and World Steel (apparent steel usage per capita, 2016 data). Steel usage per capita in tonnes of crude steel equivalent using the sum of net industry shipments within a given country or region, plus its imports and minus its exports. Other major emerging Asian countries includes Indonesia, Thailand, the Philippines, Vietnam, Malaysia, Pakistan and Bangladesh.

[5] Wood Mackenzie Global Coal Markets Tool (2018 1H).

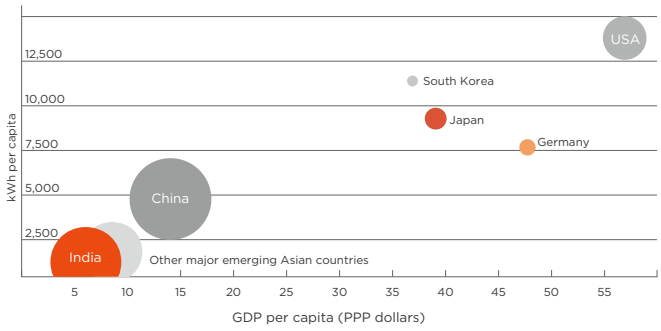
[6] Wood Mackenzie Coal Cost Curves (May 2018, Reference Year 2018), Wood Mackenzie Global Coal Markets Tool (2018 1H), Sea freight export terminal assumptions: United States – East Coast; Canada – West Coast; Australia – Hay Point; Russia – East.

The Future of Seaborne Thermal Coal

Thermal coal is used to produce electricity. Listed below are three key drivers that underpin the continued role for Australian seaborne thermal coal in a diversified electricity generation mix across Asia.

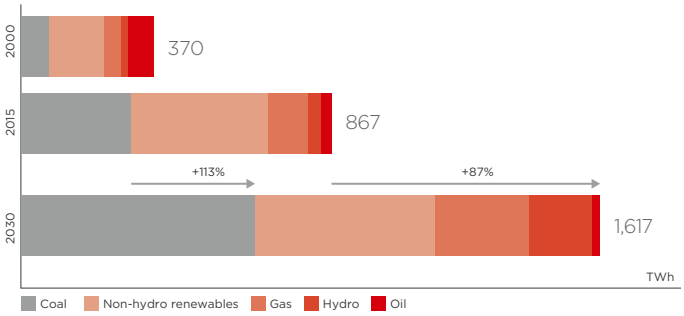
Increasing Electricity Demand in Asia

Figure 6 — Per Capita Electricity Consumption vs. Per Capita Income, by Key Countries[7]



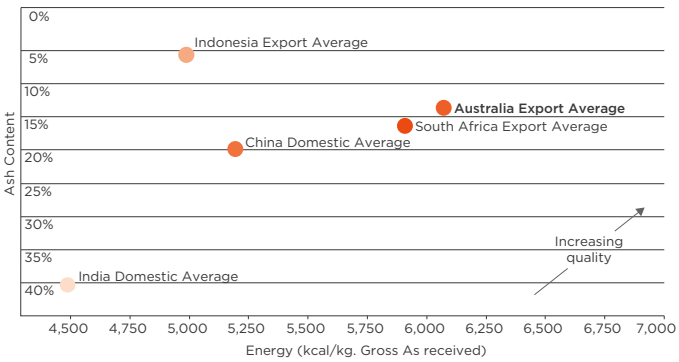
Continued Reliance on Coal-Fired Power in Asia

Figure 7 — International Energy Agency (IEA) Outlook for Electricity Generation in South-East Asia, by Source (TWh)[8]



Importance of High-Quality Coal

Figure 8 — Thermal Coal Energy and Ash Content[9]



[7] World Bank (GDP per capita PPP, current international $, 2016 data), World Bank (population, 2016 data), World Bank (Electric power consumption per capita, 2014 data). Other major emerging Asian countries includes Indonesia, Thailand, the Philippines, Vietnam, Malaysia, Pakistan and Bangladesh.

[8] IEA *World Energy Outlook, New Policies Scenario 2017.*

[9] Australia (Export Product) Source: Wood Mackenzie Coal Supply Tool (Year: 2018, Data: Q2 2018). Wood Mackenzie Coal Cost Curves (Year: 2018, Data: May 2018). India Domestic Average Source: India Ministry of Coal Provisional Coal Statistics 2016-17. China Domestic Average Source: IEA Coal Medium-Term Market Report 2016, Wood Mackenzie. Indonesia Export Average Source: Wood Mackenzie Coal Cost Curves (Year: 2018, Data: May 2018), Indonesia Coal Mining Association. South Africa Export Average Source: Wood Mackenzie Coal Cost Curves (Year: 2018, Data: May 2018), Richards Bay benchmark specifications (Platts).

[10] IEA *World Energy Outlook 2017*, Aurizon analysis. Note: Where individual year projections are not published in the IEA *World Energy Outlook*, figures have been extrapolated (straight line).

Scenario Analysis

Along with our own long-term outlook for seaborne coal demand, we also consider the best known and most widely used Sustainable Development Scenario from the International Energy Agency's (IEA) annual *World Energy Outlook* (WEO).

Following our initial reporting on the recommendations by the Task Force on Climate-related Financial Disclosures (TCFD) in our 2017 Sustainability Report, we have updated our scenario analysis to use the most recent projections by the IEA. In the Sustainable Development Scenario, the IEA projects global coal trade to reduce by 33% by 2030 compared with 2016, a compound annual growth rate (CAGR) of –2.8%. For global metallurgical coal trade, the volume projection reduces by 17% by 2030 compared with 2016 (CAGR of –1.3%), while global thermal coal trade is projected to reduce by 38% over the same period (CAGR of –3.4%).

As the Sustainable Development Scenario does not provide country-level trade projections, we have applied market share assumptions for Australia.

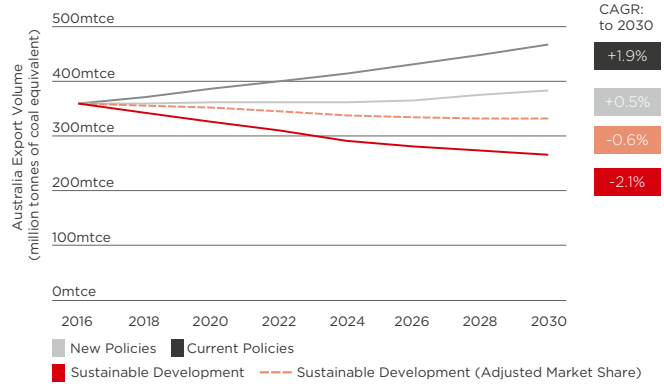
Based on Australia's export volumes in 2016 (and the split of metallurgical coal and thermal coal) and assuming Australia's participation in the trade market aligns with the (central) New Policies Scenario, Australia's export volume would be projected to reduce by 26% (or 93mtce) in 2030 compared to 2016, representing a compound annual growth rate of –2.1%. However, this projection for Australia takes a conservative approach given an expected further preference for higher quality coal in such a carbon-constrained scenario.

When assessing the business resilience to the IEA Sustainable Development Scenario, we consider the following:

1. **Market share:** We hold the view that in a carbon-constrained environment, higher quality coal (high energy, low ash and low sulphur), which Australia supplies, will be favoured and will increase Australia's participation in global coal markets. The resilience of Australian supply aligns with the IEA's (central) New Policies Scenario where Australian coal export volume is projected to increase by 19% in 2040 (compared to 2016) despite a projected 4% contraction in global trade over the same period. We have modelled an increased market share (+10 percentage points in both the metallurgical and thermal coal trade markets by 2030). In such a scenario, Australia's export volume would reduce by just 27mtce in 2030 (–8% compared to 2016). This represents a compound annual growth rate of –0.6% across the period, as illustrated as Sustainable Development (Adjusted Market Share) in figure 9.
2. **Metallurgical coal:** In FY2018, two-thirds of coal carried on the Central Queensland Coal Network (CQCN) is estimated to be metallurgical. With few substitutes in steel production, the Sustainable Development Scenario projects more resilience in metallurgical coal trade (compared to thermal). When combining this figure with an expected higher market share for Australian exports, we expect the CQCN to be resilient if global coal demand falls.

For more information on our scenario analysis or the IEA's Sustainable Development Scenario, see our 2018 Sustainability Report.

Figure 9 — Australia export volumes projected under IEA Scenarios[10]



SAFETY

Public Safety

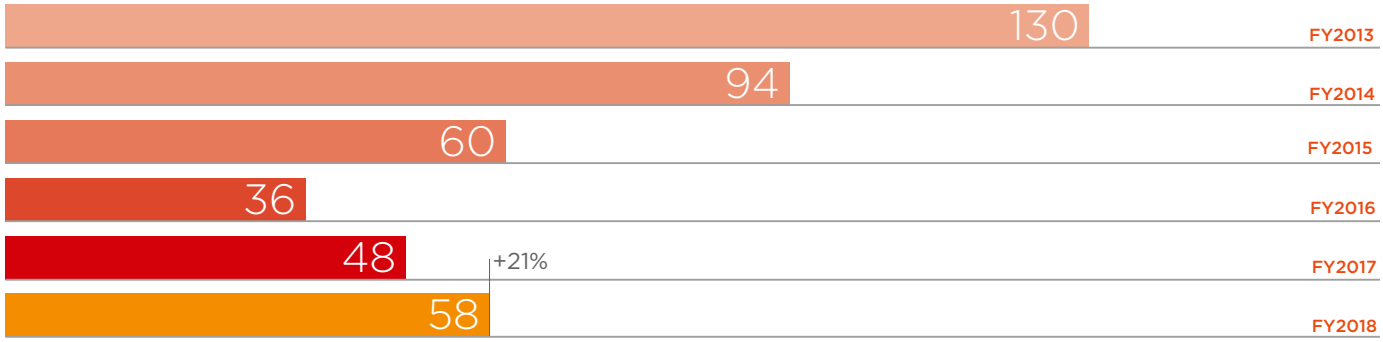
It is essential that people in our communities are safe around rail corridors and at railway level crossings. Therefore, we take a leading role in promoting safety awareness through our targeted campaigns in key hot-spot locations.

In the Hunter Valley, we again partnered with the Newcastle Knights to deliver our national award-winning rail safety program to the region's primary schools. Our 2018 program will reach more than 2,000 students. Throughout the Knights partnership, we have delivered vital rail safety messages to more than 14,000 primary school students.

Concerningly, on our Central Queensland Coal Network (CQCN) the number of level crossing incidents rose in FY2018. The 58 level crossing incidents were 21% more than in FY2017 (see figure 10), primarily driven by an increase in near miss incidents from 31 to 47.

To accelerate towards **ZERO**Harm and to support the ongoing development of our strong safety culture, we commenced several improvement initiatives in FY2018. These initiatives will continue throughout FY2019. See the Safety chapter of our 2018 Sustainability Report for more detail.

Figure 10 — CQCN Level Crossing Incidents FY2013 to FY2018



HOW WE OPERATE

Driving our Future with Technology

New investment in technology and innovation in our operations will continue to create environmental benefits and improve productivity and safety.

To improve train-driving performance, new technology collects real-time information about a locomotive's condition and handling. Besides helping to cut wear and tear on rollingstock, this data will save fuel and promote a smaller carbon footprint.

Our condition-monitoring program predicts mechanical faults in moving trains by analysing photographs taken at trackside supersites and sending data on to maintenance staff, who then prepare to fix faults when trains arrive. This program helps us to extend inspection schedules from 21 to 42 days and keep trains safely in service longer. Now used at six Central Queensland supersites, this advanced program is being installed in the Hunter Valley.

We are also rolling out technology that enables us to detect the closing force of every door on our coal wagons. With this technology enabling us to predict a door's failure or the potential for failure, we expect to reduce the impacts on our services. Next year, we will trial a European system of train speed and signal enforcement for improved safety and rollingstock asset use.

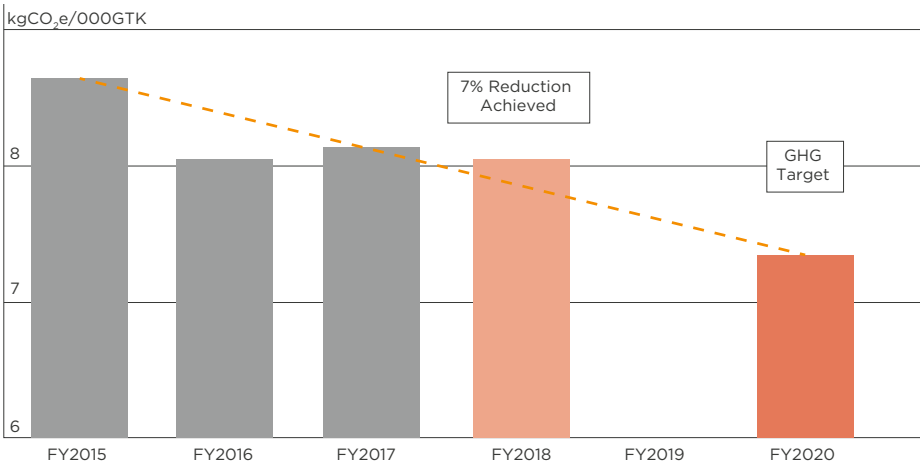
ENVIRONMENT

We acknowledge that as rail operators with a large operational footprint we have a role in helping our local communities to maintain a sustainable environment. Our environment vision is to deliver value through effective management of our material environmental risks and improved enterprise environmental performance.

Greenhouse Gas Emissions

We apply an evidence-based approach to the management of environmental issues. For example, by implementing targeted initiatives we continue to improve the energy efficiency of our locomotive operations and have achieved a 7% emissions intensity reduction since FY2015.

Figure 11 — Emissions Intensity Performance



Diesel Emissions

Like the people in our communities, we share concerns about air quality. Even though locomotive emissions are a minor contributor to local air quality, we want to help our local communities to ensure word-leading air quality is maintained. That's why we led Australian rail freight operators to develop an industry-led approach to managing diesel emissions.

In FY2018 this culminated in the publication of the *Code of Practice for Management of Locomotive Exhaust Emissions* (CoP) by the National Rail Safety and Standards Board. The CoP will take effect from 1 December 2018.

Safeguard Mechanism

Under the government's Emissions Reduction Fund Safeguard Mechanism, large GHG emitters are required to keep net emissions below set baselines. Three of our facilities were captured in FY2018. Having effectively managed our emissions, we complied fully, and were not required to buy or generate offsets.