

Tailings Management to Enhance Safety, Sustainability and Transparency

Mariana Teixeira

Environmental & Social Governance Brazil Manager

Hatch, São Luís, Maranhão, Brazil

Corresponding author: mariana.teixeira@hatch.com

Abstract



Management of major risks for tailings facilities has become a key financial driver for investors. This is necessitating cultural change, and robust steps forward to be taken in tailings governance. Major tailing asset owners and members of Industry Council of Mining & Metals (ICMM) are committed to implement the Global Industry Standard for Tailings Management (GISTM) for critical operations by August 2023 and remaining operations, not in a state of safe closure, by August 2025. The intended higher level of safety and security provided by more transparent and ethical management systems is focused on benefiting communities located nearby to impoundments. In practicality, implementation of the GISTM program is not simple or immediate. Understanding the cultural challenges and transitioning to the new norm requires careful work across organizational levels. An industrial complex in Brazil, which includes a Port, Alumina Refinery, Aluminum Smelter, and specific areas for wet disposal of alkaline Bayer process bauxite residue, have developed and are rolling out an innovative, inclusive, and integrated GISTM Implementation Program in close partnership with Hatch. The concept is based on 04 pillars: i) to engage local and corporate teams; ii) to build and internalize knowledge, iii) to embed new requirements in existing processes and tools, iv) to add value and enhance business mindset in a sustainable manner across the journey. The program is ongoing and key factors to achieving the successful implementation of change include building communicative and cooperative relationships between internal teams and taking a structured project management driven approach in relation to guidance, continuous analysis, managing change and risk. Through strong governance by top operations and corporate leadership, and with Hatch support in the implementation, this approach is enabling change and consideration of new tailings management technologies and innovations as they arise, providing the environment for strides to be made in maintaining sustainability of operation in the face of significant legacy issues for this core global industry.

Keywords: GISTM, Alumina; Bauxite; Tailing management; Risk management; ICMM.

1. Introduction

In 2019, the Church of England Pensions Board [1] and the Swedish Council, led the foundation of *The Investor Mining and Tailings Initiative* (IMTSI) - a coalition of over than 100 investors. In 2020, immediately following the Global Mining and Tailings Safety Summit, 45 of the top-50 companies, representing 83 % of the mining industry market capitalization, joined the initiative and voluntarily disclosed information on their geotechnical assets.

The Initiative performed a broad review of issues related to recent ruptures with the intention of developing a stricter industry standard, calling operators to action, and keeping records on a common database [2]. These steps have influenced and are driving overall global industry commitment to a greater level of safety, ethics, and transparency in the mining sector.

GISTM, the product of efforts to improve, was developed by ICMM, United Nations Environment Programme (UNEP), Principles for Responsible Investment (PRI). All ICMM members have

agreed to adopt the GISTM and accordingly, critical operations from all industry will have to comply by August 2023 and remaining operations, not in a state of safe closure, by August 2025.

A global aluminium company, leading a joint venture with other members of ICMM, partnered with Hatch to develop and proceed with their GISTM Implementation Program, which runs concomitantly to all structures' lifecycle, including Project, Construction, Operation and Closure.

The shared vision is to implement GISTM by robust planning and management through building knowledge, promoting communication and cooperation between internal teams. The main objective is to embed sustainable processes at an organizational level, adapting and improving existing corporate systems and procedures to the fullest reasonable extent possible in a timely manner across business.

2. Approach

GISTM integrates 06 Topic areas, which encompass 15 Principles and 77 auditable requirements as shown in Figure 1. The benefit to nearby communities is intended to be greater safety and security from the more transparent and ethical management systems.

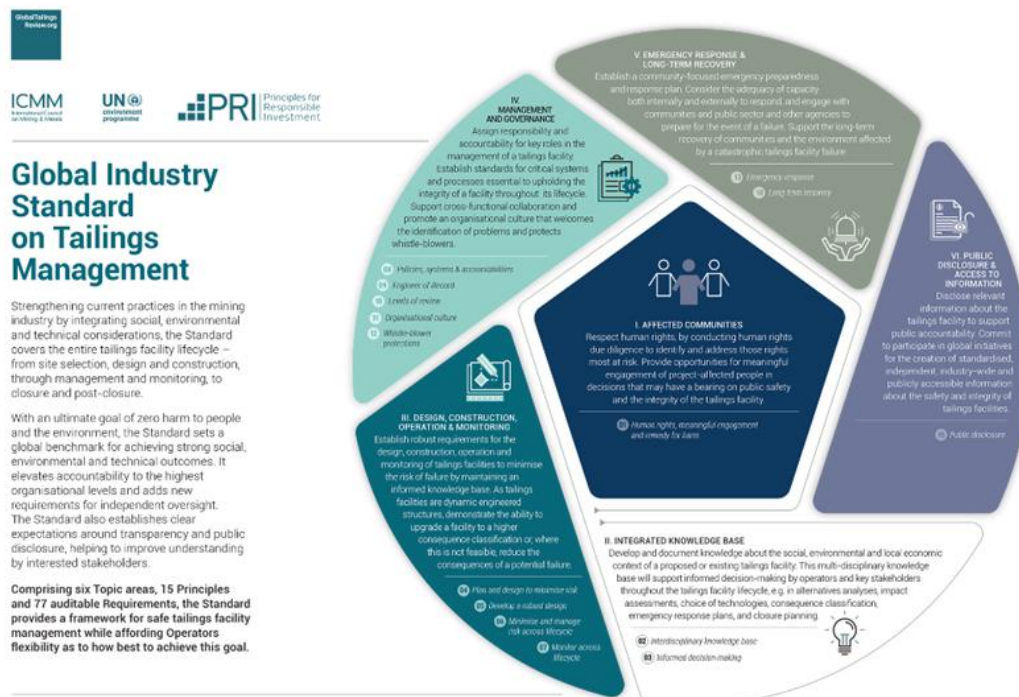


Figure 1. GISTM Topics and Principles.

2.1 GISTM Implementation Project Concept

The arrival of the new standard flagged the need for significant improvement of tailings management. The company, as operator of an industrial complex that includes Port, Alumina Refinery, Aluminum Smelter, and Residue Storage Areas (RSAs) of alkaline Bayer process bauxite residue, embarked upon upgradation of their global tailing Management System centered on GISTM requirements. Connecting several other business aspects to enhance management and governance of impoundment assets, their own corporate Self-Assessment Tool, used for decades in company's Risk-Based Audits, was revised to concentrate all GISTM Conformance Protocols requirements and criteria and was released in December 2021.

5. Conclusions

Investors and society expressly required the Mining & Metals Industry to raise the bar on tailings operations safety and transparency.

A Hatch client in Brazil operating an alumina complex has embarked on a proactive and risk-based approach, which relies on effective management and communication to build or review their internal systems. Stepping forward on their tailings management approach to reflect and embed GISTM into the business existing requirements has been focused, co-operative, and undertaken at a continuous pace to succeed, essentially by pairing full operational team engagement and commitment to company values, with Hatch project management skills, subject matter understanding and team building in a long-term partnership.

Differentiators in achieving positive change have been working to adapt culture and mindset through leadership drive and support, effective planning with sufficient timeframe to adequately provide an environment for strong stakeholder engagement, ownership of accountability, disciplined governance. The magnitude of the program is significant and may be recognized and fully valued at the end of the implementation. Current openness to changes arising from GISTM is a positive indicator for achievement of program objectives which strongly seek to operate with excellence and empower systems, teams, to maximize their outcomes.

Hatch intends by publishing this Paper is to provide useful insights to Mining & Metals Industry, while the journey is still under development.

6. References

1. The Church of England, The Investor Mining and Tailings Safety Initiative, The Church of England.
2. Global Tailings Portal, Global Tailings Portal (grida.no).