



Executive Summary Global Industry Standard for Tailings Management

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A Word from the CEO



Eduardo Bartolomeo
CEO

"We have fulfilled our commitment and implemented GISTM in our prioritized Tailings Storage Facilities. This is an important milestone in the evolution of our dam management and the safety of our operations and surrounding communities. We will continue to move forward with the incorporation of best international practices so that Vale becomes an increasingly safe and sustainable company", says Vale's CEO, Eduardo Bartolomeo.

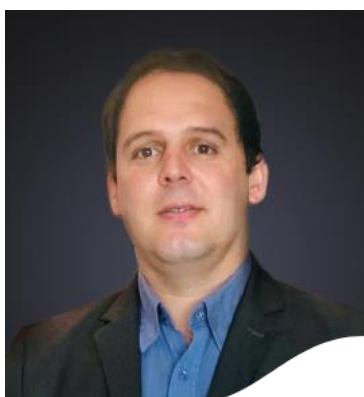
A word from the Vice President of Operations and Accountable Executive

"At Vale, we have a clear and unequivocal commitment to doing everything possible to ensure our Tailings Storage Facilities are managed according to best practices and the highest safety standard. For that matter, GISTM implementation stands for an industry milestone, especially by ensuring community safety and environmental protection. As Accountable Executive, I can assert we will continue to work diligently on GISTM maintenance, the action plans, and enhancement of our tailings facilities", underscores the Vice President of Operations and Accountable Executive, Carlos Medeiros.



Carlos Medeiros
*Vice President of Operations
& Accountable Executive*

A word from the Technical Vice President



Rafael Jabur Bittar
Technical Vice President

"Implementing the Standard is not a swift or straightforward process. It requires a high level of sustained effort over time, seeking to integrate social, environmental, and technical aspects aiming at avoiding any harm to people and the environment, with zero tolerance for human fatalities. Therefore, not all actions can be implemented in parallel, for they include technical challenges. We have already trodden a rather important path, but we still have a lot to do, and we remain steadfast in this commitment to having increasingly safer operations and complying with the best international practices", highlights the Technical Vice President, Rafael Bittar.

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1. Introduction

The Global Industry Standard for Tailings Management (GISTM) represents a milestone in the mining industry. Released in August 2020 by the International Council on Mining and Metals (ICMM), the United Nations Environment Program (UNEP), and the Principles for Responsible Investment (PRI), GISTM sets out comprehensive guidelines for Tailings Storage Structure (TSF) management.

In May 2021, ICMM complemented these guidelines by issuing the Compliance Protocols, aiming to provide guidance on the implementation of best TSF management practices. These protocols emphasize the need for an integral commitment by mining companies regarding the technical conduct and governance of their activities, aligned with the highest safety and socio-environmental responsibility standards.

Central to GISTM is the "zero harm" principle towards people and the environment, thus reflecting an effort to mitigate risks and enhance operational safety in mining Tailings Storage Facilities. The Standard sets out a global benchmark for social, environmental, and technical management excellence. This includes adopting strict safety practices at every TSF lifecycle stage, comprising planning, design, construction, operation, closure, and post-closure phases.

The aim is to ensure mining operations not only comply with, but exceed, current regulatory and ethical requirements, thus reflecting a commitment to sustainability and corporate responsibility.

GISTM requirements fall into six major categories: (i) engagement with affected communities; (ii) consolidation of an integrated knowledge base; (iii) enhancement of design, construction, operation, and monitoring of tailings disposal facilities; (iv) management and governance strengthening; (v) emergency response and long-term recovery efficiency; and (vi) transparency in public disclosure and access to information.

In January 2021, Vale, along with the other ICMM members, publicly committed to implement GISTM in all its TSFs classified as of "Extreme" or "Very High" consequence, by August 5, 2023. Additionally, all other facilities not under a safe closure status will have to comply with the standard by August 5, 2025, which expresses the industry's commitment to adopting such practices.

This document is part of Vale's commitment to provide transparency in the semi-annual disclosure of GISTM compliance results monitoring achieved in our TSFs.

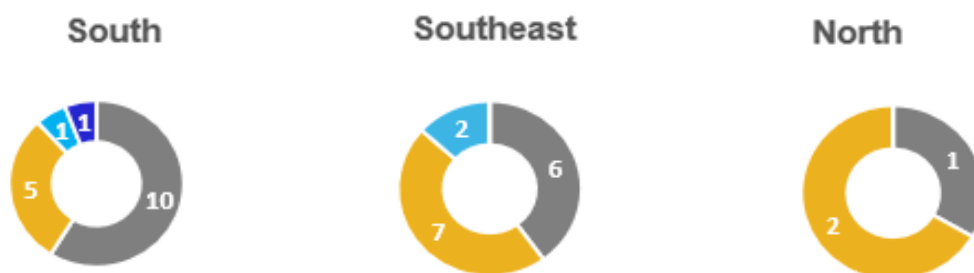
2. Vale's Portfolio of Tailings Storage Facilities

Reaffirming the commitment made to ICMM, society and its employees, Vale has implemented GISTM, as established by ICMM Compliance Protocols and regardless of the consequence classification, in the 35 TSFs of Iron Ore Solutions unit in Brazil, as of August 5, 2023.

Two TSFs, Torto Dam and Pedra Dike, will be in compliance with GISTM by August 2025, also according to a public commitment. Torto Dam was under construction by the time GISTM was released, and Pedra Dike was incorporated to the dam portfolio also after GISTM was released.

Table 1 shows the list of the 35 GISTM-compliant Iron Ore Solutions TSFs and their respective consequence classifications.

Table 1 – List of the 35 Iron Ore Solutions TSFs and their Consequence Classification based on GISTM



Key: ■ Extreme ■ Very High ■ High ■ Significant

South Corridor	
TSF	Classification
5 - MAC	Extreme
5 - Mutuca	
Forquilha I	
Forquilha II	
Forquilha III	
Forquilha IV	
Maravilhas II	
Maravilhas III	
Vargem Grande	
VI	
Área IX	Very High
B3/B4	
Dam 7	
Forquilha V	
Grupo	
Maravilhas I	High
Peneirinha	Significant

Southeast Corridor	
TSF	Classification
Conceição System	Extreme
Diogo	
Galego	
Itabiruçu	
Pontal System	
Rio do Peixe (Dam)	
Campo Grande	Very High
Doutor	
ED Monjolo	
ED Vale das Cobras	
Timbopeba	
Xingu	
Sul Superior	High
North/Laranjeiras	
Sul (Córrego do Canal)	

North Corridor	
TSF	Classification
Gelado	Extreme
Azul	Very High
Kalunga	

3. Implementation History to GISTM Compliance, August 2023

2019

In 2019, Vale strengthened its risk management model with the implementation of the three-line defense system. It also established Executive Risk Committees reporting to the company's Executive Committee and Board of Directors.

Also in 2019, Vale began enhancing its own Tailings and Dams Management System (TDMS), establishing roles and responsibilities, standards, and procedures for safe TSF management. TDMS development was supported by specialized international consultancy.

2020

In 2020, shortly after GISTM release, Vale mobilized a dedicated and exclusive team to prepare, plan, and develop performance indicators, in addition to creating and acquiring control tools to monitor the company's GISTM implementation processes.

In October 2020, Vale's Board of Directors approved a new Safety Policy for Dams and Geotechnical Mining Facilities (POL-0037-G), which has GISTM as one of its main references. Among other guidelines, the Policy mandates that all components of the TDMS use and apply the best available technologies and practices in accordance with international institutions, including ICMM.

The formal GISTM implementation process started out in September 2020 through self-assessment followed by a review conducted in 2021.

2021

Grounded on such progress, still in 2021, a specialized external consultancy was retained to perform a gap assessment. In November 2021, Vale reported 60% compliance with the requirements, a result used as a reference to assertively establish the action plans for completion of the other requirements.

The results of this assessment were disclosed in March 2022 on the ESG Portal: https://www.vale.com/documents/d/guest/sumario_executivo_gistm

2022 to August 2023

In March 2022, the second GISTM implementation program phase was launched. This program encompassed a series of integrated activities involving multidisciplinary teams of the company and aimed mainly at engagement, in-depth understanding of requirement interpretation, with permanent technical discussions, and development of action plans to meet the requirements.

Due to the wide-ranging GISTM requirement scope, a continuous team maturity gain could be observed throughout the work on the various action fronts, with crystal-

clear line of defense improvement in environmental, social, and governance aspects.

For another external verification by an independent company, aiming at calibration and validation of GISTM implementation methodology and results achieved in its Iron Ore Solutions operations, Vale retained a specialized technical consultancy at the end of 2022, whose results also support the information presented by this Executive Summary.

Figure 1 shows major GISTM implementation actions on a timeline.



Figure 1 – Timeline of major GISTM implementation actions at Vale

For TSFs of the Tailings Stack (PDR) and Combined Tailings and Waste Stack (PDER) type, Vale is currently implementing GISTM requirements, with deadline on August 5, 2025, according to a public commitment.

4. GISTM Compliance Maintenance Program (August 2023 onwards)

GISTM Compliance Maintenance Program is a set of governance processes within the company, ensuring thorough monitoring of management and control for any compliance deviation related to the standard requirements may be observed during TSF lifetime.

According to ICMM Compliance Protocols criteria, the company may declare compliance with GISTM, considering both requirements met and those with an ongoing action plan.

The implementation and compliance process associated with a management standard such as GISTM is an ongoing process. To facilitate indicator monitoring and control, Vale has established the following:

- **Compliant requirements** are those that have already been met during implementation and do not require action plans.
- **Transitional compliance requirements** are those that have been met, but that still have action plans in place.

Requirements classified as 'transitional compliance' bear a higher complexity level and, therefore, they are associated with GISTM requirements requiring engineering work and/or other long-term measures. These requirements are expected to be completed as soon as reasonably possible, and such actions will be properly monitored, followed up, and informed to all stakeholders.

In addition to meeting the 77 GISTM Requirements, a compliant TSF means that information oversight, monitoring, and transparency have improved and are continuously improved. Primary focus is on people and environment safety throughout TSF lifecycle.

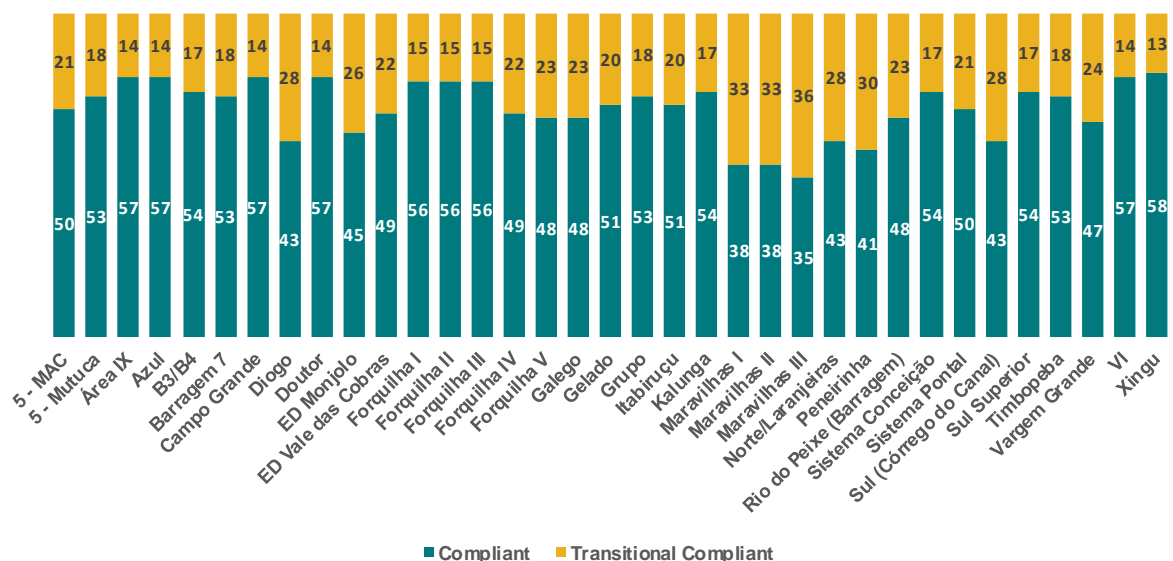


Figure 2 – Quantity of Compliant and Transitional Compliant Requirements of the 35 Iron Ore Solutions TSFs

For the transitional compliant requirements, the ongoing action plans have been approved of by the Accountable Executive, including completion deadline.

Figure 3 shows an analytical deadline forecast diagram for compliance with the requirements of the 35 Iron Ore Solutions TSFs, considering the completion of the ongoing action plans within the 2024 cycle.

In line with GISTM objective of zero harm to people and the environment, Vale has completed all actions aimed at ensuring this integrity. Therefore, even facilities with ongoing actions are safe for communities and the environment.

Some highlights on the GISTM topics shown in Figure 3 are summarized as follows:

In Topic 1, in its only Principle (1), Requirement 1.2 was considered not to apply to all TSFs, and Requirement 1.3 requires further studies for Community Relationship Plan development.

In Topic 2, comprising two Principles (2 and 3), Requirement 3.3 was considered not to apply to all TSFs, and Requirements 2.1 and 3.1 still have ongoing actions to prove climate change parameters have been applied to the knowledge base, as well as risk and opportunity assessments to all TSF lifecycle stages. Some specific Requirements (e.g., 2.2, 3.2, and 3.4) require best closure opportunity assessment to be completed, as well as changes to the facility to be assessed and included in the Change Assessment Report (RAA).

In Topic 3, consisting of four Principles (4, 5, 6, and 7), Requirement 5.3 needs to substantiate the application of climate change parameters to the knowledge base and risk and opportunity assessments to all TSF lifecycle stages. Requirements 6.1 and 7.1 need to integrate management systems to manage socio-environmental risks and impacts in a structured way in the short and long term regarding all TSFs. The requirements of Principle 4 and 7, in general, require a rationale to be put together for seismic study loading methodology. As for Principle 5 Requirements, information is being consolidated into a report entitled *Design Basis Report* (DBR), as well as best closure opportunities are being assessed. Concerning Principle 6 Requirements, the survey on changes to the facility, which must be assessed and recorded in the Change Assessment Report (RAA), is currently underway.

In Topic 4, comprising five Principles (8, 9, 10, 11, and 12), Requirements 8.2, 10.2, and 10.3 have to integrate management systems to manage all TSFs. As for Requirement 8.6, the main action underway is the development of a succession plan for critical TSF safety functions. In Requirement 10.1, the main action underway refers to the need to substantiate the application of climate change parameters to the knowledge base, as well as risk and opportunity assessments to all TSF lifecycle stages. In Requirements 11.3 and 11.4, there are still ongoing actions regarding implementation of incident/accident analysis and investigation process and lessons learned between TSFs. Requirement 8.5 has ongoing actions related to Design Basis Report (DBR) development, and Requirement 10.5 has ongoing actions related to the survey of changes to the facility, which must be assessed and recorded in the Change Evaluation Report (RAA), and assessment of *best closure opportunities*.

As for Topic 5, comprising two Principles (13 and 14), Requirements 13.1 and 13.2 indicated the need for feedback to the community following simulation/training, signaling how suggestions received were dealt with, in order to substantiate meaningful engagement.

Topic 6 had all its Requirements met.

5. Public Disclosure

Vale maintains a comprehensive external communication network through various channels, e.g., Whistleblowing Channel, Contact Us, Reparation, amongst others.

Regarding GISTM, Vale publicly disclosed an Executive Summary of the Self-Assessment carried out in 2020/2021, which can be accessed at the Dams section of the ESG Portal. In addition to this document, since August 2023, Vale has maintained and updated this Executive Summary every six months.

For the Executive Summary on GISTM Self-Assessment 2020/2021, please visit: https://www.vale.com/documents/d/guest/sumario_executivo_gistm

For this Executive Summary, released in August 2023 and revised biannually, please visit: <https://vale.com/pt/web/esg/gistm>

The last GISTM principle (Principle 15) is the public information disclosure through communication channels, thus ensuring transparency based on standardized and complete data.

Principle 15 calls for "*Publicly disclose and provide access to information on Tailings Storage Facilities to support public accountability.*"

Also in line with Principle 15, its Requirement 15.1 states: "*Release and regularly update information on operator's commitment to safe management of Tailings Storage Facilities, implementation of tailings governance framework, policies, standards, or approaches applicable to the organization as a whole for design, construction, monitoring, and closure.*"

To comply with this requirement, Vale has developed a Disclosure Portal regarding its Iron Ore Solutions operations. This portal is a dynamic tool created to render navigation of Requirement 15.1 items more user-friendly for all Tailings Storage Facilities with GISTM implemented.

For information on Iron Ore Solutions operations, please visit: <https://principio15.azurewebsites.net/>

6. Final Remarks

Vale reaffirms its commitment to the Global Industry Standard for Tailings Management, as well as its dedication to activities associated with the integrity of its Tailings Storage Facilities.

The teams dedicated to GISTM implementation will remain committed to ensuring compliance with the Standard. This document is updated and released at least every six months.

Vale will continue with in-depth monitoring and strict maintenance of the activities described in this Document, with highest priority being applied to all safety-related activities regarding people, communities and the environment.

GISTM draft, released on August 5, 2020, can be accessed in Brazilian Portuguese on:

https://globaltailingsreview.org/wp-content/uploads/2020/12/global-tailings-standard_PT.pdf

GISTM Compliance Protocols, dated May 2021, can be accessed in Brazilian Portuguese on:

https://www.icmm.com/website/publications/pt/tailings/tailings_conformance-protocols-por-br.pdf

Approved of by the Accountable Executive

Carlos Medeiros

Vice President of Operations

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