## **Transforming To Achieve Our Purpose**

**Barclays Conference** 



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## 1. Opening remarks



#### 1. Opening remarks

### Vale has undergone significant changes in the last years Cultural reset



## Our governance has evolved



 Advisory Committees composed exclusively of BoD members

# 2. We are becoming a safer company



### We improved our tailings and dam management considerably



#### Governance

2019

- Strengthen 3-line of defense model
- Dedicated Safety Office
- Geotechnical Risk Committee



Adoption of International Best Practices

 New TDMS (Tailings and Dams Management System)

- 3 Geotechnical Monitoring Centers
- Engineer of Record
- Improved technical understanding of Vale's dams ("As-is" project)
- Adoption of GISTM (Aug/20)



Lower Risk Solutions

- Hazard Identification and Risk Analysis (HIRA) for dams and tailings facilities
- Upstream dam elimination program
- New way to operate alternatives to tailings – Filtered Tailings
- Co-products



Our ambition World-class standards and processes

**Cultural Transformation Journey** 

## Our current tailings management approach is based in a multi layers of protection, improving our capacity to avoid accidents

Business units	Safety & Risk	Internal audit	External sentinels			
Geotechnical operations team	Technical VP	Chief Compliance Officer	Engineer of Record	Independent Auditors	Dam Safety Reviews	
"risk owner" Accountable executive		Internal audit and whistleblower channel	Dam safety inspections and performance assessments	Public Prosecutors technical reviews and Tailing Review Boards (ITRB)	Periodical technical reviews by external engineering company	
1 <sup>st</sup> line of defense	2 <sup>nd</sup> line of defense	3 <sup>rd</sup> line of defense			1 /	
	No compensation tied to production or financial metrics					



<sup>1</sup>TSF stands for Tailings Storage Facility, with criteria agreed by the International Council on Mining and Metals' Tailings Advisory Group in response to the Church of England information request, which may differ from Brazilian National Mining Agency criteria. <sup>2</sup> A requirement by the Global Standard Industry on Tailings Management.

### **Tailings Management Strategic Pillars**

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Co-products: recycling dry tailings to sustainably increase production capacity



### **Tailings Management Strategic Pillars**



Implementation of a new and transformed Tailings & Dams Management System (TDMS)

Vale will comply with the Global Industry Standard for Tailings Management

Eliminating Upstream TSFs - De-characterization Program

New Way to Operate – New projects to reduce the reliance on TSFs

Co-products: recycling dry tailings to sustainably increase production capacity



### Tailings & Dams Management System (TDMS)<sup>1</sup>

Cultural transformation focused on Transparency, Leadership and Performance





11

### Engineer of Record is responsible for periodic inspections Monthly Tailing and Dam Performance Assessment is publicly disclosed

#### Geotechnical Performance Condition Classification Table for TSFs Satisfactory With Possible Unsatisfactory With Possible Safety Unsatisfactory With Possible Safety Satisfactory With Restriction **Operational Improvements** Issues Issues non-exhaustive **EoR Monthly Performance Assessment ↑↓** Mine DCE **Emergency Level** Country ↑↓ Structure ↑↓ Municipality $\uparrow\downarrow$ Prev. Month Cur. Month\* Barragem Brazil Barão de Cocais Brucutu Negative Level 1 Norte/Laranieiras Área IX Negative Brazil Ouro Preto Fábrica Level 2 Brazil 6 MAC Águas Claras Negative Nova Lima Level 1 7A MAC Águas Claras Brazil Nova Lima Negative Level 1 Barragem 5 -Brazil Nova Lima Mutuca Negative Level 1 Mutuca Barragem 7B Águas Claras Positive Brazil Nova Lima Not applicable

www.vale.com/web/esg/dam-performance







12

### **Tailings Management Strategic Pillars**

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## **Commitment to the Global Industry** Standard on Tailings Management (GISTM)

Initiative led by Church of England Pensions Board, the Swedish Council on Ethics, ICMM and UNEP



#### Further information on slide 62

1 - Based on the results of the self-assessment conducted in December 2021, which had the 77 auditable requirements as main source and encompassed 66 Tailings Storage Facilities (TSFs). | 2 - Tailings Storage Facility with criteria agreed by the International Council on Mining and Metals' Tailings Advisory Group in response to the Church of England information request, which may differ from Brazilian National Mining Agency criteria. | 3 – TSFs inventory revision to adapt to GISTM criteria resulting in 50 TSFs



# Population close to risk areas removed and emergency drills performed

Emergency Action Plans for Mining Dams (PAEBM)<sup>1</sup> publicly disclosed<sup>2</sup> and fully aligned with of GISTM **Emergency response training with communities close to dams** 



Partnership with the local Civil Defense Agency to ensure appropriate conditions for simulations and emergency protocols activations



Alarm sirens placed in strategic areas to trigger emergency protocols



Teams and communication channels dedicated to the dialogue with communities



In case of mandatory removal, full support to reestablish living and working conditions to those affected



### **Tailings Management Strategic Pillars**

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### Vale is eliminating all its upstream dams to ensure zero harm



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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

Dike 3, one of the 5 structures eliminated in 2022

## No dam at critical safety condition by 2025



### **2** dams with emergency level removed in Apr-23

**10** dams with emergency level removed since 2022

**2** dams are in the process to reduce their emergency levels (expected to Aug-23)

**2025** No dam at critical safety condition (level 3)



<sup>1</sup> Includes tailings and sediments dams, dikes and drained stacks. As per the Brazilian regulation and as provided for in each Mining Dams Emergency Action Plan, considering level 3 as the critical emergency level. <sup>2</sup> Considering the maximum number of structures at emergency level in 2020. <sup>3</sup> The 21 structures encompass different heightening methods and include 10 upstream structures.

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

## Understanding the level 3 emergency upstream dams (2 structures)

Level 3 — No longer with access of people — Total Evacuation of all people downstream

### 2019 scenario:

- Immediate response to the B1 dam failure
- Dams with same technical characteristics of B1
- Change in the technical criteria to address liquefaction risks. Adoption of minimum parameters.
- No change or degradation in the dam conservation status.
- Adoption of remote monitoring and remote inspections

### 2023 scenario:

- Back-up dams downstream to reduce consequences
- Measures to improve stability and safety conditions.
- 3 years of heavy rains recorded
- 3 years of good performance measured
- Conclusion of the B1 technical investigation by different world's top experts
- In-depth studies to improve knowledge on the them
- <u>1 dam reduced from Level 3 to Level 2 as a result</u> of technical works



### Level 3 dam's status



Forquilhas 3 – Advanced stage of Engineering



Sul Superior – Started tailings removal



## **Backup dam for Sul Superior**

36m height

330m length

## **Backup dam for Forquilhas**

93m height

315 m length

### Upstream dam elimination program is 40% completed 60% will be eliminated by 2025



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



No dam at critical safety condition by 2025



2. We are becoming a safer company

### **Precautionary approach:** Use of remotely operated equipment to remove tailings in critical safety structures





## Fernandinho Dam de-characterization concluded 2021

Vargem Grande Complex, Minas Gerais State, Brazil

## 8B Dam de-characterization concluded 2019

<u>VIDEO</u> <u>De-characterization</u> <u>Program</u> (Dec/22)

### **Tailings Management Strategic Pillars**

Implementation of a new and transformed Tailings & Dams Management System (TDMS)

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New Way to Operate – New projects to reduce the reliance on TSFs

Co-products: recycling dry tailings to sustainably increase production capacity



### New way to operate to reduce tailings and the use of dams



US\$ 2.5 bi invested

Dry tailings used as co-products





Sand as raw material for civil construction



Dry tailings to promote infrastructure improvements in communities

Circular mining approach

29

### Building a sustainable performance in Health & Safety



## We are becoming a safer company

Redesigned governance supporting risk management with tailored compensation

On track to be fully adherent to GISTM

Upstream de-characterization program is 40% completed and progressing to 60% by 2025

No dam at critical safety condition by 2025

Reducing our reliance on dams with filtration plants and circular mining

Boosting our culture for a more safe and reliable organization



## 3. Reparation



## **Ensuring Integral Reparation**

### **Reparation based on UN Principles<sup>1</sup>**

- **FSI** Public apology
- Restitution
- Rehabilitation
- (economic & noneconomic)
- Sanctions (legal & administrative)
- Measures for non-repetition

#### **Main Actions**

- Emergency Works
- Indemnification Payments
- Projects (infrastructure, socioeconomic, environmental)
- Resettlement & Evacuated Regions

### Regain the social license to operate

Key lessons								
Active listening	Open dialogue		Humility Compassion		Taking responsibility	On-the-ground presence		
Tone of communic	ation	Empathy	Strong	management	Operational discipline	Data-driven discussions		



## 4. Brumadinho Reparation



## Efforts to locate and identify victims

### 272 fatalities

- 3 remaining "gems" (victims)
- Search facility operated by the Military Firefighter Corps of the state of Minas Gerais
- Financial resources were provided, with donations of state-of-the-art equipment and improved infrastructure

# Since the collapse, we have been implementing initiatives in 26 different municipalities and 131 communities



Our efforts to provide economic reparation extend beyond the Paraopeba Basin, covering an area of 27,600 km<sup>2</sup>

## **Global Settlement for Integral Reparation**

Agreement Amount (US\$ billion<sup>1</sup>)



The Settlement, signed with the Minas Gerais state government, the State and Federal Public Prosecutors' Offices, and the Public Defender's Office for the state of Minas Gerais, represented the legal formalization Vale's obligations to act and provide payments within the scope of socioeconomic and socio-environmental reparation.



4. Reparation

## Brumadinho: 58% of the agreement is completed







## Reparation and development initiatives key pillars

- Compensation Plan (Evacuated Regions)
- Environmental reparation
- Water monitoring
- Basic sanitation
- Social projects and support for those affected
- Social and economic development
- Social and urban infrastructure works

# Significant improvement in water quality, comparable to or surpassing pre-collapse levels during the dry season

Concentration of manganese in the Paraopeba River's water compared to conditions prior to collapse:



Data are corroborated through means of monitoring carried out by the Minas Gerais Water Management Institute (Igam)



# We are restoring biodiversity through fauna and flora rescue, area recovery, species monitoring, and animal care



From 658 hectares that will be recovered until 2029, 155 hectares (23.6%) are already in the process of environmental recovery (around 61,000 seedlings of native species of the Brumadinho region have been planted).



# We strive to ensure that all impacted residents can access their right to high-quality water in the necessary quantity



+1,500 points for monitoring of water quality



+2,500 water supply points



Drilled and reactivated wells



Individual water treatment system for the rural community



New upstream water catchment in the Paraopeba river



New water catchment in Pará de Minas

### +4 million people have been served through water supply initiatives<sup>1</sup>



Promoting comprehensive reparation in affected communities involves actively engaging and working together with the community

- The Family Reference Program provided more than 166 thousand psychosocial services.
- 143 community leaders received training under the Program for Strengthening Public Services.
- Creation of the Community Center: Integrative Practices for the family members victims, co-managed by AVABRUM<sup>1</sup>

- Health Cycle Program: donation of 5,754 pieces of equipment and 2,541 trained professionals.
- Comprehensive Assistance Program for Affected People: activities in financial education, productive recovery, assisted purchasing and psychosocial support (10,000 consultations).
- Temporary housing and hotels: social support to 732 families

<sup>1</sup> AVABRUM – Association of the Family's Victims and People Affected by the rupture of Córrego do Feijão's dam.

# We have implemented projects to transform experiences, foster economic development and improve quality of life



Valorizar Program, with a total of 58 awardwinning social organizations to support income generation



**Cultivar Project,** with 877 inputs and seeds donated to 25 producers to support agricultural productior



**Professional training,** with 144 residents of local communities trained



**Collectors of Recyclable Materials Program,** currently trains 199 participants

## Nowadays, people can rely on preschools, basic health units, public squares and paved roads



## And today, what do we still need to do?

- **Find** the three remaining "gems" (victims)
- **Finalize** pending compensation
- Comply with all the commitments made and agreements signed, contributing to improving the quality of life in the affected municipalities.
- **Continue to recover** the Paraopeba River.
- Carry out the complete management and disposal of the tailings.
- Restore confidence among all stakeholders.
- ... And dialogue, dialogue, dialogue!



## 5. Mariana Reparation



### Fundão dam breach



<sup>1</sup> Compliance index which compares the water quality results obtained in the monitoring with the legislation's reference values, as of November 2022. <sup>2</sup>As of December 31, 2022. Interrupted cases and public buildings are not included. <sup>4</sup> Amounts do not include the Renova Foundation's administrative expenses and the TAC Governance.

## Our goal is to fully repair the damage caused

### 42 programs





## Speeding up Mariana reparation



R\$ billion



### Number of housing solutions<sup>2</sup>



<sup>1</sup> Amounts do not include the Renova Foundation's administrative expenses and the TAC Governance. <sup>2</sup> Interrupted cases and public buildings are not included.

### **Bento Rodrigues resettlement**



**06** families living in new homes and **08** keys handed over

124 concluded proprieties

7 concluded public goods

**38** proprieties under construction

**3** public goods under construction



### Paracatu resettlement



51 concluded proprieties

10 proprieties under construction

13 public goods under construction



### **13** key deliveries planned for the next 60 days

## Substantial progress on Rio Doce recovery

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



1.5 million data points per year
690 km of water monitoring
80 monitoring points
22 automatic monitoring stations
145 monitoring parameters



## 6. Building a better Vale



6. Building a better Vale

### Sustainability across the business

promote sustainable mining

foster low carbon solutions

stay disciplined

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



Exploration	Project	Operation	Closing Operations	Mine Closure	SLoM
Stud		(Sustainable Life of Mining)			
Establishing Future Use					



## Going beyond reparation, our ESG commitments to the needs of society



### **Climate Change**

Reduce absolute GHG emissions, from Scopes 1 and 2, in 33% by 2030; Achieve zero net emissions in Scopes 1 and 2 by 2050; Reduce Scope 3 emissions by 15% by 2035.



### Energy

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



### Forests

Recover and protect +500,000 ha by 2030 beyond the company's borders.



#### **Atmospheric emissions**

Reduce PM and SOx emissions by 16% and Nitrogen Oxide emissions by 10%.



Dams

S (Social)

No tailings dams in critical safety condition (emergency level 3) by 2025; Implementation of GISTM in operations by 2025; Decharacterize all upstream dams in Brazil by 2035.

### Water

E (Environment)



Reduce uptake fresh water by 10% until 2030. The goal was reached and for 2023 a new commitment will be launched

G (Governance)



### **Diversity & Inclusion**

26% representation of women by 2025 and 40% of leadership positions in Brazil occupied by black employees by 2026.



#### Health and Safety

Zero the number of recordable high potential injuries (N2) by 2025.



### **Resilient Communities**

Support 500,000 people out of extreme poverty;



### **Indigenous Peoples**

Support indigenous communities neighboring Vale's operations in their plans in pursuit of the rights aligned to UNDRIP<sup>1</sup>

### **Social Performance**

To appear in the TOP 3 in the social requirements of the main external evaluations; (MSCI, Dow Jones and Sustainalytics);

### ESG Gaps

Close key ESG gaps against best practices by 2030

<sup>1</sup> United Nations Declaration on the Rights of Indigenous Peoples

6. Building a better Vale

### Nature & Climate Agenda





6. Building a better Vale

# Fighting poverty is essential to develop resilient communities and our business

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



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

### Supported by partnerships



## 7. Closing remarks



### We are taking important steps towards building a better Vale

Delivering on our priorities **Reparing Brumadinho and Mariana** 

Enhancing our tailings & dam management

Resuming and stabilizing operations

Reshaping our portfolio with divestment program

Changing for a sustainable mining Transforming our culture for a better Vale

Growing in transition metals for EV industry

Developing iron solutions for low carbon steel industry

Being disciplined in our capital allocation

Rebuilding trust with society





# A strong governance and oversight for TSF<sup>1</sup> management, supported by tailored executive compensation





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### **Concrete steps towards GISTM implementation**

centers with TARPS<sup>3</sup>

Non-exhaustive examples

#### **Public disclosure** Design, construc-Emergency Affected Integrated Management response and longand access to tion, operation & communities<sup>1</sup> knowledge base and governance information monitoring term recovery The PAEBM<sup>1</sup> registers Consequence of failure Policies, systems and PAEBM<sup>1</sup> publicly GISTM implementation Grievance Global accountabilities commitment disclosed Standard released on the project-affected classification being disclosed<sup>2</sup> people (socioreviewed in accordance completely reviewed at the ESG Portal October 30, 2020 economic and with GISTM Engagement with public sector agencies Human Rights Global environmental) ITRB and EoR appointed ESG Portal under Addressing brittle failure in post-failure Policy and Global frequent review to modes with conservative accommodate all the The most at-risk Multi levels of review Standard Procedure for response strategies TSF and information engagement with groups are also design criteria implemented identified (implementation of Brumadinho Indigenous People and requested backup dams for the Traditional Geotechnical reparation enabling participation of the Monthly EoR reports Probabilistic seismicity critical upstream TSF) knowledge portal Communities hazards and climate publicly disclosed implemented affected people in the change assessments Design Basis Report restoration and Brazilian legislation requires FPIC being performed prepared by EoR's Organizational culture recovery works and with VPS enforcement ongoing monitoring TSF break studies HIRA to assess risks and All process that requires activities PAEBM review has an under review. critical controls. Ombudsman channel with whistleblower following best geotechnical monitoring Indigenous and

protection

<sup>1</sup> Emergency Action Plans for Mining Dams.
 <u>https://vale.com/pt/paebm</u>

Quilombola component

practices

## All sites are already covered by HIRA<sup>1</sup> first cycle



Reassessments every 3 years (critical sites) or 5 years (non-critical sites)

