

# Vale Day

*New York 2022*



# Disclaimer

“This presentation may include statements that present Vale's expectations about future events or results. All statements, when based upon expectations about the future involve various risks and uncertainties. Vale cannot guarantee that such statements will prove correct. These risks and uncertainties include factors related to the following: (a) the countries where we operate, especially Brazil and Canada; (b) the global economy; (c) the capital markets; (d) the mining and metals prices and their dependence on global industrial production, which is cyclical by nature; (e) global competition in the markets in which Vale operates; and (f) the estimation of mineral resources and reserves, the exploration of mineral reserves and resources and the development of mining facilities, our ability to obtain or renew licenses, the depletion and exhaustion of mines and mineral reserves and resources. To obtain further information on factors that may lead to results different from those forecast by Vale, please consult the reports Vale files with the U.S. Securities and Exchange Commission (SEC), the Brazilian Comissão de Valores Mobiliários (CVM) and in particular the factors discussed under “Forward-Looking Statements” and “Risk Factors” in Vale’s annual report on Form 20-F.



# *Opening remarks*

Eduardo Bartolomeo, CEO





# Strategic roadmap 2019–2022

## De-risking



- Brumadinho
- Mariana
- Dam safety
- Production resumption

## Reshaping



- Focus on core business
- Elimination of cash drains
- Accretive growth opportunities
- Cost efficiency

## Re-rating



- Benchmark in safety
- Best-in-class reliable operator
- Talent-driven organization
- Leader in low carbon mining and ESG practices
- Reference in creating and sharing value

**Sound cash flow generation**

**Discipline in capital allocation**



# We have materially de-risked and reshaped Vale

<b>De-risking</b>	<b>Brumadinho</b>		<ul style="list-style-type: none"> <li>• Agreement with legal certainty</li> <li>• ~58% of Integral Reparation performed</li> </ul>
	<b>Mariana</b>		<ul style="list-style-type: none"> <li>• 346 housing solutions delivered by nov/2022</li> <li>• R\$ 24.7 bn disbursed in reparations initiatives since 2015</li> </ul>
	<b>Dams' safety</b>		<ul style="list-style-type: none"> <li>• 40% upstream dams in Brazil eliminated by 2022</li> <li>• Expects no dams at critical level by 2025</li> </ul>
	<b>Capacity resumption</b>		<ul style="list-style-type: none"> <li>• Delivering new assets (e.g., four filtration plants, Maravilhas III dam)</li> <li>• Creating resilience to improve flexibility</li> </ul>
<b>Reshaping</b>	<b>Portfolio simplification</b>		<ul style="list-style-type: none"> <li>• 9 business sold in 5 different countries since 2019</li> <li>• Up to US\$ 2 bn per year of cash drains eliminated</li> </ul>
	<b>Cost efficiency</b>		<ul style="list-style-type: none"> <li>• Flat fixed costs in 2022 and 2023 (vs. 2021)</li> <li>• Gradual C1 reduction as volumes increase</li> </ul>
<b>Re-rating</b>	<b>ESG</b>		<ul style="list-style-type: none"> <li>• 2022 ESG rating upgrade (MSCI and Moody's)</li> <li>• Scope 1, 2 and 3 emissions reduction targets defined</li> <li>• Green products (e.g. Green briquettes, certified Nickel)</li> </ul>
<b>Capital allocation</b>	<b>Return to shareholders</b>		<ul style="list-style-type: none"> <li>• Solid dividend policy (US\$ 6.6 bn paid 2022 YTD)</li> <li>• Bold buyback programs (~20% of total outstanding shares)</li> </ul>



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<b>Energy</b>		<ul style="list-style-type: none"> <li>• ...</li> <li>• ...</li> </ul>
<b>Environment</b>		<ul style="list-style-type: none"> <li>• ...</li> <li>• ...</li> </ul>
<b>People</b>		<ul style="list-style-type: none"> <li>• ...</li> <li>• ...</li> </ul>
<b>Community</b>		<ul style="list-style-type: none"> <li>• ...</li> <li>• ...</li> </ul>



# We have materially de-risked and reshaped Vale

<p>De-risking</p>	<ul style="list-style-type: none"> <li>• Reduced commodity price risk</li> <li>• Reduced foreign exchange risk</li> <li>• Reduced operational risk</li> <li>• Reduced environmental and social risk</li> </ul>
<p><b>Reshaping</b></p>	<p><b>Portfolio simplification</b></p> <ul style="list-style-type: none"> <li>• 9 business sold in 5 different countries since 2019</li> <li>• Up to US\$ 2 bn per year of cash drains eliminated</li> </ul> <p><b>Cost efficiency</b></p> <ul style="list-style-type: none"> <li>• Flat fixed costs in 2022 and 2023 (vs. 2021)</li> <li>• Gradual C1 reduction as volumes increase</li> </ul>
<p>Financing</p>	<ul style="list-style-type: none"> <li>• Reduced debt</li> <li>• Improved liquidity</li> </ul>
<p>Operational excellence</p>	<ul style="list-style-type: none"> <li>• Increased production</li> <li>• Reduced costs</li> </ul>



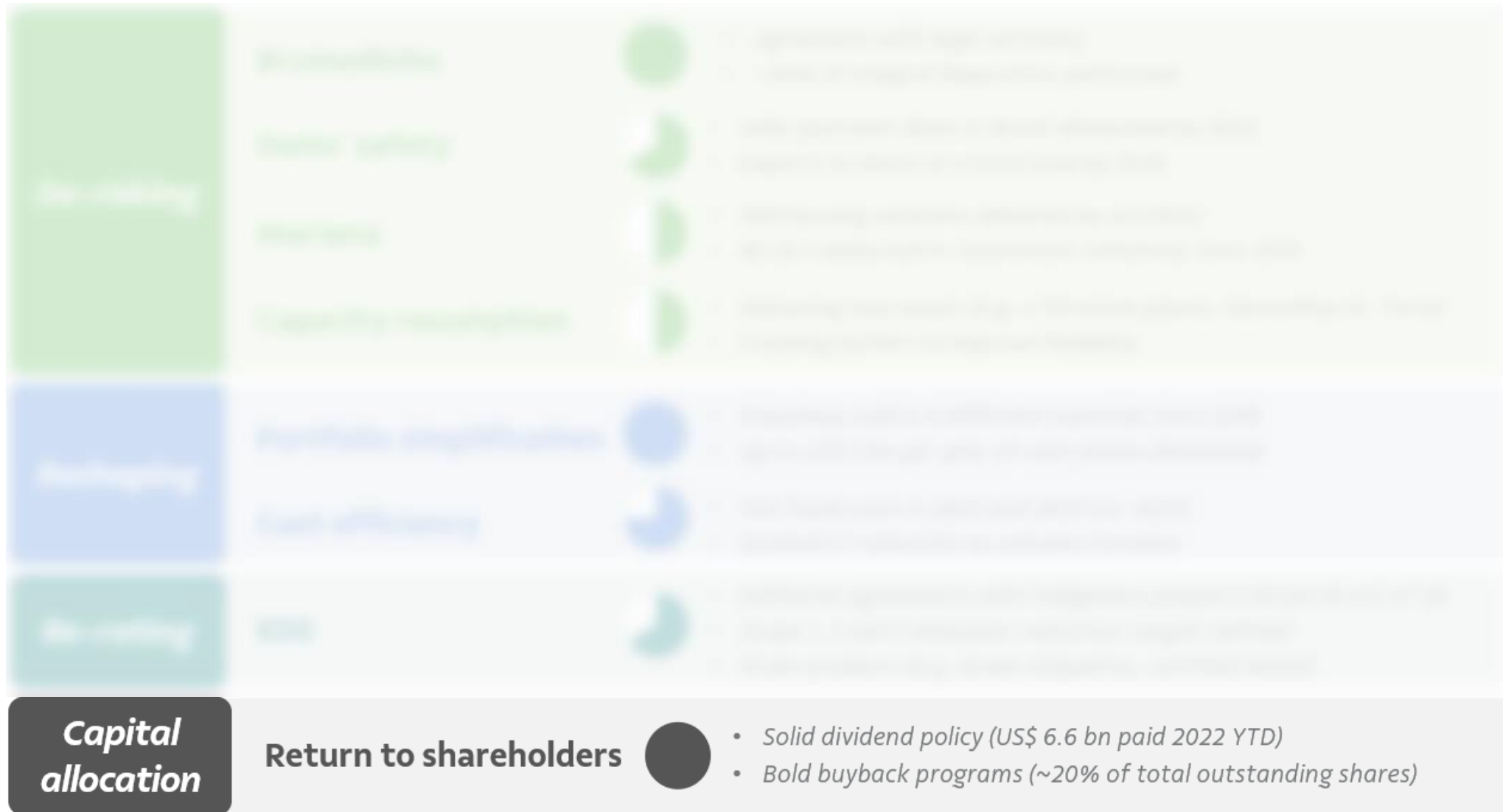
# We have materially de-risked and reshaped Vale

<p>Environment</p>	<p>Climate Change</p> <p>Water</p> <p>Waste</p> <p>Energy</p>	<ul style="list-style-type: none"> <li>Climate Change</li> <li>Water</li> <li>Waste</li> <li>Energy</li> </ul>
<p>People</p>	<p>Human Resources</p> <p>Health &amp; Safety</p>	<ul style="list-style-type: none"> <li>Human Resources</li> <li>Health &amp; Safety</li> </ul>
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# We have materially de-risked and reshaped Vale





# Strengthening our strategy to the Vale of the future

## promote *sustainable mining*

- *People-driven*
- *Reliable operator*
- *Benchmark in safety and dam management*
- *Shared value*
- *Nature positive*

## foster *low carbon solutions*

- *Focused on high quality products and resources*
- *Iron Solutions*
- *Energy transition materials*
- *Circular mining*

## stay *disciplined*

- *Efficient capital allocation*
- *Attractive cash return to shareholders*
- *Strong balance sheet*
- *Cost and capex efficiency*

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***We exist to improve life and transform the future. Together.***

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# *Sustainable Mining*

Eduardo Bartolomeo, CEO





**We are building**

**a better Vale**



# Brumadinho: 58% of the agreement is performed

## Main progress:



**58%** of total payments as per the Integral reparation agreement<sup>1</sup>



**+13,500** people with individual indemnification agreements<sup>2</sup>



**R\$ 3.2 bn** in individual indemnification signed



Extra-legal claims closed in January 2022 for most territories<sup>3</sup>

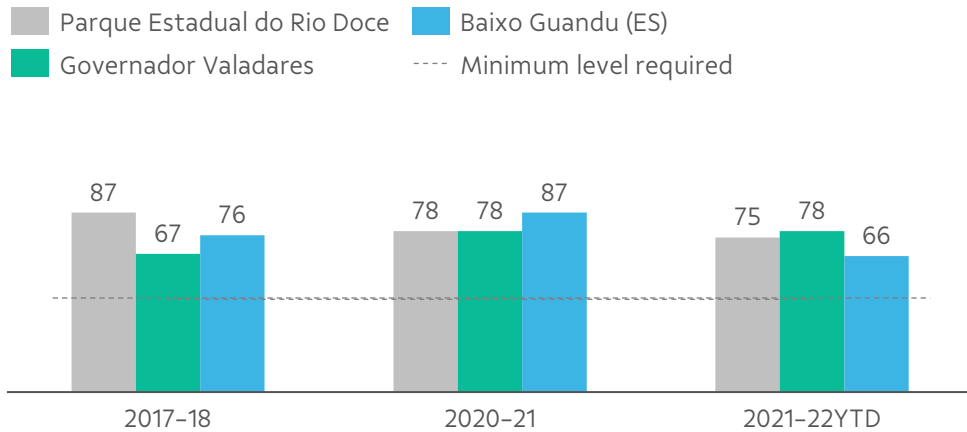




# Mariana: Renova speeding up reparation

## Water monitoring

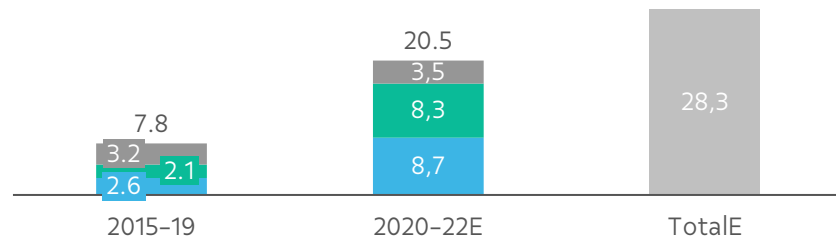
Water Quality Index – Rio Doce river<sup>1</sup>:



## Renova's disbursements

R\$ billion

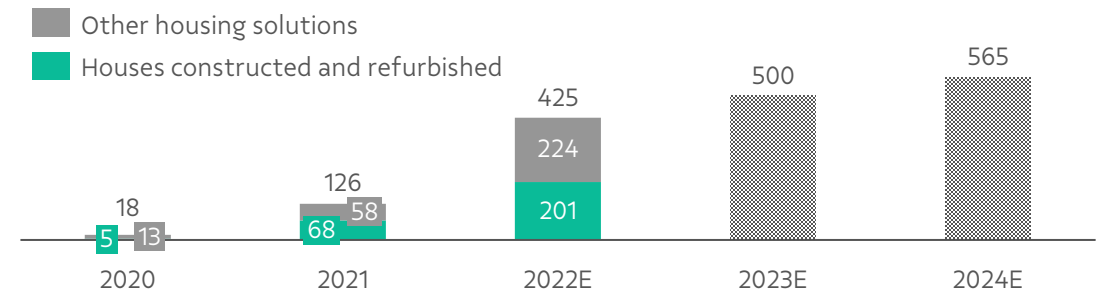
Increased significantly since 2020



## Resettlements



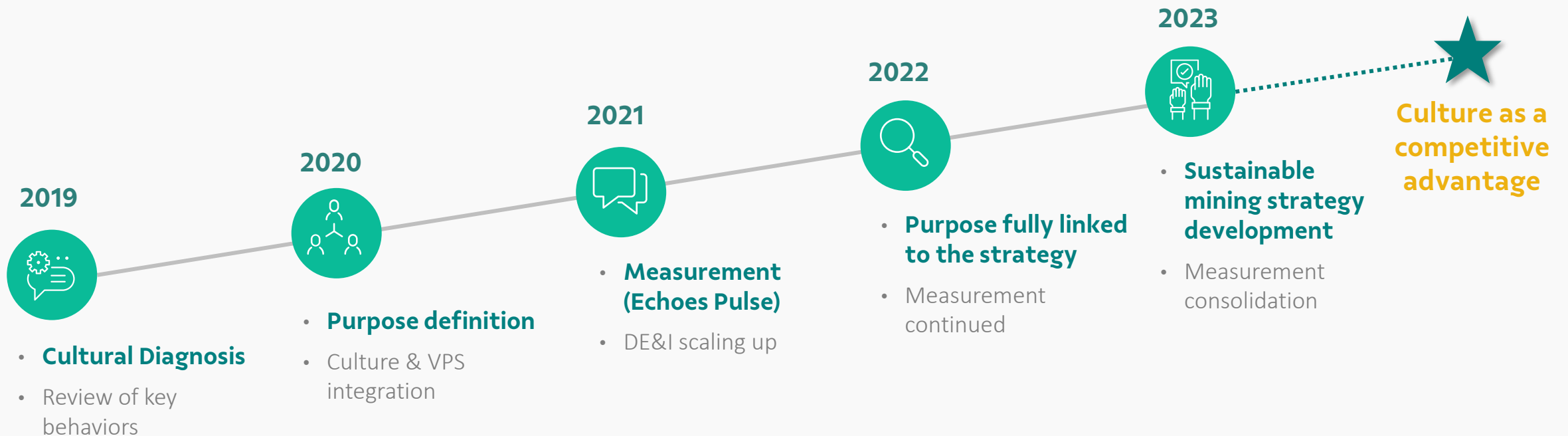
Number of housing solutions<sup>3</sup>





# Boosting our culture for a people-driven organization

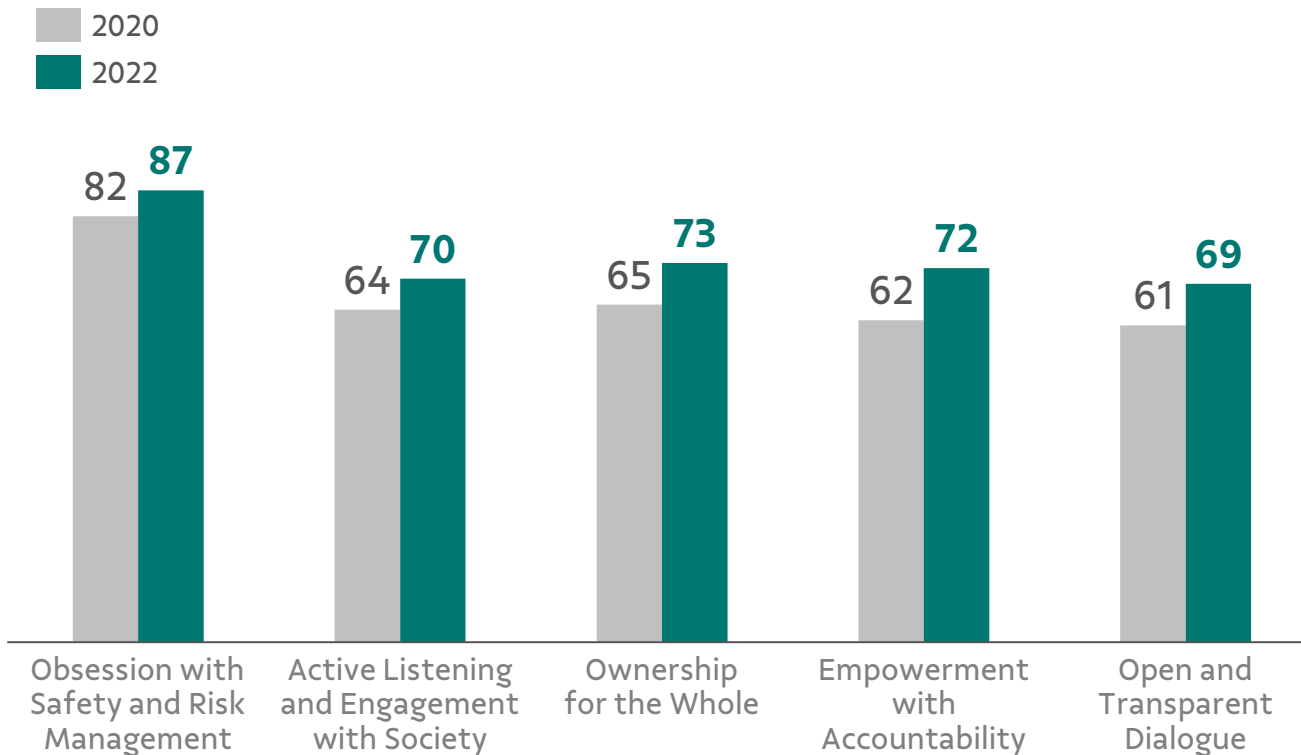
Our path for building a better work culture in Vale:





# Ensuring progress by measuring the cultural transformation

## Key behaviors – Vale’s employees’ perception (%)



Culture favorability: **75%**, increased **5 p.p.** vs. 2021



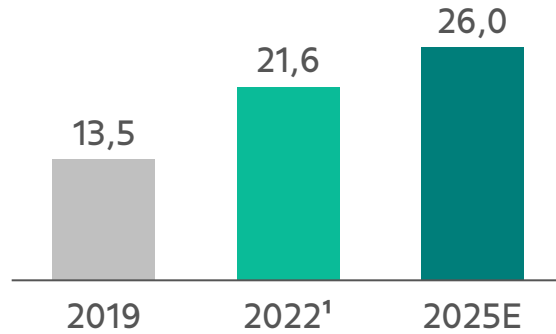
**+24,000** employees assessed



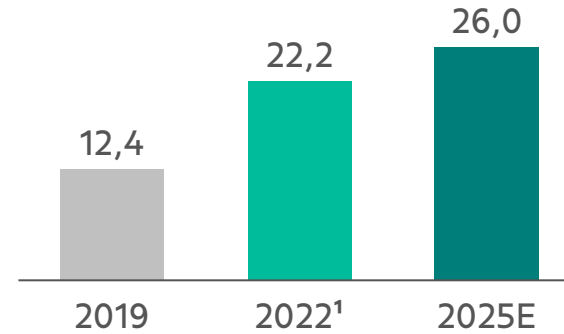


# Embracing diversity and respectful behaviors

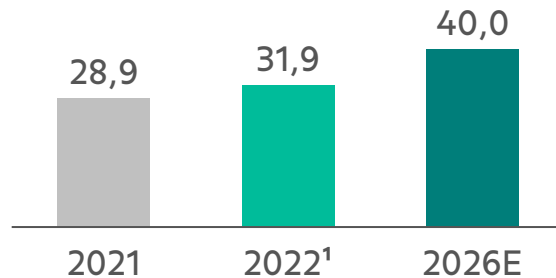
Gender equity:  
Total women representation (%)



Gender equity:  
Women in Senior Leadership roles (%)



Racial equity:  
Black employees in Managerial roles (%)



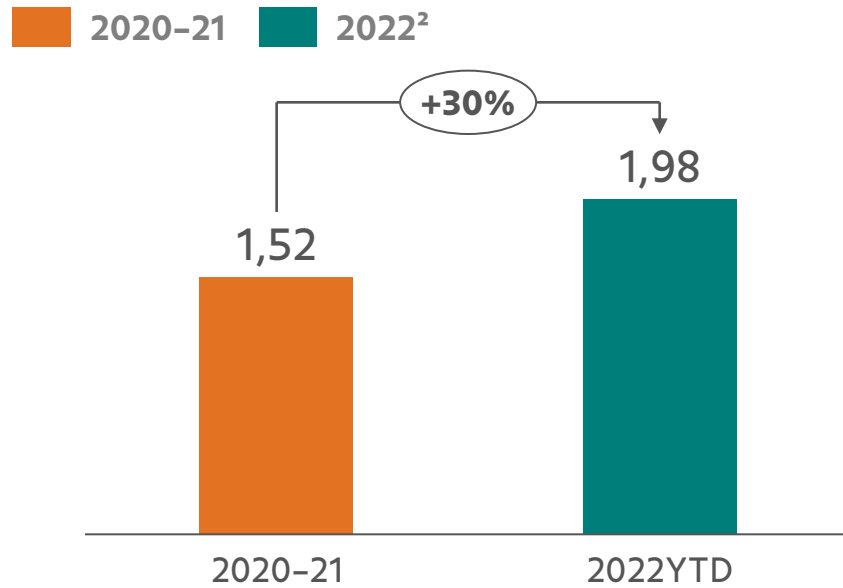
**Zero tolerance** with anti-ethical conduct<sup>2</sup>:  
 +3,000 corrective actions  
 157 employee's dismissal





# VPS<sup>1</sup> puts culture into practice, enabling the reliable operator

## Maturity evolution:



## VPS main numbers:



Maturity **target**: 3.00



**52% reduction** in areas below 2.00

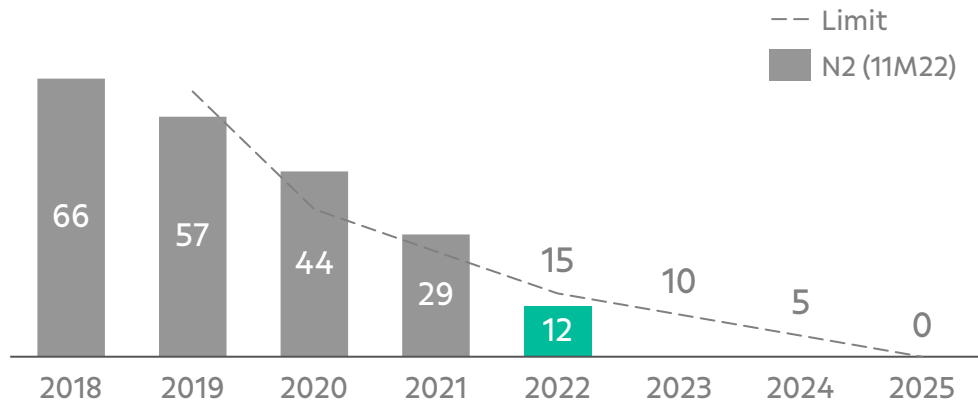


Maturity average **increased 30%** vs. 2021

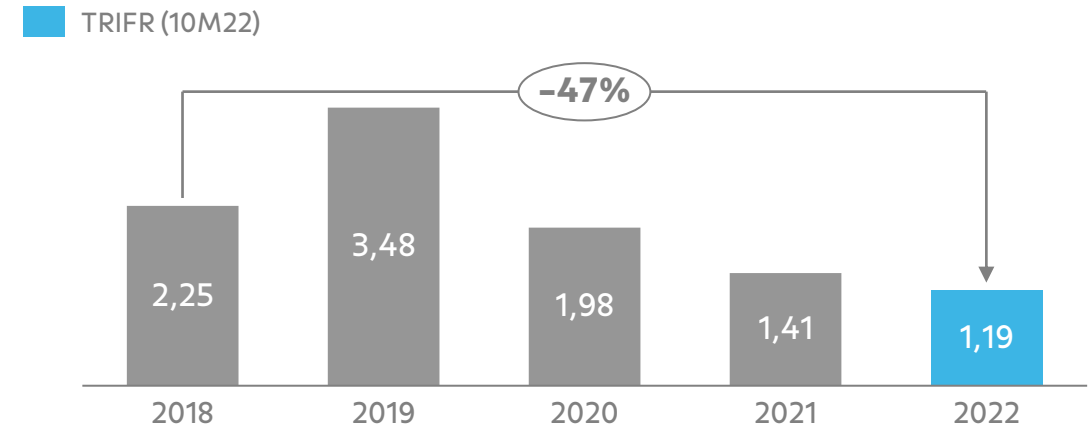


# We are becoming a safer company

## Reduction of high-potential recordable injuries (N2)

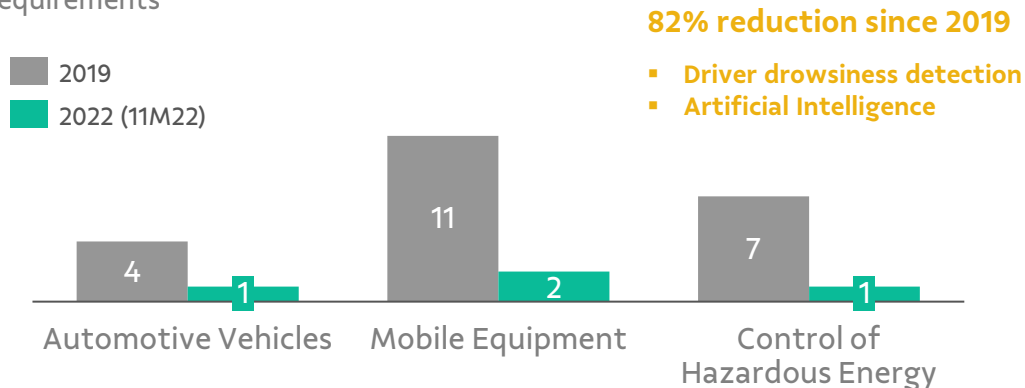


## Total recordable injury frequency rate (TRIFR)

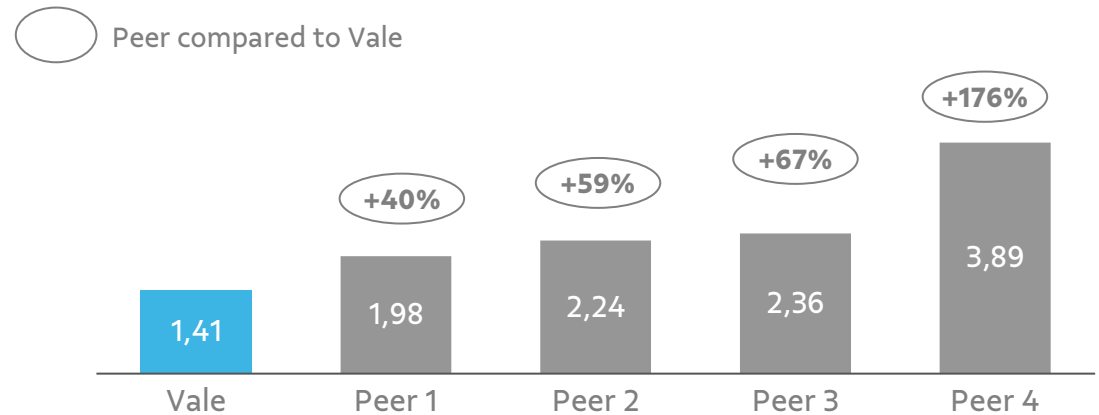


## Safety Transformation Program

Number of high-potential recordable injuries (N2) by main critical activity requirements



## TRIFR - 2021 comparison in mining



# Eliminating our upstream dams to ensure zero harm



**100% of the population close to risk areas removed and emergency drills performed**



**4 Backup dams constructed to reduce potential consequences**



**40% of upstream dams in Brazil eliminated by 2022**

An aerial photograph of a lush green valley. A wide, light-colored riverbed, possibly a dry river or a river with a high sediment load, flows through the center of the valley. The surrounding hills and mountains are covered in dense, vibrant green forest. In the distance, several mountain peaks are visible under a clear blue sky. A yellow banner with white text is overlaid on the middle of the image.

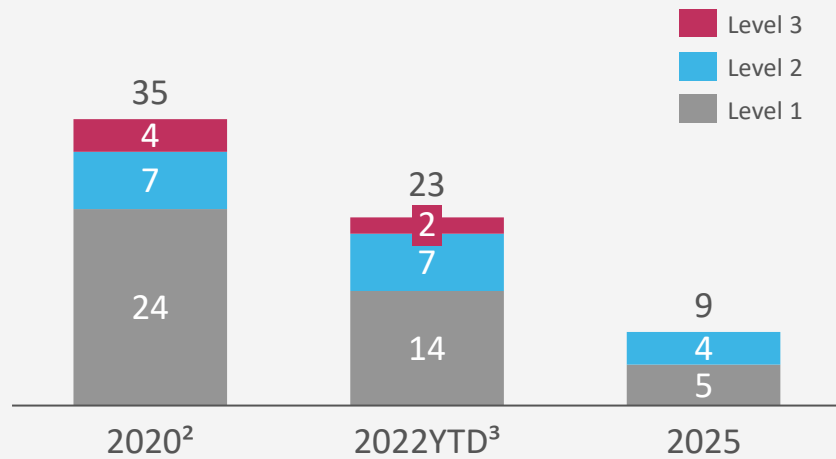
## De-characterization program

[Click here](#) to watch a video



# Actively working to improve dam safety

## Structures at emergency level<sup>1</sup>:



**8** dams with emergency level removed since the start of the year

## B3/B4 removed from critical safety condition (level 3)



**No dam at critical safety condition by 2025**



# GISTM<sup>1</sup> compliance reached 90%



<sup>1</sup>Global Industry Standard on Tailings Management. <sup>2</sup>Based on the results of the self-assessment conducted in December 2021, which had the 77 auditable requirements as main source. Structures held by joint-ventures are not included. <sup>3</sup>TSF stands for Tailings Storage Facility. <sup>4</sup>For TSFs with "Extreme" and "Very high" consequence classification.

# Contributing to social and economic development



## Our social ambition:

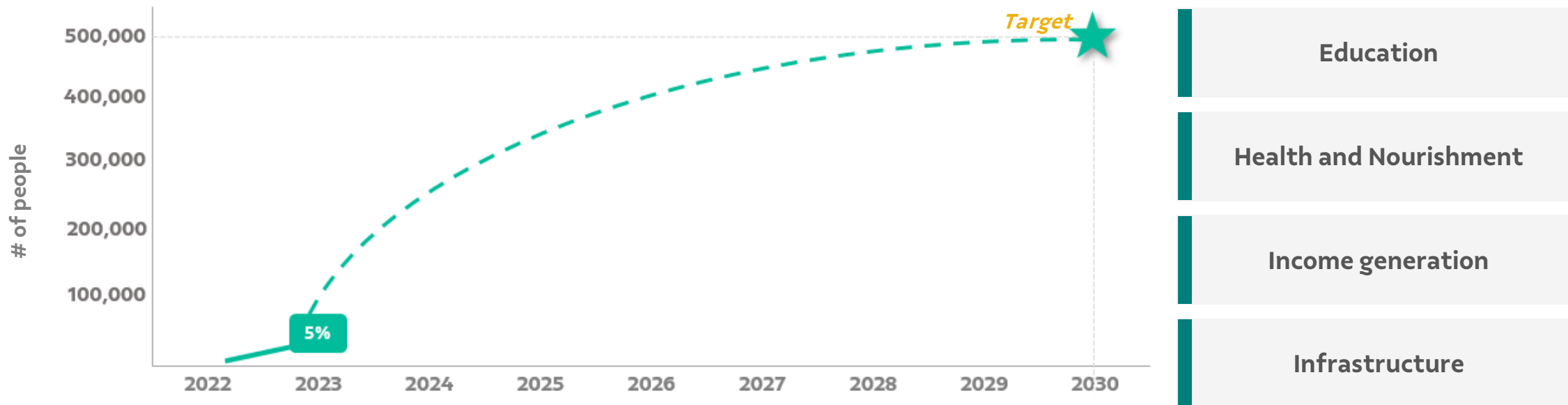
To be a **partner company** in the development of **resilient communities**, engaged in **relevant issues to humanity** and committed to **sustainable mining**





# Fighting poverty is essential to develop resilient communities

## Multidimensional approach to lift 500,000 people out of extreme poverty



Supported by partnerships

# Strengthening relationships with communities



**Historical agreement with the Xikrin do Cateté and Kayapós indigenous people**

Note: The agreement with the Xikrin community was approved by the court responsible for the Onça Puma, S11D and Salobo projects. Court approval is still pending for the Alemão and Ferro Carajás projects.

# Recognizing the climate change urgency and taking action to be nature positive

## Our climate change strategic goals:



Reduce scope 1 and 2 emissions by 33% by 2030  
Reduce net scope 3 emissions by 15% by 2035  
Net zero scope 1 and 2 emissions by 2050



100% of renewable electricity in Brazil (2025) and globally by 2030

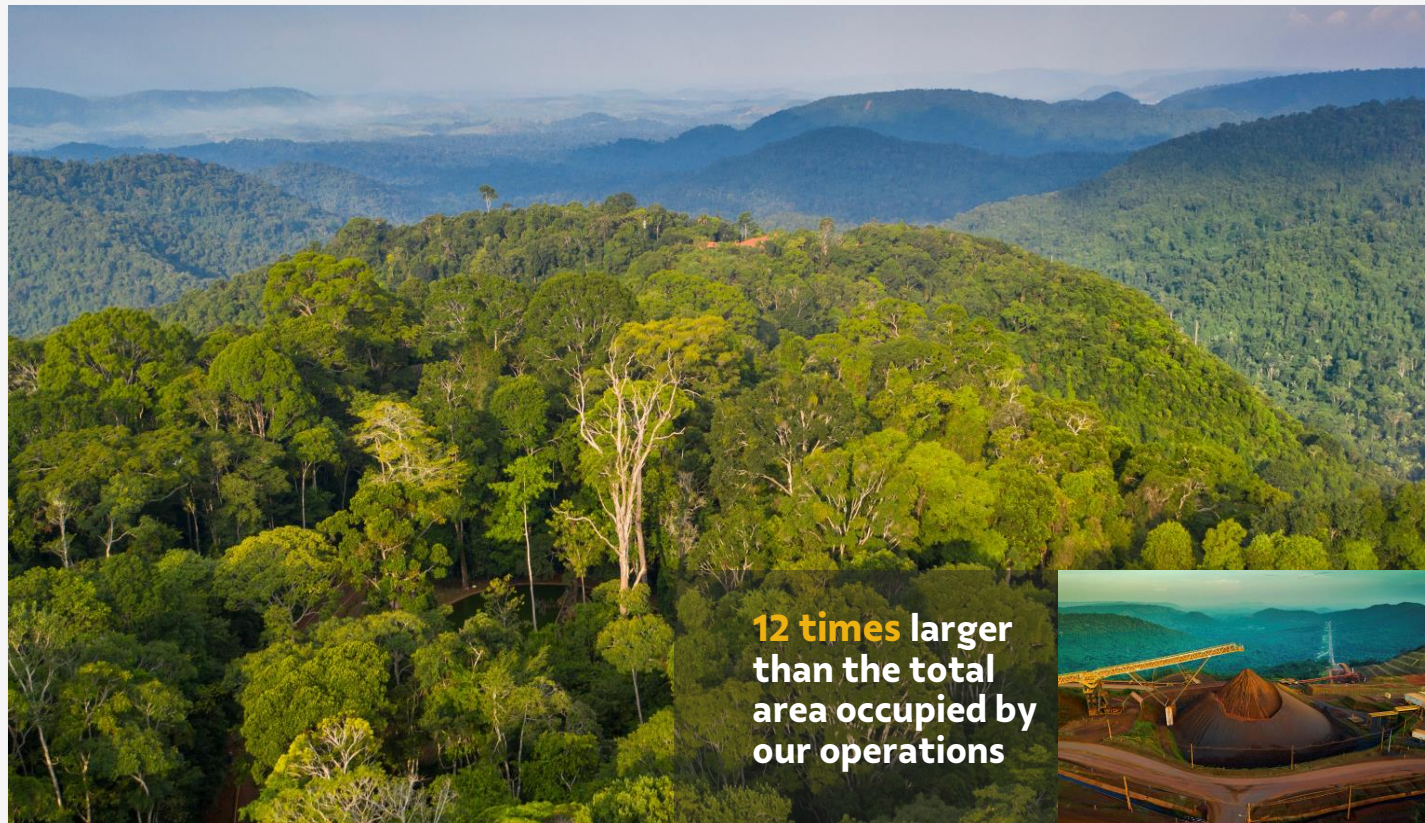


Recover and protect +500,000 ha by 2030



# We are a nature-based company

We protect ~1,191,000 ha<sup>1</sup> and +600 endangered flora and fauna species, 15% of total endangered species in Brazil



Boosting partnerships to go beyond our target:



**Biomass initiative**



**PrevisIA**



**Supporting startups**

An aerial photograph of a town with a central tower and a blue text box. The town is densely packed with buildings and trees, with a prominent tower in the center. The sky is blue with scattered clouds. A blue banner with white text is overlaid on the image.

# Climate Change agenda

[Click here](#) to watch a video



# Solid path to reduce our scope 1 and 2 emissions

2017



Sol do Cerrado full operation



Sol do Cerrado

2023

~7 p.p of the target

- Biomass based trials to replace fossil fuel in pelletizing and metallurgical processing
- Continue electric trucks pilots



72t electric truck

Two pelletizing plants converted to briquetting



Briquette

2025

~10 p.p of the target

- Zero Scope 2 emissions in Brazil
- Voisey's Bay wind power plant
- End fuel oil consumption in pelletizing and convert two plants to briquetting

2026-2028

~13-27 p.p of the target

- Ramp up electric/alternative fuel trucks and locomotives
- Replacement of coal by low-carbon fuels in most pelletizing and metallurgical processes



100% electric locomotive



**GHG emissions  
33% reduction**

- Zero Scope 2 emissions globally
- Scope 1 reduction using low-emission and renewable fuels

2030



# Fostering low-carbon solutions



## Energy transition materials

- Unique asset
- 1<sup>st</sup> Quartile in scopes 1&2 CO<sub>2</sub> emissions<sup>1</sup>
- Carbon verified by third party

## Iron solutions

- Best reserves in the industry (Carajás)
- Agglomerates for BF-BOF energy transition
- High-quality tailored solution for DR route



# Strengthening our strategy to the Vale of the future

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## *Iron solutions*

Marcello Spinelli, EVP Iron Ore



Developing supply for  
high-quality growing  
market segments



Strengthening our  
portfolio and building  
iron solutions

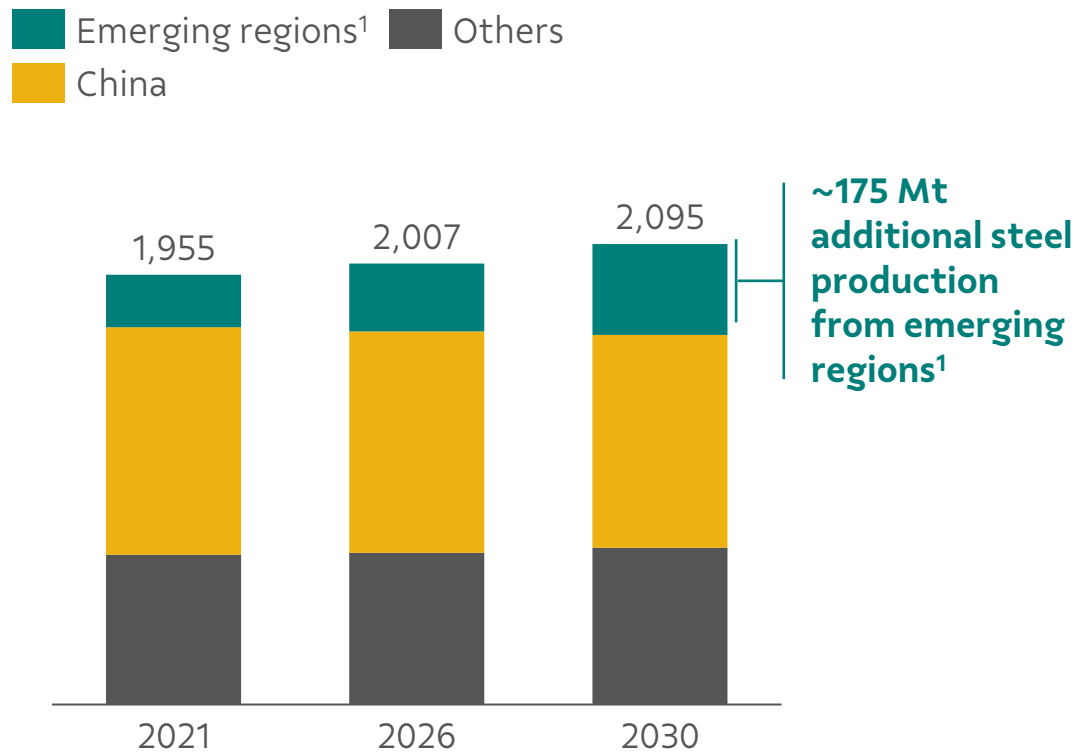


Recovering our  
operational flexibility  
to deliver quality







# Steel demand will grow steadily over the years based on emerging regions and current megatrends

### Steel production by region (Mt)



### Megatrends for steel demand

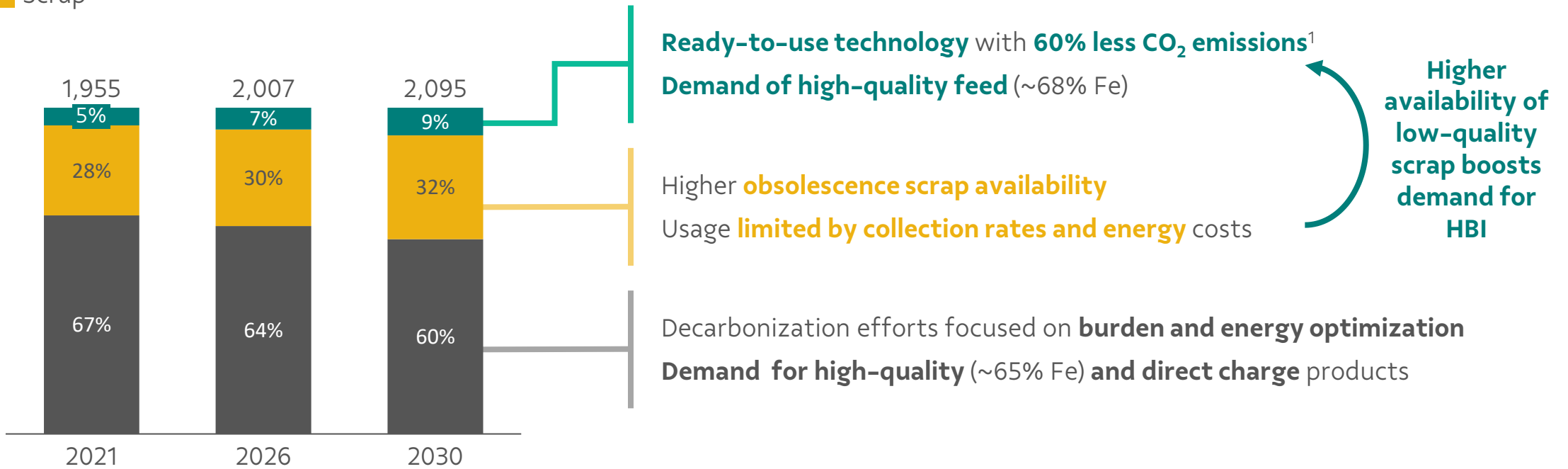
-  Population and economic growth
-  Urbanization
-  Onshoring
-  Energy transition



# Decarbonization pathway demanding enormous steel production via the DR route

### Steel production by metallic source (Mt)

■ HBI/DRI
 ■ BF pig iron
 ■ Scrap



<sup>1</sup>According to IPCC 2019 data, considering scope 1 emissions, assuming the DR-EAF route with natural gas reductant and compared with BF-BOF route. Considering a 75% of sinter and 370kg/t of coke rate in BF-BOF burden mix and not considering carbon capture and storage.



# Over 160 Mt of DR and BF agglomerates seaborne demand increase by 2030

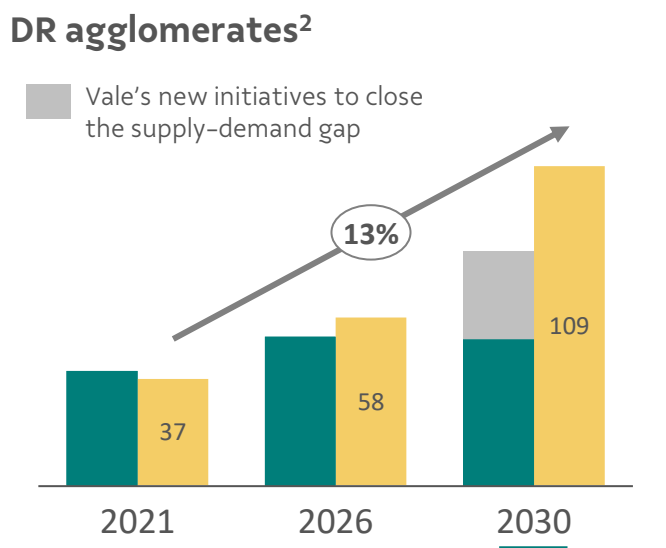
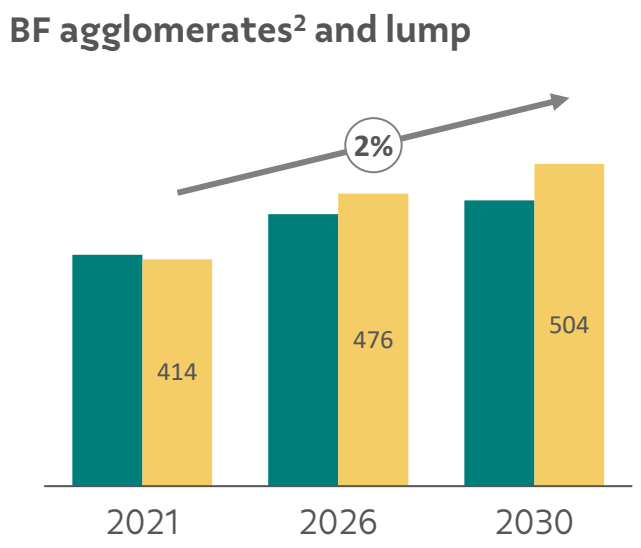
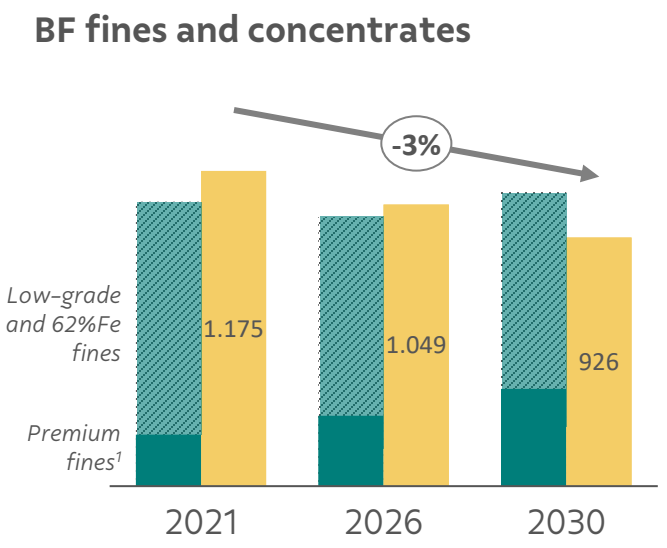
Low-grade fines seaborne demand will decrease over the years...

...but demand for BF direct charge products will gradually increase...

...while the roaring DR feed demand will change the industry dynamics

**Seaborne iron ore supply/demand (Mt)**

- Supply
- Demand
- CAGR



Challenge to replace ~400 Mt supply depletion<sup>3</sup> until 2030

~70 Mt S-D gap in 2030



# Demand bifurcation increasing agglomerated premiums even further

Spread over 62%Fe index (US\$/dmt)

What drives medium and long term?

		2018-2022	2026	2030+
Vale's market	<b>Class 1</b> DR agglomerate (68%Fe)	74	~78	~95
	<b>Class 1</b> BF agglomerate (65%Fe)	66	~68	~75
	<b>Class 1</b> Premium fines (65%Fe)	18	~20	~22
	<b>Class 2</b> Low-grade fines (58%Fe)	-27	~ -30	~ -30

**US\$ 125/t pricing spread**



Shift to greener and more expensive reductants



Undersupply of high-grade products, especially agglomerates



Carbon pricing/taxes



Aging plants demanding solutions to upgrade lifespan



## Strengthening our portfolio and building iron solutions



Blast furnace route  
energy transition



Growing direct  
reduction route

An aerial photograph of an iron mine. The landscape is dominated by reddish-brown earth and extensive tire tracks from heavy machinery. In the foreground, a large yellow haul truck is driving away from the viewer, carrying a load of dark iron ore. To its left, a small white car is parked on a dirt path. The background shows several industrial buildings and a large, terraced excavation site. The sky is clear and blue, with distant mountains visible on the horizon.

# Iron solutions

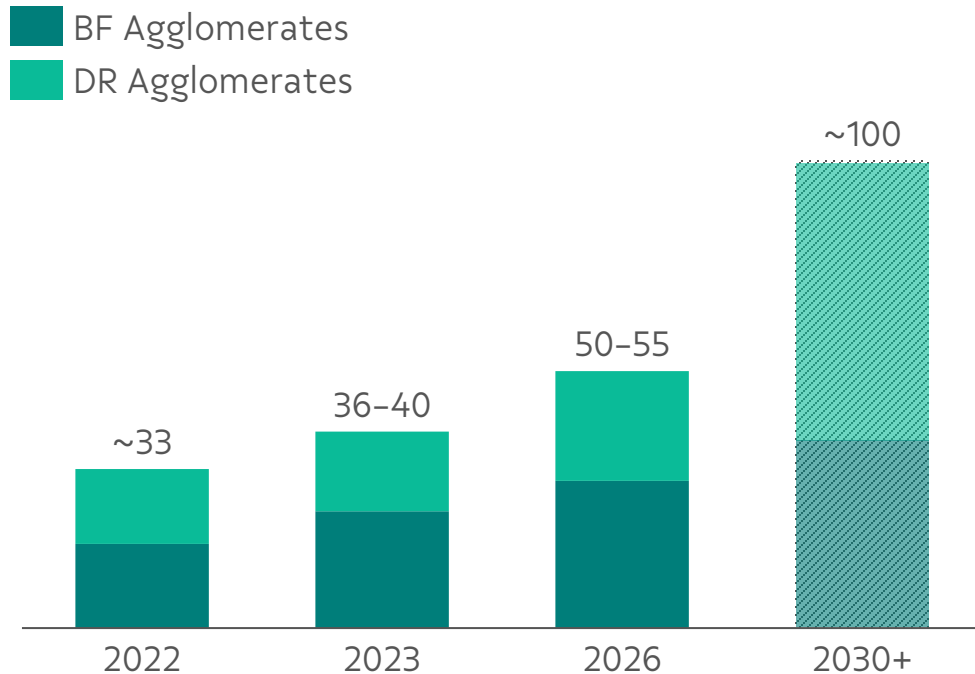
[Click here](#) to watch a video





# Vale will supply ~100 Mt of agglomerated products

## Pellets & briquettes production (Mt)



### Leader in pelletizing process



~25% of global seaborne market share in 2022



Plants in Brazil and Oman

### Increasing supply by briquetting



First plant start-up in 1H23 (Tubarão)<sup>1</sup>  
8 plants under evaluation (including co-located plants)



Environmentally friendly agglomerate: less fossil fuels, particulates and water usage



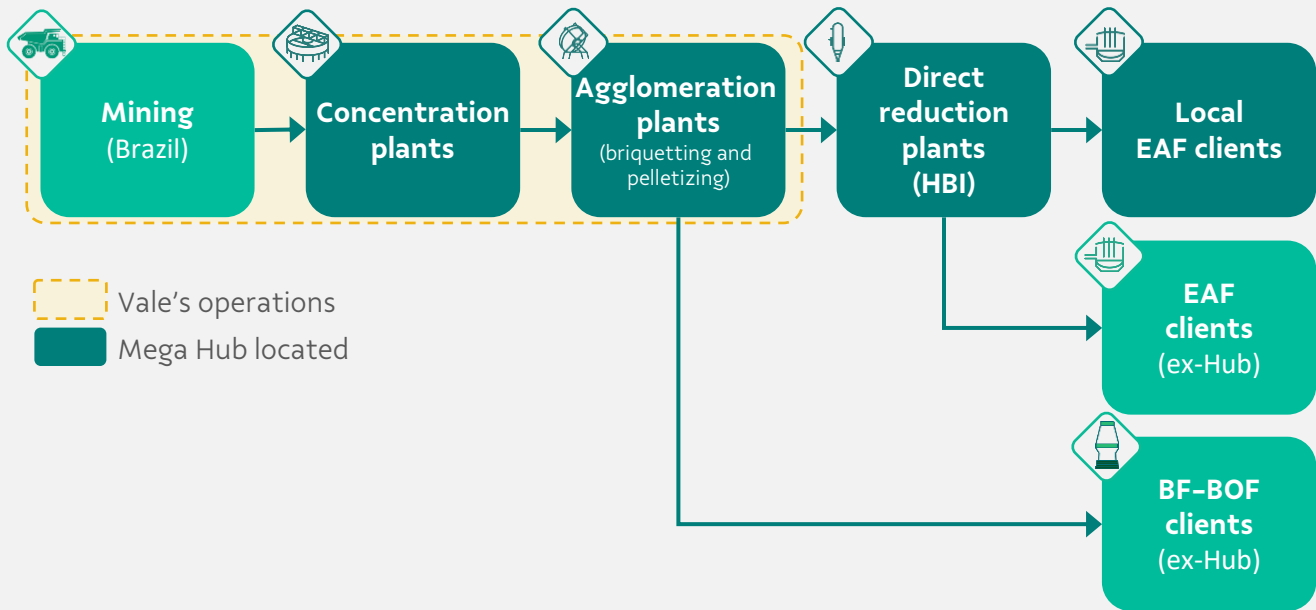
Similar VIU to pellets, but half costs and 1/3 Capex

<sup>1</sup>Two plants are under construction at Tubarão with 6 Mtpy total capacity. First plant is expected to start-up in 1H23 and second plant is expected to start-up in 2H23.

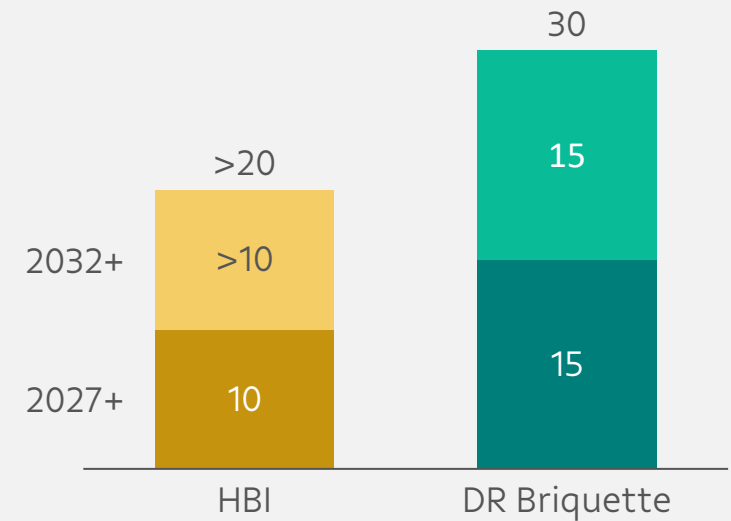


# Mega Hubs: supplying green solutions to the steel industry

## Mega Hubs concept



## Volumes (Mt, preliminary estimates)



Geographical diversification with three agreements signed to study the development in the Middle East and others under evaluation in Brazil and US





# How to overcome the high-quality feedstock challenge?

## Vale's concentration solutions



### Tailings filtration

Usage of wet processing with dry tailings disposal at stockpiles  
4 tailings filtration plants at Conceição, Cauê, Brucutu and Vargem Grande



### Dry concentration

First industrial plant under construction at Vargem Grande with start-up in 2024  
8 Mtpy plant in Oman expected to be approved in 2023



### Third-party concentration facilities

Usage of concentration capacity where concentration by-products (sand) have commercial value  
~10 Mt concentrated in 2022

**New**



### Northern System ore concentration

Investment to generate DR quality feed from IOCJ to fulfill the newcoming demand from 2027 onwards

**Circular mining approach through the recycling of tailings as co-products**

Recovering our operational flexibility to deliver quality

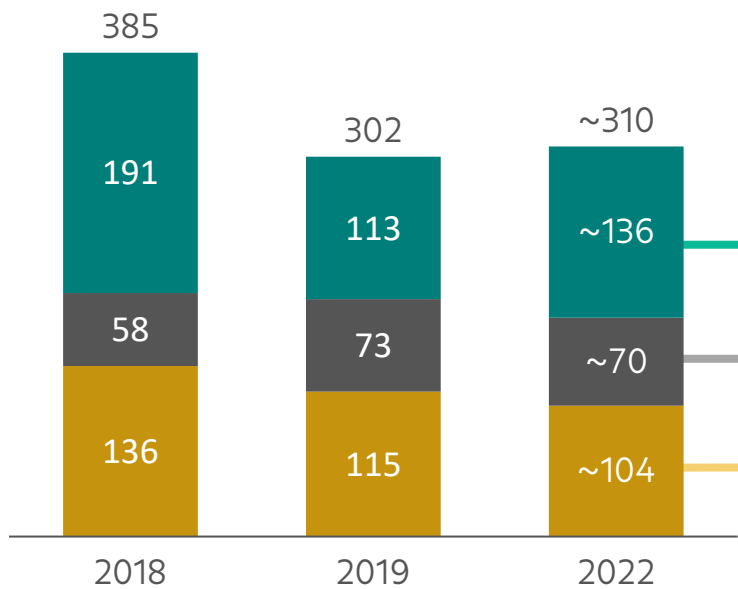




# Operation resumption: lessons learned in the new way to operate

Iron ore production<sup>1</sup> (Mt)

■ Minas Gerais operations<sup>1</sup>
■ Serra Norte & Leste
   
■ S11D



## Reorganization and stabilization after Brumadinho

- Structures under strict geotechnical review
- New regulatory framework
- Start-up of tailings filtration plants in 2021 and 2022
- Ongoing development of tailings/waste stockpile

## S11D performance

- Improved orebody knowledge and new asset learning curve
- Jaspilite/waste processing challenges

## Serra Norte licensing restrictions

- Mine depletion and licensing is impacting production base
- New orebodies under approval and development



# A more stringent license process requires a new approach

## Licensing challenges



### Southeastern and Southern Systems

*Significant regulatory changes after 2019*



### Northern System

*Conservation of the biome supported by extensive studies*

## What are we doing to advance?



**Sustainable projects:** new way to operate; less water usage; conveyor belts; and electric trucks



**Supporting studies:** ~US\$ 140 million invested by ITV<sup>1</sup> in the Amazon<sup>2</sup>; cooperation/investments with environmental agencies ~US\$ 42 million<sup>3</sup> until 2030<sup>4</sup>



**Institutional front:** project portfolio prioritization; active listening to agencies and communities' requests



ITV researcher at Serra Norte site



# Several assets under construction and coming online

Licensing status	Initiative front
Main licenses achieved <sup>1</sup>	Quality
Under licensing process	Volume

## Northern System

### Serra Norte

- 4Q22** Gelado project start-up
- 2H24** N3 mining front start-up
- 2023**  
**2026** Licensing and opening of new mining fronts

### S11D

- 4Q22** +10Mt project commissioning
- 2H25** Serra Sul 120 project start-up
- 2026** Crusher to process large compact waste/jaspilite

### Serra Leste

- 2026** Expansion to 10 Mtpy

## Southeastern System

### Brucutu

- 2023** Torto dam start-up
- 2023**  
**2026** Tailings/waste areas licensing and development

### Itabira

- 2023** Itabiruçu dam raising phase 2 works conclusion
- 2023**  
**2026** Tailings/waste areas licensing and development

### Capanema

- 1H25** Project start-up

## Southern System

### Vargem Grande

- 2H23** Capitão do Mato and Tamanduá mines licensing
- 1H24** VGR1 plant revamp for wet processing resumption

### Paraopeba

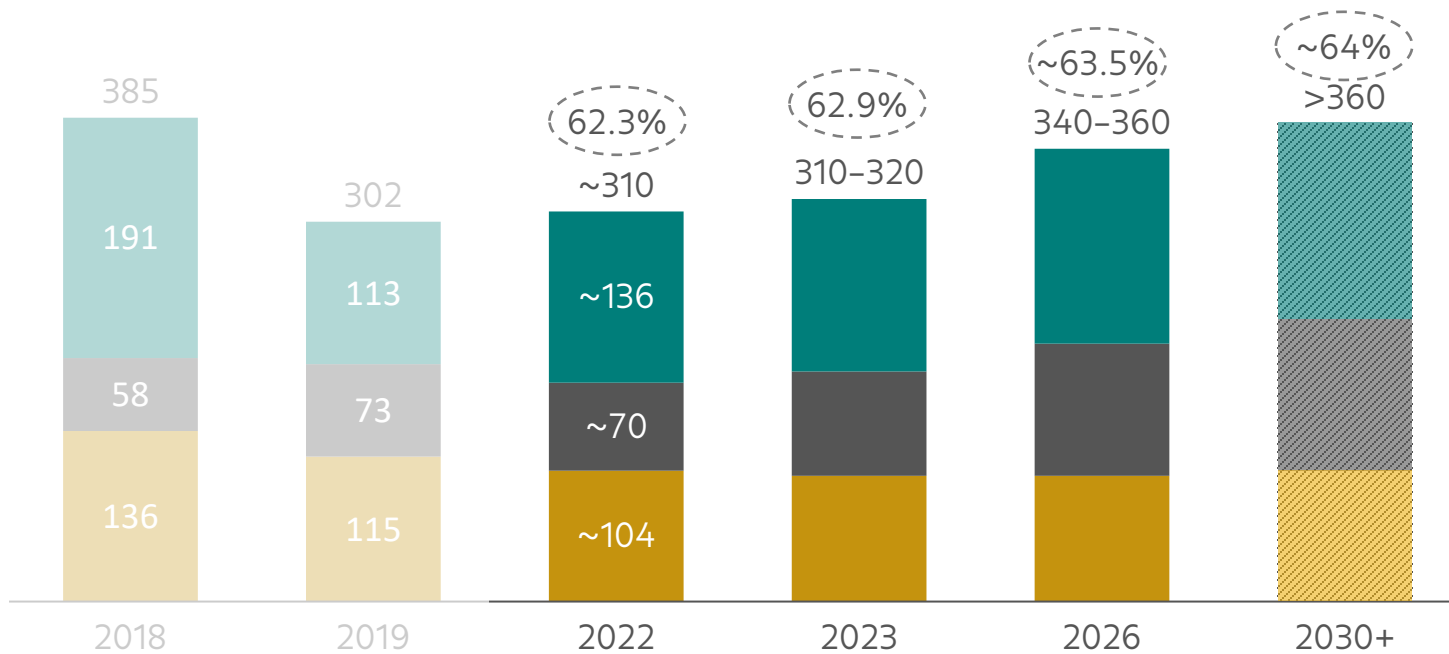
- 2Q23** Capão Xavier mine licensing
- 2023**  
**2026** Tailings/waste areas licensing and development



# Focused on enhancing quality whilst gradually recovering capacity

## Iron ore production<sup>1</sup> (Mt)

■ Minas Gerais operations<sup>1</sup> ■ S11D ■ Serra Norte & Leste ○ Average sales Fe content



**Production plan revised**  
Adjusted to licensing challenges

**Delivering quality**  
Focus on increasing high-quality volumes

**Gradual capacity increase**  
More flexibility to offset setbacks





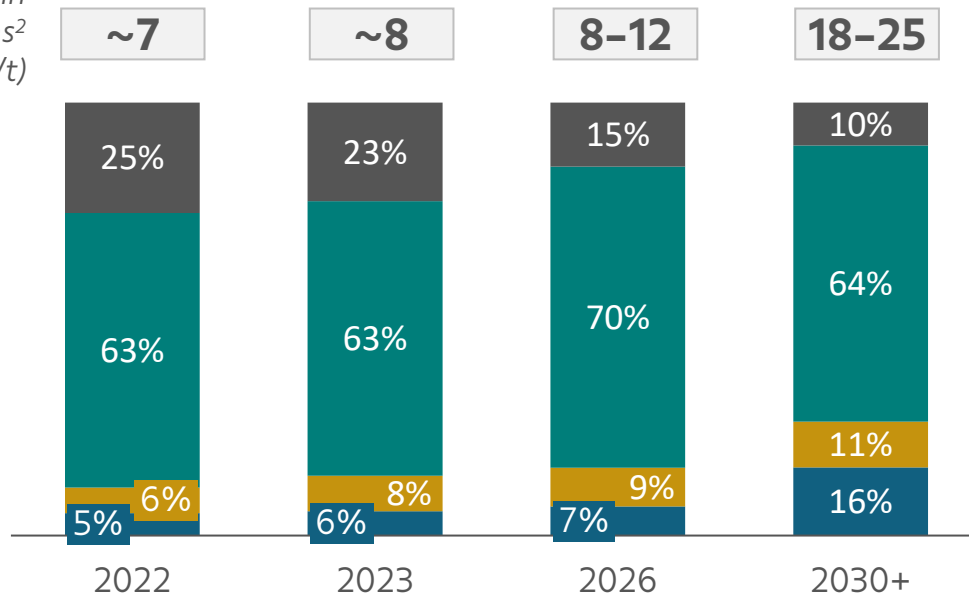
# Potential contribution of ~US\$ 4 billion EBITDA<sup>1</sup> from higher premiums and volumes by 2026

## Vale's product portfolio (%)

Others IOCI + BRBF BF Agglomerates DR Agglomerates



Vale's all-in premiums<sup>2</sup> (US\$/t)



Better **quality premiums** due to the impact of **decarbonization trends**



**Increase of 70 Mt in high-quality agglomerate** production by 2030+



**All-in premiums increasing** to ~US\$ 12/t by 2026 and ~US\$ 25/t by 2030+



**Substantial EBITDA creation** by volumes and premium portfolio combined<sup>1</sup>



## Key takeaways



**Decarbonization** will create a market segmentation with increased volume demand and **superior premiums**



Accelerating implementation of **breakthrough iron solutions** to attend more stringent demands of steelmakers



Optimized portfolio to reach **100 Mt of agglomerated products** by 2030+ with geographical diversification



**Iron solutions will create substantial value** to clients, society and shareholders



# *Energy Transition Materials*

Deshnee Naidoo, EVP Base Metals

*Questions?*

*valeday@vale.com*





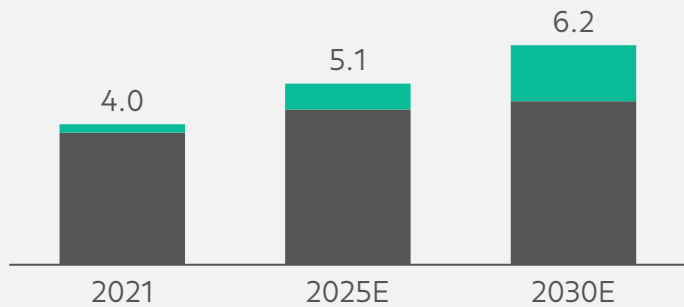
# Energy transition offers once in a lifetime opportunity

## Total demand

million tonnes of finished metal

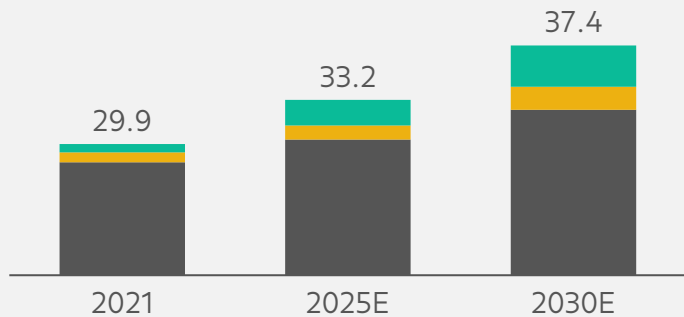
EV Renewables Others

Ni



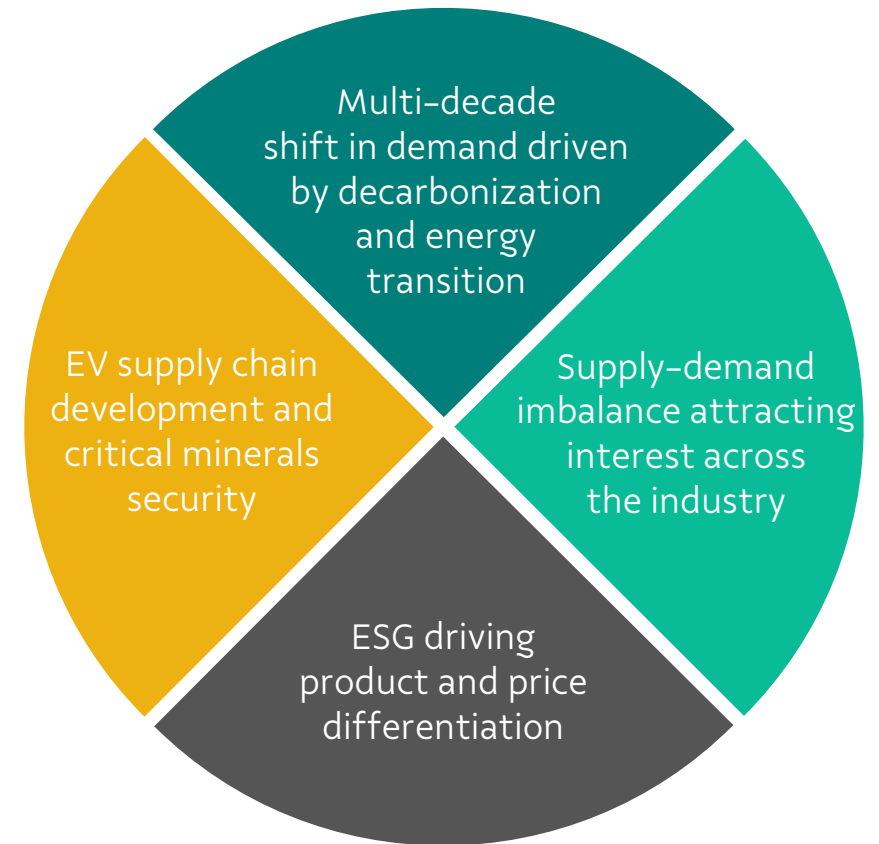
**~50%**  
increase in  
total demand

Cu



**~19% py**  
growth in demand  
in EV segment

**~10% py**  
growth in demand  
in renewables





# The right set of assets placed in the right jurisdictions to succeed

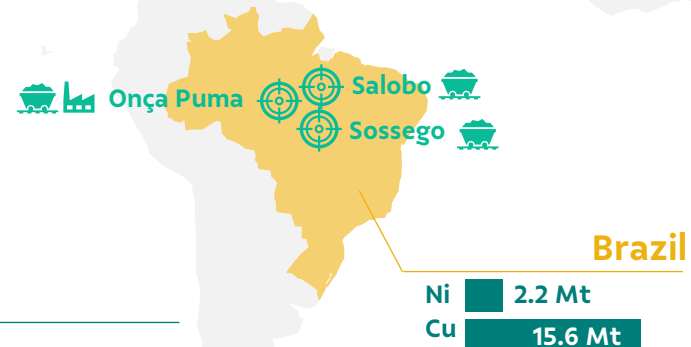
Well-positioned to support and supply North America EV growth



Attractive exposure to Indonesia



A Tier 1 mining complex with growth optionality



Ni Contained metal in Mineral Resources  
Cu inclusive of Mineral Reserves<sup>1</sup>

Mine & Mill    Smelter/Refinery    New Hub

<sup>1</sup>Mineral Resources contained metal (Measured, Indicated and Inferred categories), inclusive of Mineral Reserve, reflects our disclosure on Form 20-F as of December 31, 2021 and shown in 100% basis, not reflecting Vale's interest. Values have been rounded and does not include metallurgical recovery.



# The right approach to foster a sustainable economy

## Strong ESG standard products...



Verified low-carbon products



>90% of Base Metals electricity from clean sources



Sustainable relationships with communities

## Pivoting towards Electric Vehicles...



Contracts with key OEMs: Tesla, Northvolt and GM



Advancing studies for a Nickel Sulfate project in Quebec – 25kt Ni in NiSO<sub>4</sub>, with LT commercial agreement signed with GM



Currently 5% of our Class I is sold to EV, LT contract with GM redirects further 15–20%

## Building a virtuous circle...



Recycling

Improving capabilities for recycling battery e-waste



Mining

2ktpy of Ni from waste  
60ktpa Indonesian HPAL project using ore diverted from waste



Processing

5ktpy of Cu from Thompson precipitates  
~2 ktpy of Ni recycled from slags

**Building**

**stable foundations**

**to succeed**



The image shows the exterior of a modern building with a curved facade. The upper portion of the building is clad in dark grey panels, while the lower portion features large glass windows and a brown horizontal slat ceiling. A teal banner with white text is overlaid on the center of the image. In the foreground, there are concrete planters containing various green plants and pink flowers. A white downspout is visible on the right side of the building.

# Integrated Remote Operating Center (iROC)

[Click here](#) to watch a video



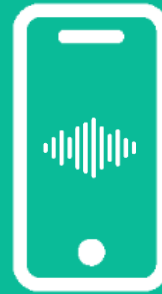


# iROC today



## PRODUCTIVITY

10% overall productivity uplift achieved in Coleman and Creighton mines in 2022



## CONNECTIVITY

Largest private underground LTE network in the world, 45km of LTE cables.



## SAFETY

55 Mobile Equipment connected with IOT  
84 Mobile Equipment with live Telemetry  
1,200 Location Awareness Beacons installed



# Progressing on the path of improvement in North Atlantic...



More productive underground operations through iROC & VPS



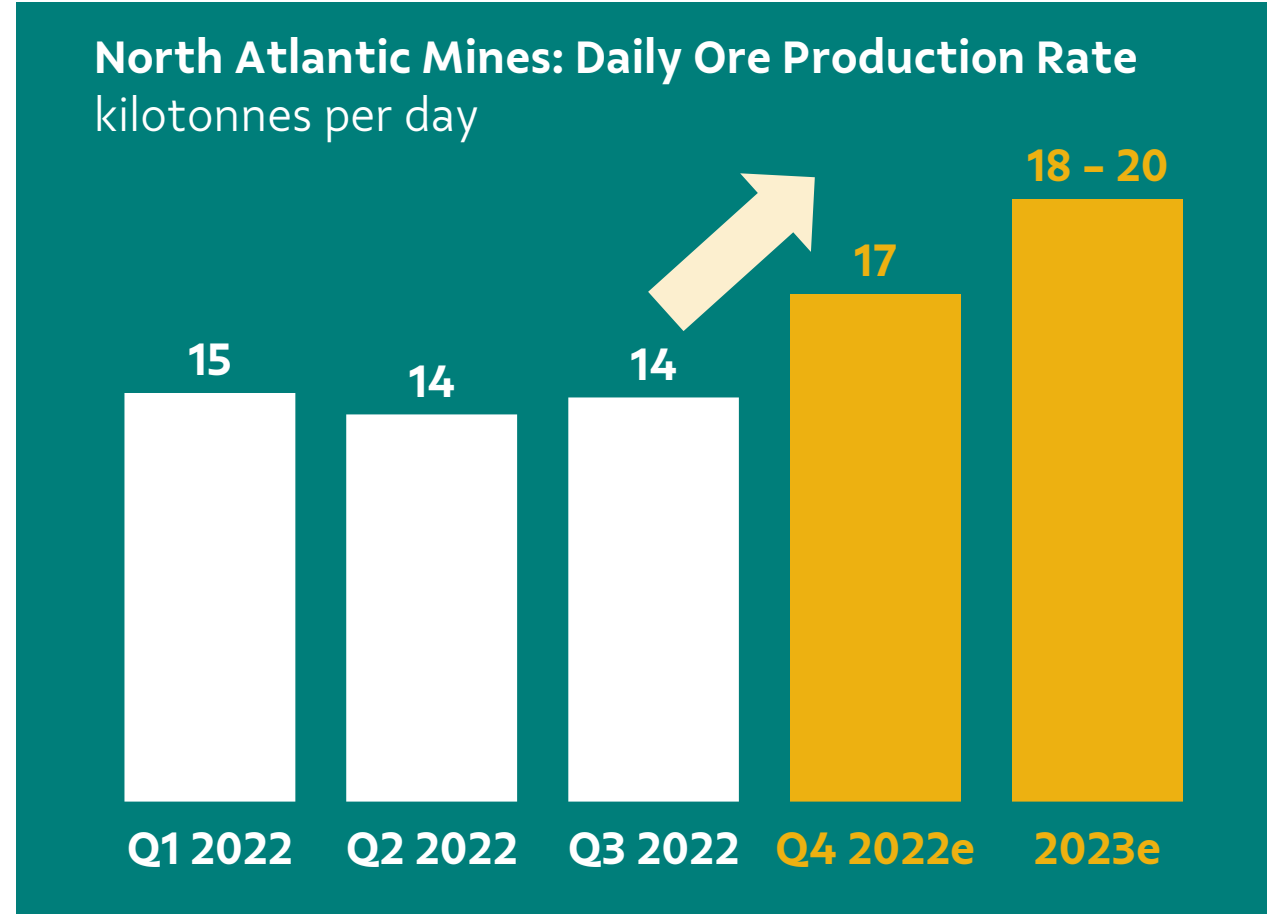
Delivered CCM 1 and continued to ramp up VBME



Mine maintenance with enlarged scope to improve ground controls



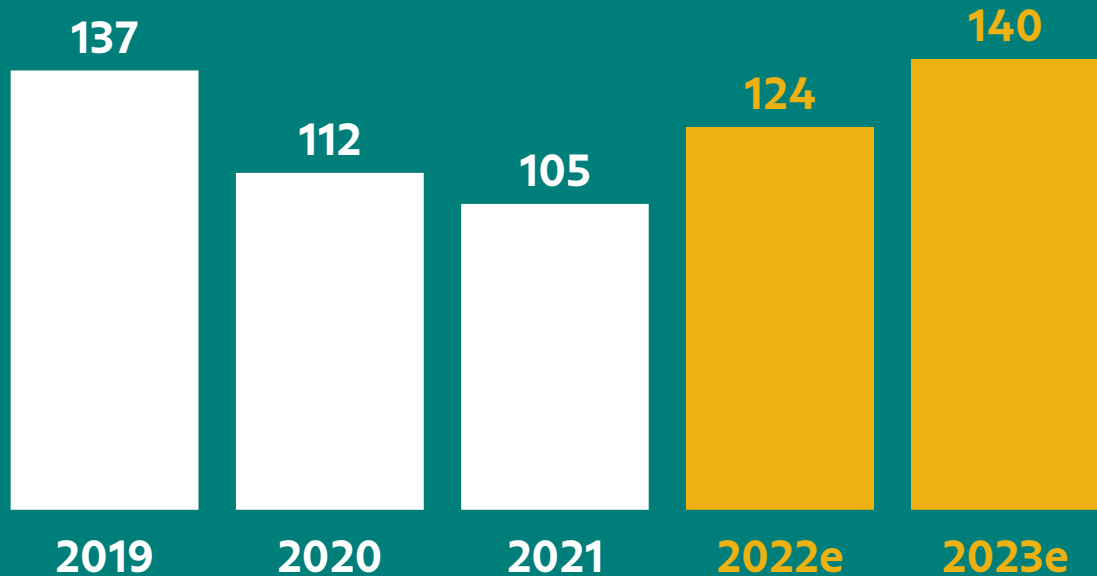
Progressing on mid-term mine plan with >100% increase in mine development ACD<sup>1</sup> in 2022





## ... while improving stability in South Atlantic

Salobo mine: Total material moved  
million tonnes



Debottleneck of Salobo mine – pit redesign, mine pumping system repowering, two-side loading and excavation



Concluded extended maintenance at Sossego SAG mill

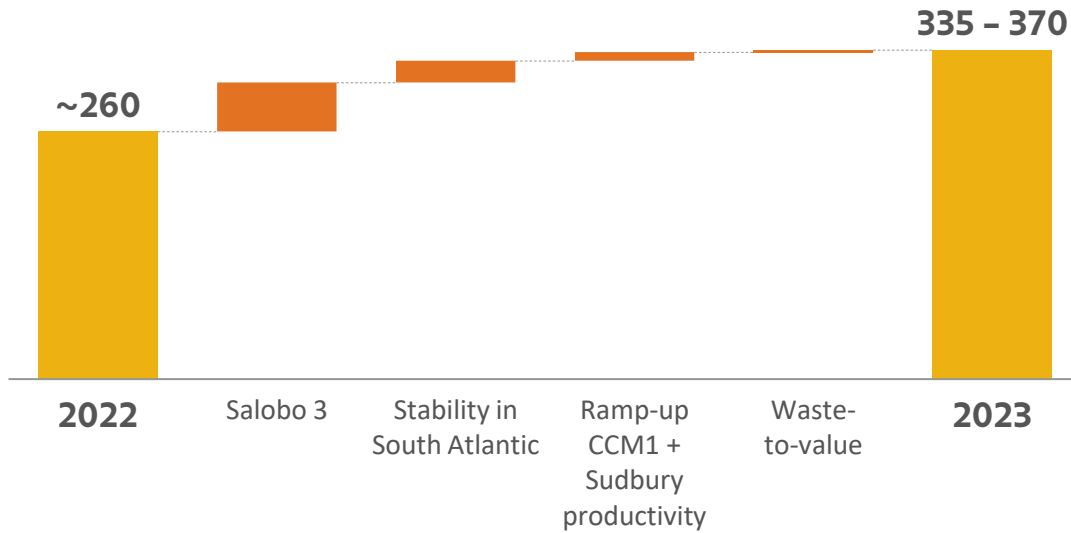


Revised maintenance program to improve plant reliability in South Atlantic Copper

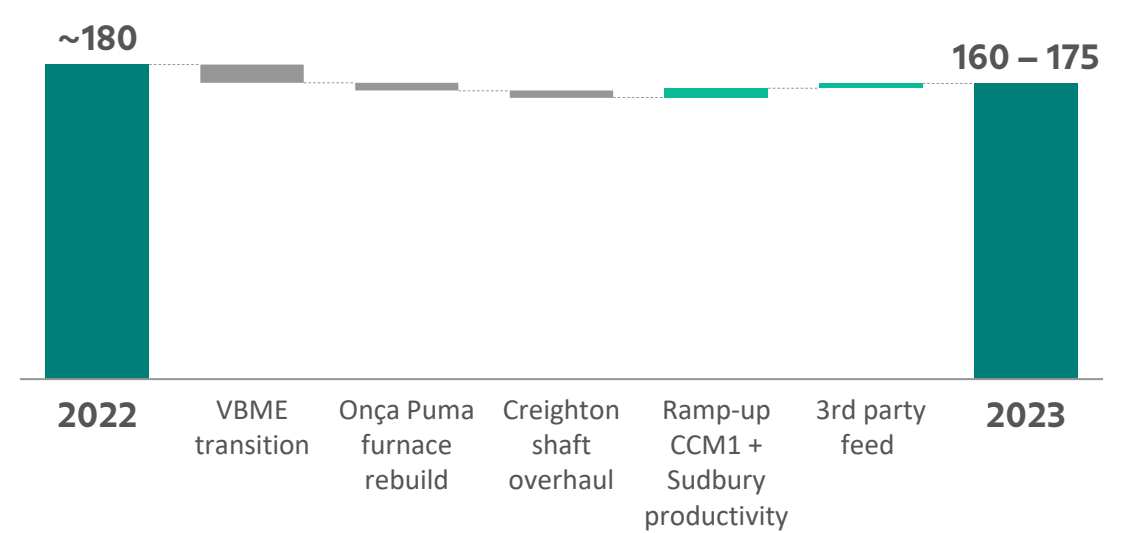


# Growing copper production; nickel impacted by planned overhaul and VBME

### Copper production kt



### Nickel production kt



### Key planned events

Salobo 3 ramp-up

Continued stabilization of Salobo 1 & 2 and Sossego

### Key planned events

Depletion of Ovoid and ramp-up of VBME

Creighton shaft overhaul in Q3  
Onça Puma 6-month furnace rebuild starting in Q4

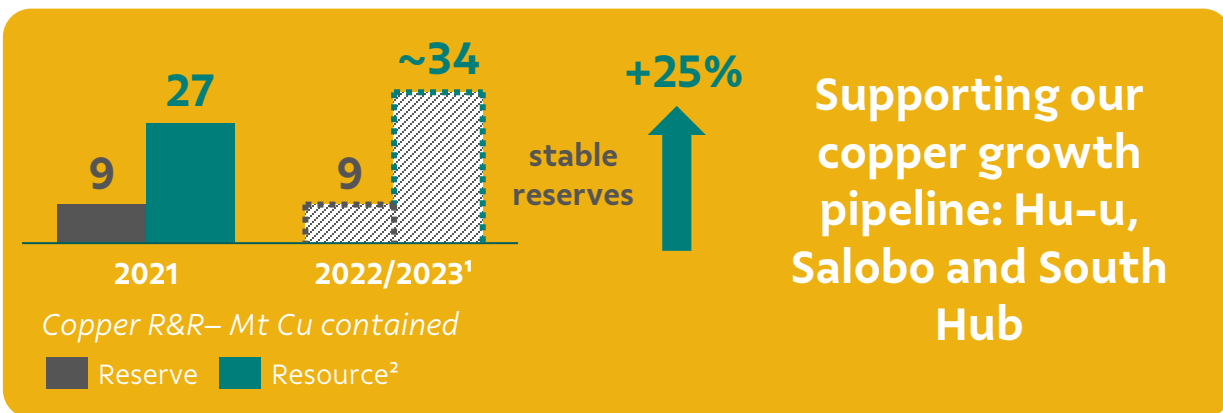
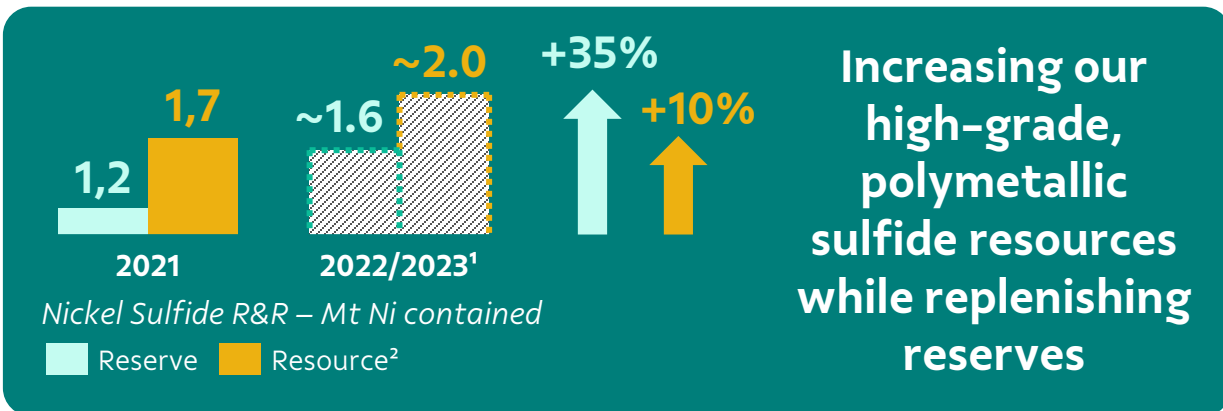
**Accelerating the  
next wave of growth**





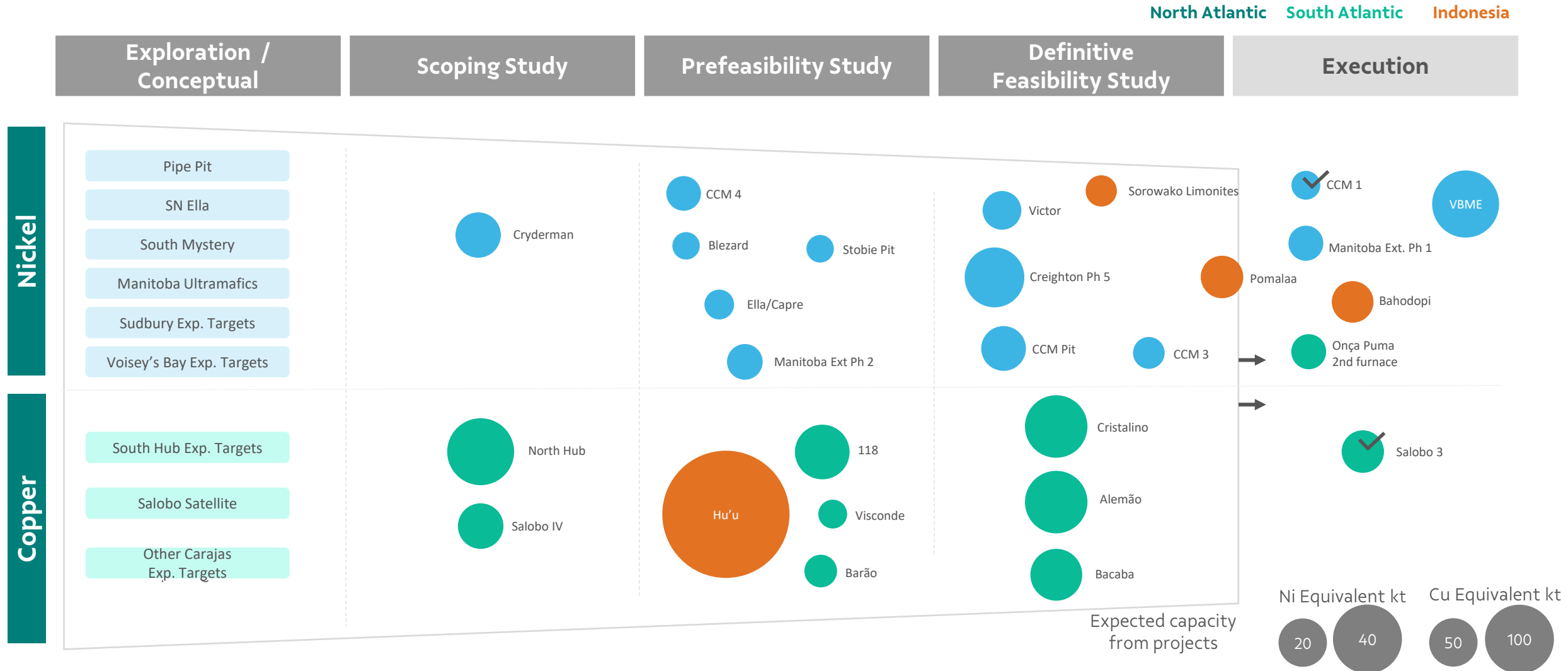
# Accelerating exploration of our strong resource base

>60% increase in drilling since 2019





# Advancing our project pipeline



<sup>1</sup>Victor is expected to produce ~20kt of copper. It is allocated to the nickel business as it should feed into the North Atlantic nickel flowsheet. <sup>2</sup>Includes both replacement and growth projects capacity. <sup>3</sup>Includes indirect share of Vale in Indonesian JVs. <sup>4</sup>Includes copper produced as by-product of nickel projects. Includes gold produced as by-product of copper projects. Nickel and Copper equivalent calculations based on long term price assumptions <sup>5</sup>Hu'u added at 100% basis. Hu'u is 100% owned by PT Sumbawa Timur Mining (STM), an Indonesian private joint-venture company owned by Eastern Star Resources Pty Ltd (80%) and PT Aneka Tambang (20%). Eastern Star Resources Pty Ltd is 100% owned by Vale.



# Delivering successfully the Salobo 3 project

Start-up on Nov 30<sup>th</sup>

World class operational readiness program

30-40 ktpy additional copper production

Improved plant reliability vs. Salobo I&II

10-15% reduction in overall unit cost

Over 40% female workforce

Full capacity to be achieved in Q4 2024

2022, December







# Approving projects to enable growth in nickel



## Approval of Onça Puma 2<sup>nd</sup> furnace

+12–15 ktpy Ni in FeNi

>50y LOM and additional resource upside

More stable and efficient operations: 15% reduction in overall unit cost

CAPEX: US\$ 555 million | Startup: 1H25



## Approval of Bahodopi project

73 ktpy Ni in FeNi (49% PTVI)

Mine (100% PTVI): ~US\$ 400 million

RKEF JV (49% PTVI): US\$ 2.3 billion (of which PTVI: US\$ 1.1 billion), including 600MW Natural Gas Power Plant



## Pomalaa agreement signed

Up to 120 ktpy Ni in MHP

Call option to acquire up to 30% equity of the HPAL once completed

PTVI to own 100% of the mine

MoC<sup>1</sup> with Huayou and Ford for a 3-party relationship to process PTVI's nickel ores from Pomalaa block



# Advancing replacement projects through feasibility study



## Creighton Ph 5

Start-up: 20 – 24 ktpy Ni  
2027–2029 17 – 20 ktpy Cu

High-grade polymetallic ores at Creighton deeps  
15-year life of mine  
Advanced to FS/FEL 3 in 2022

## CCM Pit

Start-up: 12 – 15 ktpy Ni  
2026–2027 7 – 9 ktpy Cu

Recommissioning of a high-volume open pit mine in Sudbury  
~7-year life of mine  
Advanced to FS/FEL 3 in 2022

## Victor

Start-up: ~5 ktpy Ni  
2028 ~20 ktpy Cu

Set of high-grade polymetallic deposits with a focus on copper  
Studies with Glencore

## South Hub

Start-up: 2026+ ~60 ktpy Cu

Extending the life of Sossego plant  
Bacaba and Cristalino projects most advanced: FS/FEL 3 stage  
Planned anticipation of Bacaba development  
Investment decision expected in 2023



# Strong growth opportunities at the right jurisdictions

Well-positioned to support and supply North America EV and renewables growth



## North Atlantic

### Thompson Ultramafic

Large nickel ultramafic-hosted deposit  
Stage: Exploration

### Voisey's Bay Exploration targets

Recent drill results confirm exploration potential for new discoveries and extended life of mine  
Stage: Exploration

Attractive exposure to Indonesia

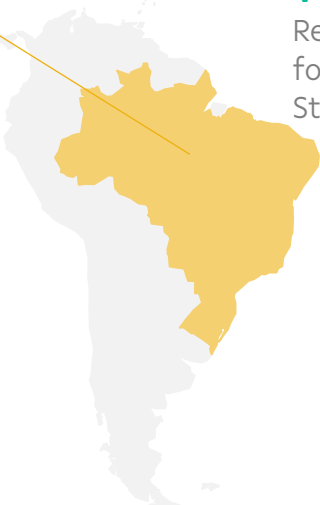
## Carajas

### Alemão (60 ktpy)

High grade copper deposit  
Mine life: ~ 22 years  
Start-up: 2027+  
Stage: FEL 3 / DFS

### North Hub (70 – 100 ktpy)

Development of Northern deposits  
Start-up: 2030+  
Stage: FEL 1 / Scoping



A Tier 1 mining complex with growth optionality

## Indonesia

### Hu'u (up to 350 ktpy)

World class copper project with predicted mine life of >45 years  
Startup: 2030+  
Stage: FEL 2 / PFS

### Sorowako HPAL (60 ktpy)

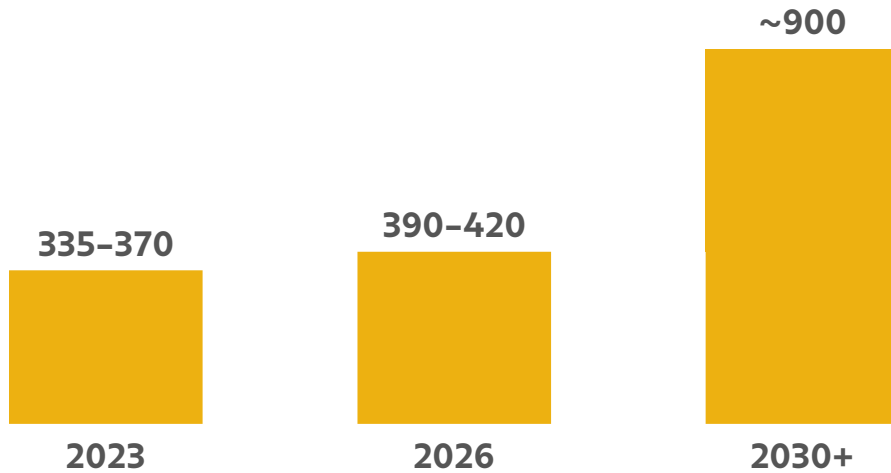
Convert already mined limonite into revenue.  
Signed Heads of Agreement with Huayou for same commercial structure as Pomalaa HPAL with 30% call option  
Start-up: 2027      Stage: FEL 3



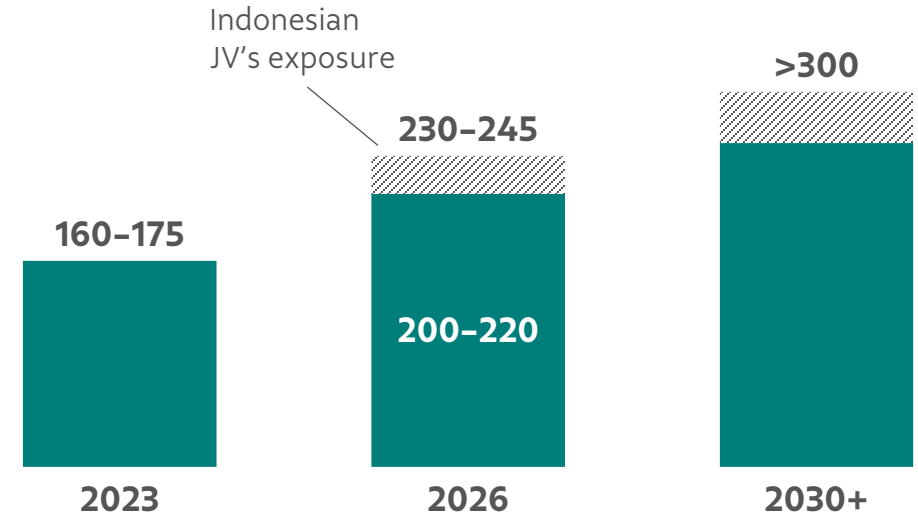


# Actioning a plan to meet the needs of the Energy Transition

Copper production  
ktpy



Nickel production  
ktpy



### Mid-term projects

- + Salobo 3
- <sup>R</sup> South Hub extension

### Long-term potential

- + Alemão
- + North Hub
- <sup>R</sup> Carajás additional optionalities
- + Hu'u

<sup>R</sup> Replacement project    + Growth project

### Mid-term projects

- <sup>R</sup> Replacement capacity in Canada
- + Pomalaa and Bahodopi exposure
- + Onça Puma 2nd furnace

### Long-term potential

- + Thompson Ultramafics
- + Sorowako HPAL exposure
- + Joint Venture projects and offtakes

<sup>R</sup> Replacement project    + Growth project



## Key takeaways

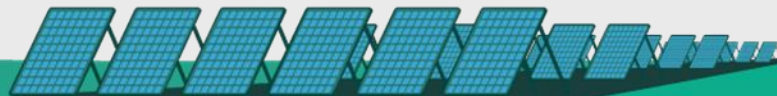
- ⚡ Energy transition provides **once in a lifetime opportunity**
- ⚡ High-quality **low-carbon products** to support the energy transition
- ⚡ Strong social and environmental practices, having **circular mining as a pillar** of our business
- ⚡ Taking the **right actions** for improved performance
- ⚡ Advancing development of our **robust pipeline of project** to support accretive **growth opportunities**





# *Stay disciplined*

Gustavo Pimenta, CFO





# Non-replicable future-facing commodities platform

## Unique attributes...



Largest pure future-facing commodity player



Ring-fenced governance with a dedicated Board



Access to competitive capital to fund US\$ 20 bn+ capex<sup>1</sup>



Readiness to attract and retain top talent in the industry

## ...generating high interest from potential partners

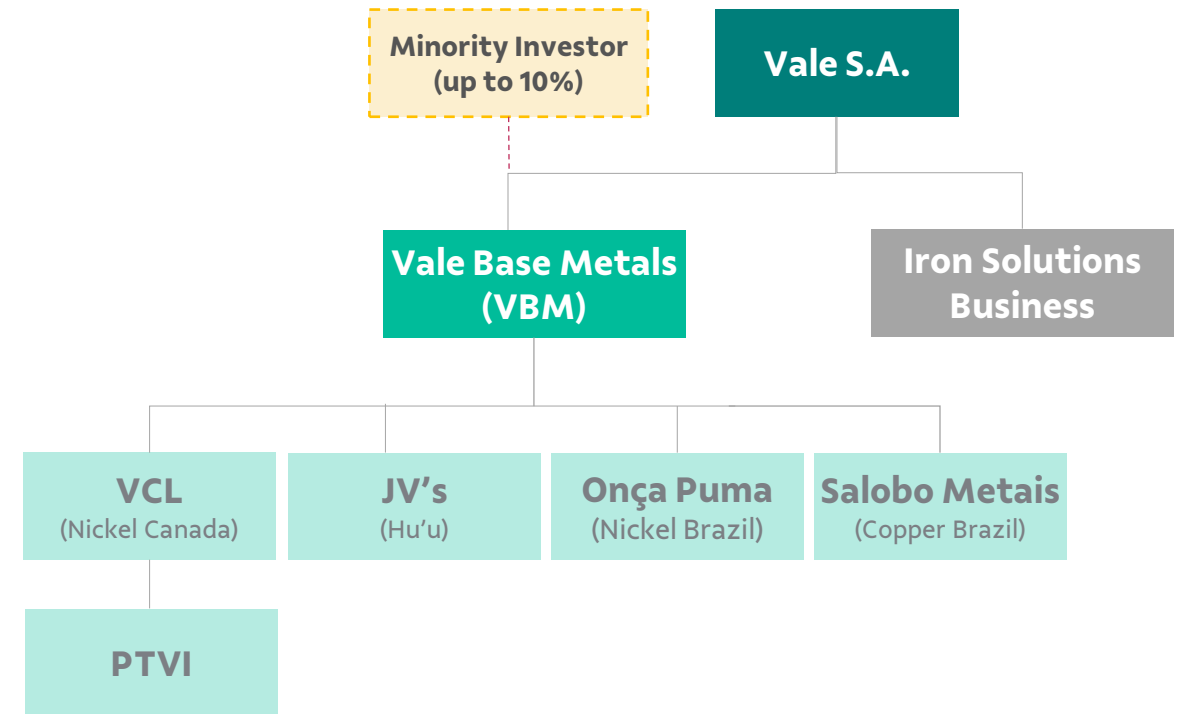


Long-term and strategic partners engaged



Use of proceeds: finance accretive growth opportunities

## ...with a dedicated vehicle





# Promoting strong ESG practices for a more sustainable mining while driving perception changes

## Vale's ESG rating

	End of 2019	End of 2021	Today	Goal
<b>Sustainalytics</b> <i>(the lower, the better)</i>	54.5	39.1	<b>39.1<sup>2</sup></b>	Be a leader in ESG practices
<b>ISS Governance</b> <i>(the lower, the better)</i>	10	6	<b>1</b>	
<b>MSCI</b>	CCC	CCC	<b>B</b>	
<b>DJSI<sup>1</sup></b> <i>(the higher, the better)</i>	45	63	<b>67</b>	
<b>Moody's</b>	-	CIS-4 <sup>3</sup>	<b>CIS-2<sup>4</sup></b>	

## What we are doing to enhance perception



Closing **ESG gaps**



**Active engagement** with key stakeholders



**Closing major legacy controversies**



**Transparency evolution**



**UNGC Principles** continuous commitment

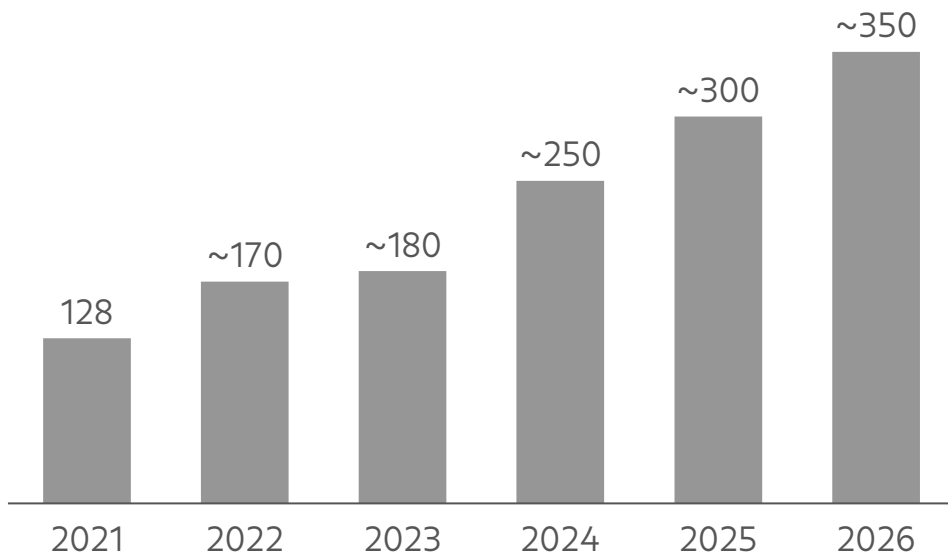




# Investing in exploration to foster optionality and sustain long-life mine

Increasing exploration activities to meet our strategic goals

Mineral exploration R&D expenses (US\$ million)

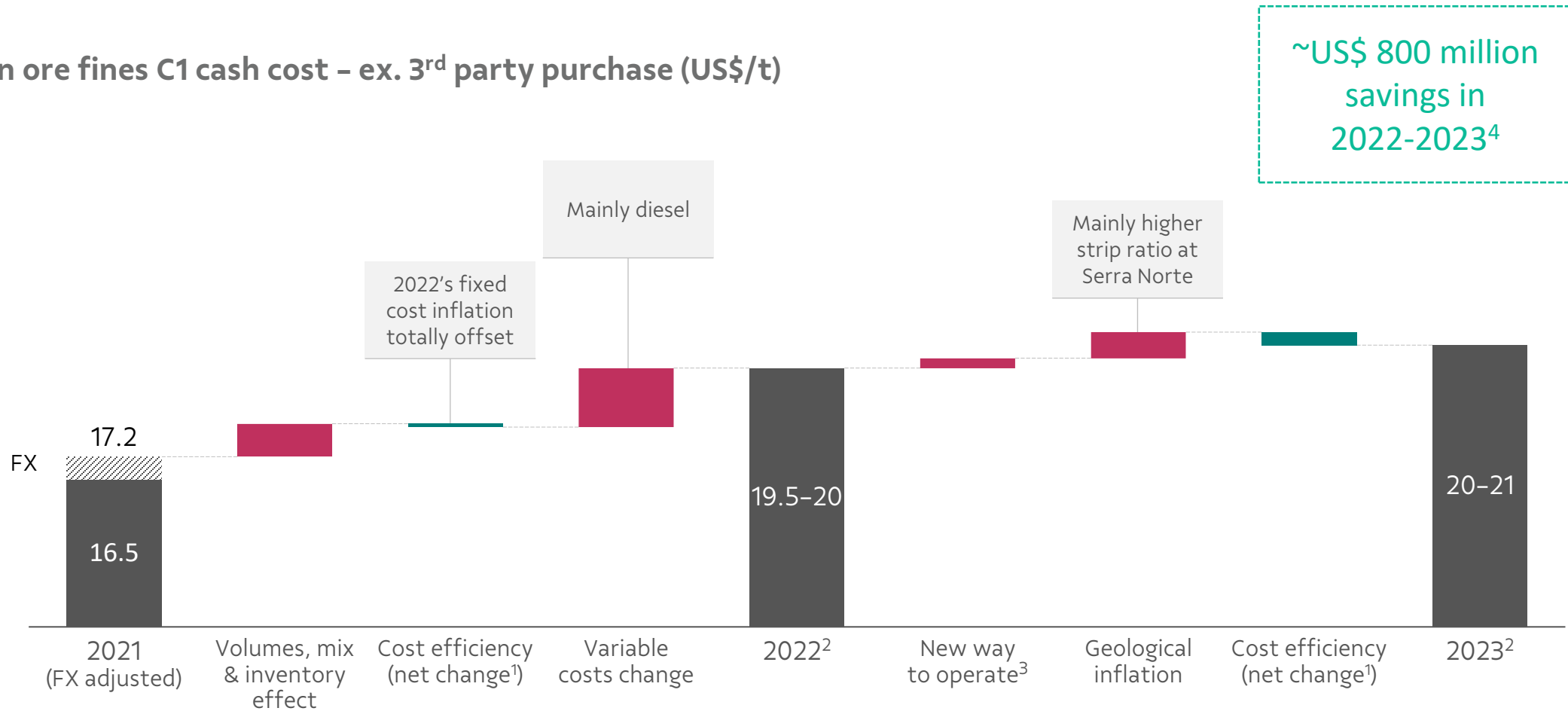


- Iron ore** Support high quality production with lower all-in costs, replenishing reserves
- Nickel** Increase production and grow reserves while reducing costs
- Copper** Substantially increase exposure to the copper industry



# Remaining focused on cost efficiency

Iron ore fines C1 cash cost – ex. 3<sup>rd</sup> party purchase (US\$/t)



~US\$ 800 million savings in 2022-2023<sup>4</sup>

<sup>1</sup>Net of inflation. <sup>2</sup>2022 BRL/USD exchange rate of 5.16 and 2023 BRL/USD exchange rate of 5.20. <sup>3</sup>Including tailings filtration plants ramp-up, health & safety, dam management, geotechnics, risk and sustainability costs. <sup>4</sup>In Ferrous business, including fixed costs initiatives already captured in 2022 and mapped for 2023.



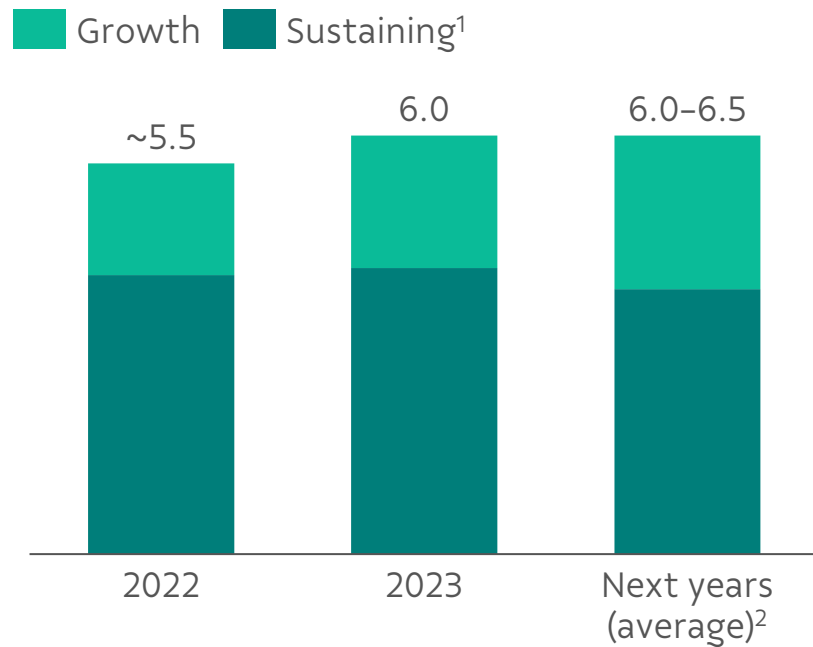
# Among the lowest cost producers in the industry

	All-in costs <sup>1</sup>			
	2022	2023	2026	
<b>Iron Ore</b>	US\$ 49/t	US\$ 47/t	US\$ 42/t	<ul style="list-style-type: none"> <li>Higher premiums and share of agglomerated products, lower bunker costs and higher volumes / fixed cost dilution</li> </ul>
<b>Nickel</b>	US\$ 13,000/t	US\$ 13,000/t	US\$ 10,000/t	<ul style="list-style-type: none"> <li>Higher volume of premium materials in the mix<sup>2</sup>, and fixed cost dilution (VBME and CCM 1 ramp-up), Onça Puma 2<sup>nd</sup> Furnace</li> </ul>
<b>Copper<sup>3</sup></b>	US\$ 4,000/t	US\$ 3,200/t	US\$ 2,600/t	<ul style="list-style-type: none"> <li>Higher volumes and fixed cost dilution, Salobo 3 ramp-up and productivity improvements</li> </ul>



# Stable and disciplined capex program supporting operational reliability and accretive growth opportunities

Capital expenditure (US\$ billion)



Controlled and efficient capex to sustain production level



Low carbon agenda initiatives



Accretive growth opportunity



# Ensuring reparation and fulfilling our commitments

## Brumadinho & Mariana commitments (US\$ billion)<sup>1</sup>

	2022	2023	2024	2025	2026	2027+	
Decharacterization	0.4	0.4	0.5	0.5	0.5	2.4 <sup>4</sup>	More stable and longer annual cash outlays
Brumadinho agreements <sup>2</sup>	1.4	1.1	0.9	0.6	0.9	0.0	58% of Reparation Agreement completed by 2022 <sup>7</sup>
Incurred expenses	0.6	0.5	0.5	0.4	0.3	0.3 <sup>5</sup>	Gradual reduction throughout the years
Samarco & Renova <sup>3</sup>	0.4	1.9	1.0	0.3	0.1	0.1 <sup>6</sup>	Performing on TTAC
<b>Total</b>	<b>2.8</b>	<b>3.9</b>	<b>2.9</b>	<b>1.8</b>	<b>1.8</b>	<b>2.8</b>	

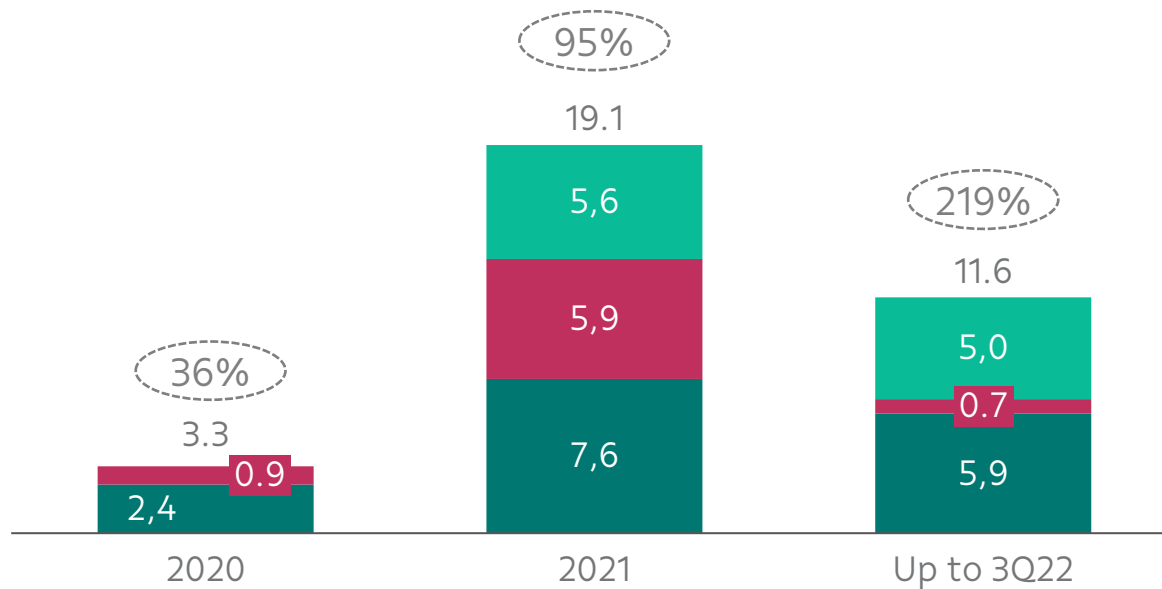


# A highly disciplined capital allocation framework

## Shareholder remuneration

US\$ billion

- Share buyback
- Extraordinary dividends<sup>1</sup>
- Dividends<sup>1</sup>
- Free cash flow returned to shareholder (%)



Vale returned **US\$ 34 billion** to **shareholders** since 2020, **~50% of market cap<sup>2</sup>**



# Expected to generate significant cash for distributions

Free cash flow 2026<sup>1</sup>  
US\$ billion

		Nickel / Copper price ('000 US\$/t)		
		20 / 7.5	22 / 9.0	24 / 10.5
Iron ore price (US\$/dmt)	90	5.7	6.6	7.5
	100	8.1	9.0	9.9
	110	10.5	11.5	12.4

**~7-16%** of free cash flow yield<sup>2</sup>

Excess cash will be allocated among share buybacks and extraordinary dividends



# *Closing remarks*

Eduardo, CEO







# Strengthening our strategy to the Vale of the future

## promote *sustainable mining*

- *People-driven*
- *Reliable operator*
- *Benchmark in safety and dam management*
- *Shared value*
- *Nature positive*

## foster *low carbon solutions*

- *Focused on high quality products and resources*
- *Iron Solutions*
- *Energy transition materials*
- *Circular mining*

## stay *disciplined*

- *Efficient capital allocation*
- *Attractive cash return to shareholders*
- *Strong balance sheet*
- *Cost and capex efficiency*

---

***We exist to improve life and transform the future. Together.***

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**VALE**