

20 October 2021

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## **Investor Seminar – Performance, strategic direction and shareholder retrans**

Attached is the presentation to be given at the investor seminar today in London at 8.00am (BST) / 6.00pm (AEDT) by Rio Tinto Chief Executive Jakob Stausholm and members of the executive team. The presentation slides and the live webcast can be accessed at

<https://www.riotinto.com/invest/presentations/2021/investor-seminar-2021>.

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RioTinto

# Investor Seminar

## Performance, strategic direction and shareholder returns

20 October 2021

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# Agenda

BST	AEDT	Topic	Presenter
08:00 - 08:15	18:00 - 18:15	Strategy and execution	Jakob Stausholm, Chief Executive
			Mark Davies, Chief Technical Officer
08:15 - 08:40	18:15 - 18:40	Panel Culture and People: Becoming best operator	James Martin, Chief People Officer
			Kellie Parker, Chief Executive, Australia
			Arnaud Soirat, Chief Operating Officer
		Decarbonisation: Impact on commodity markets	Vivek Tulpule, Chief Economist
08:40 - 09:10	18:40 - 19:10	Our own business and impact of green steel	Mark Davies, Chief Technical Officer
		Commercial opportunities from decarbonisation	Alf Barrios, Chief Commercial Officer
09:10 - 09:40	19:10 - 19:40	Q&A session 1	Jakob Stausholm   Mark Davies   James Martin   Kellie Parker   Arnaud Soirat   Vivek Tulpule   Alf Barrios
09:40 - 09:55	19:40 - 19:55	<b>BREAK</b>	
09:55 - 10:15	19:55 - 20:15	Pilbara Iron Ore	Simon Trott, Chief Executive, Iron Ore
10:15 - 10:35	20:15 - 20:35	Aluminium	Ivan Vella, Chief Executive, Aluminium
			Bold Baatar, Chief Executive, Copper
10:35 - 11:00	20:35 - 21:00	Panel Excel in development	Mark Davies, Chief Technical Officer
			Sinead Kaufman, Chief Executive, Minerals
11:00 - 11:10	21:00 - 21:10	Financials	Peter Cunningham, Chief Financial Officer
11:10 - 11:40	21:10 - 21:40	Q&A session 2	Jakob Stausholm   Ivan Vella   Mark Davies   Sinead Kaufman   Peter Cunningham
11:40 - 11:45	21:40 - 21:45	Closing remarks	Jakob Stausholm, Chief Executive





A high-angle, nighttime photograph of the Rainbow Bridge in Tokyo, Japan. The bridge is a large suspension bridge with two prominent white towers and numerous stay cables. It is illuminated with warm lights, and its reflection is visible in the water below. The bridge is filled with cars, their headlights and taillights creating a flow of light. In the background, the Tokyo skyline is visible with various buildings lit up. The water is dark, and a large cargo ship with containers is visible in the lower left. The overall scene is a vibrant depiction of urban infrastructure at night.

# Jakob Stausholm

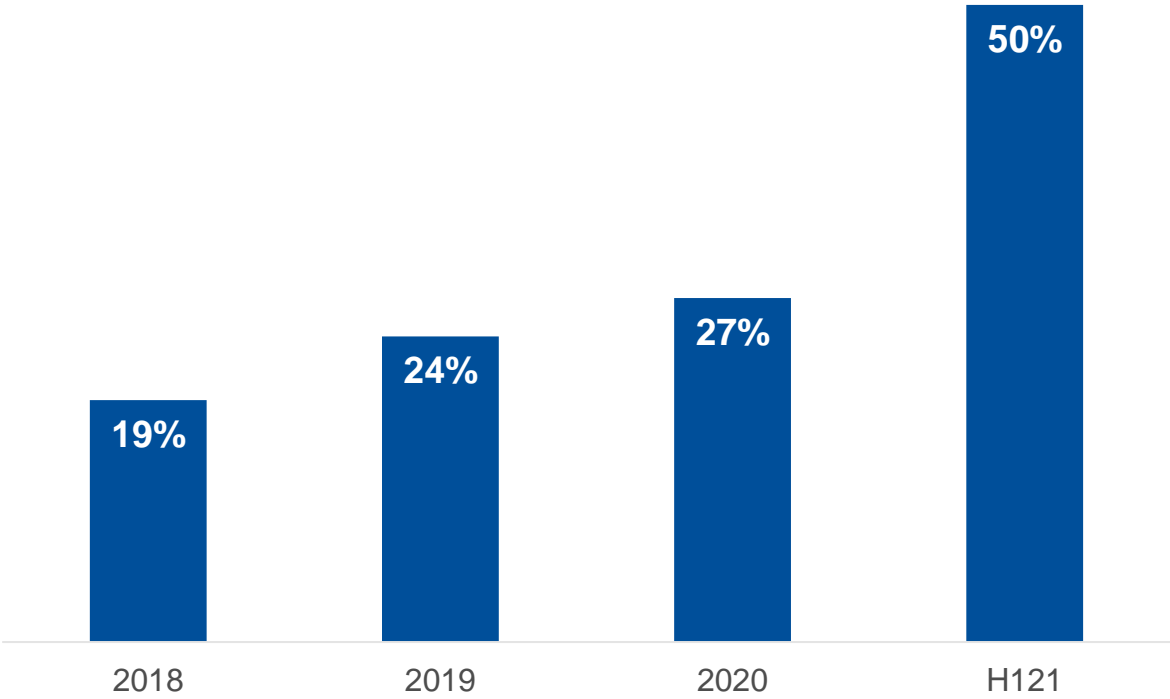
## Strategy and execution

Rainbow Bridge. Tokyo, Japan



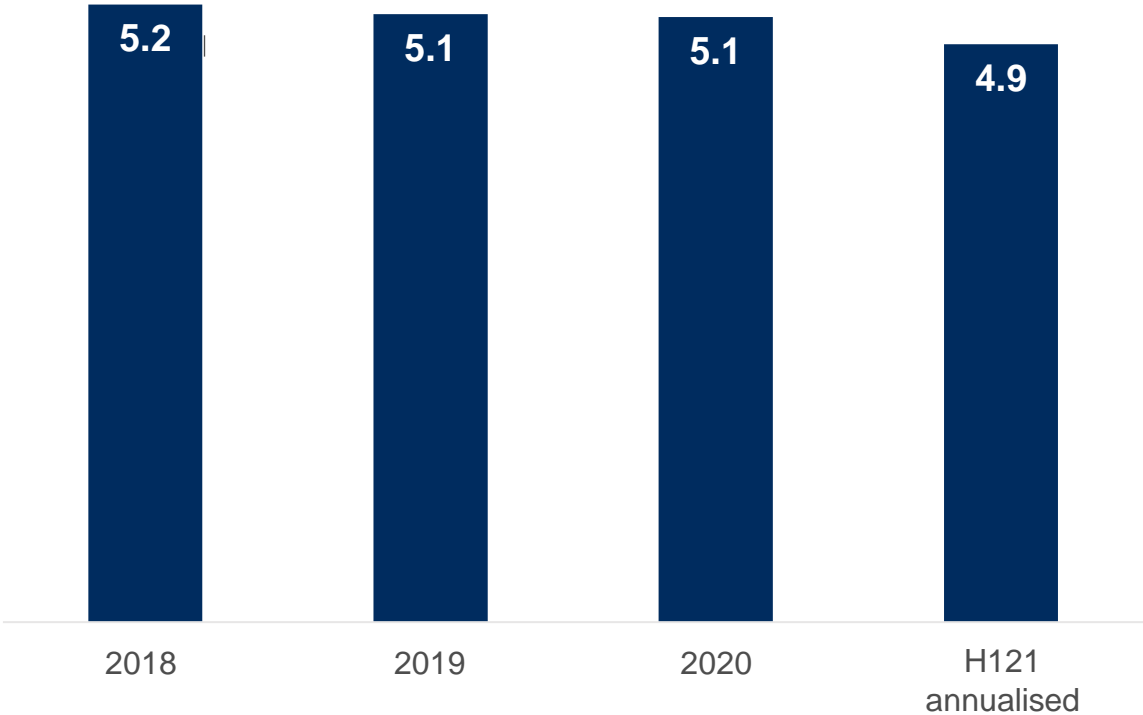
# Outstanding financials but operational improvement needed

Return on Capital Employed



\*Excludes divested assets

Copper equivalent production\*  
Million tonnes



# The team



**Bold Baatar,**  
Chief Executive  
Rio Tinto Copper



**Alf Barrios**  
Chief Commercial  
Officer



**Peter Cunningham**  
Chief Financial  
Officer



**Mark Davies**  
Chief Technical Officer



**Sinead Kaufman**  
Chief Executive  
Rio Tinto Minerals



**James Martin**  
Chief People  
Officer



**Kellie Parker**  
Chief Executive  
Australia



**Arnaud Soirat**  
Chief Operating  
Officer



**Jakob Stausholm**  
Chief  
Executive



**Simon Trott**  
Chief Executive  
Rio Tinto Iron Ore



**Vivek Tulpule**  
Chief  
Economist

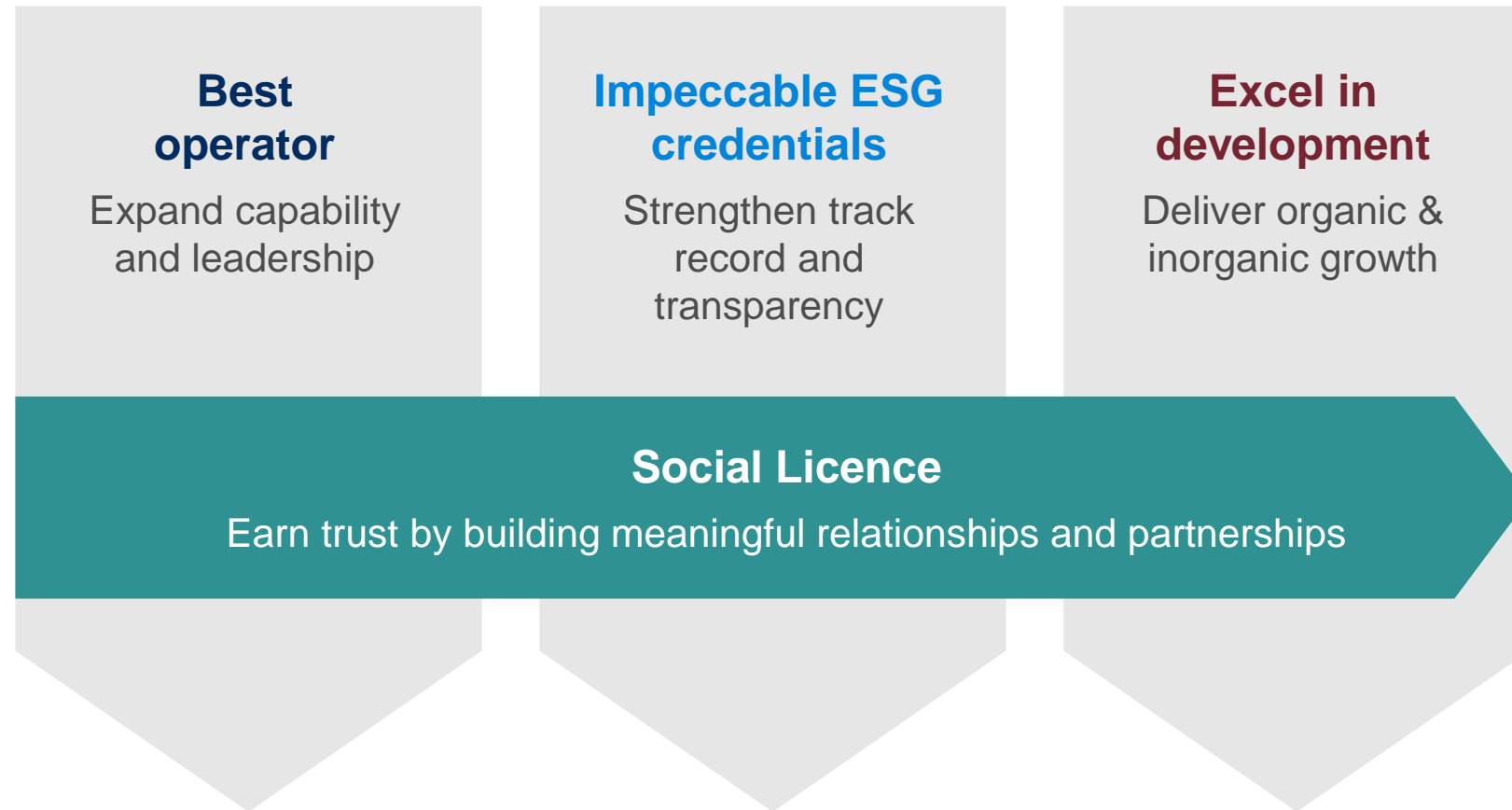


**Ivan Vella**  
Chief Executive  
Rio Tinto Aluminium

 **Executive Committee**



# Four areas of immediate focus



## Our Values

### Care for

- People's safety
- Communities
- Planet

### Courage to

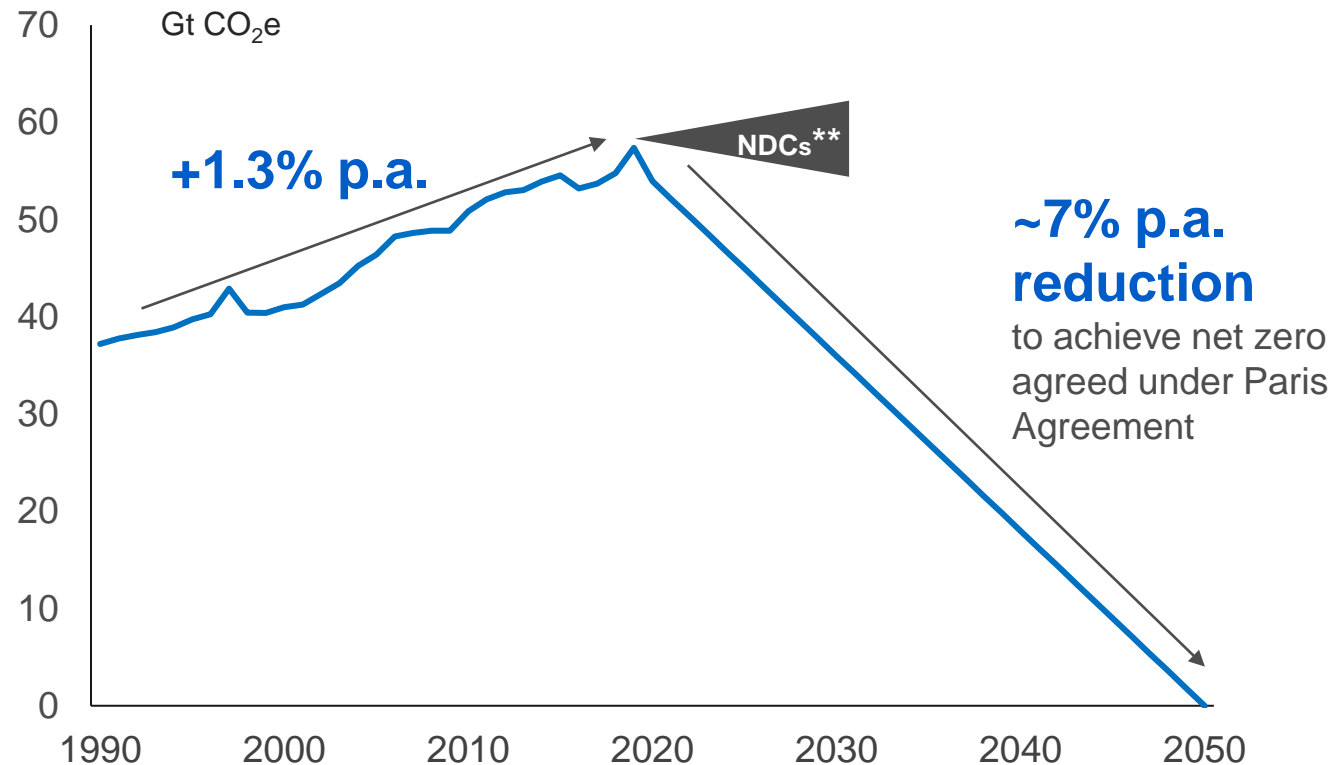
- Try new things
- Speak up
- Do what's right

### Curiosity fosters

- Collaboration
- Learning
- Innovation

# The world faces a major challenge

Annual global GHG emissions\*



Limited action so far. The world has more than doubled cumulative GHG emissions since the early '90's

Momentum changing. Countries are setting ambitious targets and enacting policies

China, the world's largest consumer and a significant producer of commodities, has set clear objectives

\*The source of the historic data is: Trends in global CO<sub>2</sub> and total greenhouse gas emissions: 2020 report. Netherlands Environmental Assessment Agency. The annual decline rate is an illustrative straight-line rate and not a forecast or scenario. | \*\*Nationally Determined Contributions

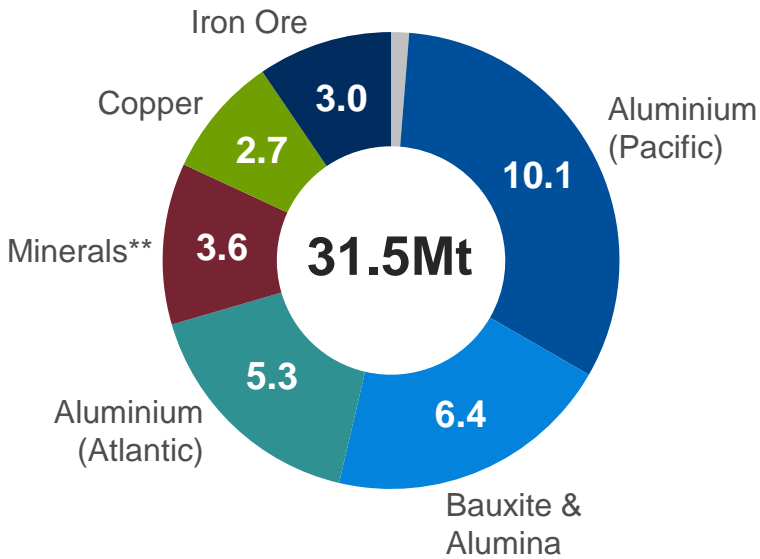
# A large carbon footprint today

Global commodity value chain carbon emissions and intensities

Global	CO <sub>2</sub> emissions	Production	CO <sub>2</sub> intensity
Copper*	86 Mt	21 Mt	4 tCO <sub>2</sub> /t
Aluminium*	~1.0 Gt	66 Mt	15 tCO <sub>2</sub> /t
Crude Steel	~3.3 Gt	1,850 Mt	1.8 tCO <sub>2</sub> /t

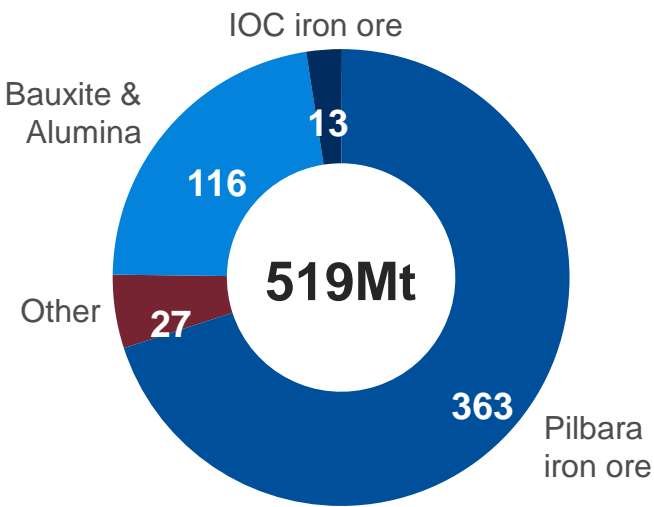
Our 2020 Scope 1 and 2 emissions by operations (equity basis)

Total CO<sub>2</sub>e



Our 2020 Scope 3 emissions

Total CO<sub>2</sub>e



\*Primary production | \*\*Iron Ore Company of Canada (IOC) included in Minerals



# All our commodities are vital – today, towards 2050 and beyond



Ongoing population growth and urbanisation provides base demand for metals

Additional demand for all our products from decarbonisation and global energy transition

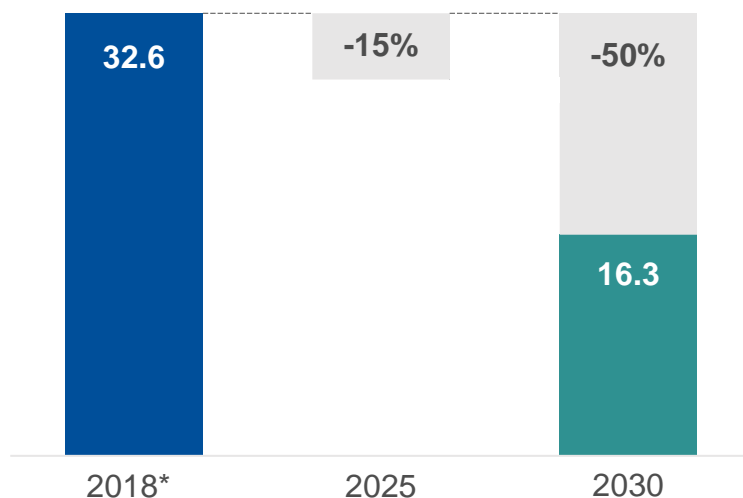
Often no alternatives to steel, aluminium, copper and minerals from primary sources even with circular economy

Creates opportunities for us to deliver value-adding growth

# Delivering our strategy

## 50% reduction in our emissions by 2030

New targets for our Scope 1 & 2 emissions (Mt CO<sub>2</sub>e equity basis)



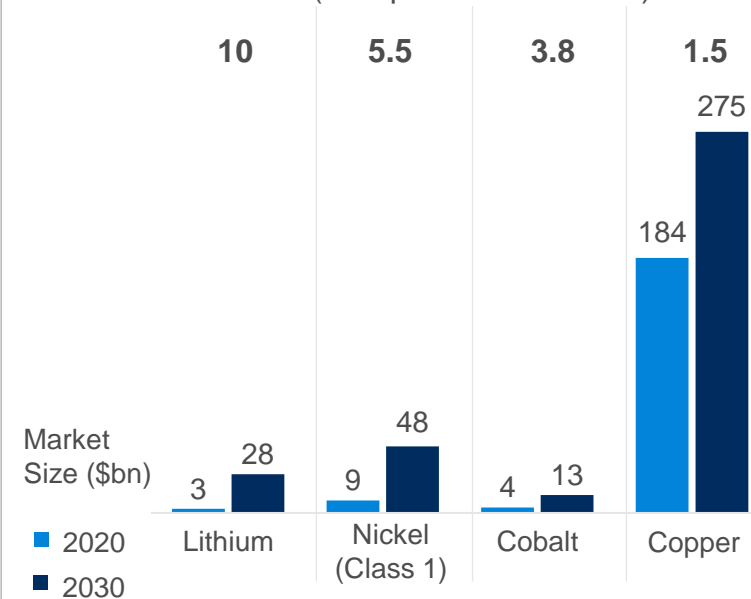
~\$7.5bn\*\*\* investment in decarbonisation from 2022-2030 plus indirect expenditure

## Accelerate R&D and beyond

- Advantaged renewables position
- Accelerate R&D
- ELYSIS™
- Studying Canadian DRI
- High-quality iron ore
- Partnerships
- Crack the code on Pilbara iron ore
- Delivering our Scope 3 goals

## Ambition to double investment in growth

Growth to 2030 (multiple of current size)\*\*



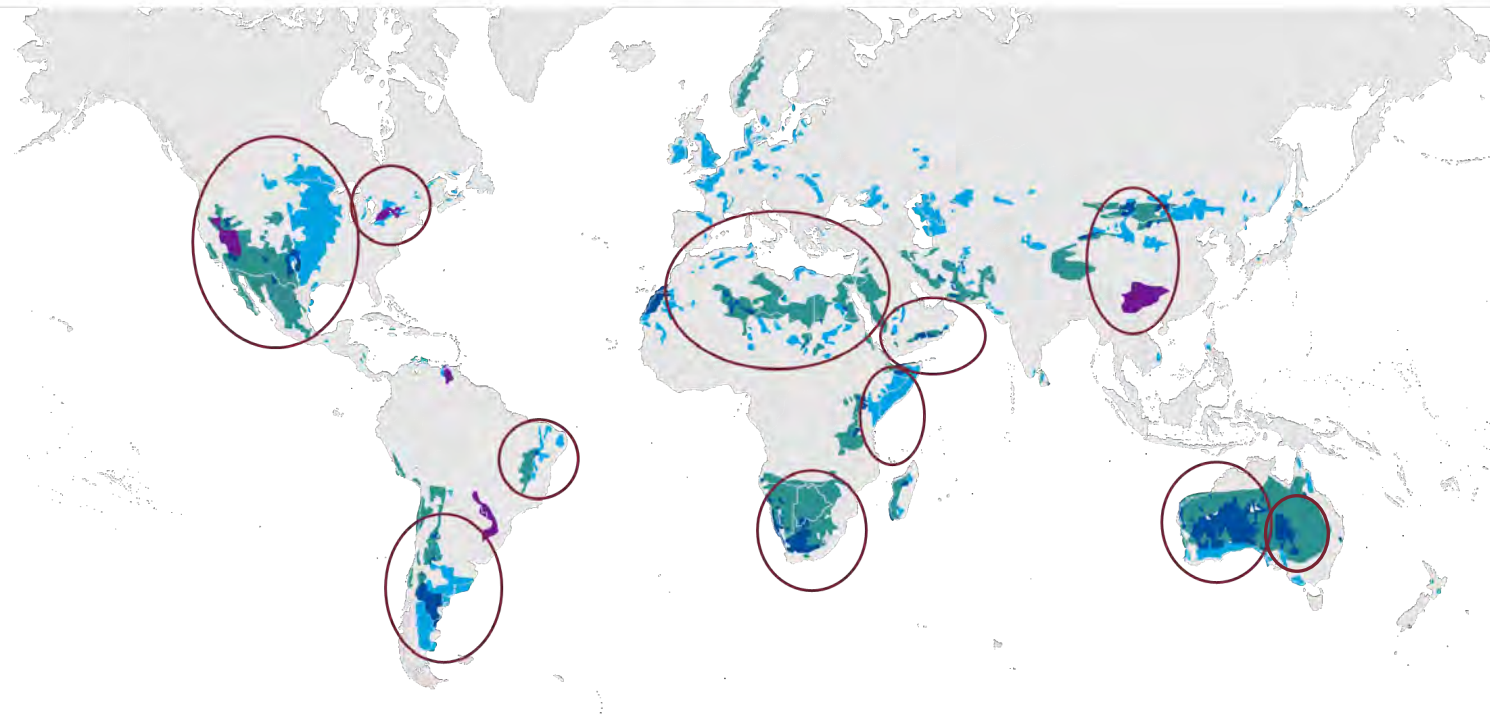
Double growth capex up to \$3bn per year from 2023

\*2018 Scope 1 & 2 emissions baseline has been adjusted for divestments. \*\*Market size is for primary market only. Recycling is expected to take a larger share of total demand in the future for most commodities. \*\*\*Conceptual view of capital requirements at October 2021. Marginal Abatement Cost Curves (MACC) will be updated on an annual basis. Sources: Rio Tinto Market Analysis, UBS, CPM Group | DRI = Direct Reduction Iron

# Well placed to deliver

## We operate in three out of the eleven advantageous regions for renewable energy

■ Ideal for wind ■ Ideal for solar ■ Ideal for solar and wind ■ Existing major hydropower ○ RES\* endowed region



\*RES = Renewable Energy System

## Advantaged positions

Large power producer and consumer. Uniquely positioned in advantaged green energy locations – Pilbara, Quebec and Queensland

## Assets and people

Long-life orebodies with superior orebody knowledge. Talented workforce

## Technology

Metallurgy, geology, mining equipment, processing, energy

## Cash flow and balance sheet

Disciplined capital allocation. Cash flow through cycle. Ability to invest and pay an attractive dividend – in line with our policy



A scenic photograph of two cyclists riding down a paved hillside. The cyclist in the foreground is wearing a black jersey and a white helmet, while the one behind is in a green jersey and a white helmet. They are both on road bikes. The background shows a vast cityscape, likely Cape Town, with a dense cluster of buildings and a prominent mountain peak (Table Mountain) visible in the distance. The sun is low on the horizon, creating a hazy, golden light over the city and casting long shadows of the cyclists onto the road.

**Vivek Tulpule**

**Decarbonisation:  
Impact on commodity  
markets**



# Transitioning towards net zero emissions



## Low-carbon policies

- 🇪🇺 Net zero by 2050<sup>1</sup>
- 🇺🇸 Net zero by 2050<sup>2</sup>
- 🇨🇳 Carbon neutral by 2060<sup>3</sup>

## Scrap use

Cannibalises some demand for primary material

Al	Steel	Cu
4-6%	1-3%	3-4%

Annual growth to 2040



## Electrification

2.5x electrification growth from now to 2050 in net zero scenario

Average per capita electricity demand will more than double



## Renewables

Renewable energy from 10% to 70% of energy mix by 2050

- ✈️ 16x wind increase
- ☀️ 30x solar increase



## Power storage

Battery capacity additions for electric vehicles will grow over 30x by 2050

Stationary storage will grow with intermittent renewable generation



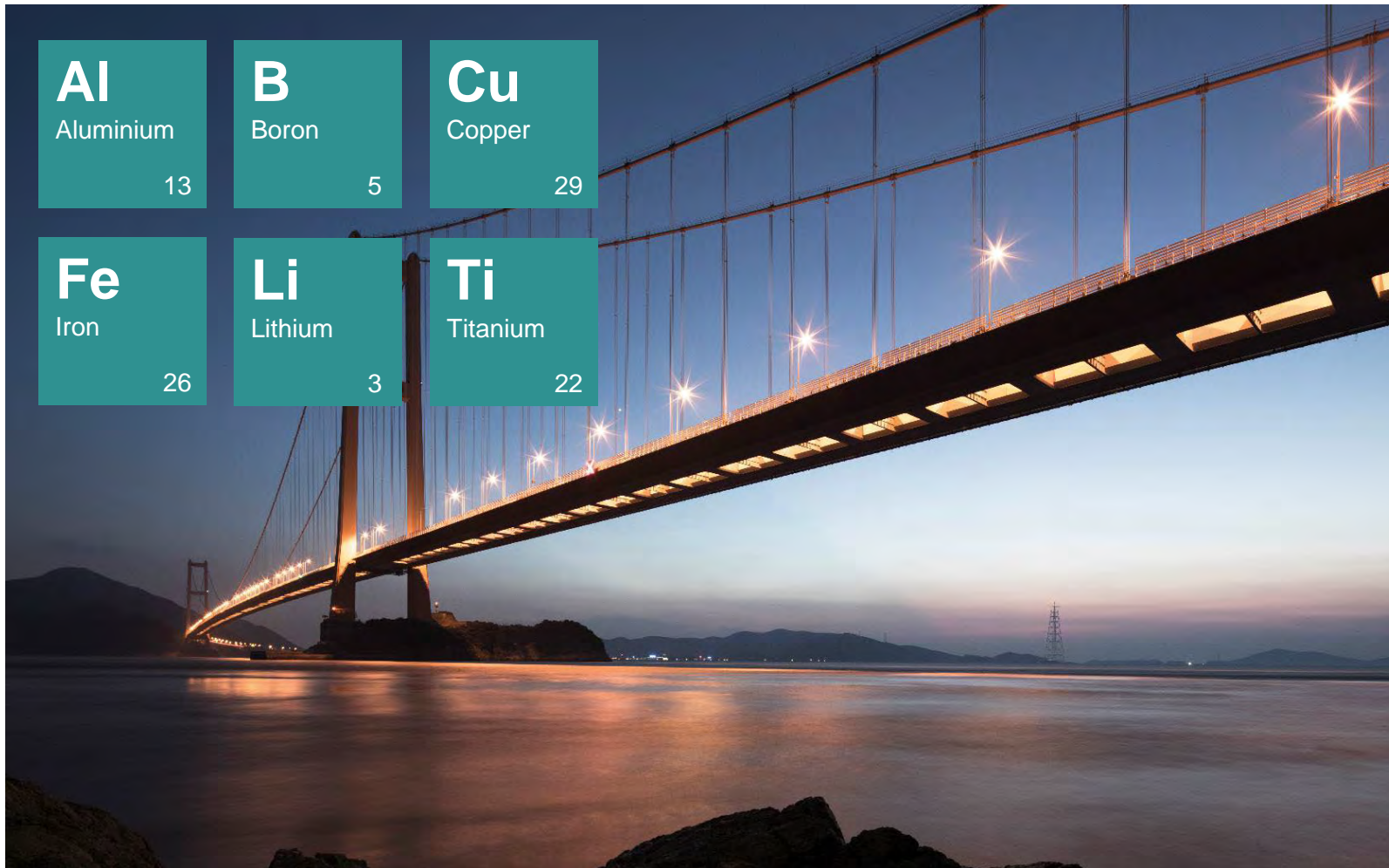
## Hydrogen

A critical part of the fuel mix in industry and heavy transport

6% of final energy mix by 2050

<sup>1</sup> EU Updated Nationally Determined Contribution (NDC), Dec 2020, United Nations Framework Convention on Climate Change (UNFCCC) | <sup>2</sup> As per section 4.a(ii).b, The United States of America Nationally Determined Contribution, April 21 2021 | <sup>3</sup> Official Statement in 75th Session of The UN General Assembly, Sep 2020 Source: Net zero statistics from International Energy Association (IEA)

# All our commodities are vital – today, towards 2050 and beyond



Green aluminium lowers carbon input

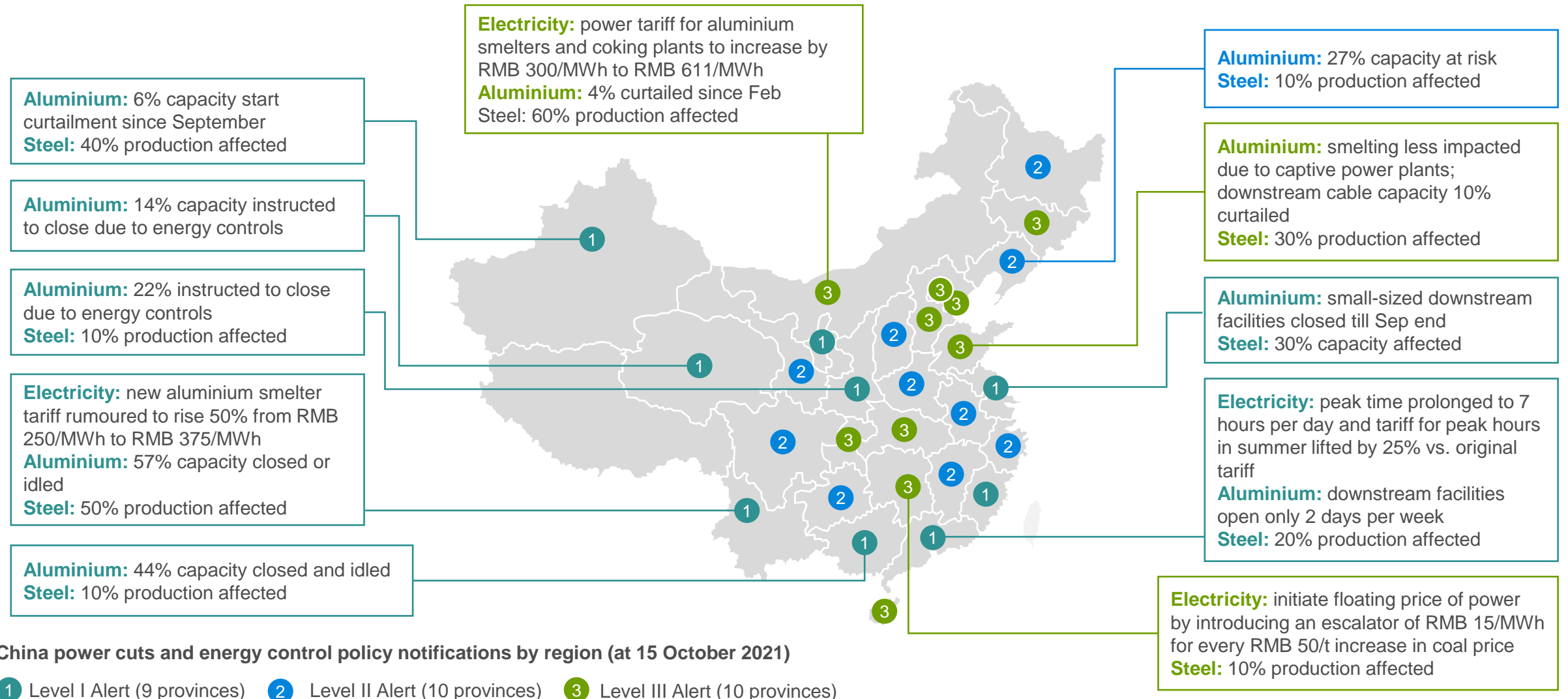
Green steel supporting low-carbon urbanisation

Copper supports rapid renewable electrification

Lithium is an essential battery technology mineral

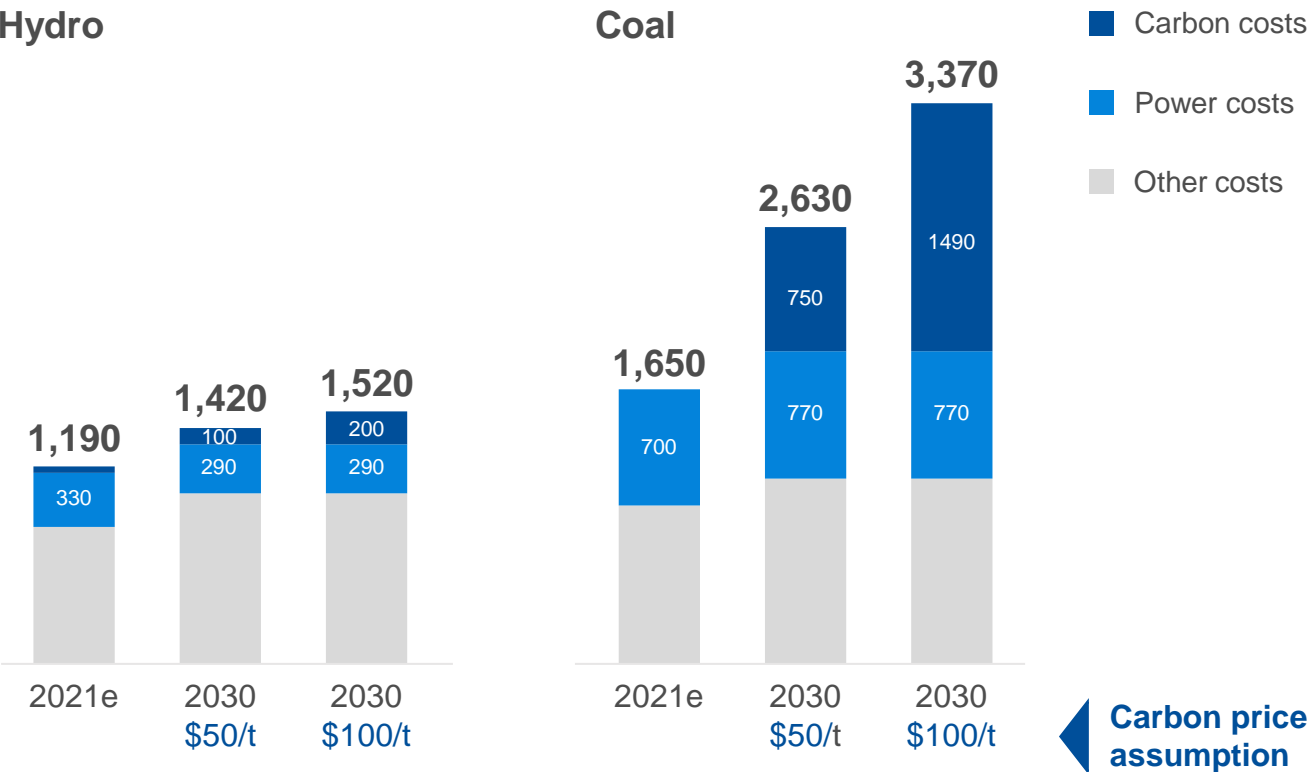


# China is targeting peak emissions by 2030



# Competitive advantage for low-carbon smelters

Aluminium smelter all-in cash costs  
(Real US\$2021 per tonne)



60% of world's aluminium production in 2020 powered by coal

China accounted for ~75% of capacity growth over 2010-20

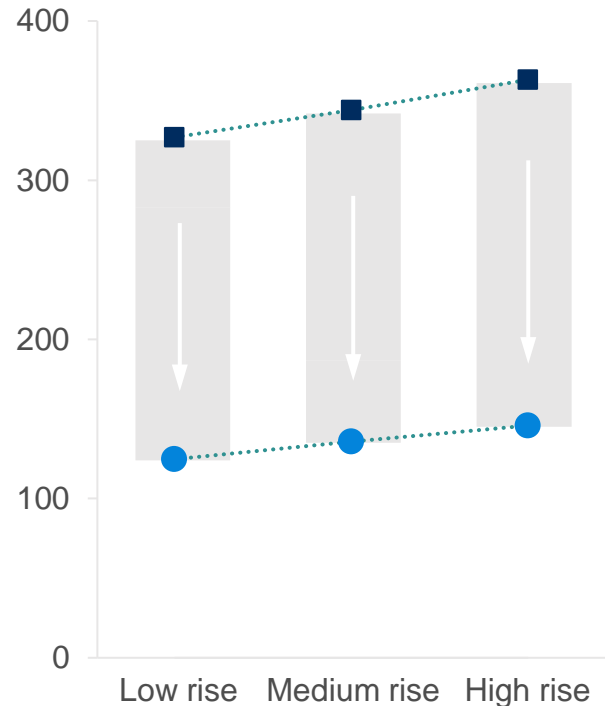
Carbon intensity of coal smelters is over 7x that of hydro smelters

Inert anodes could enable zero-carbon smelting

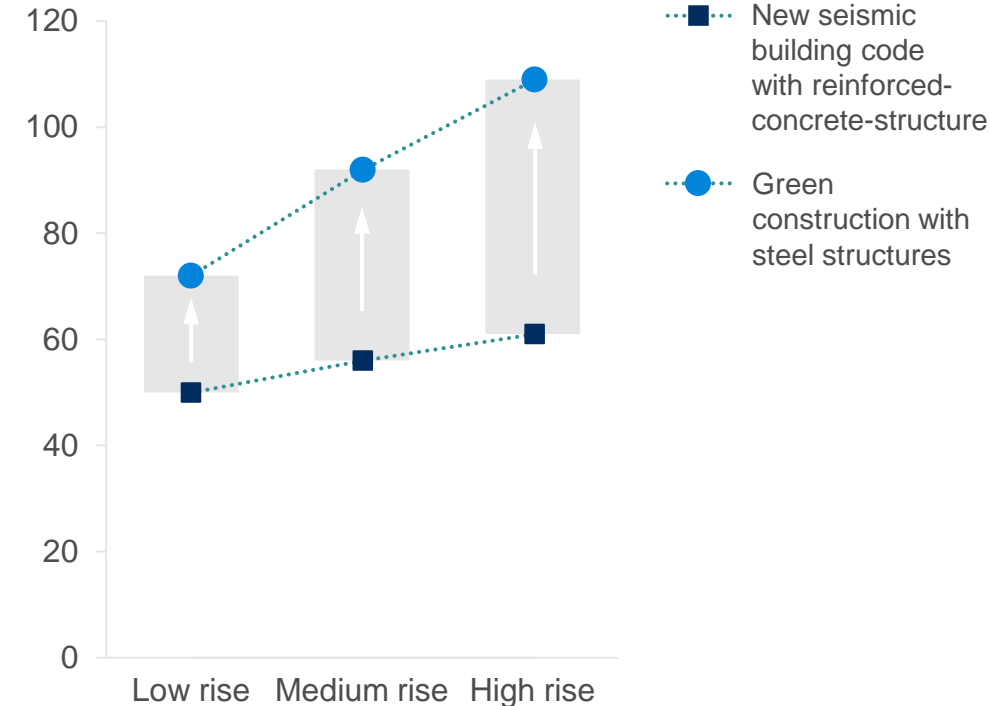
All non-carbon costs are regional weighted averages from CRU, 2021 (long-run uses 2030 costs). Hydro costs are based on a weighted average of Canadian smelters. Coal costs are based on a weighted average of coal-fired Chinese smelters. Costs do not include CO<sub>2</sub> charges from alumina refineries.

# Green steel structures can reduce emissions

**Total carbon emissions**  
Kg per m<sup>2</sup> (China)



**Steel intensity**  
Kg per m<sup>2</sup> (China)



Building construction is responsible for about 30% of China's carbon emissions

New China building code will require higher seismic precautionary intensity

A shift to green construction and steel structures will reduce carbon emissions by ~60%

Moving to steel structures contributes up to a third of the total emissions reduction

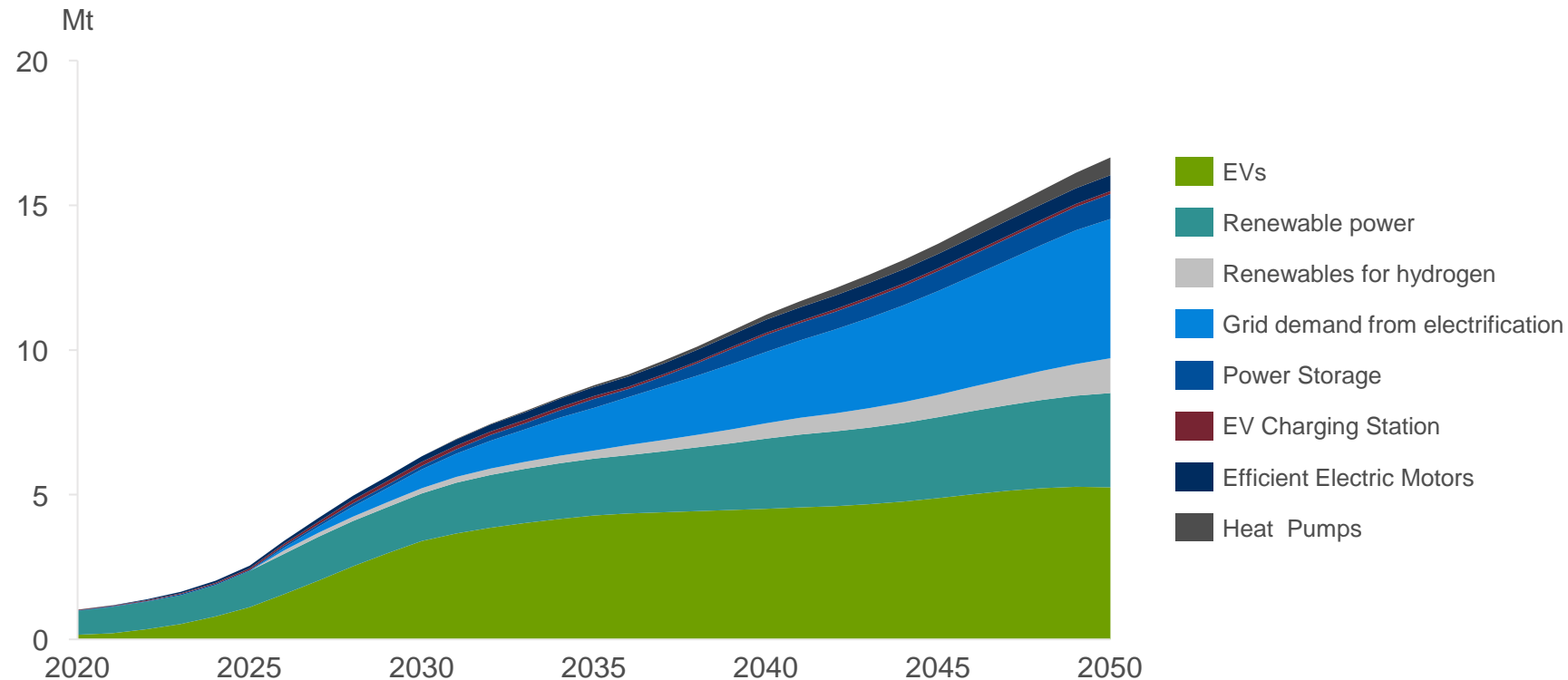
Steel intensity of construction increases by ~45-80% across low to high rise buildings

Source: Tsinghua School of Civil Engineering, 2021. Green construction with steel structures includes the shift to green concrete and green steel in addition to the move from current reinforced concrete structures to steel structures.



# Decarbonisation is a big driver of copper demand

## Net additional demand\* in a net zero carbon scenario



Net demand after deducting copper consumption using traditional technologies in these segments. Net zero carbon scenario is an internal based view where developed countries reach net zero emissions by 2050, large emerging markets, including China, by 2060 and all other countries by 2070. Average intensity data from International Copper Association (ICA). \*Global semis

Additional green demand expected to account for over one quarter of total demand in the net zero carbon scenario

Rapid electrification of grid adds ~5Mt in copper demand by 2050

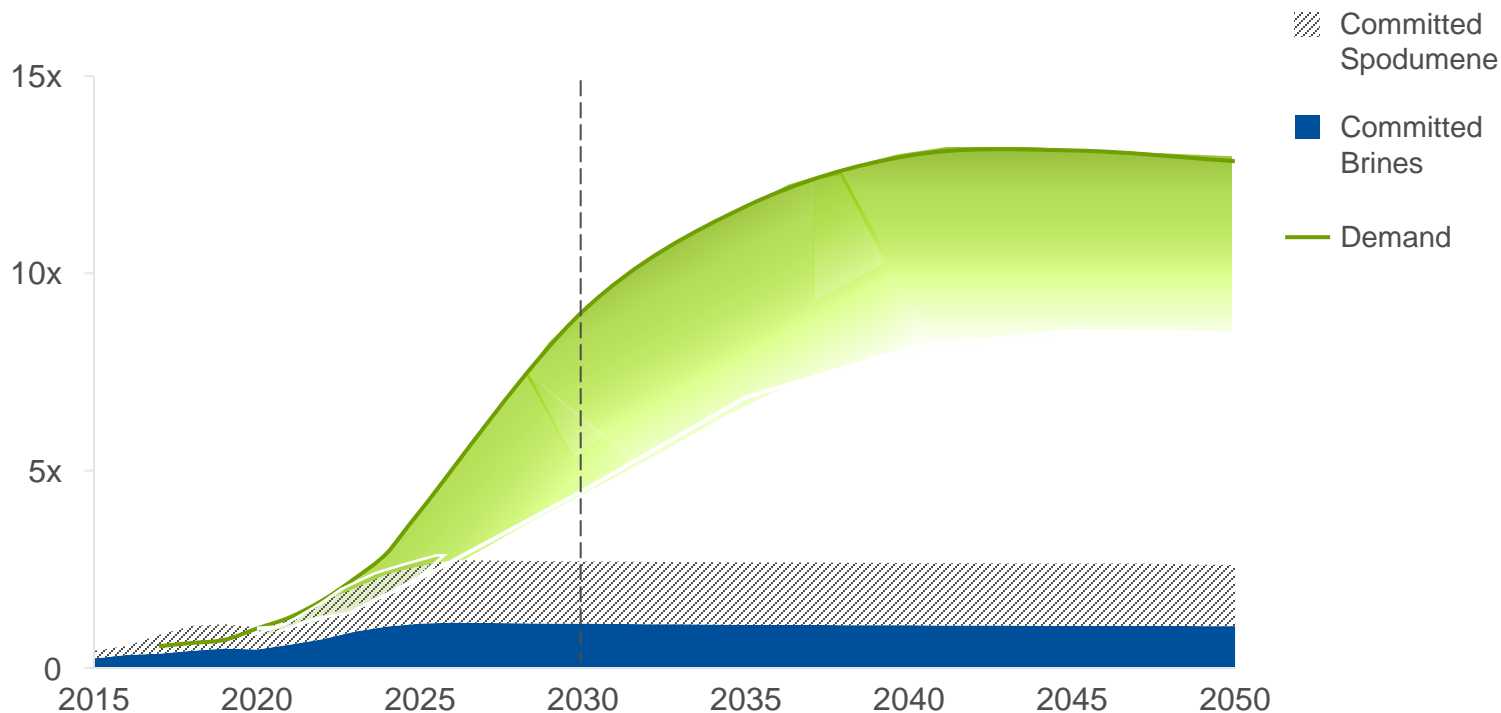
Solar and wind generation consume ~3-6 tonnes of copper per MW respectively vs ~1 tonne per MW for thermal power

Electric vehicles contain ~80kg of copper vs 20kg in an internal combustion engine

# Significant supply gap emerging for lithium

## Lithium demand and supply in net zero carbon scenario

(Multiple of 2020 demand levels, Lithium Carbonate Equivalent)



By 2030, electric vehicles will account for up to 55% of annual light vehicle sales

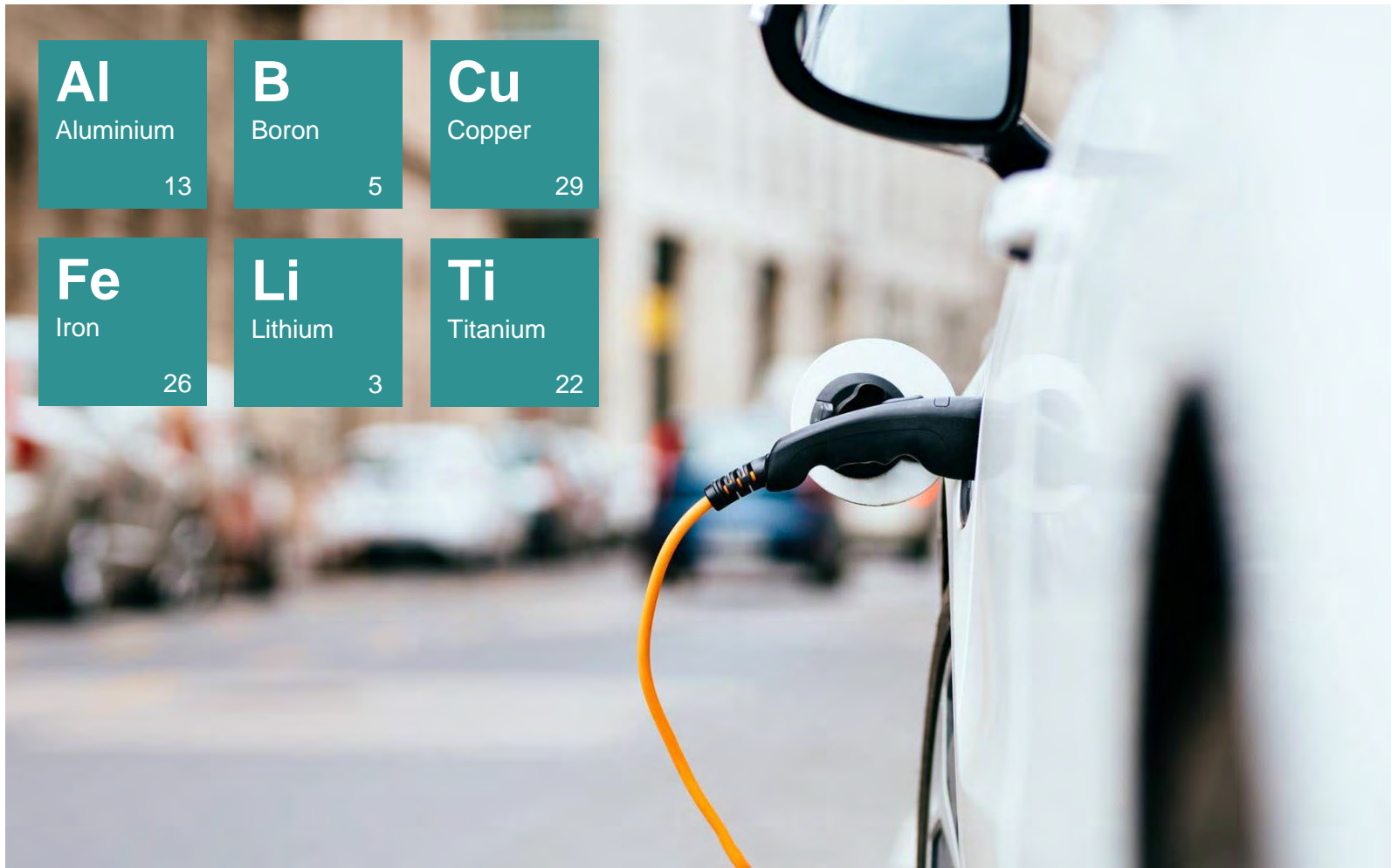
Lithium is the preferred material in electric vehicle batteries and has potential upside in emerging solid state battery chemistry

Supply gap will require over 60 Jadar projects

- Committed supply and capacity expansions contribute ~15% to demand growth over 2020-50
- Remaining 85% would need to come from new projects

Net zero carbon scenario is an internal based view where developed countries reach net zero emissions by 2050, large emerging markets, including China, by 2060 and all other countries by 2070.

# Energy and industrial transition drives demand for our products



Limiting the impact of climate change requires a green revolution

This social-industrial change will profoundly shift the energy and industrial landscape

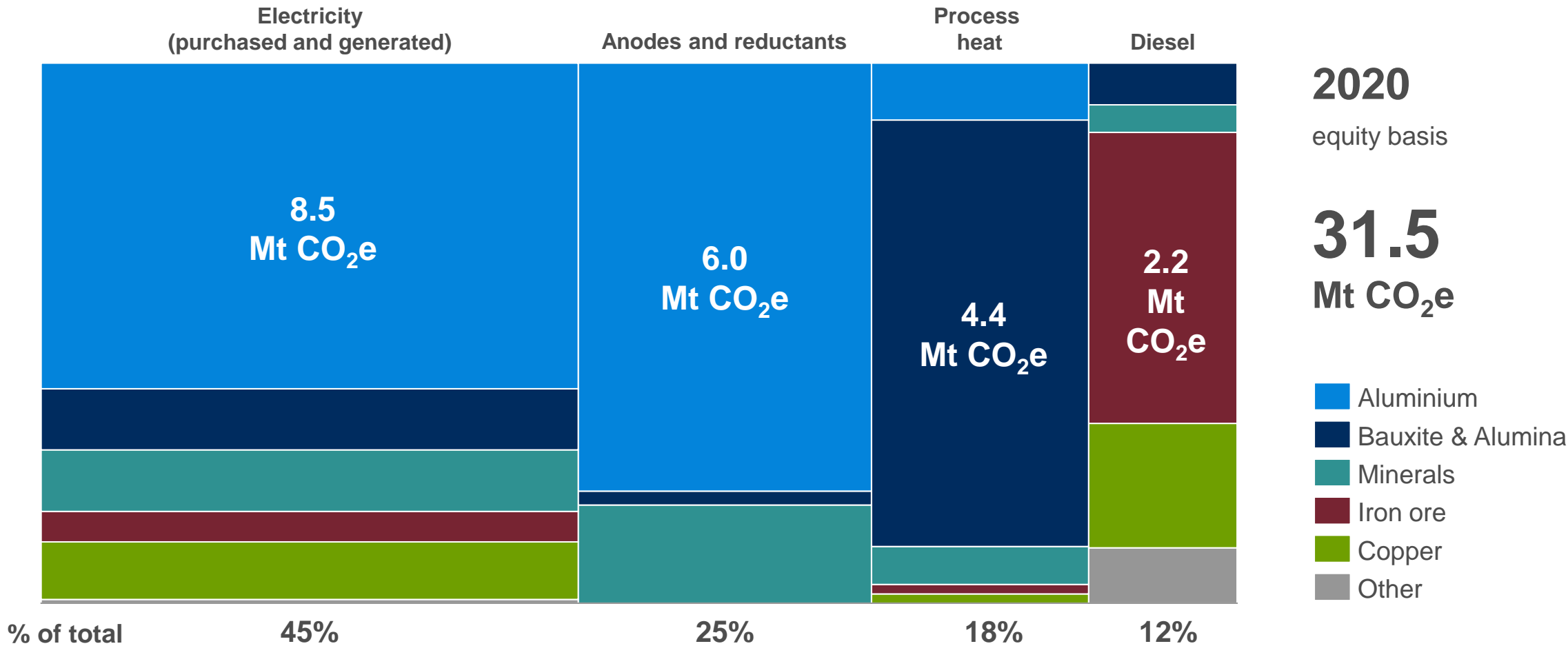
Green metals and minerals will be key enablers



# Mark Davies

## Decarbonising our own business and the impact of green steel

# Our Scope 1 & 2 carbon footprint today



# Taking actions to address our emissions

## Electricity

### Growing renewables from 75%<sup>1</sup>

- Gudai-Darri (34MW), QMM (20MW) and Weipa (4MW)
- Large scale (1GW) Pilbara renewables
- Switching Boyne Island and Tomago smelters to renewables
- Signed statement of cooperation with Queensland Government

## Anodes & Reductants

### Developing technologies

- Construction of first ELYSIS™ commercial-scale cell at Alma
- Increasing R&D

## Process heat

### Redesigning processes

- Yarwun hydrogen calcination pilot
- Plasma torches trials

## Diesel

### Partnering with industry

- Komatsu and Caterpillar zero-emission truck partnerships
- Charge On Innovation Challenge

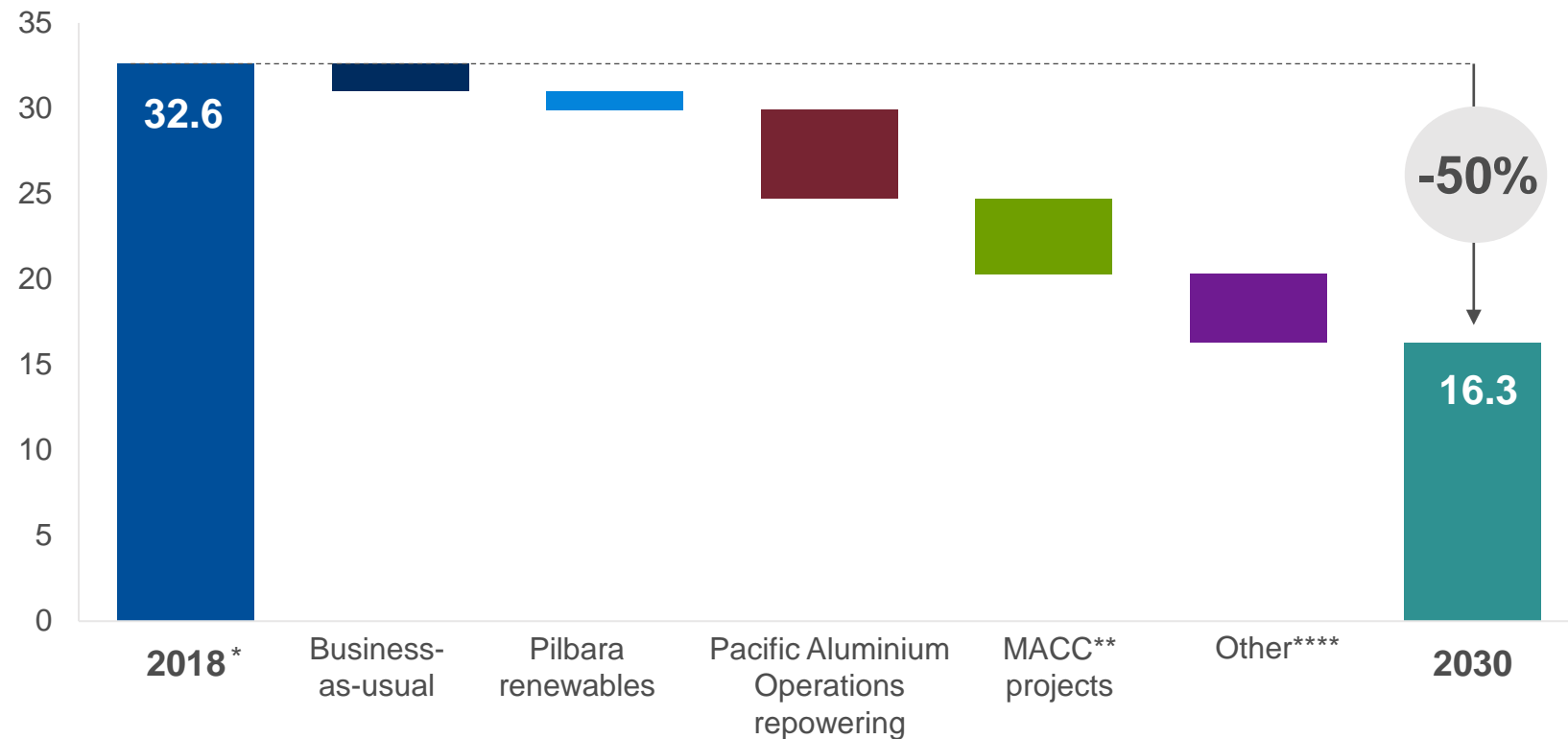
## Offsets

Building capacity and capability including new technology partnerships

<sup>1</sup>Share of renewables in 2020 across our managed operations

# Raising our decarbonisation target from 15% to 50% by 2030

## Our Scope 1 & 2 emissions (Mt CO<sub>2</sub>e equity basis)



Accelerate delivery of existing 15% emissions reduction target to 2025

2030 target from 15% to 50% reduction

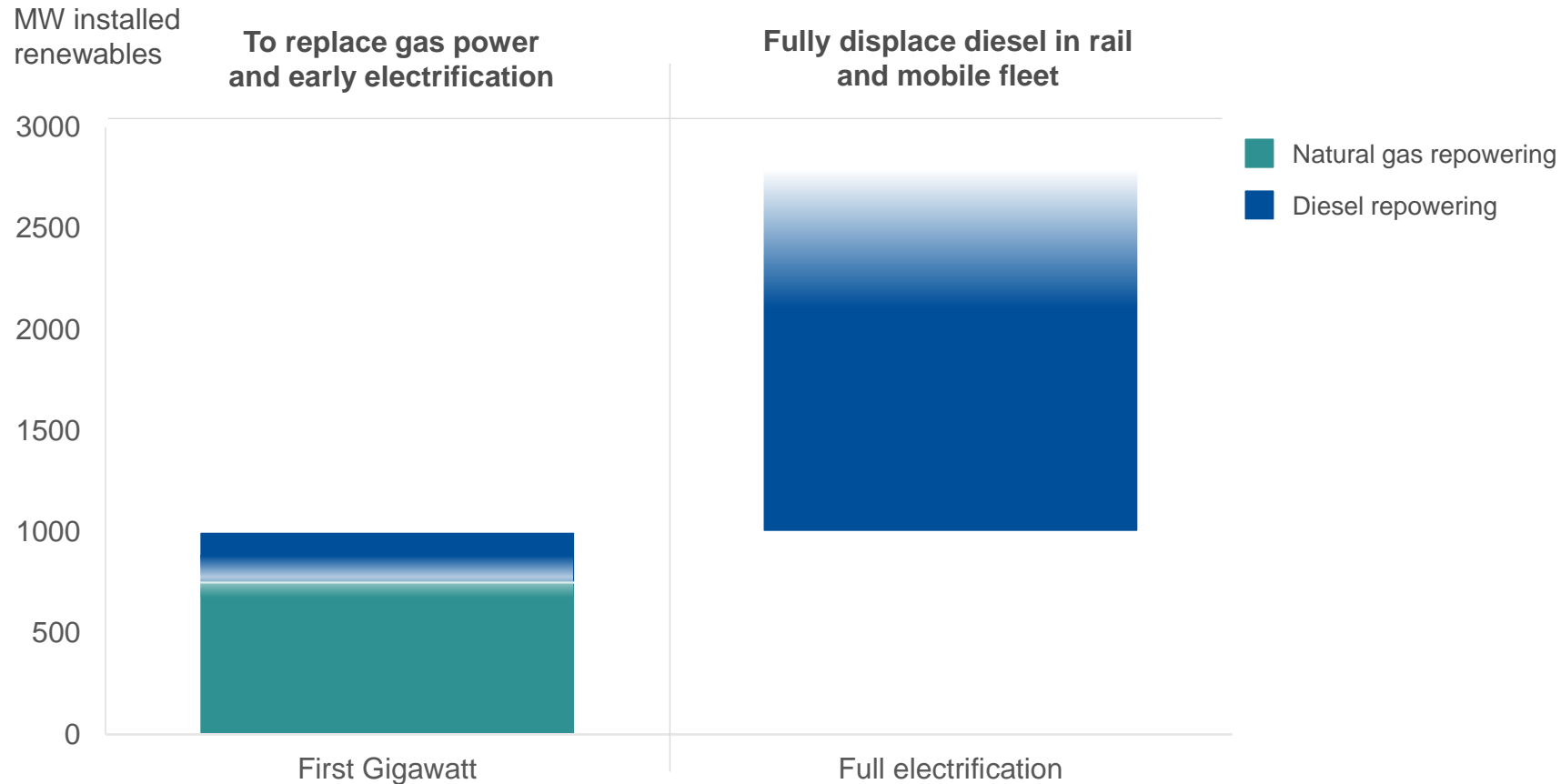
Increase decarbonisation investment of our own assets to ~\$1.5bn over next three years and total investment of ~\$7.5bn from 2022 to 2030\*\*\*

Incentivise MACC projects with internal carbon price of \$75/t CO<sub>2</sub> initially

\*2018 Scope 1 & 2 emissions baseline has been adjusted for divestments. | \*\*Marginal abatement cost curve, see slide 28 | \*\*\*Conceptual view of capital requirements at October 2021. MAC curves will be updated on an annual basis | \*\*\*\*Includes energy efficiencies, ELYSIS™ and carbon offsets



# Switching the Pilbara to renewables






Rapid deployment of ~1GW solar and wind renewables, supported by storage

Abates ~1Mt CO<sub>2</sub> Scope 1 emissions, mostly from gas-based power for fixed plants

Full electrification and decarbonisation of Pilbara system require further deployment of renewables at scale

Exploring development partnerships

# Progressing renewable power options for Australian smelters

Assets in coal-based grids	Ownership	Power (100% basis)	Contract expiry
	<b>Tomago smelter</b>	51.6%	960MW (demand)
	<b>Boyne Island smelter</b>	59.4%	810MW (demand)
	<b>Gladstone power station</b>	42.1%	1,680MW (capacity)

Catalyst for regional renewable energy deployment and development of industry

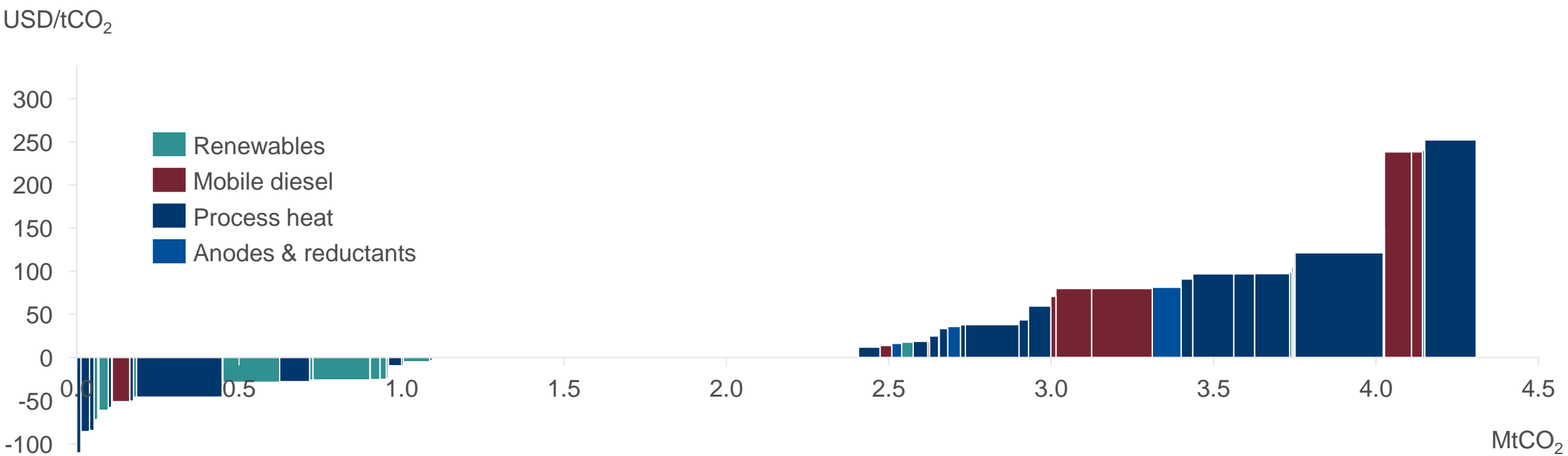
Signed Statement of Cooperation with Queensland Government

Requires deployment of 5GW+<sup>1</sup> of solar and wind power with robust firming solution

<sup>1</sup> Equity share

# Accelerating current abatement projects

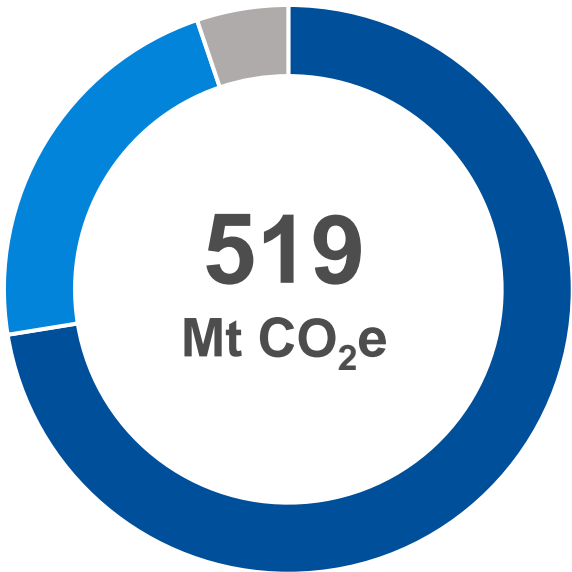
**Our Marginal Abatement Cost Curve for Scope 1 & 2 emissions**  
(excl. Pilbara and Pacific Operations repowering, ELYSIS™, energy efficiency and carbon offsets)



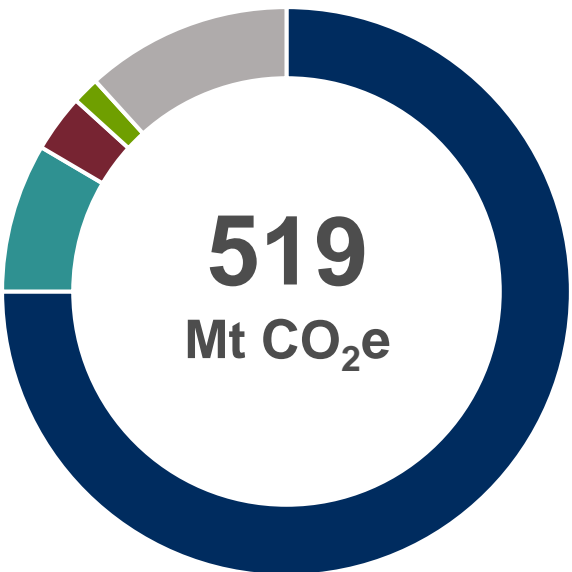
As of 30 September 2021



# Developing green products for our customers



By source	MtCO <sub>2</sub> e
Pilbara iron ore	363
IOC iron ore	13
Bauxite and alumina	116
Other	27

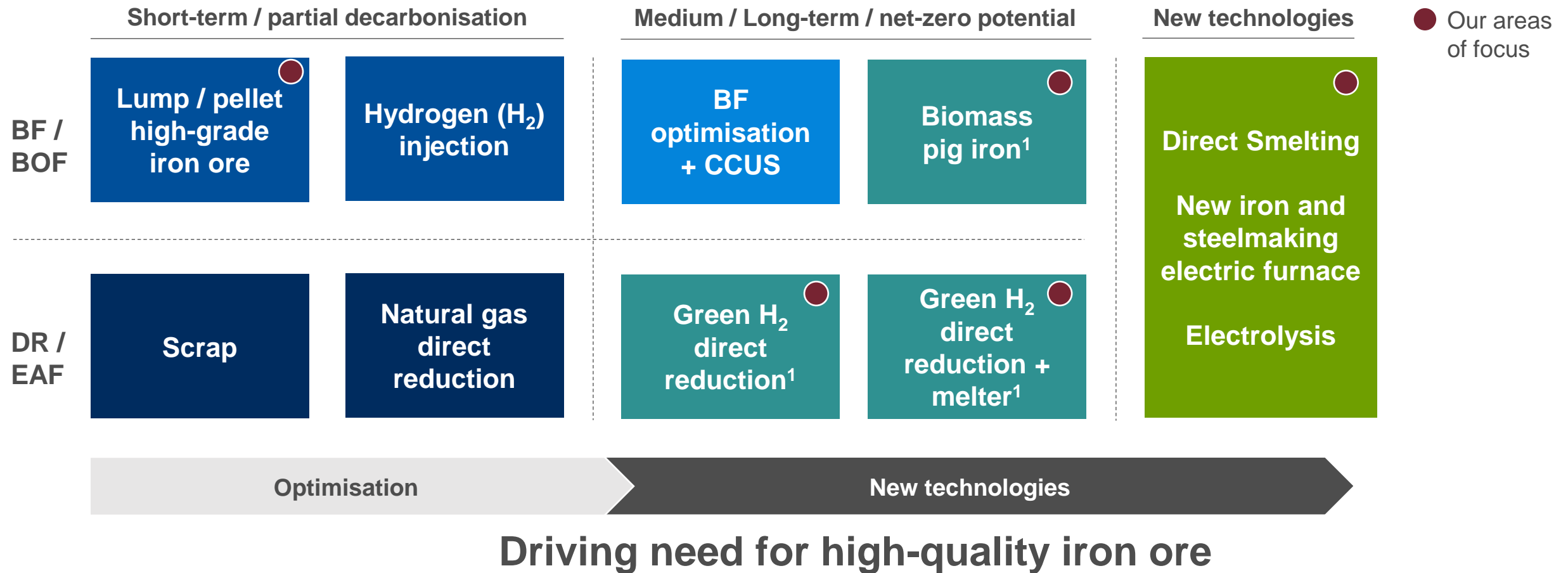


By region	MtCO <sub>2</sub> e
China	390
Japan	44
South Korea	17
EU	8
Other	61

## Scope 3 goals

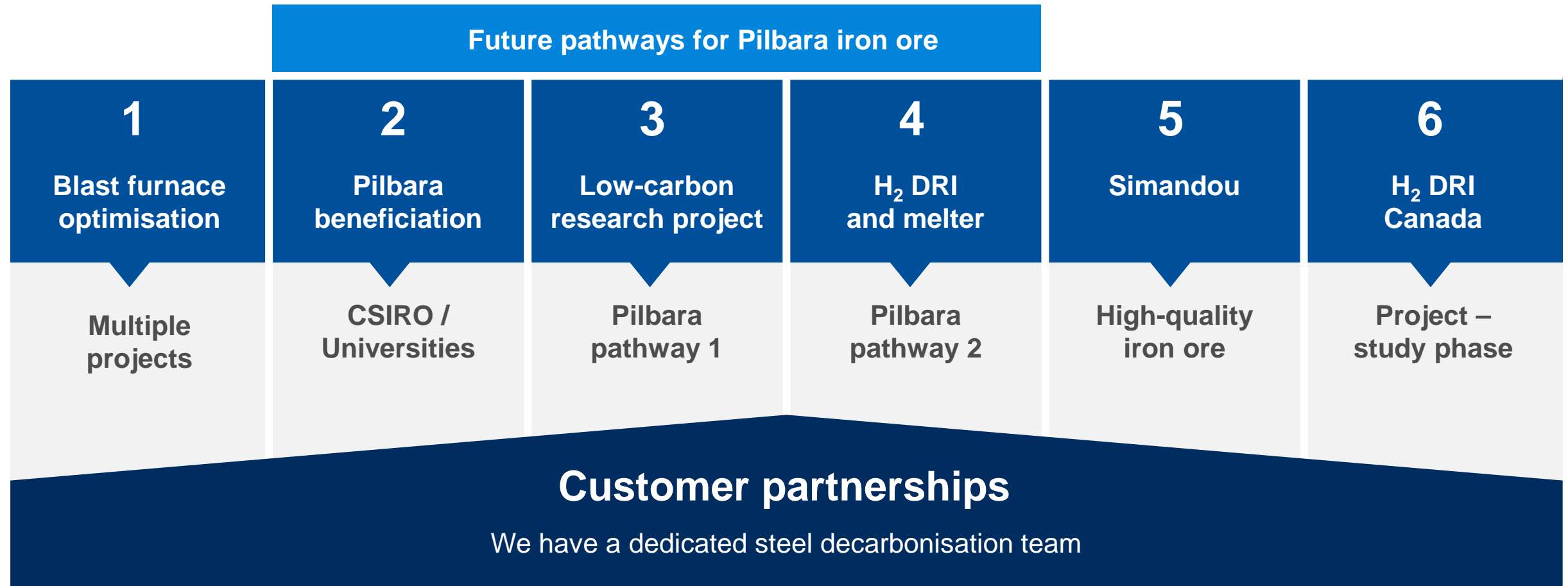
- 1 Technology for reductions in steelmaking carbon intensity of at least 30% from 2030
- 2 Breakthrough technologies to deliver carbon neutral steelmaking pathways by 2050
- 3 Anticipate that ELYSIS™ technology will reach commercial maturity in 2024
- 4 Net zero emissions from shipping our products by 2050

# A shift to greener steelmaking technologies



<sup>1</sup> These products can be used in an EAF or BOF | BF = Blast furnace, BOF = Basic oxygen furnace, DR = Direct reduction, EAF = Electric arc furnace, CCUS = carbon capture, utilisation and storage

# Our focus areas for iron and steel decarbonisation



DRI = Direct reduction iron, CSIRO = Commonwealth Scientific and Industrial Research



# Alf Barrios

## Commercial opportunities from decarbonisation



# Sustainable future across the value chain

## Leveraging insights across the value chain

Assets

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Customers

---

Suppliers

---

Markets

---

Communities

**1** Partnering with our suppliers and developing sustainable supply chains

---

**2** Working together with our customers to provide products & services for a more sustainable future

---

**3** Innovating with our customers to enable them to decarbonise



# Partnering with suppliers and developing sustainable supply chains



## Driving innovation through supplier partnerships

- Collaborating on a mining decarbonisation pathway
  - 2025 Piloting zero emission trucks and locomotives
  - 2030 No new diesel-powered trucks and locomotives
- Supporting local and Indigenous supplier development

<sup>1</sup> From our own and time chartered fleet | <sup>2</sup> Delivery from H2 2023  
IMO: International Maritime Organisation, LNG: Liquefied Natural Gas

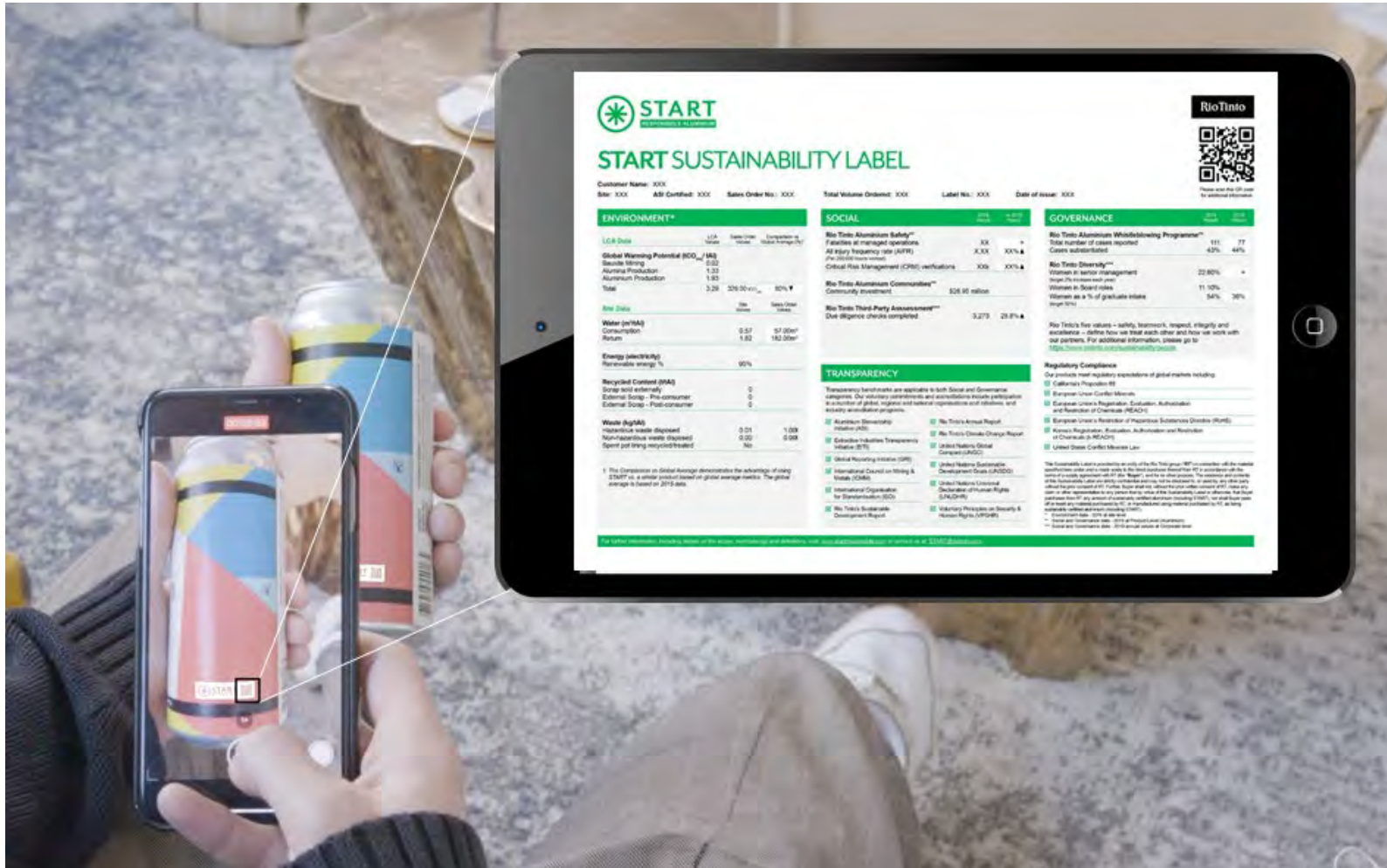


## Accelerating shipping decarbonisation

- Reduced emissions intensity<sup>1</sup> >30% by end 2021, vs IMO target of 40% by 2030
- Chartered 9 LNG dual-fuel Newcastlemax vessels<sup>2</sup>
- Net zero emission vessels by 2030



# Working with customers to meet societal demands



Government policy  
and markets responding  
to end-user demand

## ESG transparency through START

- Transparency and traceability from mine to market
- Secure platform, built on blockchain
- Enabling consumers to make ESG-informed decisions, beyond carbon

# Solutions for a more sustainable future



## Products for a greener world

- Aluminium alloys for giga-casting in electric vehicle manufacturing
- Collaborating with InoBat across the full lithium lifecycle, from mining through to recycling

Li = Lithium, Sc = Scandium, Te = Tellurium, Se = Selenium



## Circular solutions to reduce emissions

- Partnering with ABInbev to reduce emissions from packaging
- Multi-product collaboration with Schneider Electric for infrastructure and electric vehicles
- Optimising market placement for critical minerals (Li, Sc, Te, Se) extracted from our waste streams



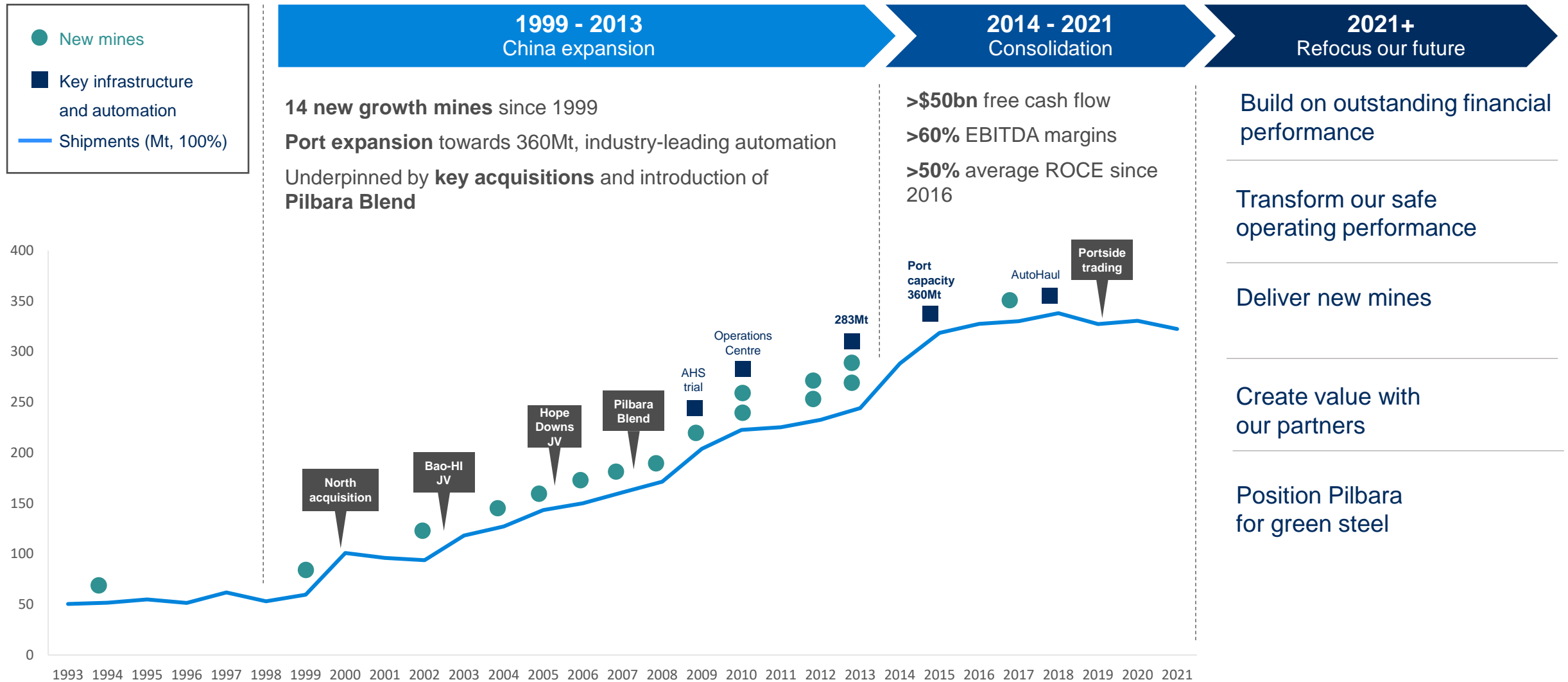
# Simon Trott

## Iron Ore





# Pilbara Iron Ore set for even stronger performance





# Raising our system capacity

	Prior best performance			Estimated Capacity
	Max month* Mt	Max quarter* Mt	Max annual Mt	Mid term** Mt
<b>Mine</b>	370	349	338	345-360
<b>Rail</b>	362	351	338	350-360
<b>Ports</b>	393	357	338	360+
<b>System</b>	362	351	338	345-360

System capacity will be delivered by:

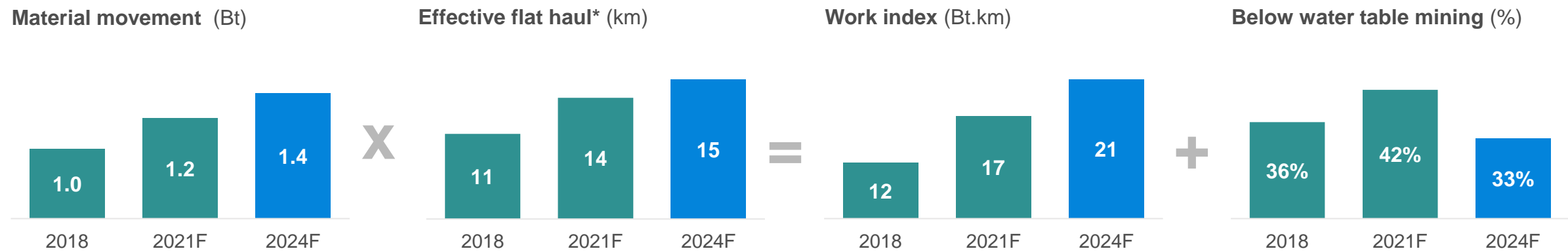
- Rio Tinto Safe Production System driving improved productivity
- Improved interface efficiencies across mine, plant, rail and ports
- Modest capital investment, including two additional rail consists

Requires commissioning of replacement mines, including Western Range, Bedded Hill Top and Hope Downs 2 and Brockman Syncline 1 to reach and sustain capacity

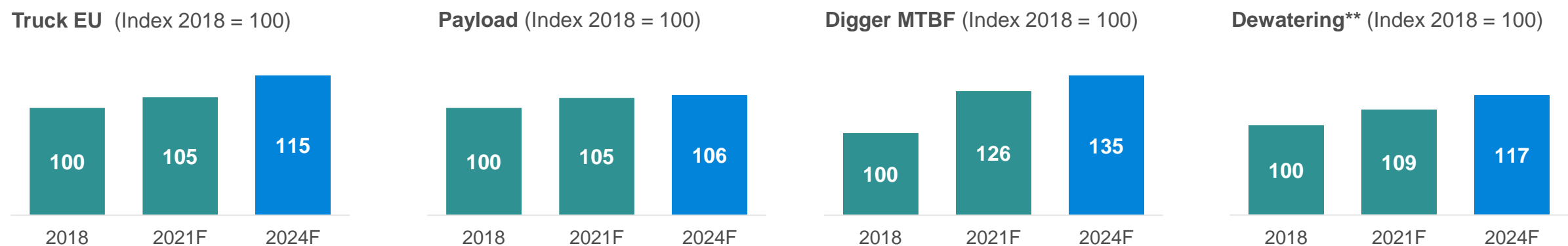
\*Annualised rates | \*\* Mid-term defined as upon completion of the next tranche of new and replacement mines

# Mine productivity to mitigate higher work index

## The work index of our mining operations is increasing



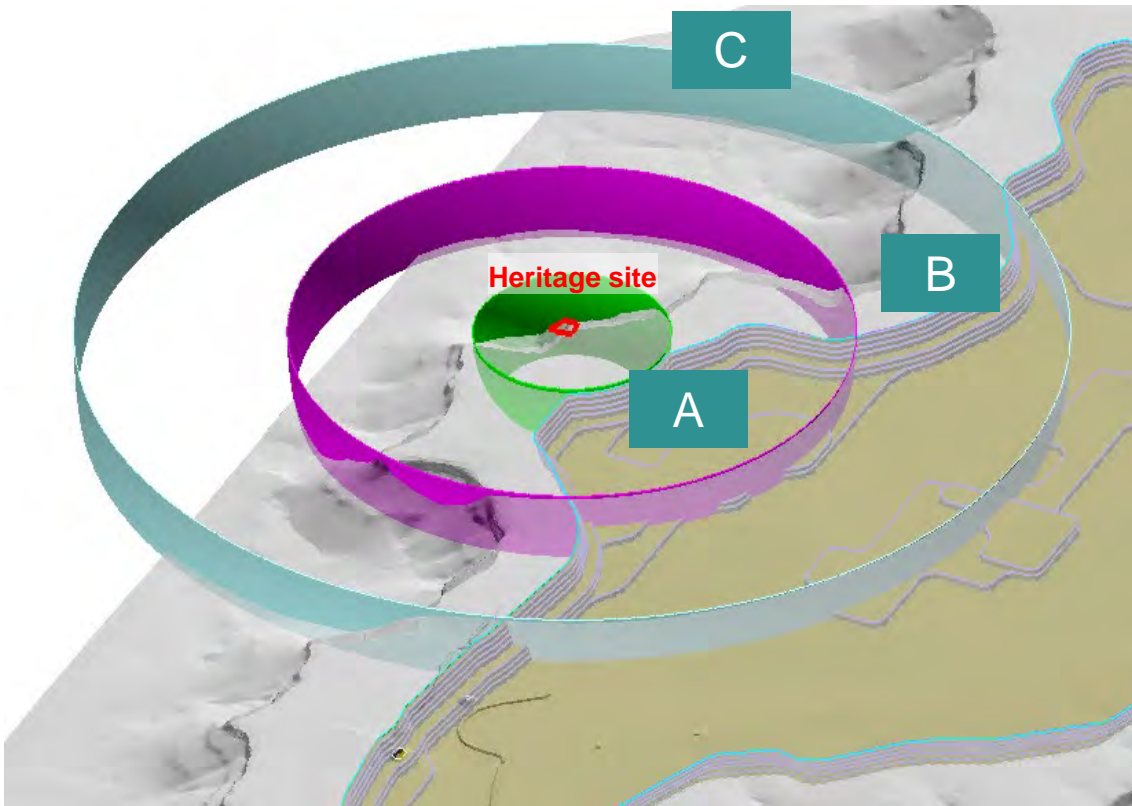
## Initial gains in productivity – targeting further improvement



\*Average haul distance travelled by each truck – adjusted for gradient | \*\* Dewatering volumes increase as pit deepens | EU = Effective utilisation, MTBF = Meantime between failure

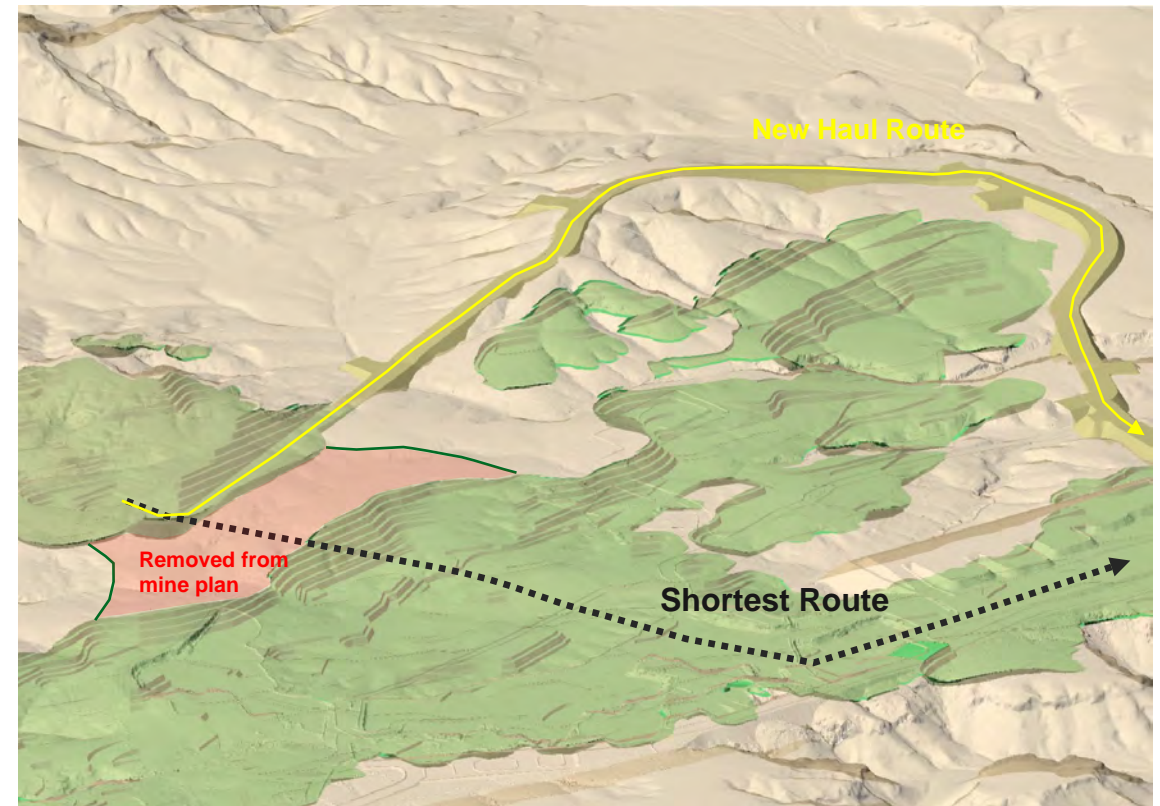
# Adjusting our operating practices to protect heritage

## Heritage site example



A. 70 metre exclusion zone | B. 200 metre blast management zone | C. 350 metre blast management zone

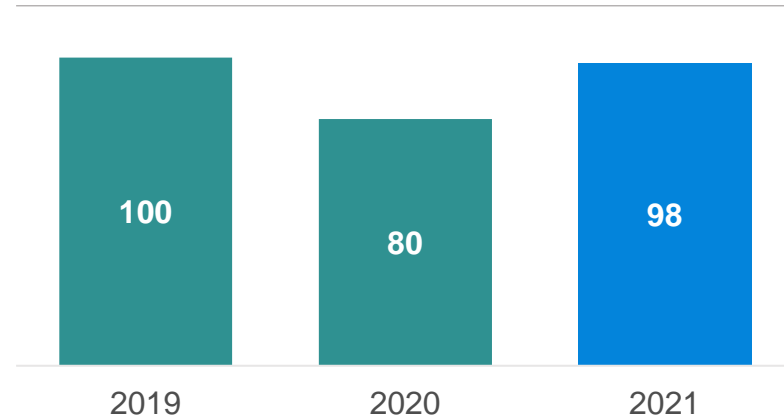
## Responding to new information



# Improving plant performance

## Maintenance impacted by labour constraints

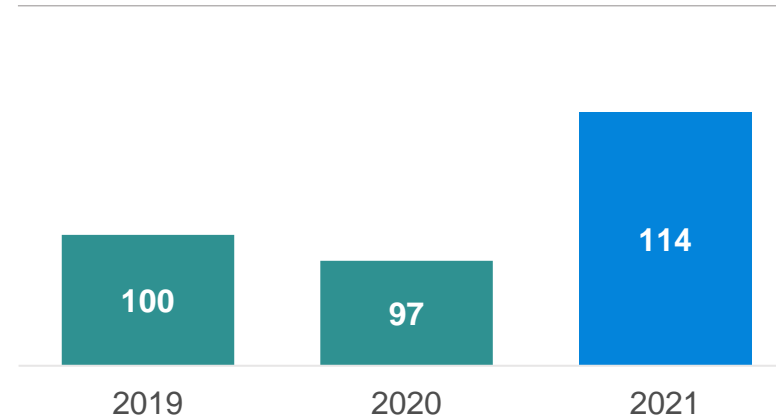
Hours, Index 2019 = 100



- COVID-19 restrictions impacted available labour in 2020 reducing maintenance hours
- 2021 labour availability improved but still constrained

## Increased planned shutdowns

Hours, Index 2019 = 100



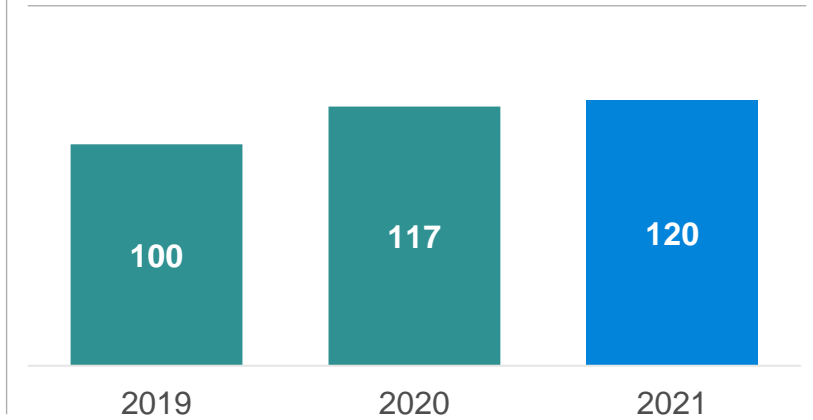
Focus areas to address maintenance backlog:

- Shutdown alignment across system
- Improved maintenance tactics and simplified maintenance schedules
- Improved conveyor reliability through better rock breaking and targeted asset improvements

Completing the brownfield mine tie-ins will further improve plant performance

## Stabilising and addressing maintenance backlog

Outstanding hours, Index 2019 = 100





# Maximising productivity from port and rail

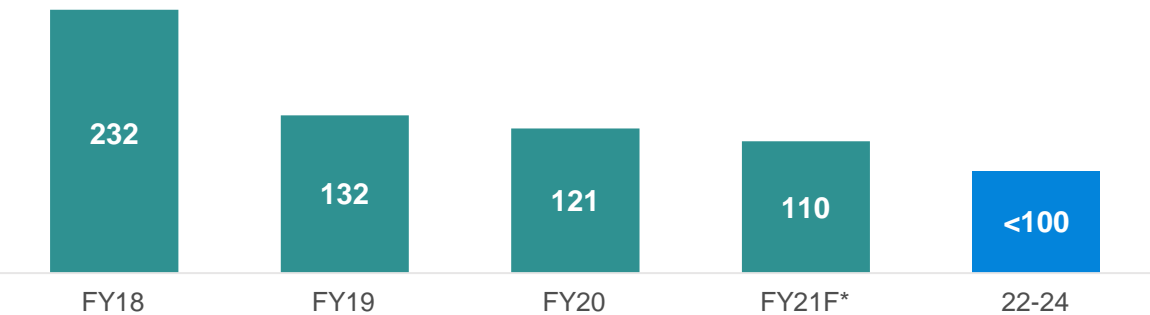
## Rail performance

### Focus on asset health, including ballast and turnout replacement

AutoHaul delivering operational and safety improvements:

- Reduction in driver change-over delays from 90 minutes per train to zero
- One in 250 journeys require a driver to operate the train
- Reduction of 1.5 million kilometres each year in light vehicle travel

### Track speed restrictions cycle time impact (in minutes)



\*At October 2021 | \*\*Includes all full and partial weeks in Q3 2021

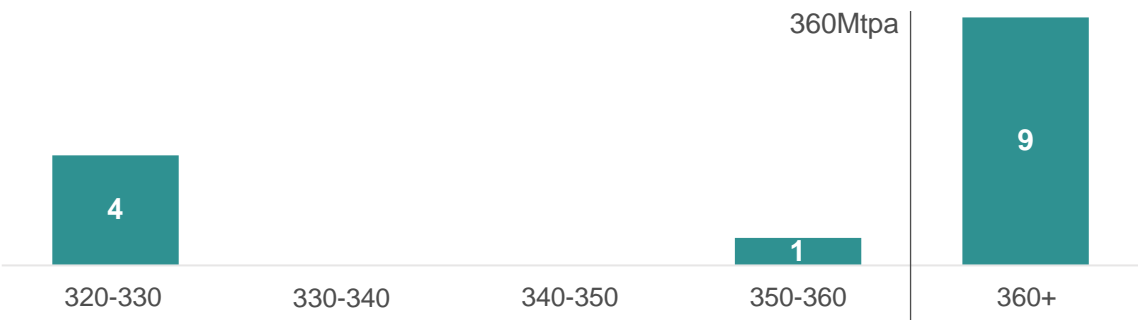
## Port productivity

### Our ports are our competitive advantage

Focus areas:

- Optimising shut durations for capacity needs
- Reclaimer replacements 2024+
- High density ore upgrades 2022+
- Car Dumper 1 at Cape Lambert end of life 2022

### Weekly outload capacity in Q3 2021 (Weeks\*\*)



# How we are improving our business

	Operational Readiness	Rio Tinto Safe Production System			
Focus area	Commission and ramp up new assets	Reduce wait for feed at the crusher	Reduce materials handling losses	Reduce fixed plant unscheduled loss	Improve rail capacity and resilience
Priorities	Gudai-Darri	Dewatering	Fragmentation	Conveyor reliability	Asset health
	Robe Valley Sustaining	Drill and blast	Feed strategy	Shutdown productivity	Cycle time
	West Angelas C&D				
	Western Turner Syncline Phase 2	Load and haul	Engineering and technology	Asset management	Digital and technology
Value chain	Mine				Rail
			Port		

# Operating and sustaining capital cost outlook

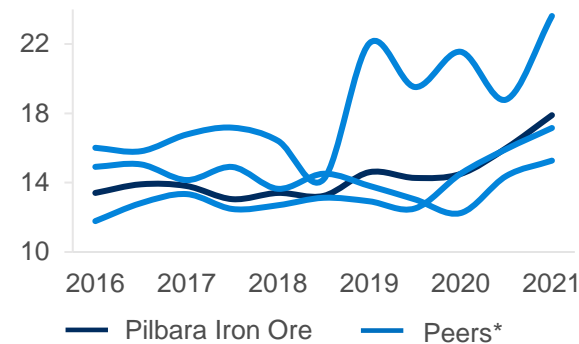
## Outlook for 2022

2021 cost guidance of \$18-18.5/t

Cost pressures continue:

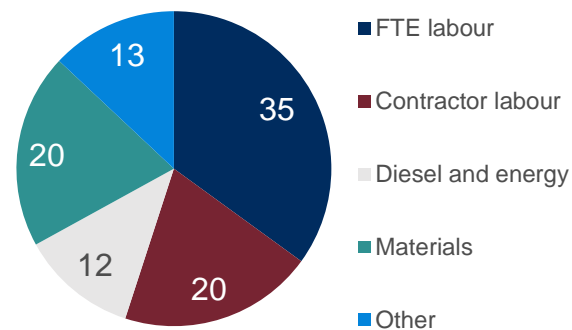
- Work index increase of 12% (from 2021 forecast)
- Continued investment in asset health and reliability
- Tight labour market driving higher rates
- Diesel price (+23%, 2021F v 2020)
- Cost of materials due to strong construction market and COVID-19 restrictions

**Unit cost history**  
(US\$/t)



\*Unit cost for peers are based off publicly available sales, revenue and EBITDA data, with adjustments made for comparison to RTIO's reporting method and products

**2021 latest cost estimate (%)**



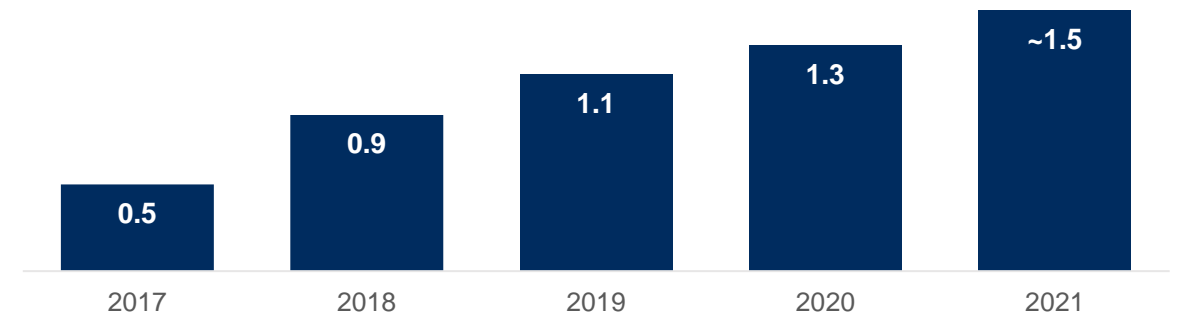
FTE = full time equivalent

## Investing in our assets

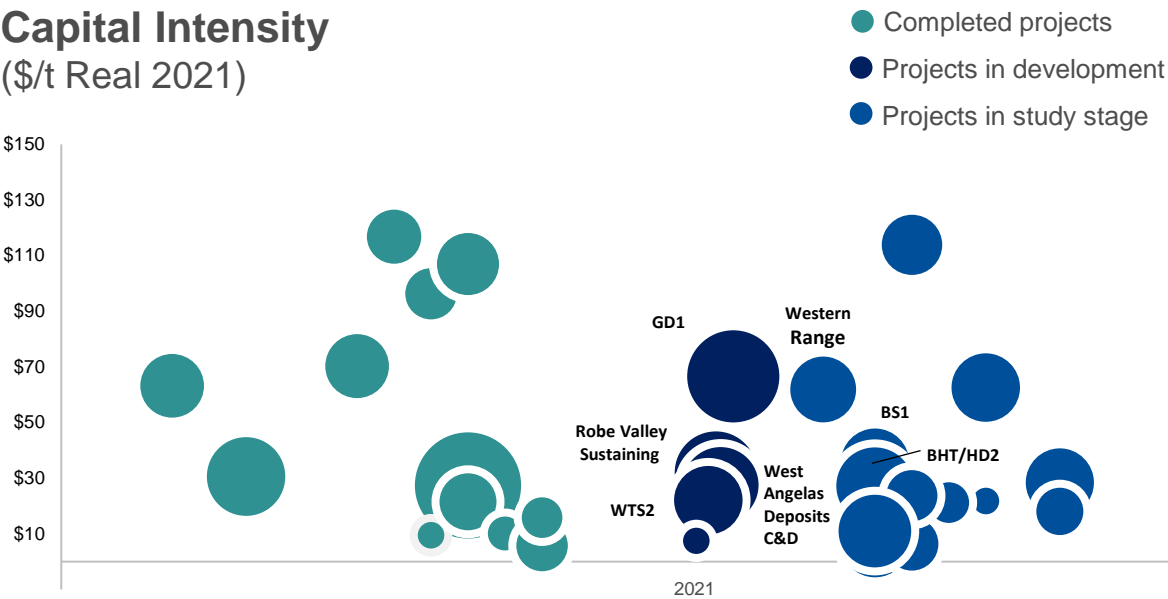
Key focus areas:

- Asset reliability
- Plant and rail asset health
- Accommodation / camps
- Systems including IT

**Sustaining capital investment**  
(US\$bn)



# Mine project pipeline

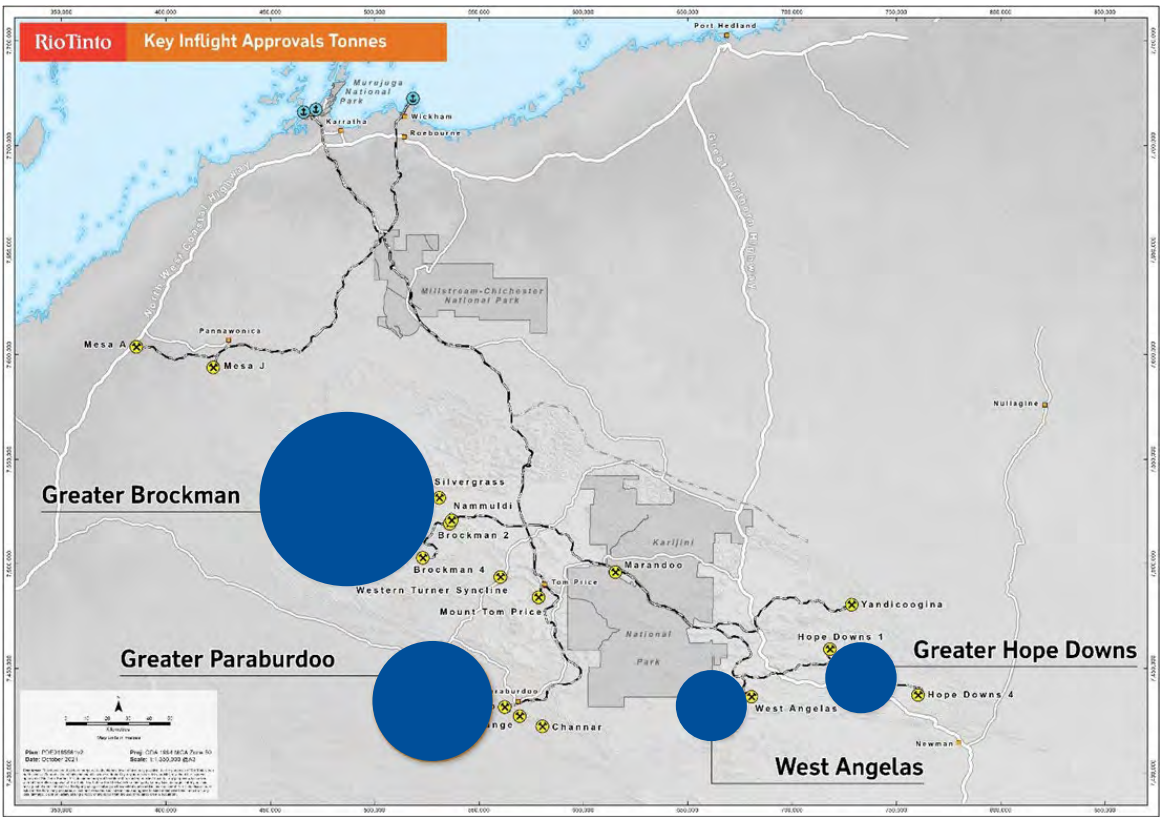


**Studies being progressed. Commissioning from 2025:**

- Western Range
- Bedded Hill Top and Hope Downs 2
- Brockman Syncline 1

Approvals timeline risk has increased

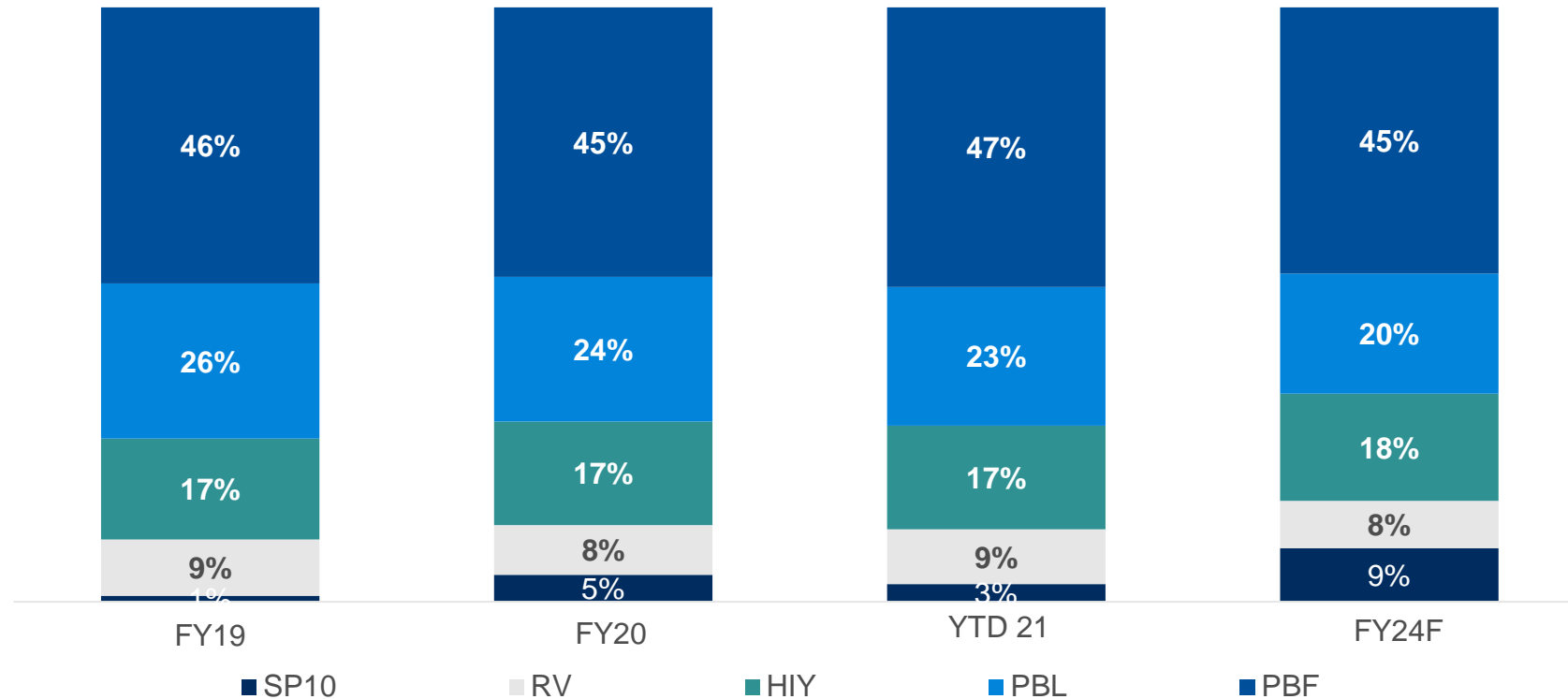
## High volume of environmental approvals for new mines





# Ongoing focus on quality and product mix

## Shipments by product (%)



Consistent quality remains key for our Pilbara Blend. Demand remains strong, and will continue to underpin our product strategy

Pilbara Blend quality maintained by:

- Blending different ore sources to tight specifications
- Producing lower quality products (including SP10) as required

RV = Robe Valley, PBL = Pilbara Blend Lump, PBF = Pilbara Blend Fines, HIY = Yandicoogina fines | 2021 YTD at 30 September 2021

# Positioning Pilbara ores in a green steel world

Working with customers to decarbonise the blast furnace mostly capped at ~20-30% emission reduction

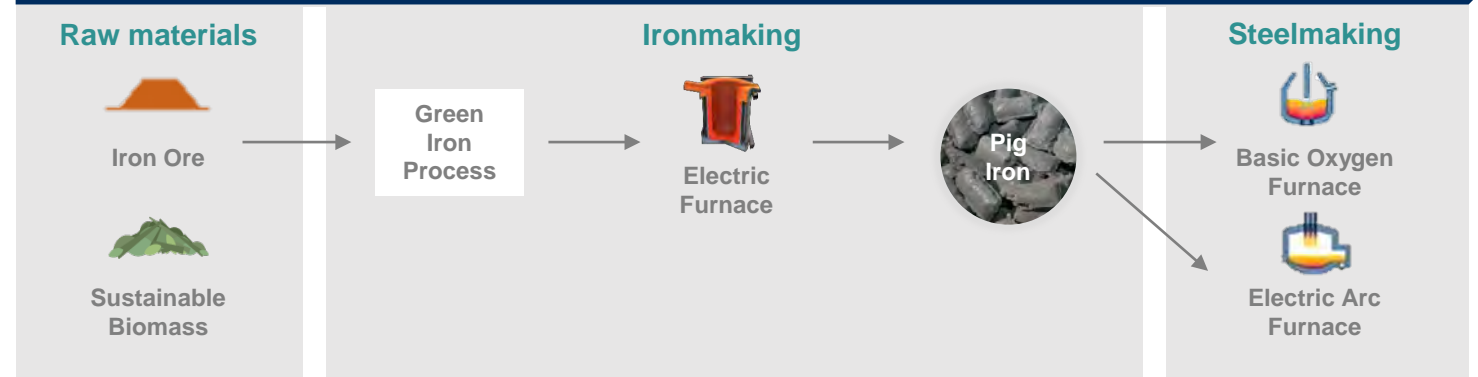
Options to more cost effectively beneficiate Pilbara ores are being developed

Working on new processing routes to crack the code for Pilbara ores

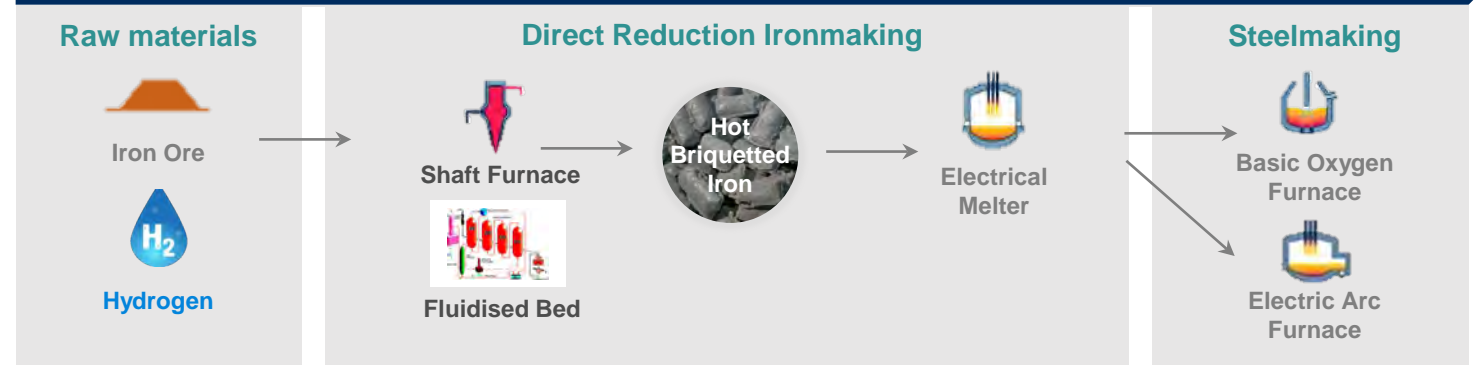
Two examples shown – both early stage development but showing promise

## Steel making process routes to move to 'net neutral'

### Pilbara Pathway 1: Low-carbon research project



### Pilbara Pathway 2: H<sub>2</sub> Hot Briquetted Iron + melter



# Strengthening partnerships



## Traditional Owners

Working together to build a better future through employment, business and caring for country and culture

Embedding cultural competency and heritage management into The Way We Work

Asset General managers now responsible for Traditional Owner relationships

Modernising agreements



## Local Communities

Supporting thriving communities through economic development and employment:

- Direct shipping into Dampier
- Automation qualifications and education pathways

Partner with State Government to provide logistics support for COVID-19 vaccinations across the Pilbara



## Western Australia

Building local capacity - using local suppliers to build rail ore cars, a first in the industry

Long-term partnerships and outcomes such as the partnership with Royal Flying Doctor Service



# Becoming the most valued resource business

## Best operator

### Transform our safe operating performance

Empower our workforce through Rio Tinto Safe Production System

## Impeccable ESG credentials

### Position Pilbara for green steel

Decarbonise the Pilbara and position our ores to participate in Green Steel

## Excel in development

### Deliver new mines of the future

Optimise Pilbara capacity, product mix and development sequence

## Social licence

Create value with our partners  
Connect, partner and restore trust with the community

## People at our heart

Shift from 'asset focus' to 'people focus'



# Ivan Vella Aluminium

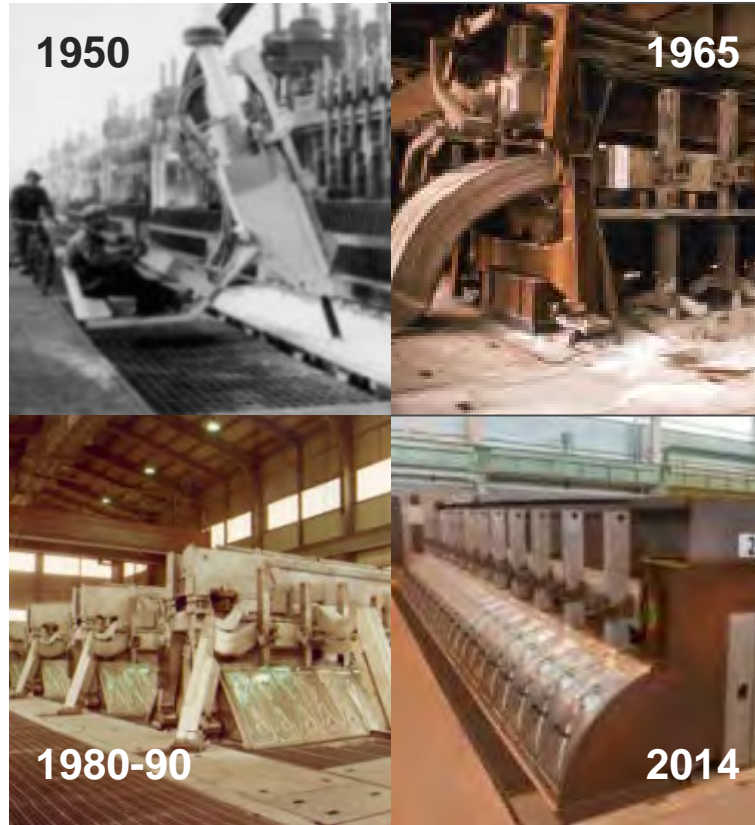




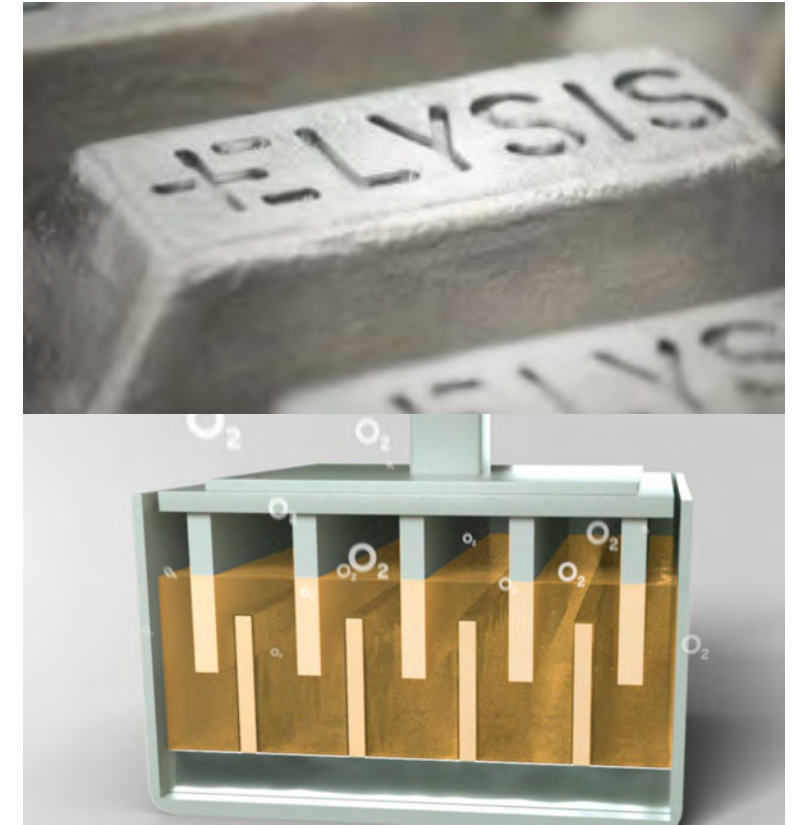
# Over a hundred years of aluminium expertise



**Engineering  
excellence**



**Technological  
expertise**



**Partnership  
and innovation**

# A structurally advantaged integrated business



## Bauxite

4 bauxite mines

56.1Mt\*

Australia, Brazil  
and Guinea



## Alumina

4 alumina refineries

8.0Mt\*

Australia, Brazil  
and Canada



## Energy

7 hydro plants

4.1GW

Supporting our  
assets in Canada



## Aluminium

14 aluminium smelters,  
80% renewables

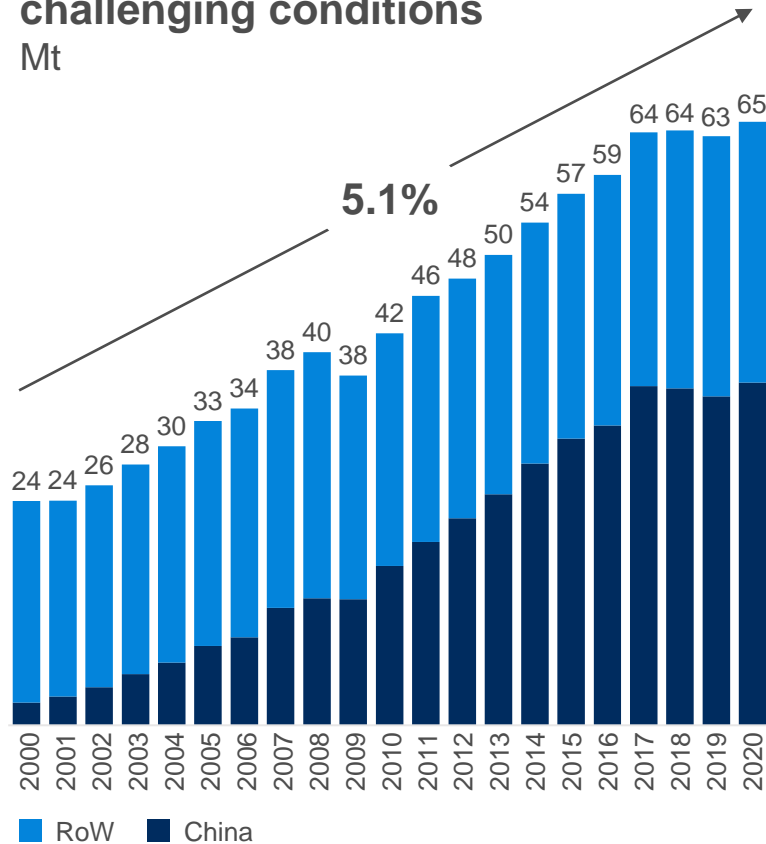
3.1Mt\*

Australia, Canada, Iceland,  
New Zealand and Oman

\*2020 production

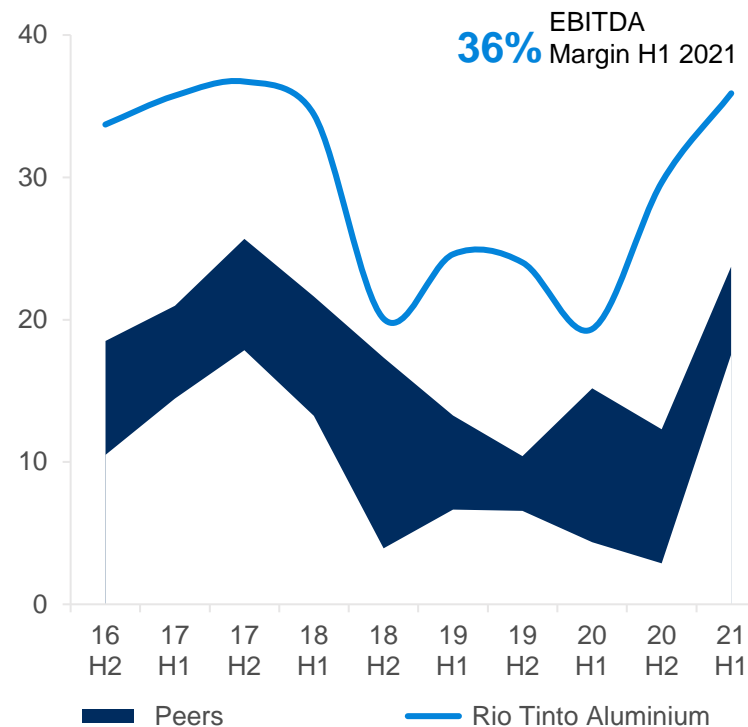
# The most profitable integrated Aluminium business

Historic supply growth created  
challenging conditions  
Mt



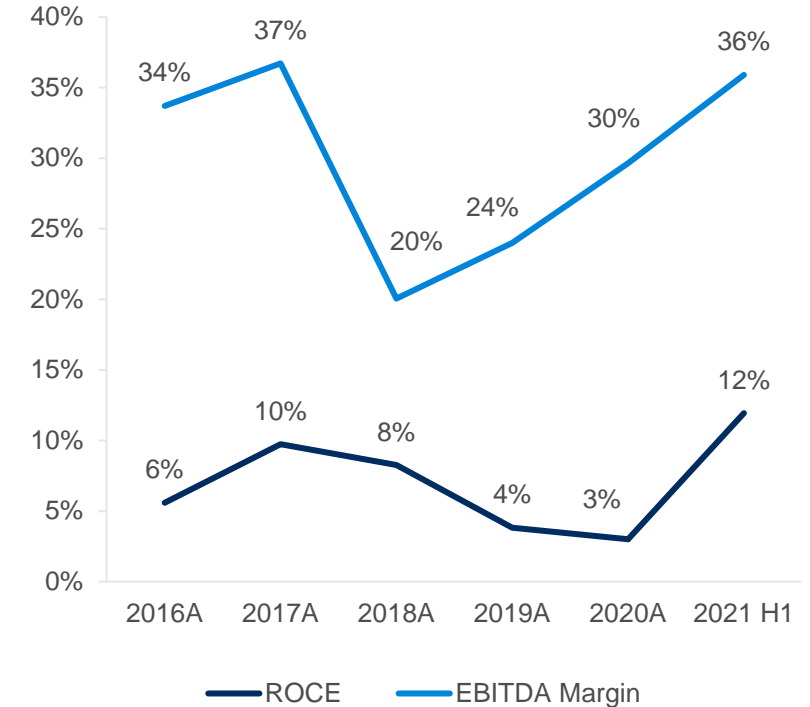
Source: Rio Tinto Market Analysis and peer disclosures

Integrated Upstream<sup>1</sup>  
EBITDA Margin  
(%)



<sup>1</sup>Upstream assets includes bauxite, alumina and primary metal

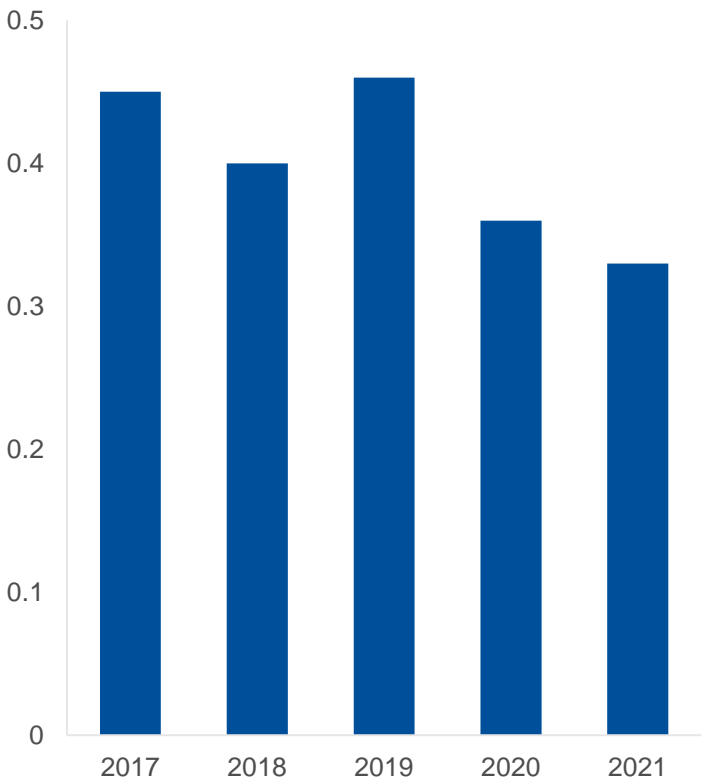
Integrated EBITDA  
Margin & ROCE (%)



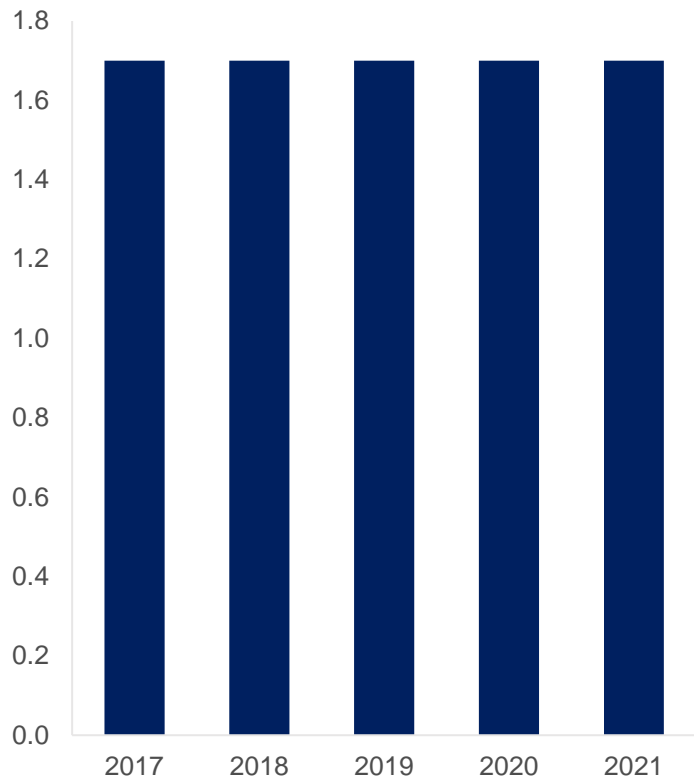


# Proven operational resilience

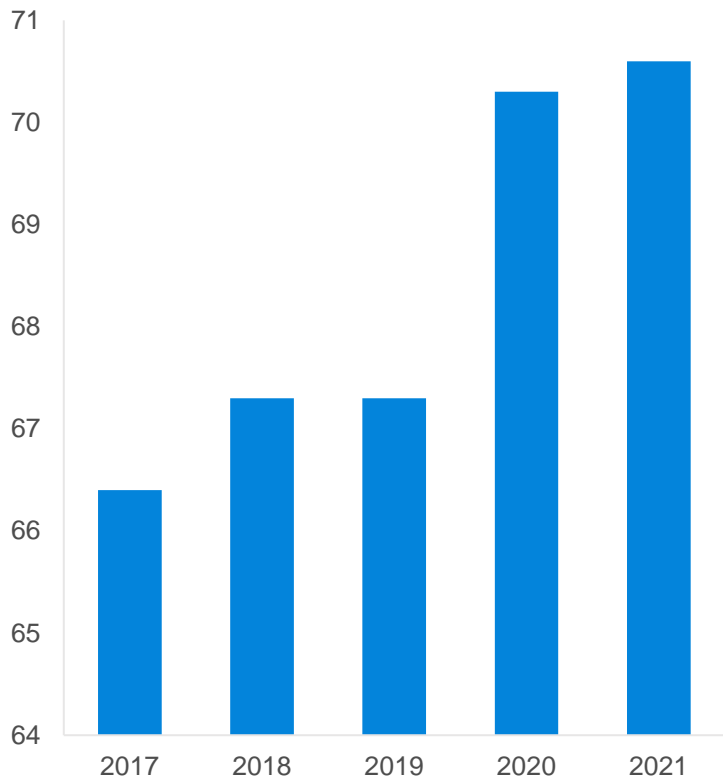
Global All Injury Frequency Rate



Pot Productivity\*  
Tonnes per operating pot per day



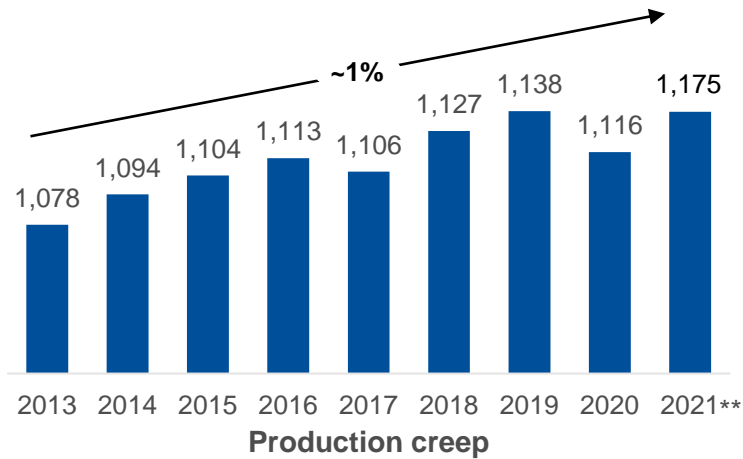
Asset Utilization rate  
Casthouse\*



\*Atlantic managed operations

# Continuing to improve our business

## 1<sup>st</sup> decile hydro-powered smelters\*



Positioned for low CO<sub>2</sub> metal demand  
Access to structurally short US market

Optimising business through data analytics  
and advanced process control

Saguenay integrated operations centre

\*Includes managed operations in Saguenay region.  
\*\*9 months annualised

## 1<sup>st</sup> quartile bauxite mines leveraging R&D



Processing technology development  
in the areas of impurities

Exploratory work on alternative  
technologies for silica

Processing technology to reduce  
product moisture

## Automating our casting process

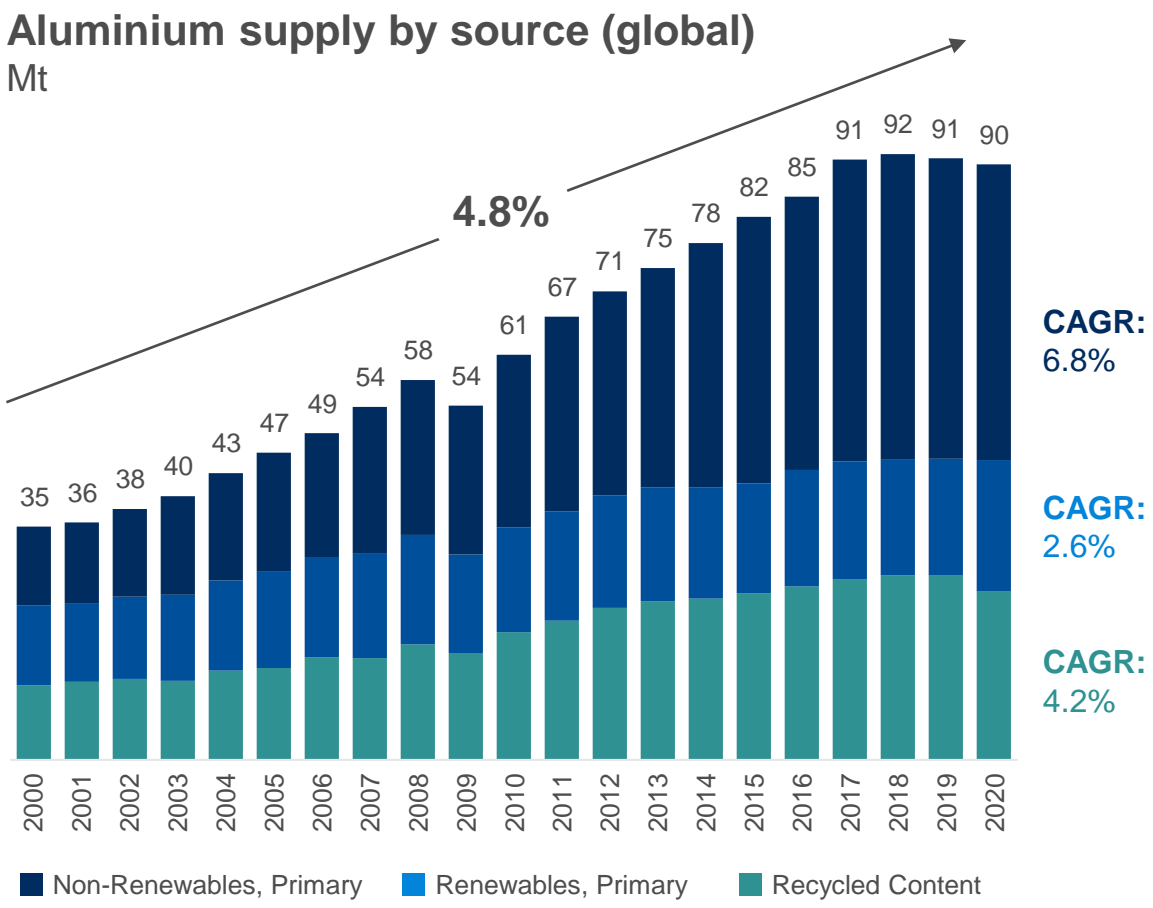


Using machine learning and automation  
to maximise scrap remelting opportunities

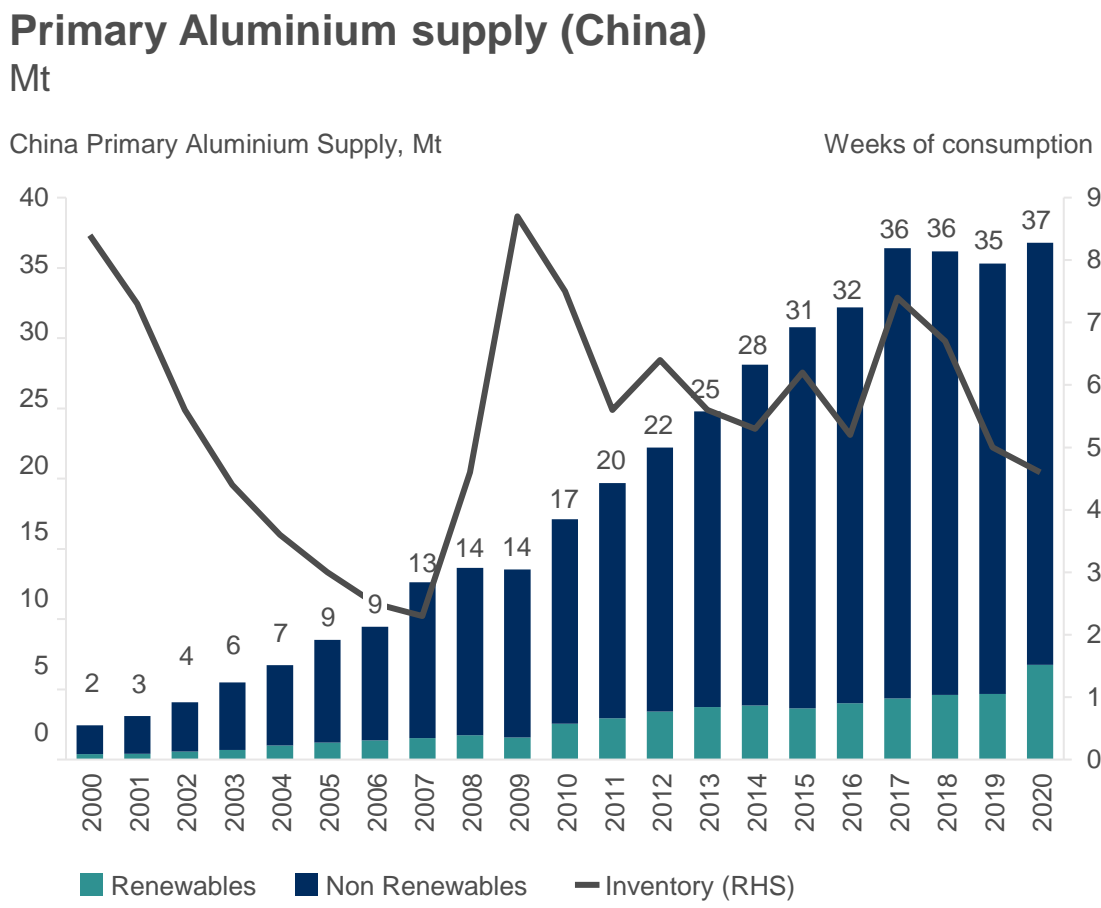
Further leveraging data analytics

Flex power – modulating smelter power  
demand

# Potential for positive structural change in the market from energy and smelting caps in China

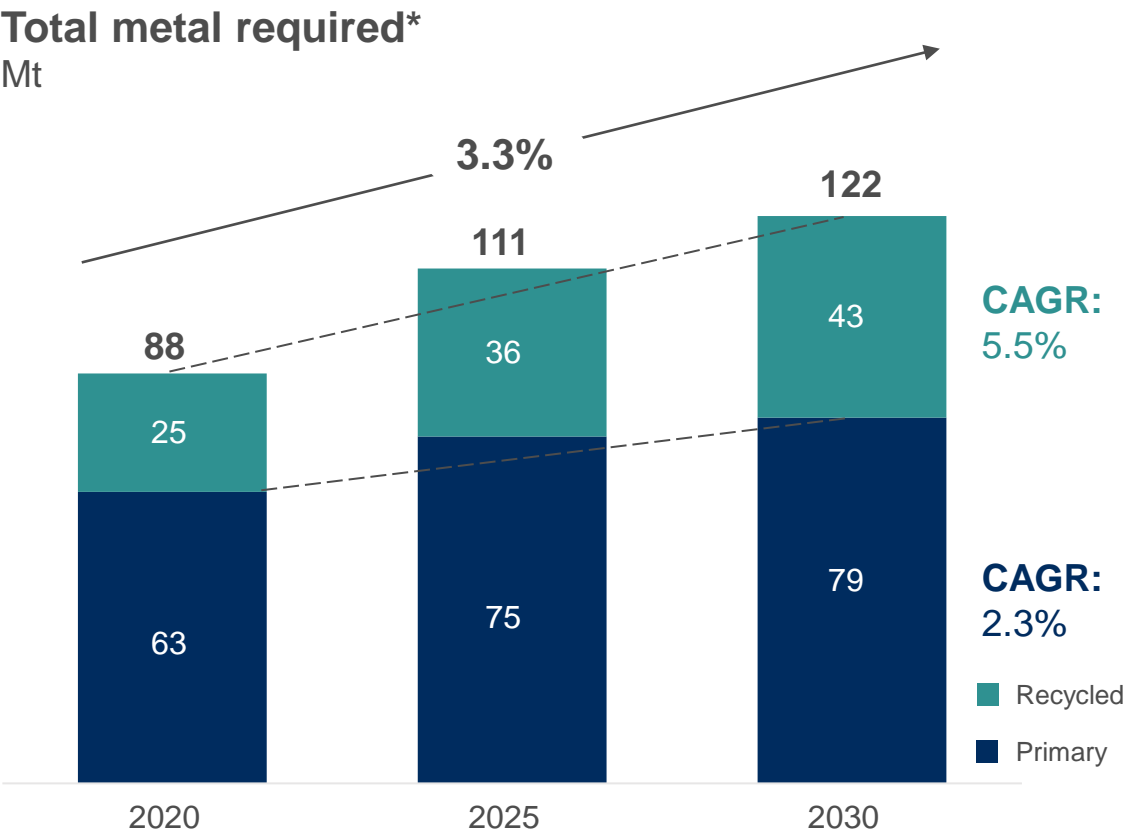


Sources: Rio Tinto Market Analysis, CRU, IAI.  
Renewables include hydropower and other renewables. Non-Renewables include coal, gas, and nuclear.



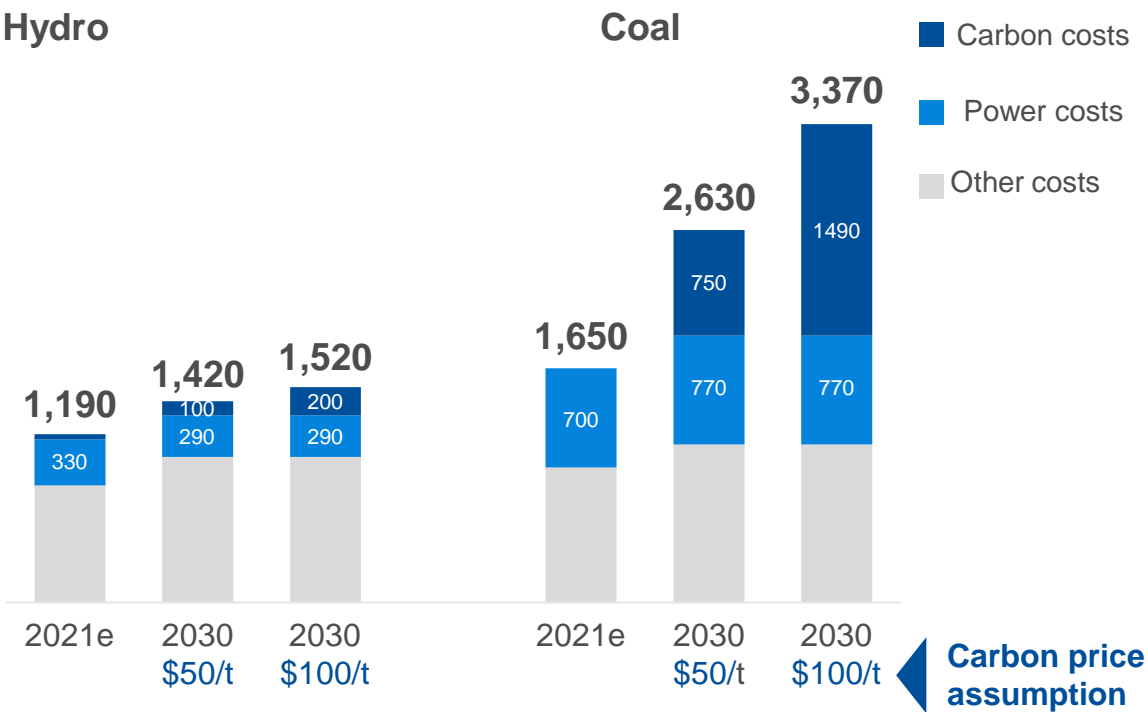
Sources: Rio Tinto Market Analysis, CRU, IAI

# New coal-powered smelting likely to be challenged



Sources: Rio Tinto Market Analysis, CRU \*Global semis production including melt loss

## Aluminium smelter all-in cash costs (Real US\$2021 per tonne)



All non-carbon costs are regional weighted averages from CRU, 2021 (long-run uses 2030 costs). Hydro costs are based on a weighted average of Canadian smelters. Coal costs are based on a weighted average of Chinese smelters from Shandong, Shanxi, Xinjiang and Inner Mongolia.



# Switching our Australian smelters to renewables

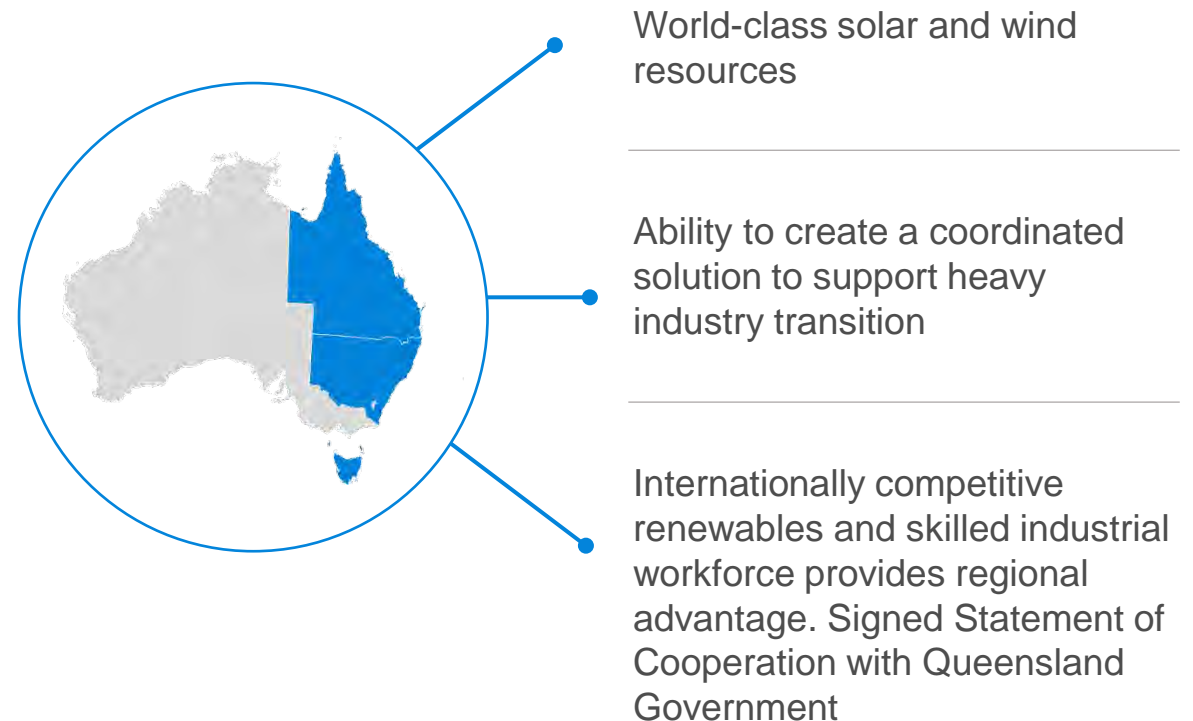
Smelting requires uninterrupted energy, increasing the technical difficulty of a transition without hydro-power...

Typical energy requirements for large-scale aluminium smelter



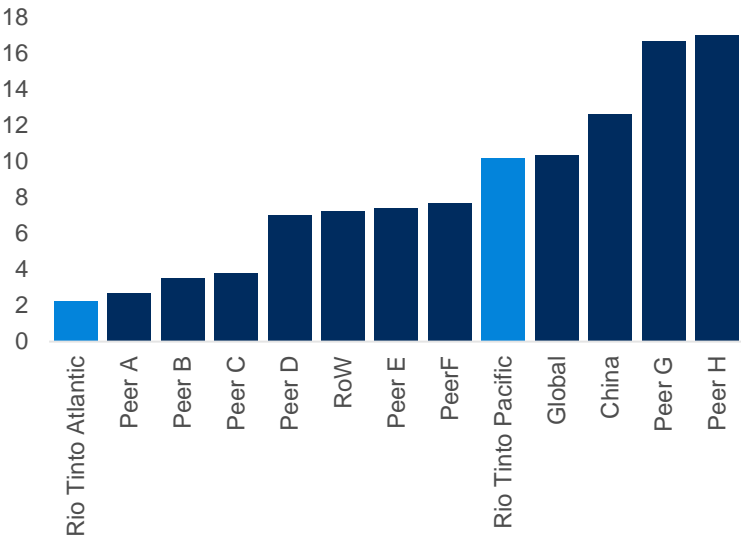
<sup>1</sup> Renewables requirements vary by region, mix of wind and solar and system design

...but regions with high-quality renewables and a coordinated approach can create value in the transition



# Decarbonising the aluminium supply chain

## Already lowest CO<sub>2</sub> emissions



2021 - Total emission tCO<sub>2</sub>/t

Producing the lowest CO<sub>2</sub> per tonne

Lowest footprint alumina refinery in the world

The graph is on an equity basis for Rio Tinto and all the other individual producers  
Source: CRU includes direct emissions (Scope 1) and indirect from electricity generation (Scope 2)

## Hydrogen calcination



Green hydrogen a substitute to natural gas

Potential to underpin 10% Rio Tinto group-wide decarbonisation

## Commercialising ELYSIS™



P1020 metal grade or better

On track for commercial scale technology in 2024

# Green materials need to be more than carbon free

## Carbon free

Zero carbon through the full lifecycle of production



**ELYSIS**

**Decarbonisation of  
Australian Smelters**

## Responsible

Produced with respect and care for host communities, partners, first nations and environment



## Traceable

Materials identifiable and traceable throughout lifecycle



## Circular

Recyclable material that retain its properties

**Recycling pilots  
in Quebec**

# Strengthening our social licence



## First nations and communities

Mutual Respect Agreement with Mashteuiatsh for 20 years

Joint business opportunities with First Nations in Quebec and British Columbia

Long-term relationships with Traditional Owners in Weipa and Gove



## Vaudreuil filter press

Reduce red mud waste volume

Eliminate slurry pond storage

Stable red mud disposal sites



## Turning waste into valuable resources

Treatment technology developed by RTA

Treat spent pot lining of the Canadian Al industry and reuse in the cement industry

Convert Anhydrate by-product into a fertiliser used in blueberry crops



# Opportunities to leverage our attractive foundation

Tier 1 bauxite resource with options to expand and improve cost position

---

Deep technical and processing expertise

---

Growing smelting capacity requires more green power

---

Working with customers to meet their specific needs

---

Improve capital intensity of future investments

---

ELYSIS™ commercial maturity in 2024

---

Recycling is an opportunity to enhance our profitability and relevance to customers



# Positioned to thrive in a low-carbon environment

## Strong foundation

- Integrated business with Tier 1 assets
- Advantageous renewables position
- Strong history with world-class technical expertise
- Operational stability

## Clear strategy

- Accelerate zero carbon, zero waste
- Empowering our people to be the Best Operator
- Optimise capital intensity
- Build strong connections with our partners and stakeholders
- Pursue options for increased profitability or growth

## Attractive future

- Potential structural change in the market
- ELYSIS™ – net zero aluminium smelting
- Switching Australian smelters to renewables
- Long-life Tier 1 resource in bauxite
- Long-life hydropower assets
- Well positioned for North American market

Best  
operator

Impeccable ESG  
credentials

Excel in  
development

Strengthening our  
social licence



# Peter Cunningham

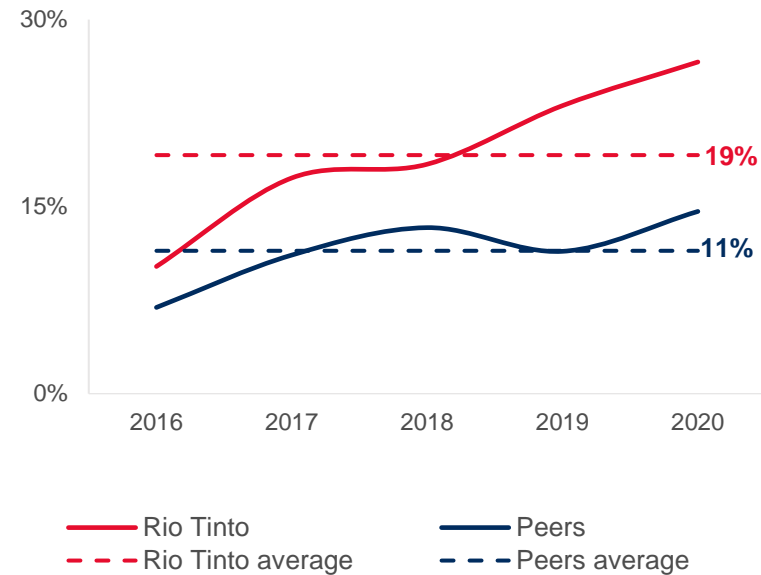
## Performance, investment and shareholder returns





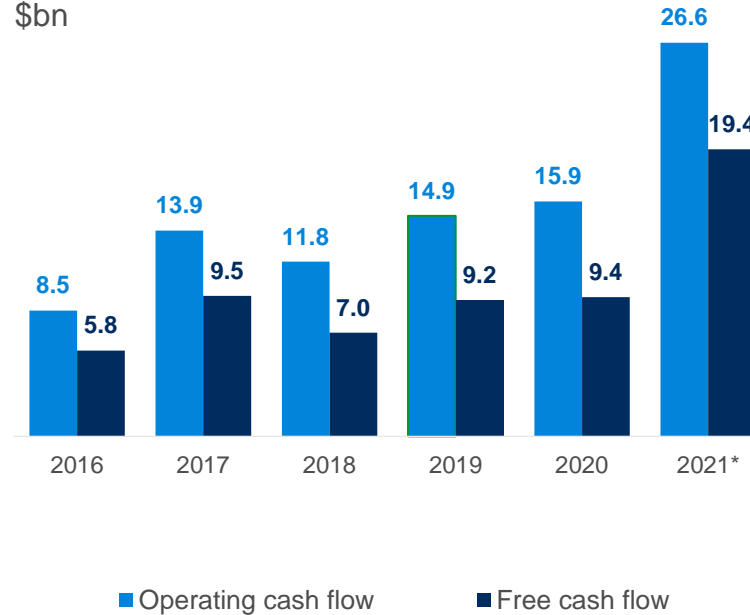
# We are in very robust financial health

## ROCE (post-tax) – outperforming our peers



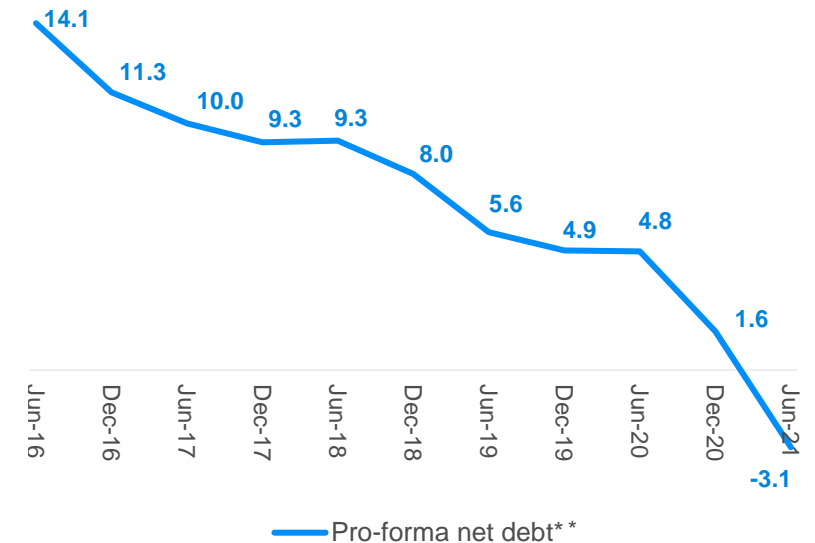
## Attractive cash flows

\$bn



## Strong balance sheet

Net debt (cash) \$bn



Investing consistently and with discipline through the cycle

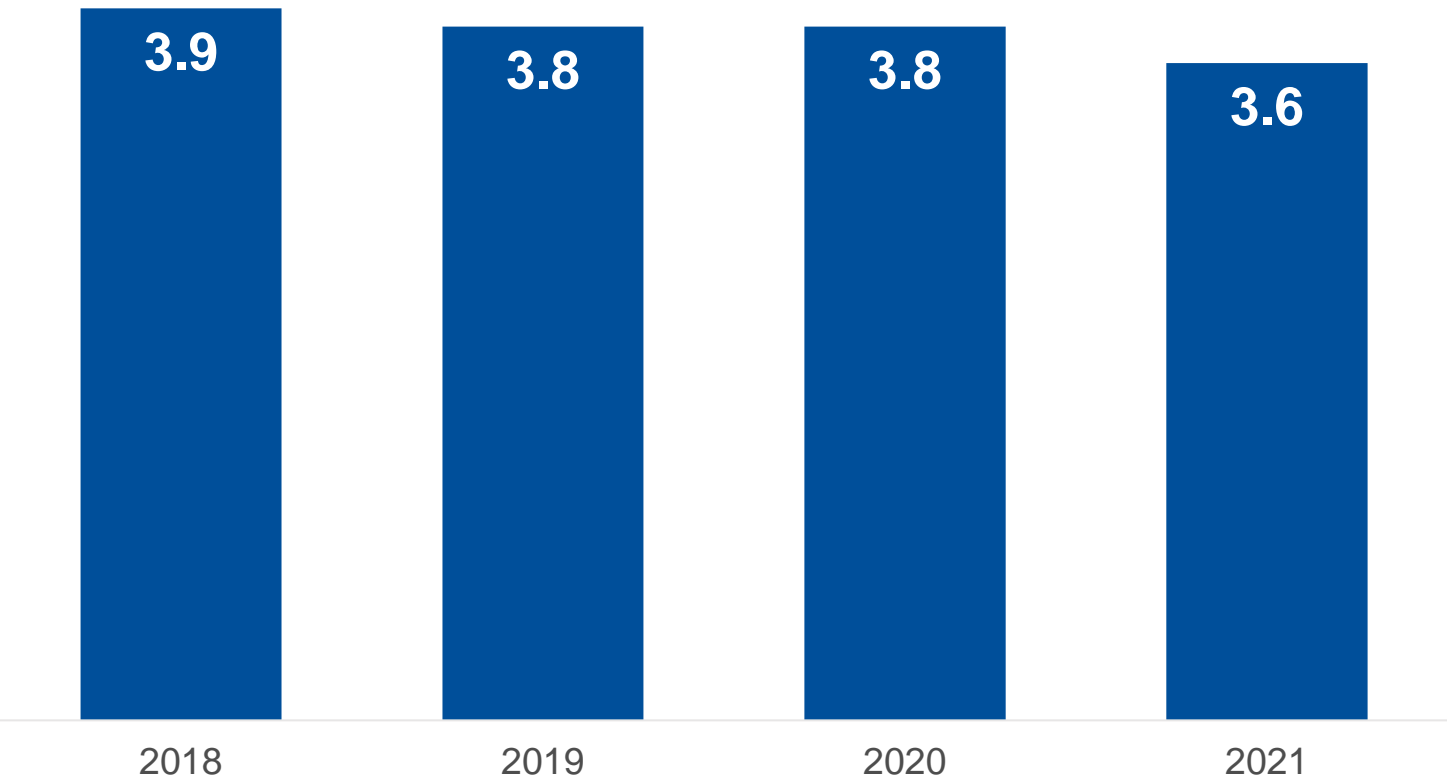
Maintain a strong balance sheet. Focus on “Single A” credit metrics

We can grow and invest in decarbonisation whilst continuing to pay attractive dividends to shareholders – in line with our policy

Peers: BHP, Vale, Anglo American and Glencore | \*Consensus (Visible Alpha, 15 October 2021) | \*\*Pro-forma net debt (cash) adjusts for the remainder of previously announced buy-backs from operations, lags in shareholder returns from disposal proceeds, Australian tax lag (December only) and disposal-related tax lag and the impact of IFRS 16 Leases accounting change for the prior periods. This lease accounting change is reflected in the June and December 2019 reported net debt

# Actions in place to improve our performance

Copper equivalent production for the nine months to September\*  
Million tonnes



- Operating performance not where we want it to be
- Rigorous performance management
- Deploying Rio Tinto Safe Production System
- Building capability across the organisation
- Increasing our capital allocation towards sustaining
- Focused on risk management

# Disciplined allocation of capital remains at our core

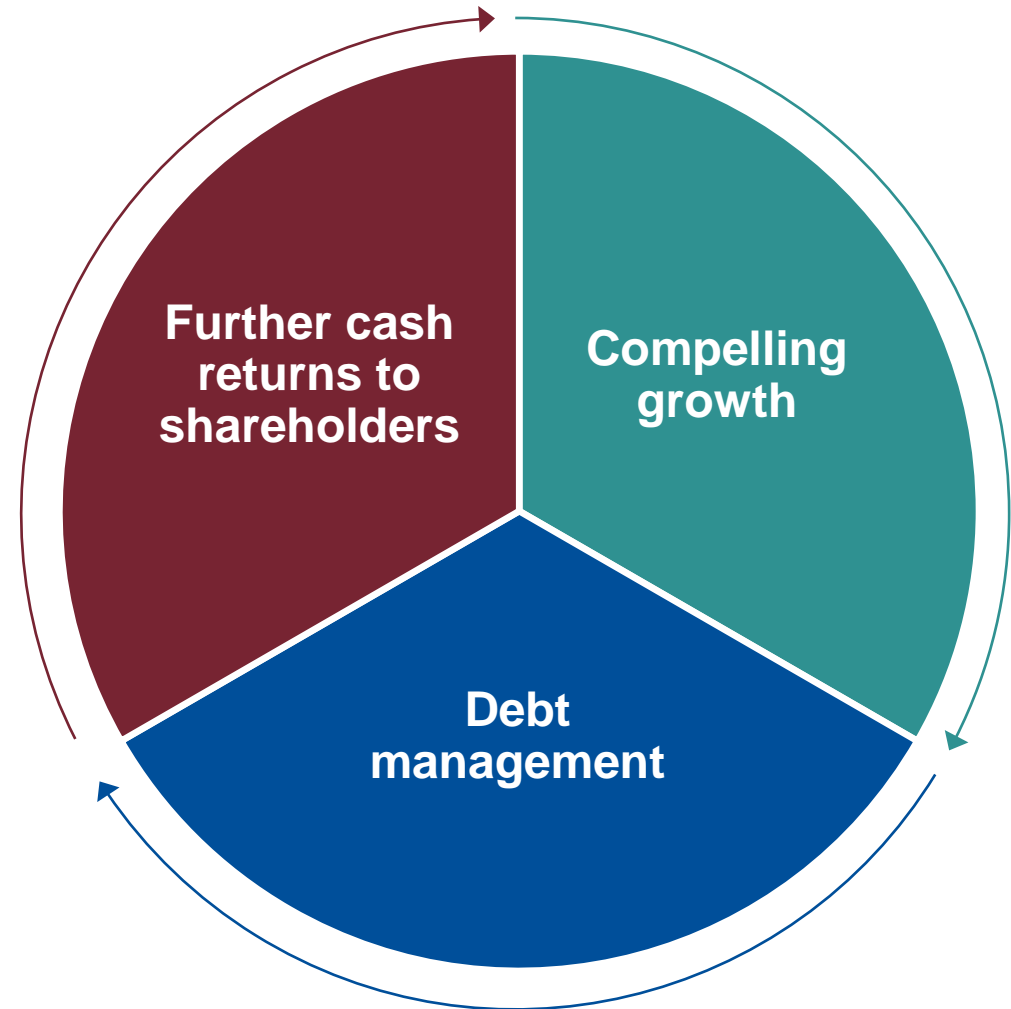
**1** | Essential capex  
*Integrity, Replacement, Decarbonisation*

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**2** | Ordinary dividends

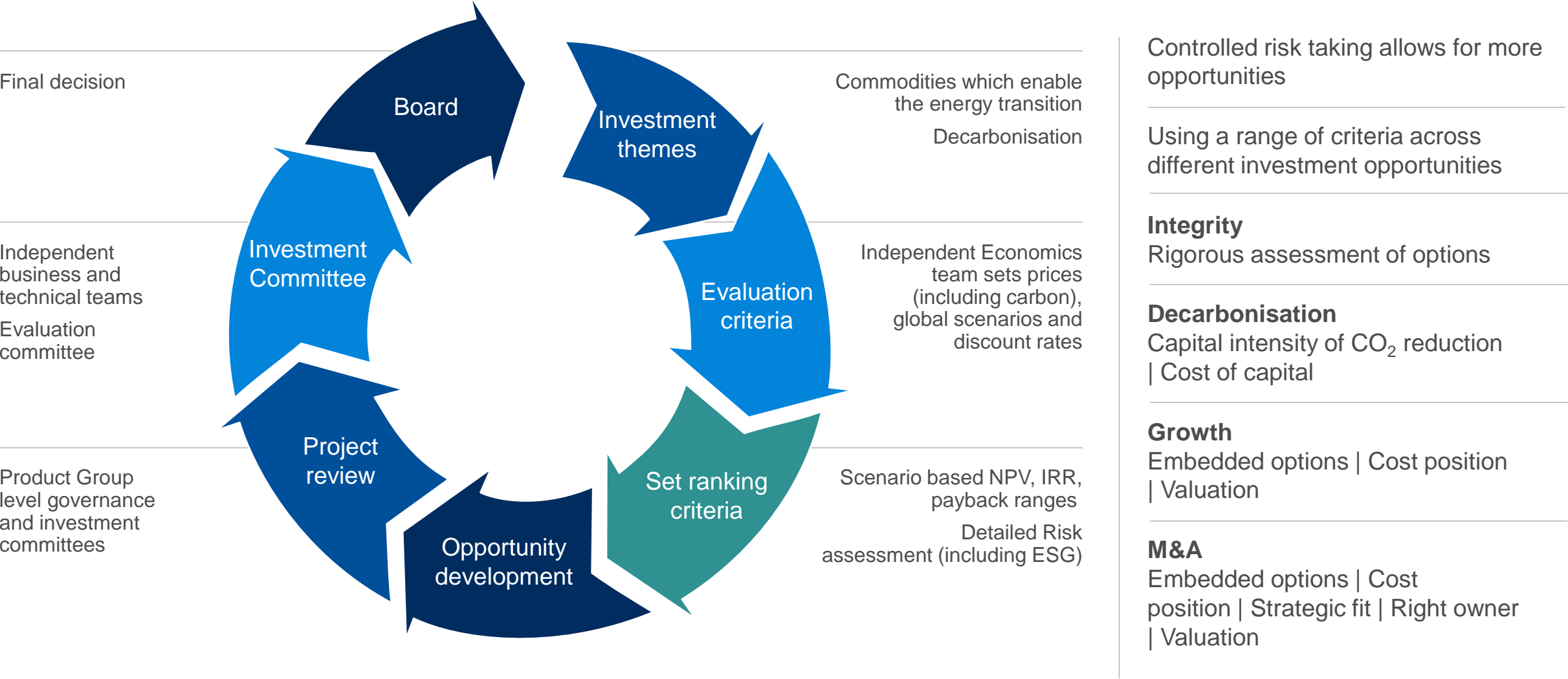
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**3** | Iterative cycle of



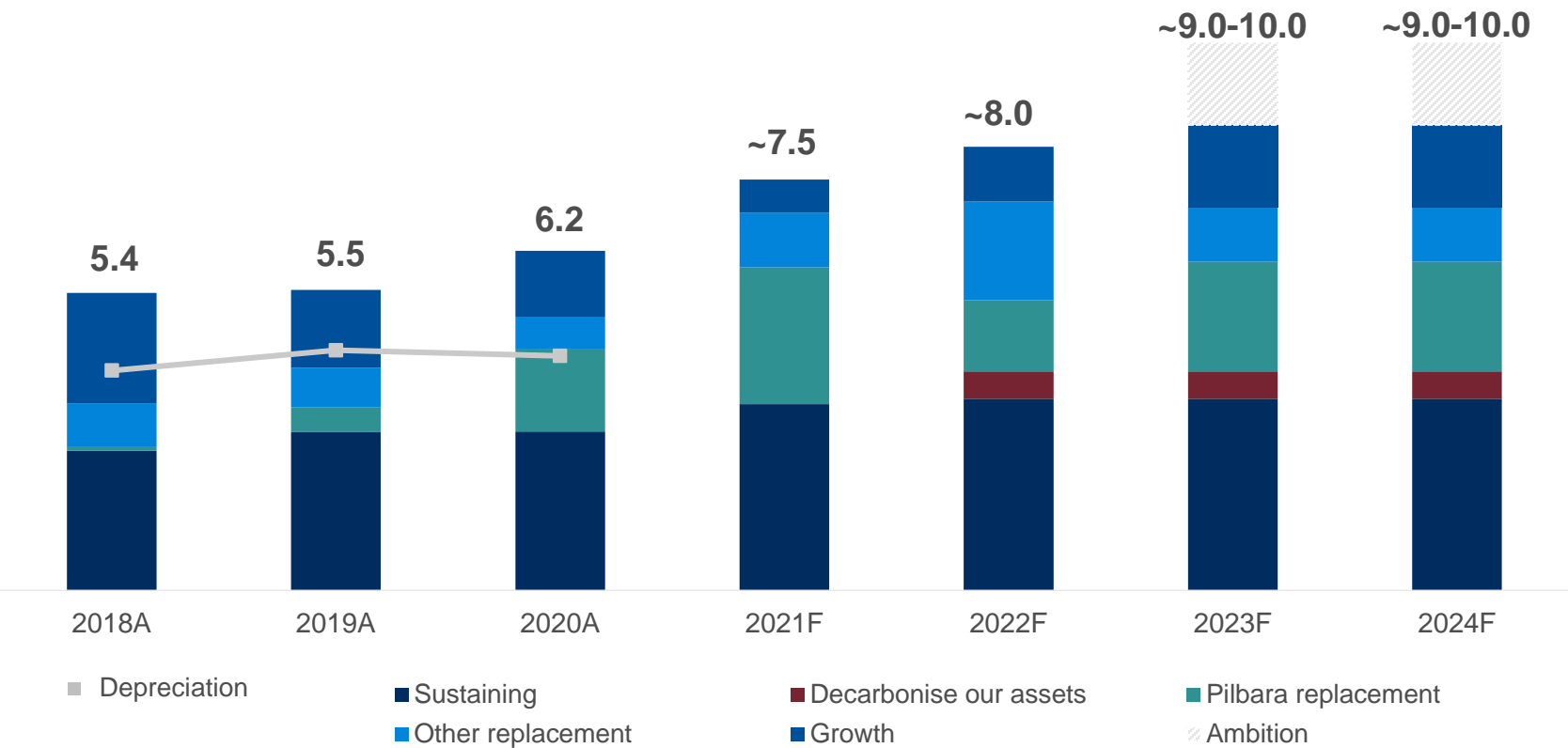


# Maintaining our rigorous approach to investments



# Reinvesting for growth and decarbonisation

Capital expenditure profile  
\$bn



Sustaining capital of ~\$3.5bn per year including Pilbara Iron Ore of ~\$1.5bn

~\$0.5bn per year to decarbonise our assets from 2022 to 2024

Total decarbonisation investment of ~\$7.5bn\* from 2022 to 2030, predominantly in second half of decade

Ambition to grow and decarbonise reflected in 2023-24 capex of up to ~\$9-10bn including up to \$3bn in growth spending, depending on opportunities

Replacement spending unchanged at \$2-3bn per year

\*Conceptual view of capital requirements at October 2021. Marginal Abatement Cost Curves (MACC) will be updated on an annual basis

# Broad-based funding model for decarbonisation

## Capital expenditure ~\$7.5bn over 2022-30

Pilbara energy system | ELYSIS™  
implementation capital | MACC projects

## Operating expenditure

New capability | Energy efficiency | R&D

## Long-term contracts

Pacific Aluminium smelters and refineries  
Kennecott

## Partnerships\*

Green steel: 25 existing R&D partnerships –  
more targeted

Examples provided under each category of funding is not an exhaustive list and options for decarbonisation will continue to evolve.

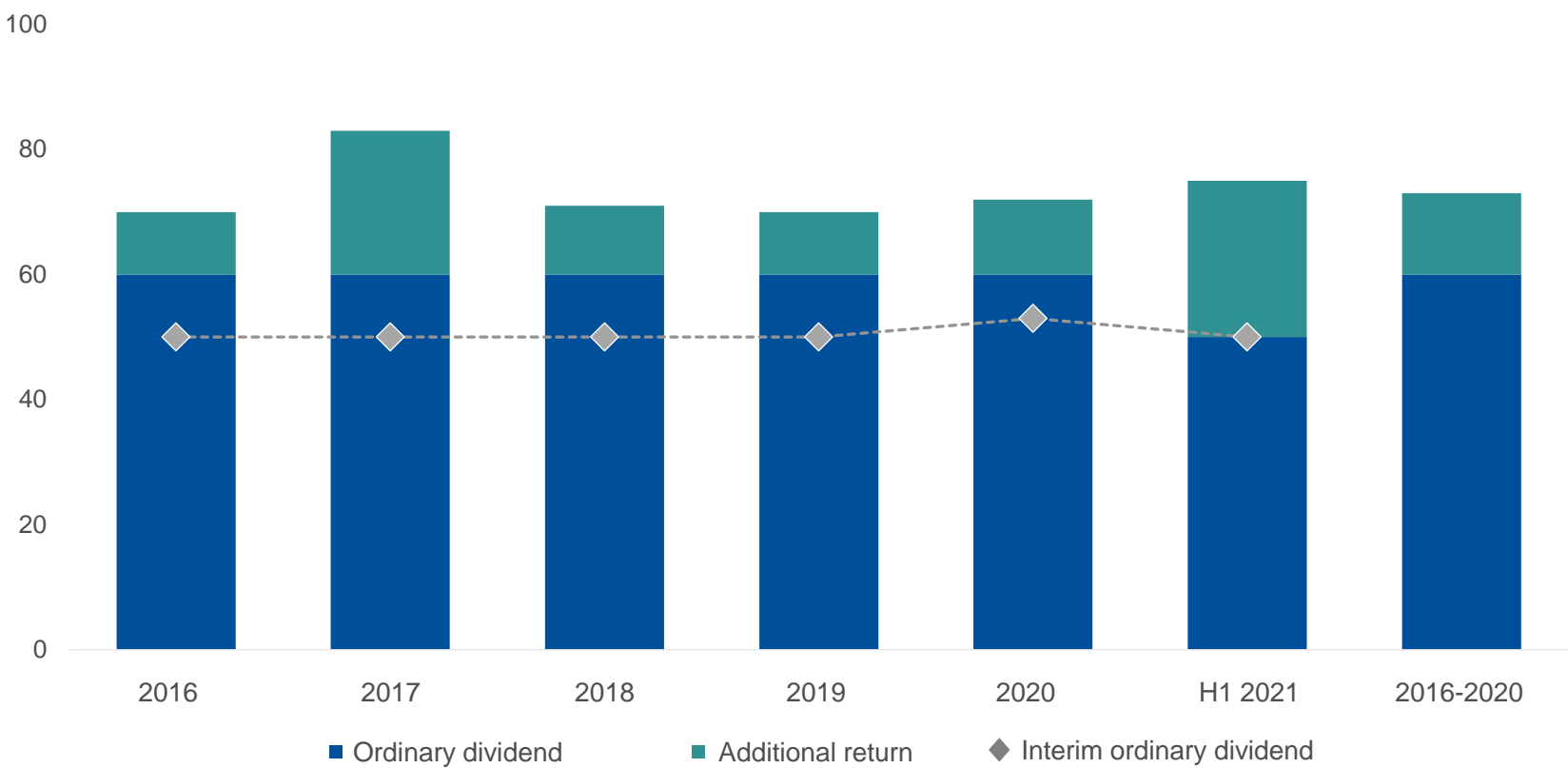
\*Funding model to be determined. MACC = Marginal Abatement Cost Curve





# Attractive dividends remain paramount

Shareholder returns of 40-60% of underlying earnings on average through the cycle  
Pay-out ratio (%)



Excluding divestment proceeds returned to shareholders

Consistent five-year record of shareholder returns

Pay-out ratio policy de-risks the company

60% average pay-out on **ordinary** dividend over past 5 years

73% average pay-out **in total**

Our financial strength allows us to simultaneously:

- **reinvest for growth**
- **accelerate our own decarbonisation**
- **continue to pay attractive dividends to shareholders in line with our policy**

# Strong foundation for growth, decarbonisation and shareholder returns

## Outstanding foundation

- No fossil fuel extraction
- Long-life assets producing vital commodities
- Resilient cash flows through the cycle
- Capital discipline
- Robust financial position
- Advantageous renewables position
- World-class pipeline of projects and exploration

## Clear strategy

- Accelerate our own decarbonisation
- Grow in materials enabling the global energy transition
- Develop products and services that help our customers to decarbonise

## Compelling investment proposition

- Deliver value-adding growth
- Continue to pay attractive dividends in line with our policy
- Attractive partner to our customers and host countries
- Reduce risks by accelerating our own low-carbon transition
- Maintain financial strength and resilience

Best  
operator

Impeccable ESG  
credentials

Excel  
in Development

Strengthening our  
social licence



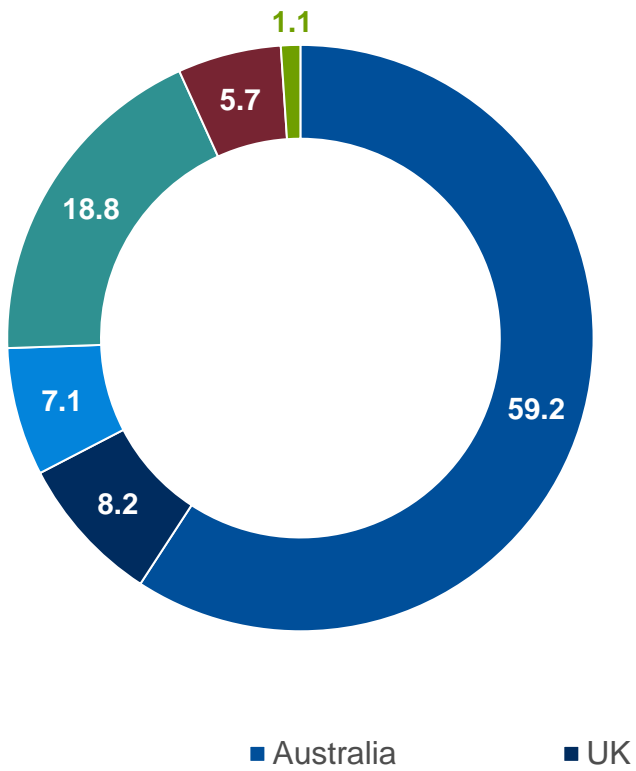
# Appendices



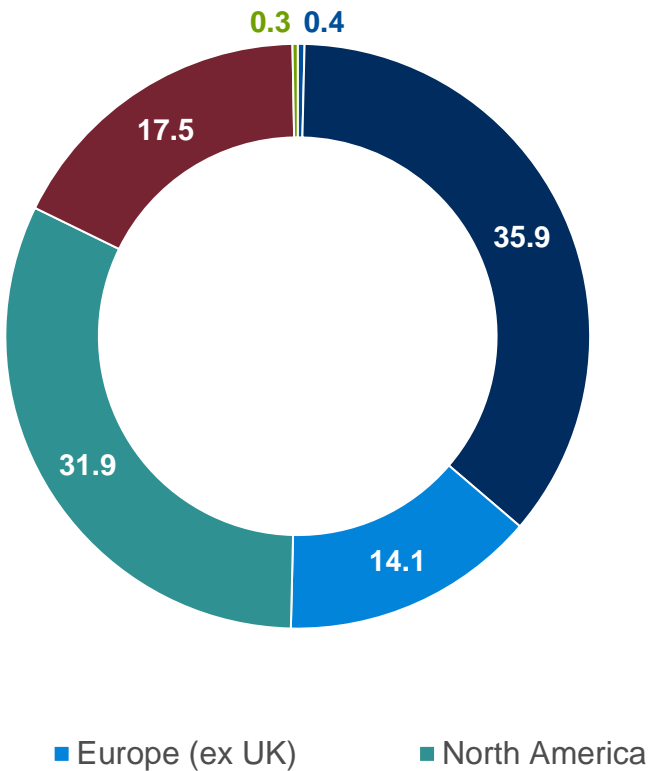


# Shareholder structure

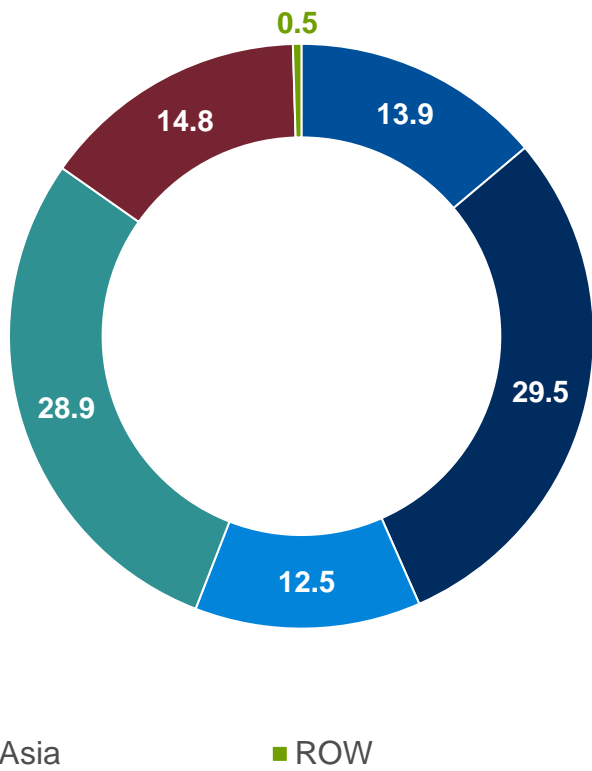
**23%** Rio Tinto Limited  
Shares outstanding: 0.371bn



**77%** Rio Tinto PLC  
Shares outstanding: 1.247bn



**100%** Rio Tinto DLC  
Shares outstanding: 1.619bn

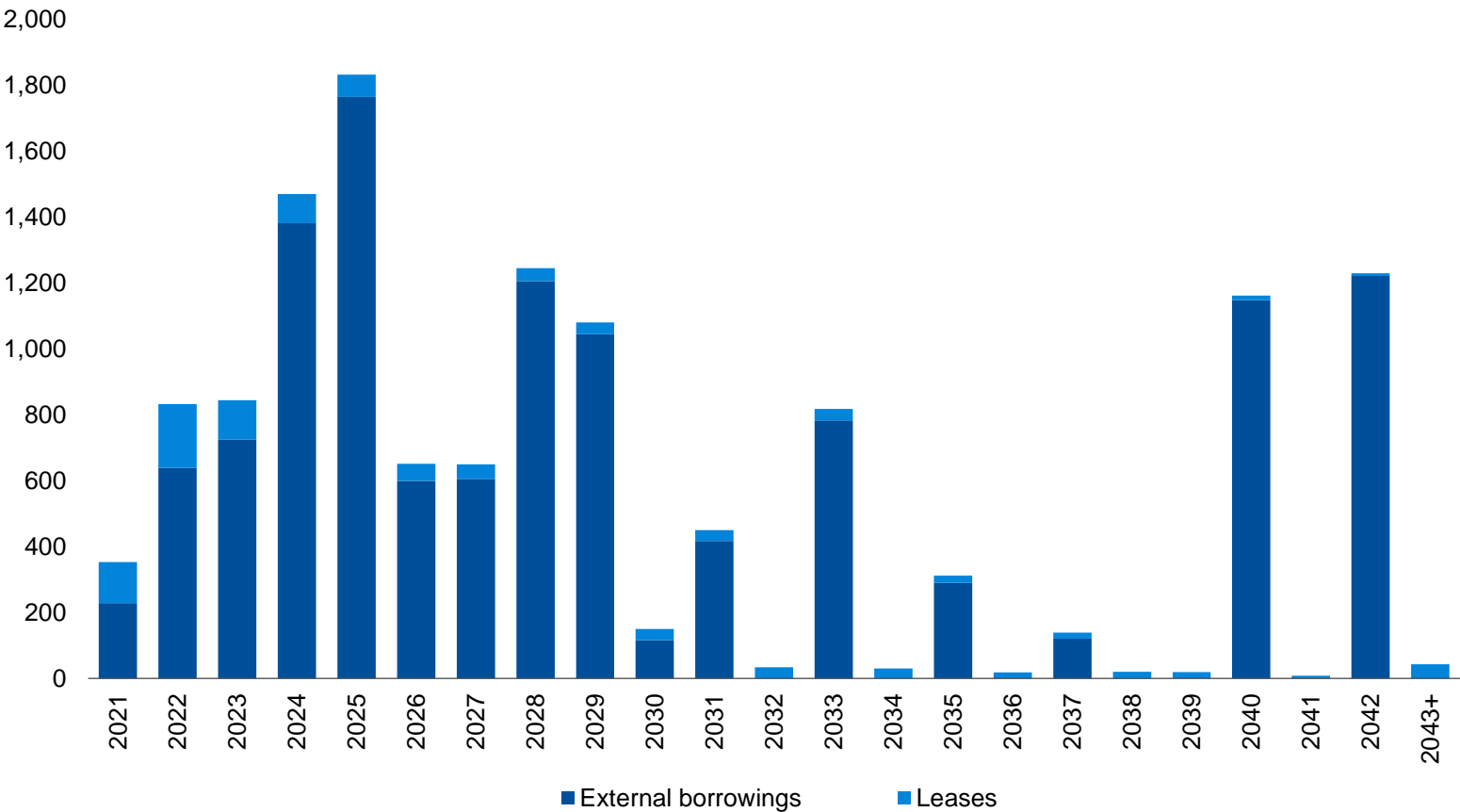


\*21 September 2021

# Debt maturity profile

30 June 2021 debt maturity profile\*

\$ million



\*Numbers based on June 2021 accounting value. The debt maturity profile shows \$1.1 billion of capitalised leases under IFRS 16.

Average outstanding debt maturity of corporate bonds at ~12 years (~ 9 years for Group debt)

No corporate bond maturities until 2024

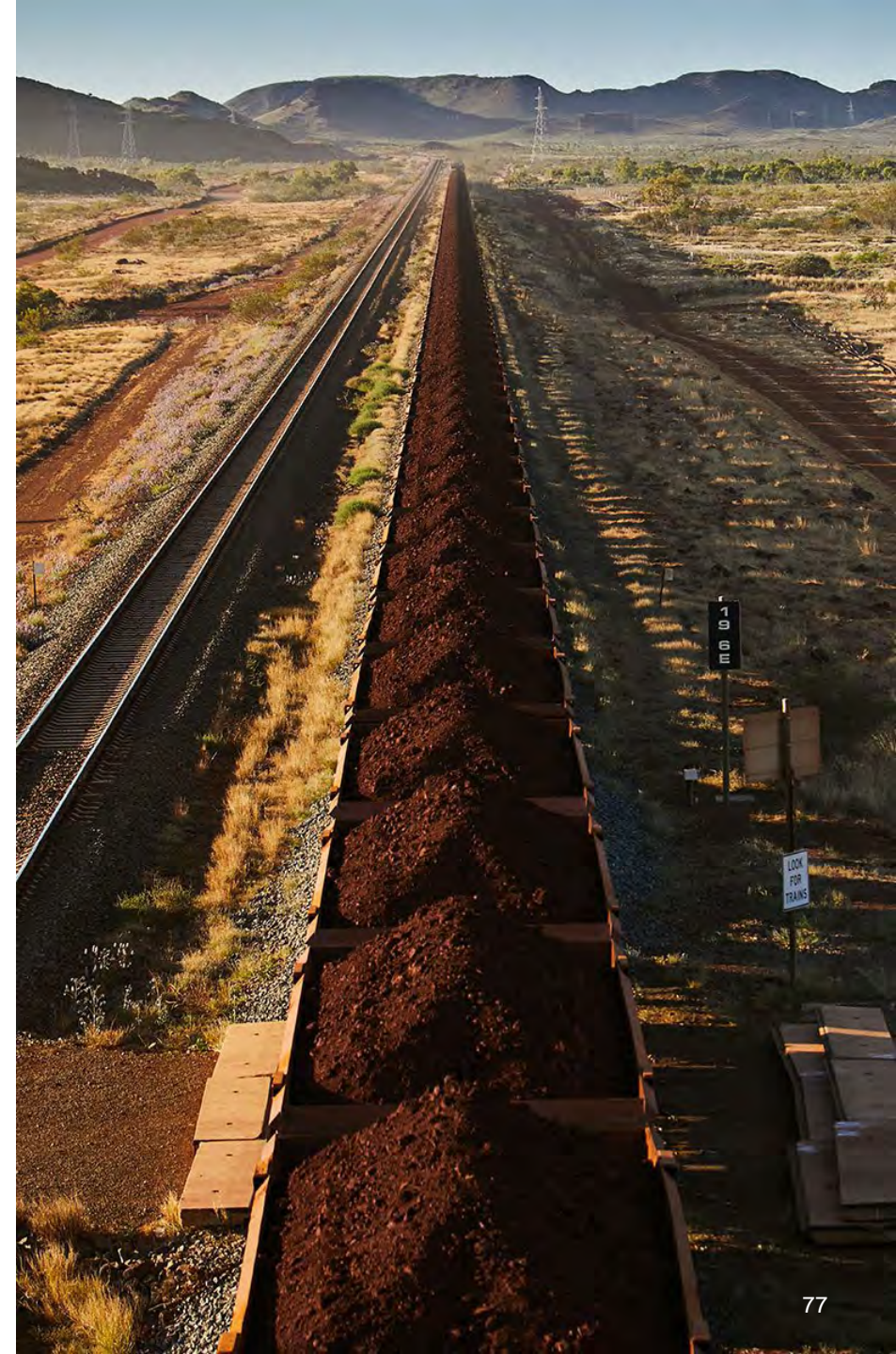
Liquidity remains strong under stress tests

\$7.5bn back-stop Revolving Credit Facility extended to November 2023 and remained undrawn throughout the pandemic

# Group level financial guidance

	FY2021	FY2022	FY2023	FY2024
<b>CAPEX</b>				
Total Group	~\$7.5bn	~\$8.0bn	~\$9.0 – 10.0bn	~\$9.0 – 10.0bn
Sustaining Capex Group	~\$3.5bn	~\$3.5bn	~\$3.5bn	~\$3.5bn
Pilbara Sustaining Capex	~\$1.5bn	~\$1.5bn	~\$1.5bn	~\$1.5bn
<ul style="list-style-type: none"> <li>• \$0.5bn per year to decarbonise our assets from 2022 to 2024</li> <li>• Total decarbonisation investment of ~\$7.5bn* from 2022 to 2030, predominantly in second half of decade</li> <li>• Ambition to grow and decarbonise reflected in 2023-24 capex of \$9-10bn including up to \$3bn in growth spending, depending on opportunities</li> <li>• Replacement spending \$2-3bn per year</li> </ul>				
<b>Effective tax rate</b>	30%			
<b>Returns</b>	Total returns of 40 – 60% of underlying earnings through the cycle			

\*Conceptual view of capital requirements at October 2021. Marginal Abatement Cost Curves (MACC) will be updated on an annual basis





# Product group level guidance

	2021 production guidance <sup>1</sup>	2021 costs
<b>Iron Ore Shipments</b>	320 – 325mt <sup>2</sup> (100% basis)	\$18.0-18.5/wmt (FOB), based on an Australian dollar exchange rate of \$0.75
<b>Copper</b>		
<i>Mined Copper</i>	~500kt <sup>3</sup>	C1 Copper unit costs 75-80 US c/lb
<i>Refined Copper</i>	190 – 210kt <sup>4</sup>	
<b>Aluminium</b>		
<i>Bauxite</i>	54 – 55mt <sup>6</sup>	Modelling guidance provided for Canadian smelters only (see slide 80)
<i>Alumina</i>	7.8 – 8.2mt	
<i>Aluminium</i>	3.1 – 3.3mt	
<b>Minerals</b>		
<i>TiO<sub>2</sub></i>	~1.0 <sup>7</sup>	
<i>IOC pellets and concentrate</i> <sup>8</sup>	9.5 – 10.5mt	
<i>B<sub>2</sub>O<sub>3</sub></i>	~0.5mt	
<i>Diamonds</i>	3.0 – 3.8m carats <sup>5</sup>	

<sup>1</sup> Rio Tinto share unless otherwise stated.

<sup>2</sup> Pilbara shipments guidance remains subject to COVID-19 disruptions including risks around mandatory vaccination for the resources industry in Western Australia as of 1 December, and risks around commissioning of new mines and management of cultural heritage.

<sup>3</sup> Remains subject to COVID-19 disruptions and risks around mine plan sequencing following geotechnical issues at Kennecott.

<sup>4</sup> Reduction reflects a Kennecott smelter incident in September resulting in force majeure on customer contracts.

<sup>5</sup> Diamonds 2021 guidance and actuals are for Diavik only for comparability, following Argyle closure in 2020. Unadjusted Diamonds production for 2020 was 14.7 million carats, including both Diavik and Argyle operations.

<sup>6</sup> Reduction reflects equipment reliability issues and operational instability at the Pacific mines. The focus in the fourth quarter is on the recovery of plant equipment availability and asset health to support 2022 performance.

<sup>7</sup> Full year titanium dioxide slag production guidance has been reinstated following stabilisation of the security situation at Richards Bay Minerals in South Africa and resumption of operations.

<sup>8</sup> Iron Ore Company of Canada.



# Modelling EBITDA

## Underlying EBITDA sensitivity

	Average published price/exchange rate for 2021 first half	US\$ million impact on full year 2021 underlying EBITDA of a 10% change in prices/exchange rates
Copper	413c/lb	478
Aluminium	\$2,245/t	784
Gold	\$1,805/oz	77
Iron ore realised price (62% Fe CFR freight-adjusted)	\$168.4/dmt	4,180
A\$	0.77US\$	665
C\$	0.80US\$	249
Oil (Brent)	\$65/bbl	112

Note: The sensitivities give the estimated effect on underlying EBITDA assuming that each individual price or exchange rate moved in isolation. The relationship between currencies and commodity prices is a complex one and movements in exchange rates can affect movements in commodity prices and vice versa. The exchange rate sensitivities include the effect on operating costs but exclude the effect of revaluation of foreign currency working capital.

# Modelling aluminium costs

## Canadian\* smelting unit cash\*\* cost sensitivity

(\$/t) Impact a \$100/t change in each of the input costs below will have on our H1 2021 Canadian smelting unit cash cost of \$1,262/t

Alumina (FOB)	\$191
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Green petroleum coke (FOB)	\$27
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Calcined petroleum coke (FOB)	\$36
-------------------------------	------

Coal tar pitch (FOB)	\$8
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\* Canadian smelters include all fully-owned smelters in Canada (Alma, AP60, Arvida, Grande-Baie, Kitimat, and Laterrière), as well as Rio Tinto's share of the Becancour and Alouette smelters

\*\* The smelting unit cash costs refer to all costs which have been incurred before casting, excluding depreciation but including corporate allocations and with alumina at market price, to produce one metric tonne of primary aluminium.



# Jadar project – 100% owned and managed

## Mining and processing

Underground mine using bench stoping  
Co-located beneficiation and chemical processing plant  
Primary products: lithium carbonate, boric acid  
Overall product recoveries: ~80%

## Capex

Capital: \$2.4bn (nominal)  
Construction phase: 2021-2026 (peak 2022-2025)  
LOM sustaining capital: \$30m per year, average (real)

## Production profile<sup>1</sup>

First saleable production: 2026  
Full ramp-up: 2029  
Annual target volumes: up to 58,000 tonnes of battery-grade lithium carbonate<sup>2</sup>, 160,000 tonnes of boric acid (B<sub>2</sub>O<sub>3</sub> units) and 255,000 tonnes of sodium sulphate<sup>3</sup> per annum

## Serbian tax and royalties

Mining royalty: 5% (levied on gross sales minus allowable deductions)  
Corporate income tax rate: 15%  
Withholding tax rate: 5%

## 40 year mine life

Ore reserve:  
16.6Mt @ 1.8% Li<sub>2</sub>O and 13.4% B<sub>2</sub>O<sub>3</sub>  
Mineral resource:  
139.2Mt @ 1.8% Li<sub>2</sub>O and 14.7% B<sub>2</sub>O<sub>3</sub>

## First quartile costs

**Dry stacked  
tailings solution**

**Electric haul trucks**

**70% water recycling**

**~2,100 direct jobs  
during construction**

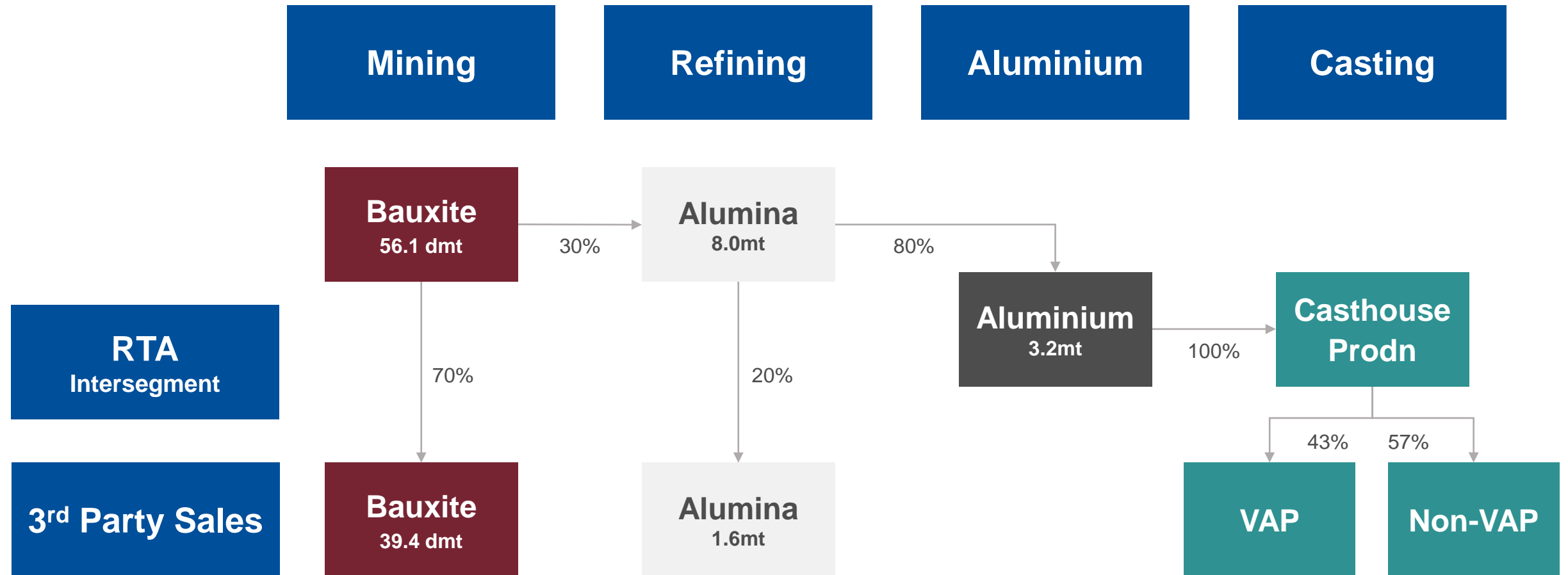
**>1,000 ongoing jobs  
when operational**

<sup>1</sup> Continuing to work closely with stakeholders in Serbia. Subject to award of final permits and approvals.

<sup>2</sup> These production targets were previously reported in a release to the Australian Securities Exchange (ASX) dated 10 December 2020, "Rio Tinto declares maiden Ore Reserve at Jadar" (for battery-grade lithium carbonate it was 55,000 tonnes). All material assumptions underpinning the production targets continue to apply and have not materially changed.

<sup>3</sup> These resources and reserves were previously reported in the Rio Tinto Annual Report 2020. The material assumptions on which they were based have not materially changed.

# RTA Value Chain – 2020 Actuals



# Common acronyms

**T** = Tonne

**Mt** = Million tonnes

**Gt** = Giga tonnes

**tCO<sub>2</sub>** = Tonne of carbon dioxide

**tCO<sub>2</sub>e** = Tonne of carbon dioxide equivalent

**P.a** = Per annum

**Mtpa** = Million tonnes per annum

**CO<sub>2</sub>** = Carbon dioxide

**GHG** = Greenhouse gas

**Mwh** = Megawatt hour

**MW** = Megawatt

**GW** = Gigawatt

**ROCE** = Return on capital employed

**EBITDA** = Earnings Before Interest, Taxes, Depreciation and Amortisation

**CAGR** = Compound annual growth rate

**USD** = United States dollar

**Bn** = Billion

**NPV** = Net present value

**ESG** = Environmental, Social, and Governance

**IRR** = Internal rate of return

**R&D** = Research and development

**VAP** = Value-added product





# Increasing transparency for our stakeholders

## A commitment to reporting on:

**Ongoing progress** against our own commitments and internal work-streams external obligations and recommendations.

The **enhanced governance** arrangements in place to oversee the company's progress against these actions.

How Traditional Owners' views are being sought and considered in shaping these commitments and **Traditional Owners' perspectives** on how successfully these commitments are being met.

How the company is working to **advocate for enhanced sector-wide cultural heritage management** and how this is consistent with our internal standards.





# Working to improve in multiple areas

1	Remedying and rebuilding our relationship with the PKKP people
2	Partnering with Pilbara Traditional Owners in modernising and improving agreements
3	Establishing the new Communities and Social Performance model
4	Building local capability and capacity to support the site General Manager
5	Improving our governance, planning and systems where it relates to communities
6	Reducing barriers to, and increasing, Indigenous employment
7	Increasing Indigenous leadership and developing cultural competency within Rio Tinto
8	Establishing a process to redefine and improve cultural heritage management standards
9	Establishing an Australian Advisory Group
10	Elevating external consultation
11	Elevating employee engagement



# Establishing an Australian Advisory Group

(previously called Indigenous Advisory Group)

## Specific actions

We are establishing an Australian Advisory Group (AAG) to help shape, influence and support our approach to issues that are important to Indigenous peoples, the Australian community and our business.

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The AAG aims to:

- Introduce more **diversity and breadth of views**
- Increase the **awareness of leaders** within Rio Tinto to make fully informed decisions
- **Act as a sounding board** for Rio Tinto on knowledge, practices, and perspectives with a particular focus on Indigenous issues
- Provide **coaching, mentoring** and advice to senior leadership
- Identify ways to **improve the culture** within Rio Tinto



# Reducing barriers to and increasing Indigenous employment

## Specific actions

### We have:

Committed to a **US\$50 million investment** to retain, attract and grow Indigenous professionals and leaders in our business

---

**Increased Indigenous leaders** from 6 to 19 across Australia

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**Increased our 2021 target** to recruit 50 Indigenous leaders

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Launched a leadership development programme in Australia, with over **200 Indigenous employees** enrolled

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Implemented a **two-way Indigenous mentoring** programme

---

Launched an Australia-wide **Indigenous employee networking programme**

---

Awarded **Indigenous university scholarships** to students in the fields of environmental science and engineering

# Establishing the new Communities and Social Performance model

## Specific actions

We have:

**Increased number of CSP professionals** from 250 to 300, working in 65 sites and 35 countries

---

**Restructured reporting lines** so field based CSP professionals report to their line managers

---

**Established a central CSP Area of Expertise** with technical subject matter experts

---

**Established a senior leadership team** comprising CSP leaders from all product groups, exploration, projects, closure and Indigenous Affairs

# Partnering with Pilbara Traditional Owners in modernising and improving agreements

## Specific actions

Preliminary discussions with **ten Pilbara Traditional Owner groups** in relation to agreement modernisation

---

Identified **key principles** for consideration in modernising agreements

---

Signed **engagement protocols** that provide a scope and framework of the modernisation work with four of the Traditional Owner groups

---

Continuing to work with Traditional Owners to **enhance benefits** that flow to communities





# Building local capability and capacity to support the site General Manager

## Specific actions

**Iron Ore Chief Executive** has the overall accountability for Traditional Owner relationships and heritage matters for the product group

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**Site General Managers** have direct responsibility for TO relationships

---

**Traditional Owner Engagement Leads** support the mine General Managers by maintaining the day-to-day engagement with the Traditional Owner groups

---

**Increased capacity across our CSP function** as well as **upgrading CSP systems** to provide improved, linked-up decision-making

---

A **Traditional Owner Partnerships Committee** has been created to drive improvements and share learnings



# Establishing a process to redefine and improve cultural heritage management standards

## Specific actions

We are increasing both the capabilities and resources of the internal Cultural Heritage teams to increase understanding and delivery of cultural heritage performance.

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Rio Tinto Iron Ore has almost **doubled the size of its cultural heritage** team to more than 60 people.

---

We are progressing the **Integrated Heritage Management Process** (IHMP) to ensure we do not impact sites of exceptional cultural significance within our existing mine plans. To date, we have:

- Reviewed **2205 heritage sites**
  - Reviewed **all sites for 2021** and **95% for 2022**
  - Removed approx. **54 million tonnes** of Iron Ore from our reserves as a precautionary measure
  - Set up **protective buffer zones** for all sites of high cultural significance
-