



From Voluntary to Binding

Integration of sustainability
standards and initiatives in
public mining governance

IISD REPORT

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Executive Summary

Sustainability standards and initiatives (SSIs) have become an increasingly important feature of mining governance worldwide. While traditionally developed as voluntary, non-state instruments, many SSIs are now influencing how governments design, implement, and enforce public policy in the mining sector. This report examines how SSIs are being integrated into public mining governance, the forms this integration takes, and the conditions under which SSIs can complement public regulation. It builds upon an important body of knowledge that the International Institute for Sustainable Development, the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF), and others have produced on the integration of SSIs into public policy.

In February and March 2025, the IGF conducted a survey among its member countries to understand how they have incorporated SSIs into mining policy and regulatory frameworks. This survey served as a basis for selecting three illustrative case studies from Brazil, Madagascar, and Sweden, which were then analyzed further based on desk research, stakeholder interviews, and information provided by governments and standards bodies. Together, these sources provide both a broad overview of government practice and concrete examples of how SSIs are used across different governance contexts and stages of the policy cycle.

Key Insights From the IGF Survey

The IGF survey reveals that government engagement with SSIs is widespread and growing. While approaches vary significantly across jurisdictions, most responding countries report some form of interaction with SSIs in their mining policy frameworks.

- The use of SSIs is most advanced at the policy implementation stage. Governments most frequently rely on SSIs as operational tools to support implementation, compliance, and reporting, rather than as instruments for monitoring or enforcement.
- SSIs are not confined to voluntary use. A significant share of respondents reports that SSIs are
 - used as a basis for developing policies, laws, or regulations;
 - directly referenced as mandatory requirements in regulations; or
 - recognized as proof of compliance with legal obligations.
- Policy development is a key entry point. Nearly 90% of respondents who have integrated SSIs report using them as references when drafting or revising mining policies and legislation, highlighting SSIs' role as sources of technical expertise and international best practices.
- Capacity constraints remain a major barrier. More than 80% of respondents identify the need for additional training and institutional capacity to effectively integrate SSIs into national regulatory frameworks. Interest is growing among late adopters. Over a quarter of respondents indicate that they are actively considering integrating SSIs into



mining regulation, suggesting that demand for guidance on how to do so effectively is likely to increase.

Overall, the survey underscores that governments do not view SSIs as alternatives to regulation. Instead, SSIs are used to fill regulatory gaps, operationalize complex requirements, align domestic frameworks with international expectations, and improve access to markets and finance.

Integrating and Referencing SSIs in Mining Policy

Building on survey results and case study evidence, the report identifies multiple modes of SSI integration and reference in mining public policy, ranging from voluntary promotion to mandatory incorporation in law. These modes are not sequential and may coexist within the same country or policy framework. Across jurisdictions, SSIs are most commonly used to

- technically inform the design of binding regulations;
- support policy implementation and reporting; and
- provide credible reference points for companies to demonstrate alignment with regulatory expectations.

Mandatory integration occurs where governments either embed SSI requirements directly into law or formally recognize compliance with an SSI as meeting regulatory obligations. However, even in these cases, public authorities retain control over enforcement and regulatory outcomes.

The report also identifies the nature of SSI integration in mining policy, considering the **public policy cycle**, which unpacks, in different stages, how public policy is developed, implemented, and assessed. Across jurisdictions, SSI integration most frequently occurs at the policy implementation stage, with an additional supporting role frequently observed at the reporting stage. As the cases of Brazil and Madagascar show, SSIs can also play a significant role in policy formulation and adoption.

Lessons From the Case Studies

The three case studies illustrate how SSIs interact with public policy in practice:

- Brazil shows how the development of an international technical standard, the **Global Industry Standard on Tailings Management**, can inform and reinforce regulatory reform following catastrophic dam failures, while national and subnational legislators ultimately set stricter requirements.
- Madagascar demonstrates how beneficial ownership requirements aligned with the **Extractive Industries Transparency Initiative** can be embedded directly into mining legislation.
- Sweden highlights long-standing mandatory use of a reporting standard, the **Global Reporting Initiative**, for state-owned enterprises as part of corporate governance.



Together, these cases illustrate that SSIs can be most effective when used as complementary instruments, supporting learning, harmonization, and implementation, while public regulation remains the primary source of legal authority. More broadly, the report demonstrates the importance of ensuring that producing-country perspectives are reflected in the design and governance of international sustainability initiatives.

Takeaways for Policy-Makers

IGF member countries could improve their regulatory framework by using SSIs while addressing related challenges by

- identifying which SSIs are most relevant to national priorities, considering how SSIs can be strategically used as both market access tools and investment attraction tools;
- systematically assessing where and at which stages of the policy cycle SSIs can add most value to national or subnational regulatory efforts; and
- strengthening institutional capacity for oversight, audit interpretation, and data use.

As governments continue to navigate increasingly complex sustainability, due diligence, and reporting requirements, alongside the proliferation of ever-new initiatives, the strategic and well-designed integration of SSIs can enhance mining governance, provided it reinforces, rather than replaces, public regulation.



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Abbreviations and Acronyms

3TG	tin, tantalum, tungsten and gold
ANM	Agência Nacional de Mineração (Brazilian National Mining Agency)
ASM	artisanal and small-scale mining
CSRD	Corporate Sustainability Reporting Directive (European Union)
CTC	Certified Trading Chains
EITI	Extractive Industries Transparency Initiative
ESG	Environmental, Social and Governance
EU	European Union
ESRS	European Sustainability Reporting Standards
GDP	gross domestic product
GISTM	Global Industry Standard on Tailings Management
GRI	Global Reporting Initiative
GTMI	Global Tailings Management Institute
ICMM	International Council on Mining and Metals
IGF	Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development
IRMA	Initiative for Responsible Mining Assurance
IISD	International Institute for Sustainable Development
LKAB	Luossavaara-Kiirunavaara Aktiebolag
LkSG	Lieferkettensorgfaltspflichtengesetz (German Supply Chain Act)
MSG	multistakeholder group
MRN	Mineração Rio do Norte
OECD	Organisation for Economic Co-operation and Development
PRI	Principles for Responsible Investment
SOE	state-owned enterprise
SSI	sustainability standard initiative
TSF	tailings storage facility
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme



1.0 Introduction

The mining and minerals sector generates high economic value but is also associated with significant environmental, social, and governance (ESG) risks. Efforts to strengthen responsible mining practices draw on a wide range of instruments, including voluntary, non-binding sustainability standards and initiatives (SSIs) developed by private and multistakeholder groups, as well as mandatory and enforceable regulations adopted by public authorities. These two approaches are often presented as alternatives. However, in practice, they are closely interlinked and can be mutually reinforcing rather than mutually exclusive.

This report examines how SSIs have been integrated into mining sector governance to help governments address critical ESG issues while mitigating human, financial, and reputational risks associated with mining operations. In doing so, the report also examines the extent to which they have influenced or been integrated into public policy, in both regulatory and non-regulatory aspects. Using three case studies of different SSIs and their application in public mining governance in Brazil, Madagascar, and Sweden, this report shows that sectoral SSIs can exert varying degrees of normative force and—under the right conditions—complement and strengthen, rather than compete with, public regulatory instruments.

The insights presented in this paper build on the 2024 Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF) briefing note on *Navigating Global Sustainability Standards in the Mining Sector* (IGF, 2024), particularly the section on “How Standards Complement Regulations,” and a significant body of research that the International Institute for Sustainable Development (IISD) has undertaken on the intersection between SSIs and public policy.¹ The case studies in this report supplement a survey² conducted with IGF member country representatives, as well as country consultations, interviews, and exchanges with SSI-setting organizations. Together, these sources provide both a broad overview of government practice and illustrative examples of how SSIs are being used in specific policy contexts.

1.1 What Are SSIs?

SSIs refer to a range of rules, systems, mechanisms, and tools developed by businesses, industry associations, governments, intergovernmental organizations, or non-governmental organizations, which are designed to promote, support, assess, and verify the sustainability performance of activities along global value chains (Organisation for Economic Co-operation and Development [OECD] & International Trade Centre, 2024; United Nations Conference on Trade and Development [UNCTAD], 2020; United Nations Environment Programme [UNEP], 2025). Many SSIs are voluntary, market-based tools that set social, economic, and environmental requirements that economic actors may choose to comply with to make their production and processing practices more sustainable (UNCTAD, 2023). These tools

¹ See a list of such publications at <https://www.iisd.org/ssi/analysis-category/policy-briefs/>

² In February and March 2025, the IGF surveyed its member countries to understand how they have incorporated SSI into mining policy and regulatory frameworks. Twenty-six government officials from 23 countries completed the survey. See Appendix A for more details about the survey and respondents.



typically comprise a combination of sustainability requirements, assurance, and verification processes to ensure compliance, and supporting services, such as capacity building, training, and impact monitoring (Bermúdez & Sarmiento, 2024). In return for compliance, products and producers may receive formal recognition in the marketplace, which can facilitate market access and differentiation (Bermúdez & Sarmiento, 2024).

SSIs have proliferated in recent decades, driven by market demands for more sustainable raw materials and products, the willingness to consider non-financial indicators to de-risk investments, and the need to address ESG concerns in mineral supply chains (IISD & IGF, 2018). At the same time, governments in both resource-rich producing countries and importing countries have increasingly used these tools to support public policy goals and advance sustainability in this industry. Overall, SSIs have been integrated into public policy, including in sectoral policies, trade policy (i.e., free trade agreements, due diligence, and market access regulations), sustainable procurement, and export promotion measures, demonstrating increasing interest in their use and the interplay between SSIs and public governance (IGF, 2024; Sarmiento et al., 2025; Marx et al., 2024; United Nations Forum on Sustainability Standards, 2022).

1.2 Evolution of SSIs in the Mining Sector

In the mining and minerals sector, SSIs similarly function as non-state frameworks, systems, schemes, or programs, distinct from public laws and regulations, designed to help actors across minerals and metals supply chains strengthen sustainability performance and outcomes. Some examples of SSIs in mining are the Aluminum Stewardship Initiative, the Initiative for Responsible Mining Assurance, the Copper Mark, the Responsible Mica Initiative, and others, as illustrated in Figure 1.

The history of SSIs in the mining industry started in the early 1990s, with multistakeholder efforts like the Whitehorse Mining Initiative, which later evolved into the Towards Sustainable Mining initiative. The Whitehorse Mining Initiative inspired others, including the Voluntary Principles on Security and Human Rights (2000), the Extractive Industries Transparency Initiative (EITI) (2002), and the Kimberley Process Certification Scheme (2003), which all aim to promote responsible practices and transparency in mining operations.

Some SSIs have also been developed directly by government bodies or intergovernmental organizations, most notably the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (hereafter: OECD Guidance), which aims to promote responsible supply chains of minerals and metals through corporate due diligence. Other examples include Certified Trading Chains in the Democratic Republic of the Congo and the International Conference on the Great Lakes Region's 2019 Regional Certification Mechanism for responsible mineral supply chains in Africa.

Industry associations such as the International Council on Mining and Metals (ICMM) have further developed guidelines and commitments to help their member companies follow specific ESG requirements.



As a result, the SSI landscape in the mining sector has been growing, with 158 active SSIs as of 2025 that are very diverse in terms of their focus, objectives, governance structure, and scope (UNEP & IGF, 2025). Broadly, three categories of mining SSI exist (International Organization for Standardization [ISO], 2024, as cited in IGF, 2024b):

1. **supply chain due diligence SSIs**, focusing on identifying and mitigating risks along the supply chain;
2. **performance/compliance SSIs**, focusing on measurable performance or benchmarks at the facility level and covering specific targets related to environmental and social impacts; and
3. **principle-based SSIs**, focusing on broad, flexible guidelines that companies can adopt to guide responsible behaviour.

Figure 1. Timeline of major SSIs in the mining industry and focus issues (non-exhaustive)



Source: Authors' elaboration based on data from IISD & IGF, 2018; IGF, 2024.



Figure 1 presents a timeline of the most prominent SSIs in the mining industry, identifying their thematic focus (e.g., security and human rights; transparency and governance; environmental and social standards, and responsible supply chains).

1.3 SSIs in Mining Sector Public Policy

SSIs in the mining sector are increasingly being leveraged by governments to complement existing policy frameworks, foster collaboration, and promote responsible mining practices in producer countries (IISD & IGF, 2018). Key motivations for using SSIs in public policy include their ability to complement existing regulations by addressing complex or technical issues in an internationally standardized way, such as the design of effective tailings management systems, while supporting the design of stronger legislation to mitigate risks like human rights violations (IGF, 2024; IISD & IGF, 2018). SSIs have increasingly been integrated into public policy to enhance responsible mining, fill regulatory gaps, promote transparency, and support global sustainability goals.

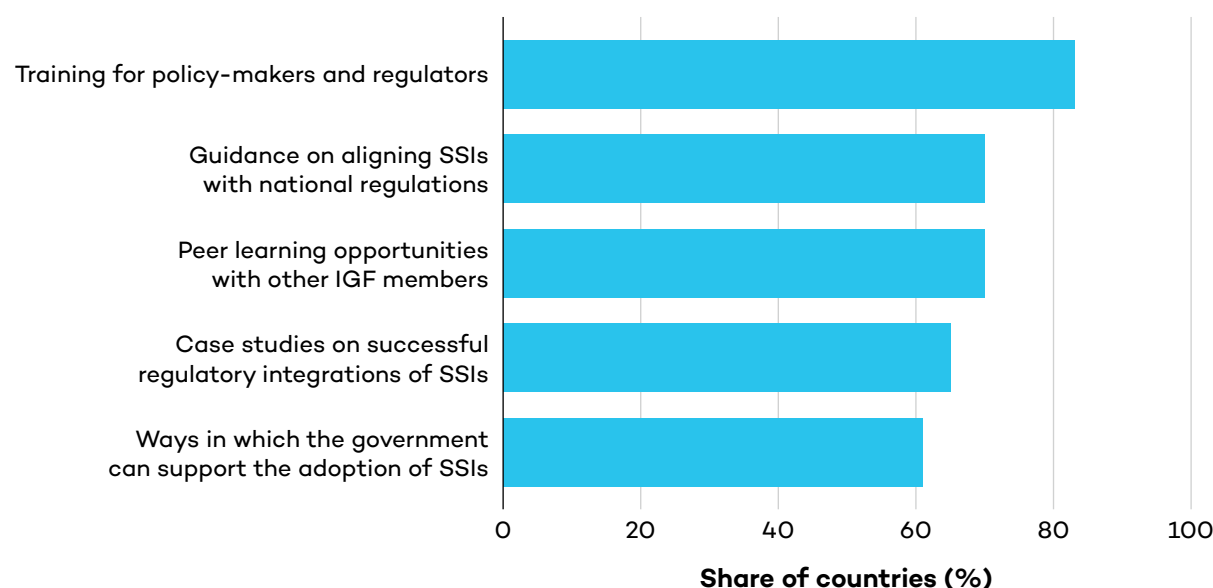
The interest in embedding these initiatives into formal governance structures appears to be growing, as reflected in the IGF member survey, where 26% of countries indicated that they are considering incorporating SSIs into national mining regulations. Benefits reported by government respondents with experience integrating SSIs include

- access to additional data on mining operations that is useful for government oversight,
- greater alignment of mining policies with international sustainability-based outcomes,
- greater market access for mining companies,
- the ability to dynamically update legal requirements without requiring lengthy legislative processes, and
- setting high sustainability requirements for mining companies with limited oversight capacity.

However, 83% of respondents also highlighted the need for more training to effectively incorporate SSIs into national regulations, as seen in Figure 2.



Figure 2. Types of support needed to advance the use of SSI in mining governance



Note: Respondents could select more than one option.

Source: Authors, based on the 2025 IGF survey (unpublished).

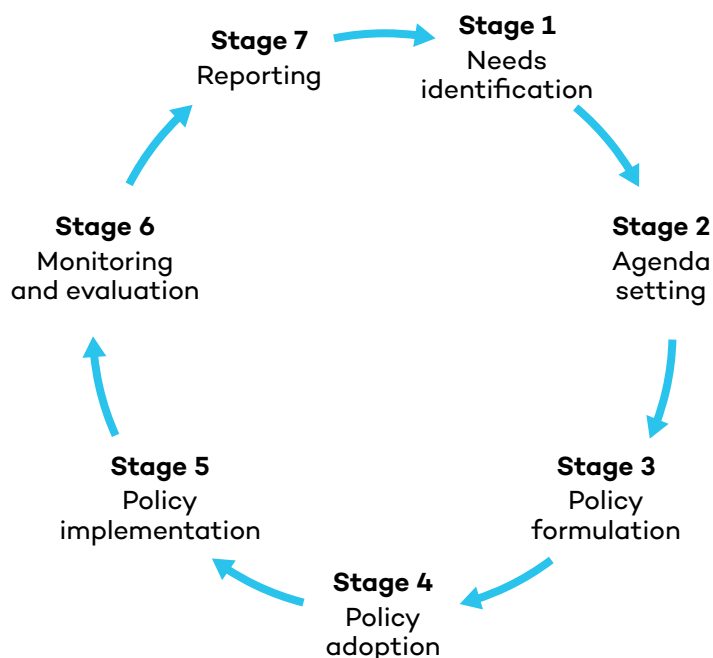
The integration of SSIs into public policy can be analyzed through two lenses. The first one focuses on identifying *where* SSIs are used within the policy cycle, specifically, which stages of the policy process see the most frequent integration or application of SSIs (Figure 2). The second one examines the *how*—that is, the nature of their use and degree of integration—ranging from purely voluntary to mandatory (Figure 3).

The “Where”: Stages of the policy cycle

SSIs can be integrated into various stages of the policy cycle (Figure 3). These policy stages are Needs Identification (Stage 1), Agenda Setting (Stage 2), Policy Formulation (Stage 3), Policy Adoption (Stage 4), Policy Implementation (Stage 5), Monitoring and Evaluation (Stage 6), and Reporting (Stage 7).

Our examination of the literature on the integration of SSIs in public policy suggests that SSIs in mining have been mostly used in Stage 5, with some integration in Stages 3, 4, and 7. This pattern reflects the practical role SSIs often play as operational tools that support not only the design of policies but also their execution and reporting outcomes. In most cases, the integration of an SSI spans more than one policy stage, as its contribution to one stage (e.g., policy implementation) can help advance the objectives of another stage in the policy cycle (e.g., reporting).

Figure 3. Stages of the policy cycle where SSIs can be integrated



Source: Authors' elaboration based on Bermúdez, 2021; Edelmann & Albrecht, 2023; Howlett & Ramesh, 2003.

The direct or indirect integration of SSIs into Stage 5, Policy Implementation, is the recurrent form. As an example of direct implementation, the European Union (EU) Conflict Minerals Regulation requires that “EU importers of tin, tungsten, tantalum, and gold (3TG, also known as conflict minerals) meet international responsible sourcing standards, set by the OECD” (Conflict Minerals Regulation, 2017). This makes adherence to the OECD Guidance effectively mandatory for companies operating in the EU.

In Switzerland, companies meeting the OECD Guidance are exempt from the due diligence and reporting obligations set forth by the Swiss Ordinance on Due Diligence and Transparency in relation to Minerals and Metals from Conflict-Affected Areas and Child Labour (Ordinance SR 221.433, 2021), indicating how the OECD Guidance serves as indirect proof of compliance with the regulation.

Some governments also provide guidance and information on using SSIs as part of policy implementation and to support compliance with mandatory regulations. For example, Germany's Federal Office for Economic Affairs and Export Control, the enforcement authority of the German Supply Chain Act (Lieferkettensorgfaltspflichtengesetz), released a guidance document on the use of standards, audits, and certifications as tools to fulfill corporate sustainability due diligence obligations (Bundesamt für Wirtschaft und Ausfuhrkontrolle, 2024).

Apart from Stage 5, SSIs can also support Policy Formulation (Stage 3) or Policy Adoption (Stage 4). For example, the Initiative for Responsible Mining Assurance (IRMA) has worked with the Indonesian government to inform and enhance mining legislation. The Ministry for Maritime Affairs and Investment conducted a gap analysis between existing Indonesian



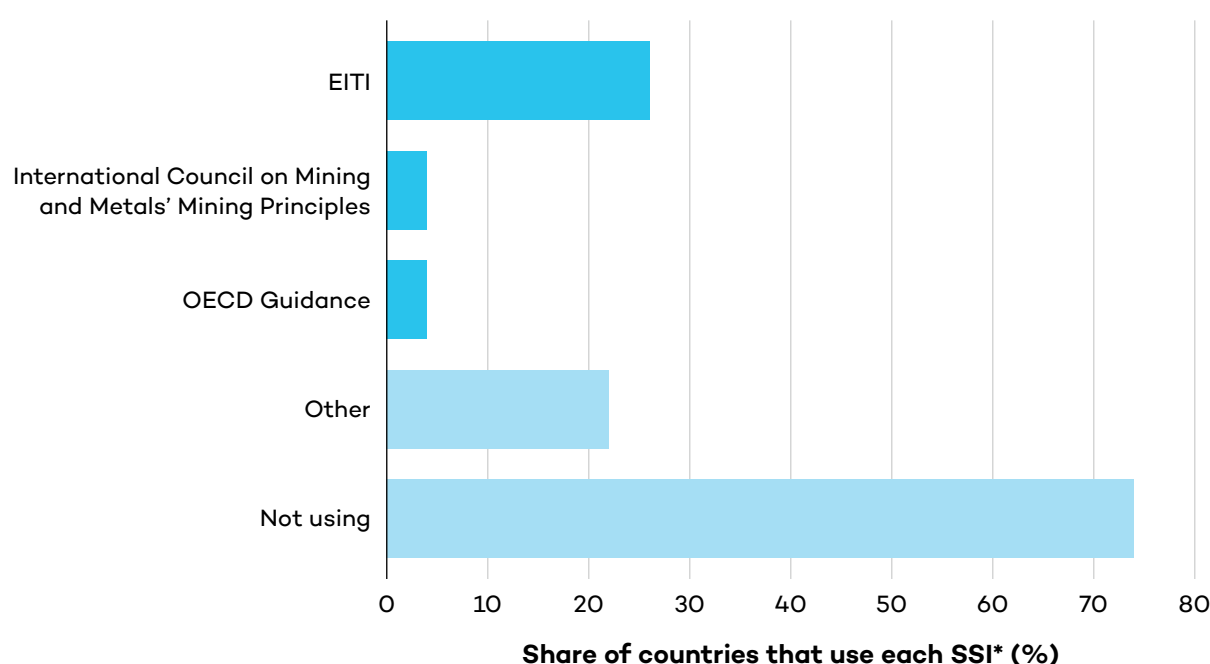
regulations and the IRMA standard to find opportunities to strengthen the legal framework and promote more sustainable practices across the supply chain for commodities such as tin and nickel (Coordinating Ministry of Maritime Affairs and Investment, 2022; IRMA, 2022).

Consistent with this, the IGF survey indicates that **89% of respondents** who have integrated or referenced SSIs in their mining policies or regulations reported using such initiatives as a foundation for developing policy and legislation, linking SSIs to both formulation and adoption stages of the policy cycle.

Box 1. EITI as the predominant framework for mining policy development

Based on the IGF survey, the EITI is used as a basis for developing policies, laws, and regulations by 26% of respondents. This is most likely because the EITI is directed primarily at governments and may require legislative change for the effective implementation of some of its criteria. Other SSIs, like ICMM's Mining Principles and the OECD Guidance, are each used as a basis for policy development by 4% of the respondents.

Figure 4. SSIs used as the basis for the development of mining policies, laws, and regulations



Source: Authors, based on IGF's 2025 survey.

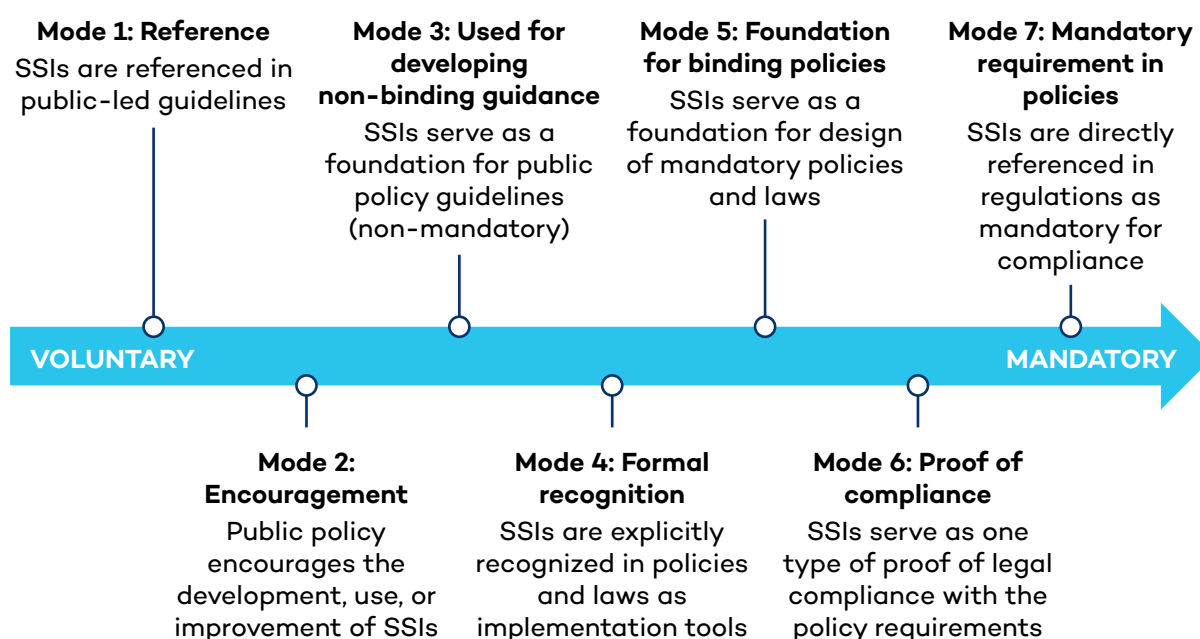
Note: *Respondents could select more than one option.



The “How”: Different modes of SSI integration

The ways in which SSIs are integrated into public policy also reflect varying degrees of stringency and enforcement. Figure 5 displays government use of SSIs along a continuum, ranging from promotional and voluntary uses to fully mandatory regulatory incorporation. These different modes capture how SSIs can function as soft governance tools, hybrid regulatory instruments, or embedded legal requirements, depending on policy objectives and regulatory context. It is important to note that these modes do not represent a linear progression; governments may simultaneously employ multiple modes of SSI integration across different policy instruments and sectors.

Figure 5. Spectrum of SSI integration in public policy: From voluntary to mandatory



Source: Authors' elaboration.

Under Mode 1, governments may reference the role of SSIs in guidelines, policy statements, or development-cooperation activities as a complement to public regulation to advance responsible practices. In this mode, SSIs are cited as relevant frameworks or examples, but without the expectation or encouragement of their use, and they are not legally binding. Under Mode 2, governments actively encourage the uptake of SSIs through capacity-building initiatives, technical assistance, or partnerships that help mining authorities, companies, or producer-country governments align their practices with recognized SSIs. An example of this voluntary approach is Canada's Roadmap to Promote Standards-Based Markets for Critical Minerals, which highlights the role of SSIs as tools to strengthen trust and sustainability performance in critical-mineral supply chains, without imposing regulatory mandates on companies (Natural Resources Canada, 2025).

Under Mode 3, governments use SSIs to design non-binding government guidance, strategies, or policy documents to broadly encourage responsible practices. They inform policy content



but do not carry legal or regulatory weight or legal implications. Germany's National Action Plan on Business and Human Rights provides such an example, as it translates international frameworks, including the OECD Guidelines, into national guidance for companies, voluntary at the time of publication (Federal Foreign Office, 2016). Under Mode 4, governments formally recognize SSIs in policies and laws as implementation tools. Here, SSIs may be acknowledged as a credible instrument for supporting the implementation of the policy, but do not, in themselves, serve as legal proof of compliance with the policy requirements, and their use is not mandatory. This allows policy-makers to leverage best practices for SSIs while maintaining flexibility and enforcement discretion and avoiding over-reliance on them.

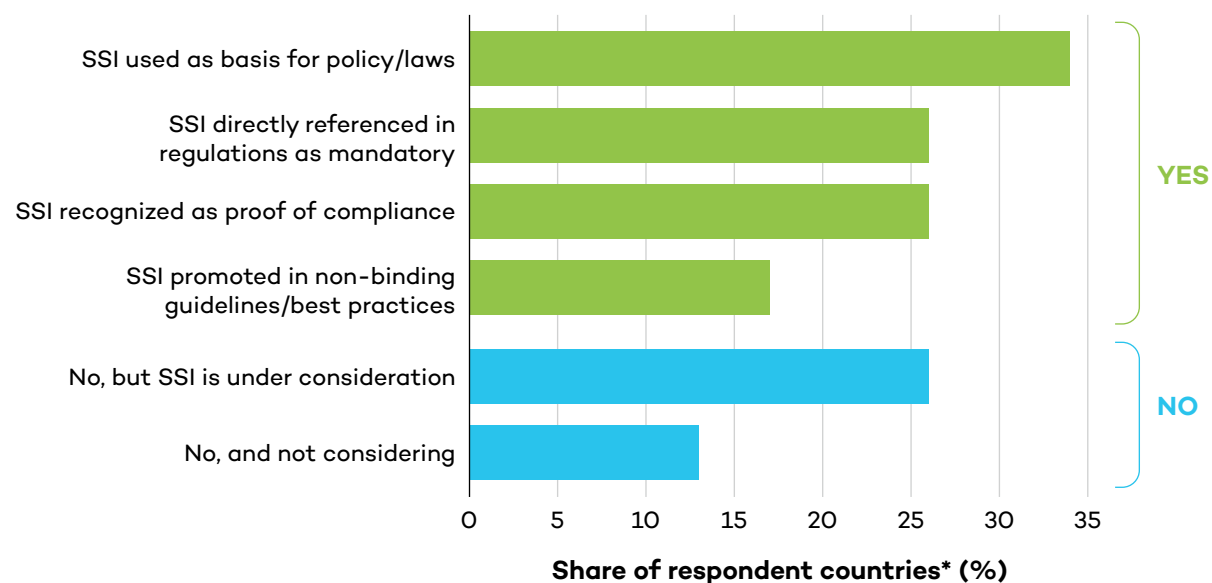
In Mode 5, governments use SSIs to inform the design of binding laws or regulations. Their principles, metrics, frameworks, or concepts are embedded into legal requirements, but companies must comply with the law itself rather than with the SSI as such. On the mandatory end, SSIs acquire legal significance as they become recognized as one way to demonstrate compliance with legal or regulatory requirements (Mode 6). Compliance with an SSI may create a presumption of conformity or reduce reporting burdens, but alternative compliance pathways still exist. The above-mentioned Swiss Ordinance on Due Diligence and Transparency is an example of Mode 6, where compliance with the OECD Guidance exempts companies from certain regulatory obligations (Ordinance SR 221.433, 2021).

Finally, in Mode 7, governments directly incorporate SSIs into regulations as mandatory requirements, meaning that regulated entities must comply with the referenced standard to meet legal obligations. This transforms initially voluntary standards and initiatives into enforceable norms, and thus into an issue of legal compliance for regulated entities. The EU Conflict Minerals Regulation exemplifies this mode, as it requires EU importers of selected minerals to meet international responsible sourcing standards established by the OECD, effectively embedding the OECD Guidance within the regulatory framework (Conflict Minerals Regulation, 2017).

Figure 6 illustrates the different ways in which governments are engaging with SSIs, which is also reflected in the IGF survey. According to the survey, the most prominent way standards have been used to complement regulations is as a basis for developing policies or laws, aligning with Mode 5 (as shown in Figure 3). In the IGF survey, 34% of respondent countries indicate that SSIs are both directly referenced as mandatory requirements in regulations, corresponding to Mode 7, and offered as an optional proof of compliance, reflecting Mode 6. In addition, 17% of respondents indicate that SSIs are promoted through non-binding guidelines or best practices, corresponding to Modes 1 and 2; 26% of respondents are considering the integration of SSIs in public policy, while 13% are not. This highlights a heterogeneous policy landscape in which countries are distributed across the full spectrum of SSI integration modes, from early-stage consideration and voluntary promotion to regulatory incorporation.



Figure 6. Country-level integration of SSIs in mining policy, by mode of integration



Source: Authors, based on the IGF 2025 survey (unpublished).

Note: *Respondents could select more than one option.



2.0 Case Studies: Overview

Following the IGF survey, we selected three illustrative case studies to substantiate the interplay between SSIs and public policy based on practical examples and practitioner insights. The cases were selected to reflect different governance contexts, policy objectives, and forms of SSI integration across the mining sector. They also respond to emerging policy drivers shaping mining governance globally, including growing expectations around responsible sourcing, tailings safety, transparency, environmental and social performance, and corporate due diligence.

The case studies aim not only to provide examples of SSI integration but also to illustrate the different rationales, opportunities, and governance considerations associated with its use in public policy. Together, they demonstrate how governments may engage with SSIs at different stages of the policy cycle, from policy formulation and adoption to implementation, monitoring, and reporting, and across varying degrees of enforceability, from voluntary alignment to mandatory regulatory incorporation.

Each case study was informed by interviews with government representatives and standards bodies, as well as secondary research, that illustrate how different policy-makers have used and are using SSIs in efforts to advance more responsible mining practices. Each case explores the context, rationale, and nature of the integration of an SSI into national or regional policy frameworks, as well as the benefits and challenges related to different approaches. The cases span different regions, governance contexts, and types of SSIs:

- The **Global Industry Standard on Tailings Management (GISTM)** in Brazil is an example of how SSIs can inform policy formulation and adoption by serving as a technical and normative reference for the design of binding regulations, while also supporting policy implementation by aligning with regulatory requirements. It emerged in response to an acute crisis—the Brumadinho tailings dam failure in Minas Gerais—which exposed the need for a global consensus on tailings dam safety and for stronger, technically robust legislation and enforcement in Brazil.
- The **EITI Standard** in Madagascar is an example of how an SSI can be used as a basis for the development of policies, laws, and regulations, with provisions on beneficial ownership, a core EITI requirement embedded into the Mining Code and its implementing decree. It illustrates the use of SSIs in the policy formulation and adoption stages, while also shaping implementation and reporting through mandatory EITI-aligned disclosures enforced under national law.
- The **Global Reporting Initiative (GRI)** in Sweden is an example of an SSI being directly mandated to be used through public policy for a defined set of actors, namely state-owned enterprises. The GRI is used at the policy implementation and reporting stages and represents a mandatory integration of SSI into public policy.

The three case studies represent SSI integration at different stages of the policy cycle and different ways through which SSIs become embedded in public policy, ranging from voluntary to mandatory. They illustrate how SSIs can contribute to policy formulation and



adoption (Brazil, Madagascar), policy implementation (Madagascar Sweden), and reporting and accountability mechanisms (Madagascar and Sweden). Taken together, these cases provide a practical overview of government engagement with international SSIs as a basis for policy learning.

3.0 Case Study 1: The GISTM in Brazil





The first case study addresses tailings management, a field where standards and regulations have evolved dynamically as a result of repeated catastrophic dam failures across the globe. Brazil has been selected as it played a key role in the evolution of developing standards, triggered by recent catastrophic failures, and serves as an illustrative case for public policy integration.

3.1 The GISTM: Overview and scope

The GISTM, launched in August 2020, is the first global SSI designed to improve the safety and sustainability of tailings facilities in the mining industry (Global Tailings Review, 2020; UNEP, 2020). The GISTM was launched following a multistakeholder approach called the Global Tailings Review, which was co-convened by UNEP, the UN-backed Principles for Responsible Investment (PRI), and the ICMM, in response to catastrophic tailings failures, including the Brumadinho dam collapse in Brazil in January 2019, which underscored the urgent need for enhanced safety measures and the improved global practice and governance of tailings facilities (Global Tailings Review, 2020; ICMM, 2020; Mining Indaba, 2025; UNEP, 2020).

The GISTM aims to achieve the goal of “zero harm to people and the environment” from tailings facilities by establishing a common baseline of principles and requirements that apply across the life cycle of tailings storage facilities (TSFs), regardless of operator, commodity, or geography (Global Tailings Review, 2020). It adopts an integrated approach that incorporates social, environmental, local economic, and technical considerations, elevating expectations for risk management, governance, transparency, and stakeholder engagement (Global Tailings Review, n.d.; UNEP, 2020).

The GISTM comprises six key topics, which are addressed in detail in the standard’s 15 principles and 77 specific requirements (Global Tailings Review, 2020):

1. meaningful engagement of project-affected communities;
2. creation of an integrated knowledge base regarding a project’s social, environmental, and local economic context;
3. design, construction, operation, and monitoring;
4. management and governance of tailings facilities;
5. emergency preparedness, response, and long-term recovery; and
6. public disclosure and access to information.

The GISTM is directed at tailings operators, defined as any entity exercising ultimate control of a tailings facility, including corporations, joint ventures, or state agencies (Global Tailings Review, 2020). Its requirements set expectations for these operators to prioritize safety, strengthen accountability, and enhance transparency across the TSF life cycle. Since its launch, the GISTM has been a key reference point for industry actors, with many industry associations, mining companies, and investors committing to implementing or aligning their practices with the GISTM’s principles and requirements (ICMM, 2025b).



3.2 GISTM Governance

A core governance feature of the GISTM is the separation between standard setting and assurance functions. While the principles and requirements of the standard were defined through the Global Tailings Review, its implementation falls under the responsibility of the Global Tailings Management Institute (GTMI), established in January 2025 as an independent, multistakeholder non-profit organization. The GTMI's core mission is to manage an assurance framework under which the tailings facilities will be independently audited and certified against GISTM requirements, ensuring transparent and consistent application of the GISTM, as well as continuous improvement (GTMI, n.d.; UNEP, 2025). The GTMI will also be responsible for promoting GISTM integration into the global policy and standards landscape.

The GTMI is governed by a multistakeholder Board of Directors representing diverse interests, including the mining industry, Indigenous Peoples, potentially affected communities, the investment community, the insurance and banking industry, the technical and academic community, environmental experts, the workforce, and regulatory bodies (UNEP, 2025). This multistakeholder governance model aims to build trust and legitimacy in the global application of the GISTM, ensuring that diverse perspectives inform oversight and continuous improvement of safety and sustainability practices in tailings management (GTMI, n.d.).

3.3 Adoption in the Mining Sector

The GISTM's integration into the mining sector was driven by catastrophic dam failures and consequential investor pressure and industry commitments. The active involvement and backing of major investors like the Church of England Pensions Board, alongside other PRI signatories has given GISTM and its governance body legitimacy and accelerated its uptake as a global reference framework for improving the environmental and social performance of tailings management (Church of England, 2024; Mining Indaba, 2025). ICMM promises that companies seeking GISTM certification will be required to prioritize safety and enhance accountability through public disclosures at all their tailings facilities (ICMM, 2025a).

GISTM's co-sponsors have different responsibilities for promoting GISTM adoption across sectors to ensure broad coverage. UNEP takes responsibility for supporting member governments interested in incorporating the standard into national legislation, PRI is tasked with developing investor expectations to support global adoption in mining investments, and ICMM member companies have committed to implementing the standard through robust site-level validation and third-party assessments. ICMM members were obliged to ensure conformance against the standard by August 5, 2023, for facilities with extreme or very high potential of negative consequences, and by August 5, 2025 for all remaining facilities. While both these disclosure deadlines were met, full conformance was not: According to ICMM's (2025) latest *Tailings Progress Report*, out of a total of 836 ICMM member facilities, 67% fully conform with the GISTM, while 33% remain partially conforming. A more complete picture of GISTM adoption and conformity will be available once the GTMI is fully operational and exercises its authority to issue formal certification against the standard.



3.4 Relevance of the GISTM for Brazil

With over 900 tailings dams registered as of April 2025,³ Brazil is one of the countries with the largest concentration of such facilities globally, placing sustained pressure on regulators to strengthen oversight and risk management frameworks. The catastrophic failures of the Fundão dam in Mariana (2015) and the Córrego do Feijão dam in Brumadinho (2019) caused environmental and human losses, exposing the risks of weak dam design and monitoring systems, toxic waste leakage, and weak accountability mechanisms, creating the impetus for strengthening the governance of tailings facilities at a global level, while simultaneously triggering regulatory reforms in Brazil with similar intent.

Against this backdrop, Brazilian regulators, as well as mining experts and industry representatives, showed interest in internationally recognized frameworks that could help raise safety standards and restore public trust, such as the GISTM (Agência Nacional de Mineração, personal communication, April/May 2025). The Brazilian Congress amended Law 12,334/2010 in 2020 to strengthen the National Dam Safety Policy, enforcing stricter safety protocols for dam stability, informed by the ongoing development process of the GISTM. The repeating disasters also underscored the importance of strengthening the institutional capacity of the National Mining Agency (Agência Nacional de Mineração [ANM]), to ensure the effective implementation and enforcement of these legal frameworks (Agência Nacional de Mineração, personal communication, April 2025).

Additionally, Brazilian industry stakeholders, such as the Brazilian Mining Institute (Instituto Brasileiro de Mineração [IBRAM]), played a significant role in the development, dissemination, and ongoing implementation of the GISTM, contributing technical input and promoting the alignment with global best practices among Brazilian mining companies (IBRAM, 2020; ICMM, 2020).

3.5 Integration Into Public Policy

As Brazilian public policy and the GISTM were (re)formulated and evolved simultaneously in the aftermath of the 2019 Brumadinho disaster, their interaction has been dynamic. While Brazilian experts, regulators, and industry representatives took part in the international consultation process leading to the GISTM, many of the latter's principles are also reflected in Brazilian national and subnational regulations and policy reforms. Most importantly, ANM Resolution No. 95/2022—a key regulatory reform advanced by the buttressed National Mining Agency—used the GISTM as a technical reference in its development (ANM, 2025). The resolution incorporated or aligned with several GISTM requirements, including governance structures, independent review, risk assessment, emergency preparedness, and transparency, while also establishing stricter legal obligations in certain areas.⁴

In theory, GISTM-certified companies will, by default, already be aligned with many ANM requirements, which could simplify regulatory audits or inspections, reduce compliance friction, and reinforce a culture of proactive safety and accountability. Furthermore, ANM

³ Based on data from Brazil's ANM and Carvalho (2022).

⁴ A detailed comparison between GISTM principles and ANM Resolution 95/2022 is provided in Appendix B.



Resolution No. 95/2022 includes a classification index called “operational management classification” that formally recognizes companies adopting international frameworks such as GISTM and the Towards Sustainable Mining framework by classifying them as achieving higher levels of operational safety and governance. However, GISTM certification does not exempt companies from compliance with Brazilian laws and regulations, since the standard is not currently recognized as formally fulfilling any legal obligations under Law 12.334/2010, ANM resolutions, or state-level requirements (ANM, 2025).

While the GISTM has helped with policy formulation and is referenced in policies and legal frameworks, Brazilian laws and regulations diverge from—and sometimes surpass—GISTM requirements in several areas. For instance, the GISTM does not explicitly address the issue of upstream tailings and instead it requires operators to define “criteria for the tailings facility to minimize risk” (Principle 4) and to “develop a robust design” for all phases of the tailings facility life cycle (Principle 5) (ICMM, 2020). Brazilian law, by contrast, now prohibits upstream dams⁵ and uses a more fine-grained different classification system for tailings facilities.

Beyond federal-level integration, state-level legislators and agencies have also referenced or drawn from GISTM in developing regional policies or strengthening enforcement. This is most obvious in the state of Minas Gerais, which was directly affected by the Brumadinho disaster and overhauled its tailings management policies in the aftermath. Minas Gerais State Policy for People Affected by Dams, Law No. 23.795 of January 2021, provides for long-term recovery in the event of a catastrophic failure in line with GISTM Principle 14 and defines the rights and engagement with people affected by dam projects throughout all phases of a dam’s life cycle in accordance with GISTM Principle 1. Complementary regulations, such as State Decree No. 48.747 of December 2023, further operationalize these obligations through environmental bond (*caução ambiental*) requirements, which provide financial assurance and environmental deposit requirements (Federação das Indústrias do Estado de Minas Gerais, 2023).

In policy-cycle terms, the Brazilian case reflects the integration of the GISTM primarily at the policy formulation and policy adoption stages (Stage 3 and 4 in Figure 3), where the SSI served as a technical and conceptual reference for the design of strengthened tailings dam regulation in Brazil.

On the spectrum of SSI integration in public policy (Figure 3), this corresponds to Mode 5, in which an international SSI informs and shapes the development of binding policies and regulations as Brazilian authorities drew on the principles, risk-based approaches, and governance concepts embedded in the GISTM to strengthen domestic regulatory requirements, while retaining full regulatory authority and tailoring obligations to national priorities.

⁵ As a global standard, GISTM was developed to be broad enough to account for different regional circumstances and geographic contexts, with no specific design mandated nor prohibited. For instance, upstream tailings dams may be adequate in dry regions, whereas in the Brazilian context, they have been assessed to be insufficient.



3.6 Roles of Government and the GISTM

In the aftermath of repeated fatal tailings dam failures, regulations have been issued and updated at the federal level, as well as in the major mining states of Minas Gerais and Pará. GISTM's internationally agreed principles have served as orientation in this regulatory evolution of the national and subnational regulatory frameworks.

The ANM has also taken on a much more proactive oversight role, including through management and data transparency tools like the Integrated Mining Dam Management System (Sistema Integrado de Gestão de Barragens de Mineração), which centralizes information on tailings facilities, risk classifications, inspections, and emergency action plans. Through these measures, Brazil has moved decisively beyond reliance on voluntary SSIs alone, institutionalizing core safety and governance practices in binding law and regulation, reflecting the policy position that voluntary approaches, while informative, are insufficient on their own to manage systemic tailings risks (ANM, personal communication, April/May 2025).

In this case, the role of the GISTM in Brazil is complementary to regulations. GISTM does not replace regulatory requirements or enforcement but is expected to play a growing role in corporate auditing and compliance, particularly as its assurance system becomes fully operational. Once the GTMI accredits independent auditors and implements a robust certification framework, GISTM conformance assessments may provide additional, standardized technical information that supports company-level risk management and enhances transparency.

Looking ahead, once GISTM certification becomes fully operational through the GTMI, the SSI has the potential to support the policy implementation and monitoring stages of Brazil's regulatory framework. Subject to regulatory confidence in the robustness and independence of the GISTM assurance system, third-party audits conducted under the GISTM could complement public oversight by providing standardized assessment methodologies, structured audit outputs, and improved data quality relevant to tailings governance. While GISTM certification is not a substitute for regulatory compliance, the public disclosure of conformance information may contribute to reputational benefits and peer learning within the sector, thereby encouraging broader alignment with best practices (ANM, 2025). In this sense, the Brazilian case also illustrates how an SSI may progressively evolve from informing policy design and policy adoption (Stages 3 and 4 in Figure 3) toward potentially supporting implementation and monitoring functions, without formal delegation of regulatory authority (Mode 5 in Figure 5).

3.7 Benefits and Challenges

The integration of GISTM into Brazilian mining policy and regulatory processes has generated several benefits for both regulators and operators, particularly by improving transparency, harmonizing expectations, and strengthening technical dialogue. The existence of a global SSI with internationally comparable verification mechanisms has presented clear opportunities for the Brazilian government, both to refine its policies and to share its lessons learned from disaster response and ensuing risk management with other governments and international actors through the GTMI.



GISTM also promotes increased corporate transparency within the sector, which should lead to better data availability and cross-national comparability for regulators due to corporate disclosure of sustainability information concerning tailings. Full GISTM implementation, to which major operators have committed, will require enhanced dam safety management, monitoring, and disclosure practices that could systematically feed into national oversight processes (ICMM, 2025a). One example of such advancing public disclosure practices by mining companies in line with GISTM transparency requirements is a new public portal launched by Mineração Rio do Norte (MRN) that adheres to GISTM disclosure provisions by sharing up-to-date information on tailings structures, including risk classifications, emergency plans, governance systems, and safety evaluations, which complements national reporting obligations under ANM Resolution No. 95/2022 and Brazil's dam safety laws (IBRAM, 2025; MRN, n.d.-a).

Another important benefit is the technical dialogue, mutual learning, and complementary support between Brazilian regulators and the GISTM standard-setting body. For example, the ANM's engagement with the ICMM included discussions on how the GISTM and its audit and verification mechanisms relate to Brazil's own regulatory framework, with ICMM expressing interest in the robustness of Brazil's national dam database and classification systems (ANM, 2023).

Further, once fully operational, GTMI's assurance system may complement public oversight by generating more standardized, publicly available information on tailings management practices, supporting regulatory monitoring and cross-country learning without delegating regulatory authority. As Brazil works on further updating its mining regulations, particularly ANM Resolution 95/2022, it is actively drawing on the framework provided by the GISTM principles. ANM regulators also highlighted that a global standard such as GISTM can offer opportunities for knowledge sharing between implementing countries. Once auditing and certification mechanisms are fully operational, they can also provide additional publicly available information from private operators that would otherwise be resource intensive for governments to collect themselves. This illustrates how international SSIs and national regulation can evolve in parallel: global standards provide best practices and technical coherence, while public authorities retain control over binding regulation, enforcement, and risk tolerance.

Finally, strengthened coordination between Brazilian regulatory institutions and industry bodies can support institutional alignment and improved compliance support. Industry participation in global SSIs, such as the GISTM, can promote a culture of safety and accountability, thereby enhancing corporate risk assessments and operational practices. For example, MRN's implementation of GISTM requirements now incorporates extensive governance structures and monitoring systems that align with both international expectations and Brazil's regulatory requirements (MRN, n.d.-b). Another example is IBRAM, which is an association member of the ICMM and actively participated in discussions during the development phase of the GISTM (IBRAM, 2020). IBRAM leads Brazilian industry efforts to implement the SSI across its member companies, promoting alignment with global best practices (IBRAM, 2024a).



These actual and potential benefits notwithstanding, there are also divergences between GISTM and Brazilian regulations, which are unlikely to be overcome. There is one key difference concerning classification methodologies for TSFs: while the GISTM Standard uses five categories (Low, Significant, High, Very High, and Extreme), ANM Resolution 95/2022 maintains Brazil's system with three categories (High, Medium, Low), as established by CNRH Resolution 143/2010 (ANM, 2025). This reflects the challenge of aligning global standards with established national frameworks while maintaining regulatory clarity. These differences also complicate the interpretation of international guidance when translated into binding domestic requirements.

Another challenge relates to assurance quality and data reliability. A concern from the perspective of Brazilian authorities is the variability in audit quality, as well as uneven public access to reliable data from many existing SSIs (ANM, 2025). The effectiveness of an SSI like the GISTM will thus depend heavily on the quality and consistency of audits, which in turn requires continuous training and upskilling of auditors across the industry. The repeated occurrence of major tailings dam failures despite prior clearance by international auditors shows the extent of the safety challenges that Brazil is facing.

Strengthening tailings governance in Brazil requires more than the refinement of technical standards and regulations alone. Effective implementation also depends on sustained administrative capacity and political commitment to enforce rules, ensure corporate accountability, and oversee powerful mining operators. At the same time, while the GISTM provides guidance toward improved practices and transparency, it can neither replace robust, well-resourced, and enforceable regulatory systems nor provide sufficiently detailed provisions to fit each national or local context, in terms of both local governance and technical requirements, depending on different geological conditions and risk profiles.

3.8 Conclusions and Outlook

Brazil's experience demonstrates how an international SSI can inform and strengthen national regulatory frameworks while still requiring adaptation to local legal and institutional contexts. The parallel regulatory reform and standards development process following the Brumadinho dam failure in 2019 exemplifies how national regulation and international SSIs can co-evolve, while informing and complementing each other, ideally creating complementary requirements and certification procedures rather than duplicate layers of bureaucracy.

At a global level, the GISTM potentially represents a significant step toward consolidating global expectations on tailings governance and management, bringing technical and ESG considerations together into a single, internationally recognized framework. Since the formal establishment of the GTMI in January 2025, work has progressed on operationalizing the GISTM's independent assurance and certification system. While implementation of GISTM requirements by mining companies is advancing, and many operators are reporting progress toward conformance (ICMM, 2025b), it remains too early to assess the full impact of GTMI-led certification on site-level practices or regulatory outcomes at scale, as the global assurance architecture is still being rolled out.



Yet it is already clear that the GISTM drafting and implementation process has inspired and informed regulatory reforms concerning Brazilian tailings dam facilities. Brazilian regulators describe the GISTM's impact on the country's evolving regulatory framework as "huge," especially because the GISTM process collected industry knowledge at a global scale and led to the creation of a unified auditing mechanism that is also hoped to generate useful information for regulators (ANM, 2025). Elements aligned with GISTM principles have been reflected in binding rules, most notably through ANM Resolution No. 95/2022. At the same time, Brazil has complemented GISTM alignment with stricter domestic requirements, such as the prohibition of upstream dams, illustrating how international guidance and national rules can evolve together. Thus, the GISTM has functioned in Brazil primarily as a reference framework that informed regulatory reform following catastrophic dam failures, rather than as a substitute for public regulation.

Looking ahead, the GISTM is likely to continue shaping Brazil's tailings governance and management framework as regulations are reviewed and updated. Overall, this case highlights the role of SSIs as supporting instruments within the policy formulation and implementation stages, contributing to learning, transparency, and adaptive risk management, while reinforcing the primacy of public regulation in governing tailings safety.

4.0 Case Study 2: The EITI Standard in Madagascar





This case study explores how Madagascar integrated the EITI Standard's beneficial ownership requirements into its 2023 Mining Code. As an EITI-implementing country, Madagascar moved beyond its reporting obligations by embedding beneficial ownership transparency directly into national legislation. This represents a significant step toward strengthening governance in the extractive sector. In doing so, Madagascar offers a clear example of how international standards can be translated into enforceable policy.

4.1 EITI Overview and Scope

The EITI is a global standard designed to improve transparency and accountability in the management of oil, gas, and mineral resources. It was established in 2003 when representatives from governments, companies, international organizations, civil society organizations, and investors agreed on 12 foundational principles emphasizing transparency, accountability, and public understanding in extractive sector governance, while underscoring the sovereign role of governments and the need for inclusive stakeholder participation (EITI, n.d.-f, 2023).

The EITI sets out the requirements that implementing countries and extractive companies must adhere to, in order to be recognized as meeting the initiative's transparency objectives. The EITI Standard has evolved significantly since its first edition in 2013 (EITI, n.d.-f, 2015), with each revision responding to stakeholder needs and expectations, as well as the constantly shifting global context. A notable milestone was the introduction of mandatory beneficial ownership disclosure in the 2016 EITI Standard. While the EITI Standard 2013 recommended countries request that companies identify their beneficial owners (EITI, 2015), the 2016 edition required extractive companies to publicly identify the natural person(s) who directly or indirectly own or control them; compliance was enforced from January 2020. This move helped to address corruption, money laundering, and tax evasion (EITI, 2017). The 2023 EITI Standard, the latest edition, has further strengthened these provisions, including encouraging lower ownership thresholds for beneficial ownership reporting and stricter disclosure requirements for politically exposed persons (EITI, 2023).

4.2 EITI Governance

The EITI is governed by the EITI Articles of Association and is made up of three permanent institutional bodies: the Members' Meeting; the EITI Board (the main decision-making body, comprising 20 representatives from implementing countries, supporting countries, civil society organizations, industry, and institutional investors); and the International Secretariat (EITI, n.d.-c, 2023b).

Each EITI implementing country has a multistakeholder group⁶ (MSG), comprising representatives from government, extractive companies, and civil society. The MSG oversees EITI implementation objectives, sets national priorities, and ensures that data informs public debate and policy reforms (EITI, n.d.-c).

⁶ For more information on the minimum requirements of the MSG's role, rights, and responsibilities, see: https://eiti.org/sites/default/files/2024-04/2023%20EITI%20Standard_Parts1-2-3.pdf?hash=1777370400



4.3 Adoption in the Mining Sector

There are currently 55 EITI implementing countries assessed on their progress in meeting the EITI requirements through Validation, EITI's quality assurance mechanism (EITI, n.d.-a, n.d.-g). Extractive companies operating in EITI implementing countries are bound by the EITI Standard's reporting obligations. This enables stakeholders to assess how extractive sectors are governed and how public funds are managed. EITI implementing countries publish EITI reports, generally annually, which compile data on natural resource governance, including legal and institutional frameworks, contracts and licences, exploration and production, revenue collection and distribution, and social and economic spending (EITI, 2023). These disclosures strengthen transparency and accountability and build trust among governments, companies, and citizens. They also support informed decision making, identify and reduce corruption risks, and ensure resource revenues contribute to sustainable development (EITI, n.d.-e).

The scope of EITI reporting also includes artisanal and small-scale mining (ASM). Implementing countries must report estimates of informal mining sector activity, including production and export data, and policies governing the sector (EITI, 2023). Where applicable, countries disclose the legal and regulatory frameworks, licensing, registers, production, exports, and revenues related to ASM. These disclosures can help governments support public debate, inform policy to improve regulatory frameworks, help prevent smuggling and corruption, and promote the formalization of ASM (EITI, 2022).

Beneficial ownership is a core requirement of the EITI Standard. A beneficial owner is defined as “the natural person(s) who directly or indirectly ultimately owns or controls the corporate entity” (EITI, 2023, p. 20). Under Requirement 2.5 of the standard, implementing countries must request and companies must publicly disclose beneficial ownership information, including the identities of owners, their level of ownership, and how ownership or control is exercised (EITI, 2023). Countries must also define the ownership threshold for reporting, which the EITI encourages to be 10% or lower, and companies must identify whether any beneficial owners are politically exposed persons (EITI, 2023). The standard further requires implementing countries to establish processes for verifying the accuracy of this information and encourages them to maintain a publicly accessible register containing this information (EITI, 2023). Such disclosures can help eliminate corruption risks, enable effective taxation, set up fairer markets, promote responsible investment, and manage business risk (EITI, n.d.-b.).

4.4 Relevance of the EITI for Madagascar

In 2022, the mining sector represented 4.5% of Madagascar's GDP, 1.74% of total government revenues, and 43.8% of total exports. Revenues from the sector totalled MGA 317.16 billion (approximately USD 70.61 million), with 11 companies contributing 93.87% of that total (EITI Madagascar, 2024b). Revenues from the extractives sector increased by 5.2% from 2022 to 2023, contributing to Madagascar's overall economic growth (African Development Bank, 2024). In addition to major mining projects under development, there are two operating large-scale mines: Ambatovy, a lateritic nickel-cobalt mine owned jointly by



Ambatovy Mineral Resources Investment Holding Company, a consortium led by Essenwood Partners Limited and Zungu Investments, and Korea Mine Rehabilitation and Mineral Resources Corporation (KOMIR) (Ambatovy, 2025, 2026b); and QIT Madagascar Minerals (QMM), a partnership between Rio Tinto (80%) and the Government of Madagascar (20%), which produces ilmenite, a major source of titanium (Rio Tinto, 2026).

Gold and coloured gemstones are predominantly produced through ASM in Madagascar (Ndagano & Schneck, 2021). Estimates from 2021 suggest that approximately 700,000 people work in the ASM sector, of whom 600,000 to 630,000 are gold miners, with higher estimates ranging from 650,000 to 1,000,000 (Hruschka, 2023). Annual artisanal and small-scale gold production is estimated to be approximately 14 tonnes (Hruschka, 2023). Despite its importance for rural livelihoods, the sector remains largely informal and difficult to quantify.

Mirror statistics reveal persistent discrepancies between Madagascar's official gold export declarations and import data recorded by UN Comtrade for the period 2016–2023, indicating volumes of gold leaving the country through informal or illicit channels (EITI, 2025a). This gap suggests that approximately 10 tonnes of gold may have been exported illegally over this period (EITI, 2025a), underscoring the need for stronger, legally binding transparency and oversight mechanisms. These governance gaps also highlight the importance of identifying the real individuals behind companies, especially in the gold sector. EITI issued recommendations to strengthen the publication of EITI-related information, and the government subsequently incorporated EITI principles and requirements into the 2023 Mining Code.

EITI-Madagascar was tasked with organizing consultations on the implementing decree for the 2023 Mining Code (EITI-Madagascar, 2024a) and used this opportunity to incorporate provisions on beneficial ownership, including a definition and a 5% ownership disclosure threshold (Repoblikan'i Madagasikara, 2024). More broadly, the government has undertaken reforms to secure and formalize the sector, including the addition of measures under the 2023 Mining Code and the establishment of a Single Window for Exports (Guichet Unique d'Exportation), designed to centralize export procedures, enhance traceability, and ensure the proper return of revenues (EITI, 2025a).

Madagascar officially became an EITI candidate country⁷ on February 22, 2008.⁸ Following the military takeover in October 2025, Madagascar was placed under enhanced scrutiny from November 19, 2025, to November 20, 2026. During this period, the EITI International Secretariat is closely monitoring Madagascar's adherence to the EITI principles and requirements (EITI, 2025c).

4.5 Integration Into Public Policy

The integration of the EITI Standard's beneficial ownership requirements into Madagascar's legal framework is one of the clearest examples of an SSI directly shaping binding national

⁷ A candidate country is defined as “a country that has fully, and to the satisfaction of the EITI Board, completed the four sign-up steps set out in the EITI Standard. EITI Candidature is a temporary status that is intended to lead, in a timely fashion, to compliance with the EITI Requirements” (EITI, n.d.-d).

⁸ See <https://eitimadagascar.mg/a-propos/> for a timeline of EITI implementation in Madagascar.



regulation. The adoption of the Mining Code (Law No. 2023-007) in July 2023 marked a significant turning point in the country's approach to extractive sector governance. The MSG, which consists of civil society, government, and industry, including from the Chamber of Mines, worked with the EITI Secretariat to ensure that wording on beneficial ownership and transparency would be incorporated in the Mining Code. EITI-Madagascar actively participated in the Mining Code Revision Committee, including organizing consultations with stakeholders on drafting the Mining Code and its implementing decrees. This led to a proposal in the Draft Law on the revision of the Mining Code to include wording mandating the publication of beneficial ownership information and contracts in the extractive sector. This moved the requirements from voluntary reporting to binding national legislation.

This process is reflected in Article 297,⁹ of the 2023 Mining Code, under Chapter 11, Adherence to the Principles and Requirements of Transparency and Good Governance (Repoblikan'i Madagasikara, 2023, p. 58). The article requires all mining permit holders to adhere to the EITI Standard, mandating transparent declarations, disclosure or payments to the state, and public accessibility of beneficial ownership information, contracts, and licences (Repoblikan'i Madagasikara, 2023). The scope of this requirement is broad; it applies to all mining licence holders in Madagascar. This signals a significant commitment to sector-wide transparency, rather than limiting disclosure to a select group of companies.

The 2023 Mining Code's Implementation Decree further operationalizes the Mining Code's provisions. It defines "beneficial owner" and the threshold as: "The natural person or persons who ultimately exercise effective control over at least 5% of the shares or corporate units, over an extractive company" (Repoblikan'i Madagasikara, 2024, p. 2). This threshold aligns with the EITI Standard's encouragement of ownership thresholds of 10% or lower (EITI, 2023). The decree also incorporates additional transparency measures, including requirements for cost verification and contract publication. This was informed by consultations led by EITI-Madagascar with various stakeholders. Importantly, the decree also grants legal status to the EITI and stipulates in Article 213 that 2% of mining royalties be allocated to the EITI toward the "fight against corruption, the promotion of transparency and the popularization of mining texts with the agents of the Ministry in charge of Mines" (Repoblikan'i Madagasikara, 2024, p. 41).

EITI-Madagascar's 2025 *Annual Progress Report* highlights activities supporting the implementation of the Mining Code and its implementing decrees. These include capacity-building workshops for regional representatives of the Ministry of Mines, focused on the Mining Code's transparency and good governance provisions, including the requirement that all mining permit holders must publicly disclose beneficial ownership information (EITI, 2025b). The General Directorate of Taxes maintains a Central Register of Beneficial Owners (EITI, 2025b), which may inform future EITI reporting.

⁹ "Every mining permit holder, in accordance with the standards and materiality threshold of the Extractive Industries Transparency Initiative (EITI), is obligated to respect the principles and requirements of transparency and good governance, including ... to make public information relating to beneficial ownership; to make public all contracts and licenses concluded or amended, including information made available to the public" (Repoblikan'i Madagasikara, 2023, p. 58).



Madagascar's most recent EITI Validation was completed in January 2024 and assessed the country's implementation of the 2019 EITI Standard; it used information available up to 2021 (EITI Madagascar, 2024b). Because this Validation predates the adoption of the Mining Code's Implementation Decree, it did not evaluate the implementation of the beneficial ownership provisions in the Mining Code. Future Validations will therefore be an opportunity to assess the extent to which the Mining Code's beneficial ownership and transparency requirements have been implemented.

The Mining Code establishes a broad sanctions regime for non-compliance. Penalties for violating obligations under the Mining Code include administrative measures such as written warnings, temporary suspensions, and mining permit cancellations, and criminal penalties, which may involve imprisonment, fines, or hard labour (Repoblikan'i Madagasikara, 2023).

Within the policy cycle, the EITI in Madagascar is integrated into the policy formulation and adoption stages (Stage 3 and 4 in Figure 3), where EITI-aligned transparency requirements were designed, negotiated, and embedded into binding regulations. Following their adoption, companies and government entities are expected to comply with disclosure obligations and publish information in accordance with the EITI Standard, reflecting the integration in the policy implementation (Stage 5) and reporting (Stage 7) stages shown in Figure 3.

The incorporation of EITI-aligned beneficial ownership provisions into Madagascar's 2023 Mining Code represents a strong form of integrating an SSI into public policy. Rather than making participation in the EITI itself the legal compliance mechanism, the Mining Code embeds key EITI transparency and disclosure requirements on beneficial ownership directly into national law. In terms of voluntary and mandatory integration, this positions the EITI as a foundation for the development of binding policies, laws, and regulations, corresponding to Mode 5 in Figure 5. Mandating adherence to EITI requirements can help ensure that extractive sector companies in Madagascar align their reporting with the EITI Standard, thereby strengthening transparency and accountability in the country's extractive sector.

4.6 Roles of Government and the EITI Standard

The Government of Madagascar has sought to ensure that EITI implementation supports transparency and accountability in the extractive sector. The Minister of Mines acts as the EITI Chair. The government must ensure effective implementation of the EITI Standard in Madagascar by allocating both human and financial resources required for the EITI to function properly; regularly monitoring the civic space to ensure that reforms to laws and regulations do not restrict civil society participation in the EITI process or public debates; and maintaining state representation on the national MSG through representatives from the Presidency; the Prime Minister's Office; the ministries of mines, finance, the environment, the interior; and the Malagasy Office in charge of strategic industries.

With the Director General of Tax responsible for maintaining the Central Register of beneficial owners, EITI Madagascar may draw on information from this database and incorporate it into its EITI reporting (EITI, 2025b).



The EITI monitors progress on other aspects in the decree, including environmental safeguards, as provisions around environmental management should be scrutinized. Looking forward, the EITI may also serve as a platform for policy dialogue and coordination, such as in implementing regulation of the ASM sector in Madagascar.

4.7 Benefits and Challenges

Integrating the EITI Standard's provision on beneficial ownership into Madagascar's Mining Code has improved transparency in the extractive sector. The code mandates all mining permit holders to disclose their beneficial ownership information and payments to the state, including those related to environmental and social aspects. It also mandates the publication of mining contracts and licences. These transparency measures enable the public oversight of extractive governance by government, industry, and civil society (EITI, 2023).

Joining the EITI has made it possible to inform the public about the extractive sector's annual contribution to the national economy through the disclosure of tax and parafiscal revenues, exports, employment, social and community contributions, and environmental aspects of the sector. When publicly accessible, these disclosures can improve the transparency of the extractives sector, enhance accountability, and support informed decision making. By enhancing the country's transparency in the extractive sector, being an EITI implementing country has helped to attract international investors, with the hope that investment will continue to benefit the country's socio-economic development.

The Implementation Decree gives the EITI legal status, which allows the EITI to receive funds from the Madagascar government, in addition to the 2% share of mining royalties. Additionally, the most recent Madagascar EITI report was produced on time, marking an improvement, given past difficulties receiving data on time. Furthermore, EITI-Madagascar has established a platform for companies to report payments to the government and disclose beneficial ownership information. This is intended to reduce the administrative burden on companies and ensure the reliability of the data published by EITI-Madagascar (EITI Madagascar, 2026). Together, these measures are expected to strengthen transparency and support coordinated efforts by national stakeholders to fight corruption in the sector.

At the same time, fully implementing and enforcing the EITI's requirements, particularly on beneficial ownership, is expected to be a challenge due to Madagascar's long-standing resource constraints. Limited financial and human capacity within government institutions makes it difficult to consistently collect, verify, and publish high-quality data in line with EITI requirements and will also make it challenging to scrutinize the implementation of the provisions of the latest Mining Code. In addition, periodic political uncertainties may affect the continuity of reforms and the stability of multistakeholder processes, which are central to effective EITI implementation.

4.8 Conclusions and Outlook

Madagascar's experience illustrates how an SSI can be translated into an enforceable national policy. By integrating the EITI Standard's beneficial ownership requirements into the 2023



Mining Code, the country shifted beneficial ownership disclosure from a voluntary practice to a legal obligation for all mining permit holders.

During the 2023 Validation process, stakeholders noted that civil society organizations were meaningfully included in consultations on the 2023 Mining Code. The progress achieved reflects a joint effort across the different constituencies within EITI-Madagascar. The MSG's active participation, particularly its role in the Mining Code Revision Committee, was central to this outcome and demonstrates how multistakeholder bodies can help shape national legislation. In addition, the institutional setup, with the Ministry of Mines serving as EITI Chair, has facilitated the integration of EITI-related provisions into the legal framework. A key lesson from this process is that the domestication of international standards is neither passive nor automatic; it requires sustained advocacy, engagement, and political will.

Another key insight is the value of aligning national legislation with established international definitions and language. Madagascar's decision to mirror the EITI Standard's definition of beneficial ownership in both the Mining Code and its Implementation Decree enhances legal clarity, strengthens the government's authority to collect and verify beneficial ownership information, and reduces the risk of ambiguity in enforcement.

At the same time, Madagascar's experience underscores that legislating beneficial ownership is only a first step. The effectiveness of this reform will depend on the systems put in place to implement and enforce it, particularly the government's ability to maintain a publicly accessible beneficial ownership register, ensure company compliance, and enforce penalties for non-compliance. Because the 2023 Mining Code and its Implementation Decree were adopted after the period covered by Madagascar's most recent EITI Validation, their practical impact has yet to be assessed. The next Validation will offer a clearer assessment of Madagascar's progress in meeting the EITI Standard's beneficial ownership requirements and implementing Article 297 of the Mining Code. Forthcoming EITI reports are also expected to offer a clearer indication of implementation in practice, including on beneficial ownership disclosures and company reporting.

Looking ahead, Madagascar's approach offers a useful model for other producer countries seeking to strengthen transparency and accountability in the extractive sector. Domesticating beneficial ownership provisions in national law can help reduce corruption risks and build public trust in natural resource governance. Future reforms could build on this foundation by expanding beneficial ownership disclosure to other high-risk sectors and by strengthening the link between beneficial ownership transparency and ASM, where opaque ownership structure remains a significant governance challenge.

Overall, Madagascar's experience shows how an SSI can reinforce national governance objectives when embedded through legal reform and meaningful multistakeholder engagement. This marks an important step toward more accountable and transparent resource governance.

5.0 Case Study 3: The GRI in Sweden





This case study examines how Sweden mandated the use of an internationally recognized sustainability reporting standard, the GRI, for its state-owned enterprises (SOEs), including those operating in the mining sector. It explores the drivers, design, and outcomes of this policy decision and draws lessons for other mining jurisdictions.

In this case, the driver for integration was not merely a desire to improve corporate transparency in the sector, but a concrete governance gap: while the GRI's standards were technically available to any organization, no structured policy framework existed to require SOEs, a central actor in Sweden's mining sector, to report their activities in a consistent, comparable, and accountable way. Sweden mandated a comprehensive sustainability reporting framework for state-owned companies. Rather than relying on voluntary uptake, the Swedish government mandated the GRI for its SOEs and embedded it within a formal ownership governance framework, assigning board-level accountability and linking disclosures directly to parliamentary oversight. In doing so, Sweden expanded the GRI's scope in the country and demonstrated that an internationally recognized SSI could be integrated into State Ownership Policy as a binding governance instrument, offering a model of proactive SSI domestication.

This case study is particularly relevant for countries where state ownership of mining assets is significant or growing. As governments in resource-rich countries increasingly take equity stakes in extractive industries, whether through national mining companies, sovereign wealth funds, or joint ventures, the Swedish experience offers an example for using SSIs like the GRI as a governance and accountability instrument, not just a disclosure tool. The case illustrates how SSIs can be embedded into ownership policy to drive consistent, comparable sustainability performance across a state's mining portfolio.

The case study is organized as follows: it first provides an overview of the GRI and its standards; it then describes the context of Sweden's mining sector and the governance gap that motivated policy action; it next details how the GRI was integrated into Swedish public policy, the benefits and challenges of this approach, and finally, conclusions and outlook.

5.1 GRI Overview and Scope

The GRI was established in 1997 in response to growing public concern over the environmental and social impacts of corporate activities, following events such as the Exxon Valdez oil spill that occurred in 1989 (GRI, n.d.-c). Initially focused on increasing transparency and creating accountability mechanisms for environmental practices, GRI's scope has since expanded to include economic, social, and governance issues as well (GRI, n.d.-c).

GRI's primary objective is to provide companies with standards for sustainability reporting (GRI Standards), allowing stakeholders and other interested parties to assess the impacts of companies on economies, environment, and people, including human rights (GRI, n.d.-f). GRI Standards have been widely adopted and are the most commonly used sustainability reporting standards globally (Bais et al., 2024; KPMG, 2022).

Any organization of any size in any geography can use the GRI Standards. They help companies identify their material topics, related risks, impacts, and how to manage them and

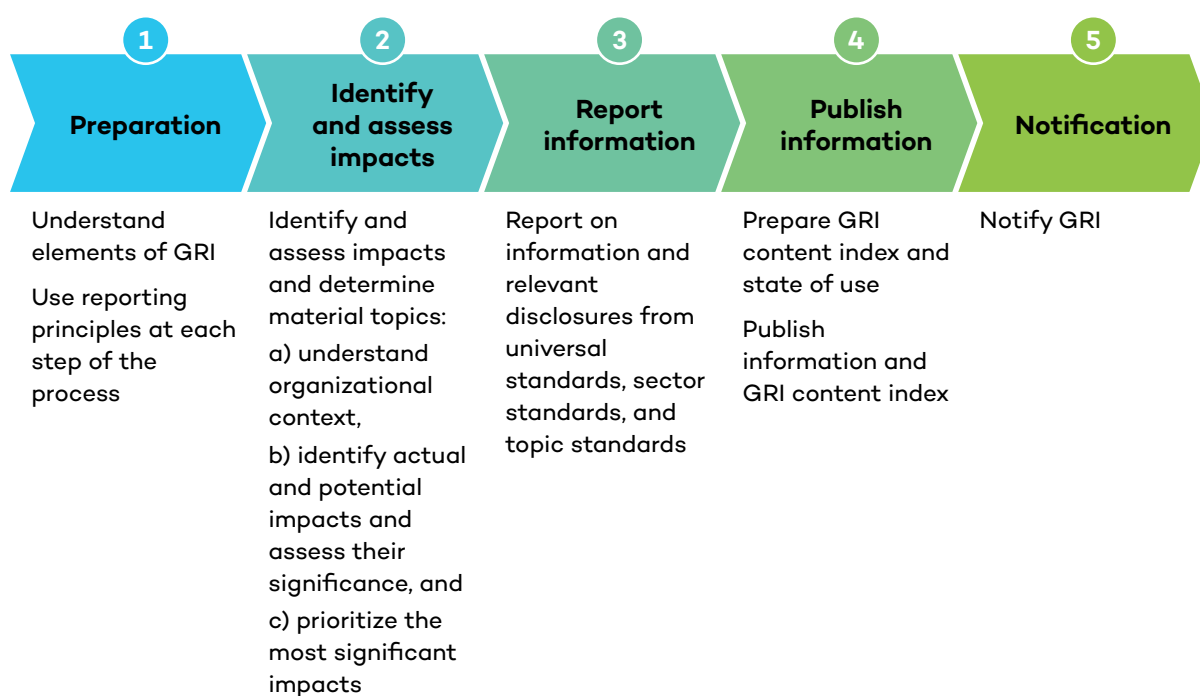


measure progress over time while reporting impacts (GRI, n.d.-f). The standards are modular and are categorized as

1. **universal standards:** applicable to all organizations, covering governance, strategy, stakeholder engagement, and due diligence, and aligned with the UN Guiding Principles on Business and Human Rights and the OECD's *Guidelines for Multinational Enterprises on Responsible Business Conduct* (GRI, n.d.-h).
2. **sector standards:** providing sector-specific guidance (GRI, n.d.-d).
3. **topic standards:** covering specific environmental, social, and economic impacts (GRI, n.d.-a).

An overview of the reporting process using the GRI is shown in Figure 7.

Figure 7. Process of reporting using the GRI Standards



Source: Author's adaptation based on GRI, n.d.-a.

5.2 GRI Governance

GRI is governed by several bodies. The Global Sustainability Standards Board is responsible for setting globally accepted standards for sustainability reporting and brings a multistakeholder perspective, including technical experts. The Stakeholder Council is a multistakeholder forum that advises boards on strategic issues. The Due Process Oversight Committee ensures the Global Sustainability Standards Board's standard-setting activities follow due process and are responsive to stakeholders. The GRI Supervisory Board provides oversight and advice to the management board. The GRI Management Board is responsible for GRI's operational leadership and policy. The GRI Secretariat is headquartered in



Amsterdam with regional offices in Colombia, India, Singapore, and South Africa, ensuring support for stakeholders globally (GRI, n.d.-b, 2022b).

5.3 Adoption in the Mining Sector

An estimated 14,000 companies across 100 countries report using the GRI Standards. It is the main reporting framework for many mining companies across the globe, including for members of the ICMM, who are required to comply with the GRI Standards (SLR Consulting, 2024).

According to the GRI adoption study results, 45% of the large publicly listed mining companies used GRI in their sustainability reporting (170 out of 379) (GRI, personal communication, May 20, 2025).¹⁰ This sector has an above-average GRI adoption rate, ranking in the top quarter of industries using GRI (GRI, personal communication, June 10, 2025).

Box 2. GRI 14: Mining Sector 2024

GRI 14: Mining Sector 2024 provides a standard for transparent, consistent, granular, and complete reporting on the sustainability impacts of the mining sector (GRI, n.d.-e). GRI 14 was developed based on the recommendations of a multistakeholder working group with representatives from business enterprises (including mining companies and industry associations), investment institutions, labour organizations, civil society, and mediating institutions such as technical experts and reporting specialists. This composition ensured a balance of perspectives across industry, workers, investors, and broader societal stakeholders, alongside geographic, gender, and cultural diversity, to reflect the wide range of impacts and expectations associated with the mining sector (GRI, n.d.-b, 2022a; Segal, 2024).

It is applicable to organizations engaged in mining and quarrying, including

- exploration, extraction, quarrying, and primary processing of all types of minerals, metallic and non-metallic, except for oil, gas, and coal (as there is a separate standard for this);
- support activities for core mining operations like transport and storage; and
- suppliers of specialized products and services to mining organizations.

The standard covers 25 key topics, including on waste, human rights, emissions, and local communities. It also covers topics like tailings management, ASM, and operations in conflict zones, which were not previously covered by GRI Standards (GRI, n.d.-e). One of the standard's distinctive features is its emphasis on site-level transparency, wherein companies need to provide detailed reporting on the impacts and risks of specific locations and minerals (GRI, n.d.-e).

¹⁰ Note that the adoption study looks at a smaller subset of companies (large publicly listed companies with specific thresholds), which is not linked to the total estimated figure of 14,000 reporters.



The *GRI 14: Mining Sector Standard* was released in February 2024 and had a transition period until January 1, 2026, meaning that organizations that wish to report in accordance with the GRI Standards would need to use GRI 14 after this date.

An internal GRI adoption study looked at sustainability reports released by the end of 2024. The adoption study identified a handful of forward-looking mining companies or organizations (18) that made commitments or initial efforts to incorporate GRI 14 into their reporting cycle. This number is expected to be significantly higher for the 2025 and 2026 reports, as organizations will have had the opportunity to incorporate GRI 14 into materiality assessments and start collecting data on the disclosures determined as material (GRI, personal communication, April 15, 2025).

5.4 Relevance of the GRI for Public Policy in Sweden

Sweden has a long mining history, with most mines located in three regions—Norrbotten, Skelleftefältet, and Bergslagen, where about 100 companies have exploration permits (Dyer & Pehrson, 2020; Geological Survey of Sweden, 2020; Liljenstolpe et al., 2024). SOEs play a central role in Sweden’s mining sector. The most significant is Luossavaara-Kiirunavaara Aktiebolag (LKAB), which has been 100% state-owned since 1976 and is Europe’s largest iron ore producer, supplying approximately 86% of all iron ore produced within the EU (LKAB, 2025). LKAB’s deep roots in the Swedish state, with the state acquiring a 50% stake as early as 1907 and taking full state ownership by 1976, make it one of Sweden’s longest-established SOEs and the dominant actor in the country’s iron ore sector (Fredriksson, n.d.). Besides, Sweden is also a major source of zinc, copper, lead, gold, and silver (Dyer & Pehrson, 2020).

The Swedish mining industry works together with specialized suppliers, industrial partners, and customers, and has formed the so-called “Swedish mining cluster,” which contributes 3% to GDP and 8% to exports; it employs up to 125,000 people (Copenhagen Economics, 2021). Sweden recently joined the Sustainable Critical Minerals Alliance, announced at the UN Biodiversity Conference (COP 15) in Montreal in 2022, signalling its commitment to ethical and sustainable mineral supply chains through due diligence and sustainability reporting (Government of Sweden, 2024).

In this context, the integration of GRI into Swedish public policy was driven by long-standing Swedish expectations for transparency, responsible business conduct, and high governance standards in SOEs. While GRI Standards were technically available to any organization, no structured policy framework existed to require SOEs, a central category of actor in Sweden’s mining sector, to report their sustainability activities in a consistent, comparable, and independently assured way. The **2007 Swedish State Ownership Policy** introduced a requirement for SOEs to publish sustainability reports in accordance with the GRI Guidelines, making Sweden one of the first countries globally to mandate a comprehensive sustainability reporting framework for state-owned companies (Ministry of Enterprise, Energy and Communications, 2007).



The choice of GRI reflected its status as the most widely used and internationally recognized sustainability reporting framework, offering a structured, comparable, and credible basis for assessing corporate ESG impacts across sectors, including mining (GRI, 2022b; KPMG, 2022). Major industry players in Sweden, like LKAB and Boliden,¹¹ already apply GRI Standards to disclose their environmental and social impacts, helping them meet growing stakeholder expectations for transparency and align with international norms on responsible business conduct. For the Swedish government, adopting the GRI provided a means to standardize sustainability disclosures across a diverse SOE portfolio, strengthen board-level accountability, and enable the state, as shareholder, to monitor performance and risks systematically.

5.5 Integration Into Swedish Public Policy

In 2007, Sweden issued mandatory reporting requirements for SOEs through the government document *Guidelines for External Reporting by State-Owned Companies (Riktlinjer för extern rapportering i statligt ägda företag)*, issued by the Ministry of Enterprise, Energy and Communications. These require SOEs to use the GRI for their sustainability reporting and also contain information on how to use the GRI Guidelines for sustainability reporting. Mandatory GRI reporting became effective from the 2008 reporting year, making Sweden one of the first countries globally to mandate a comprehensive sustainability reporting framework for state-owned companies (Ministry of Enterprise, Energy and Communications, 2007).

These guidelines assigned board-level responsibility for compliance. “The boards of the state-owned companies are responsible for the companies presenting sustainability reports in accordance with the GRI’s guidelines which, together with other financial reports, make up an integrated basis for assessment and follow-up” (Ministry of Enterprise, Energy and Communications, 2007). Based on this obligation, these narrative and financial reports were used to assess and monitor company performance.

The guidelines further addressed partially state-owned companies, mentioning that

State-owned companies shall apply these guidelines. In those cases where the state is one of a number of joint owners, the Government intends, in consultation with the company and the other owners, to endeavor for these guidelines to be applied in the jointly-owned companies. (Ministry of Enterprise, Energy and Communications, Sweden, 2007)

This implied that the GRI Guidelines were intended to be applied even to SOEs that were only partially owned by the state, through consultation among joint owners.

This case indicates the use of GRI in the **reporting stage** (Figure 8) of the policy cycle, wherein SOEs are legally required to disclose sustainability information using the GRI framework, and these disclosures feed directly into the government’s annual ownership reporting to Parliament.

¹¹ See, for example: *Boliden Area: Biodiversity GRI Report, 2021*: <https://www.boliden.com/48e71e/globalassets/sustainability/sustainability-2/biodiversity-and-reclamation/gri-reports/boliden-area-gri-report-2022-03-30.pdf> and LKAB’s 2022 *Annual and Sustainability Report*: https://lkab.com/wp-content/uploads/2024/04/LKAB_2022_Annual-and-Sustainability-report.pdf



The institutionalized use of GRI in internal company processes also indicates how GRI supports the **policy implementation stage** (Figure 8) as it supports embedding sustainability considerations into internal decision making and oversight mechanisms.

Further, on the voluntary–mandatory ways of integration, this case serves as an example of the use of SSIs at the mandatory end of the spectrum of SSI integration in public policy (Figure 9), wherein SSIs are directly referenced in public policy and used as proof of compliance. This is because the GRI is directly referenced in binding public policy, and compliance with the GRI Guidelines is required of SOEs, with boards formally accountable for implementation. In this case, the SSI functions not merely as guidance, but as a mandatory reporting and governance instrument within Swedish public policy.

5.6 Roles of Government and the GRI

In this case, the Government of Sweden both promoted and required the use of GRI Standards for sustainability reporting by SOEs. Sweden’s centralized ownership model SOEs, where a single state ownership department is exclusively responsible for exercising ownership rights, supported the implementation of this policy. This structure allowed for a clear, unilateral mandate communicated through the State Ownership Policy, ensuring consistency across all SOEs.

While SOEs initially perceived GRI reporting as a compliance exercise, it has since become integrated into their business practices and corporate governance. The practice became aligned with what the state, as shareholder, expected from the start: that sustainability reporting would be a tool to foster more sustainable business practices.¹²

GRI, on the other hand, provided the framework that enabled Swedish SOEs to conduct structured materiality assessments, leading to more strategic management of sustainability risks and opportunities. This enabled standardized reporting across entities, enhancing comparability and transparency for the state as shareholder.

5.7 Benefits and Challenges

Between 2007 and 2008, reporting in accordance with GRI Standards rose from 14% to 89% among Swedish SOEs (GRI, personal communication, June 10, 2025; Sweden Ministry of Finance, 2009). The state owner’s 2008 annual report cited the implementation of GRI Standards as enabling “us as the owners as well as other stakeholders such as customers, employees and journalists, to review and monitor the companies’ work with sustainability” (GRI, personal communication, June 10, 2025). These early results highlighted several benefits associated with the integration of GRI into SOE reporting:

- **Materiality assessment:** The GRI Standard’s embedded materiality process helped SOEs systemically identify and manage impacts, risks, and opportunities related to sustainability in mining operations.

¹² This is based on information received from GRI from a discussion with a senior official of the Swedish state ownership entity and board member of multiple SOEs, June 10, 2025.



- **Consistent, comparable information:** Beyond setting high expectations for corporate governance in the SOE sector, the state owner benefited from receiving standardized and comprehensive disclosures that could be used to assess performance, impacts, risks, and opportunities of all of its SOEs, enabling it to look across its portfolio and at an aggregate level.
- **Positive spillover effects:** As it became a core component of SOE governance, impact reporting became linked to myriad other benefits and supported efforts to meet citizen expectations for responsible business conduct.¹³

The early implementation of mandatory GRI reporting for Swedish SOEs also presented several practical challenges. The 2007 requirement for SOE adoption of GRI Standards was the first time that GRI reporting was mandated. Sweden was at the forefront of sustainability reporting, but there was a general lack of familiarity with the GRI Guidelines. In 2007, few resources were available to guide companies, and many SOEs struggled to apply the guidelines effectively. With engagement by the shareholder and, occasionally, support from consultancy or other firms, SOEs were able to properly embed reporting into business processes.¹⁴

5.8 Conclusion and Outlook

Sweden's experience demonstrates a simple but powerful model: identifying that voluntary uptake of an internationally recognized SSI was insufficient for the state's oversight needs and converting it into a binding governance instrument through ownership policy. Sweden did not create a new standard—the GRI was always applicable to any organization. What Sweden did was mandate it for SOEs specifically, embed board-level accountability, and require third-party assurance, transforming a voluntary framework into a mandatory governance tool. For mining countries where state ownership of mining assets is significant or growing, this offers a practical and replicable lesson: governments do not need to wait for new standards to emerge or for voluntary adoption to take hold; they can take existing, credible SSIs and make them work harder through the levers of ownership policy and public governance. This case shows that a centralized, policy-driven approach can mainstream SSI use even in sectors not traditionally engaged in structured sustainability reporting. A strong government mandate, like Sweden's 2007 requirement for SOEs to use GRI Standards, can catalyze widespread adoption of sustainability reporting.

Early alignment with the GRI also potentially positioned Swedish SOEs to be well prepared for subsequent regulatory developments, including the European Union's Corporate Sustainability Reporting Directive (CSRD) and the European Sustainability Reporting Standards (ESRS). This suggests that early adoption of comprehensive, internationally recognized SSIs can reduce transition costs and facilitate smoother adaptation as mandatory sustainability reporting requirements evolve.

¹³ This is based on information received from GRI from a discussion with a senior official of the Swedish state ownership entity and board member of multiple SOEs, June 10, 2025.

¹⁴ This is based on information received from GRI from a discussion with a senior official of the Swedish state ownership entity and board member of multiple SOEs, April 25, 2025.



As ESG expectations and regulatory frameworks have continued to develop, Sweden has demonstrated a responsive and adaptive governance approach by updating its State Ownership Policy to align SOE reporting expectations with ESRS, rather than continuing to mandate GRI explicitly. This evolution reflects a pragmatic approach in which SSIs are used as stepping stones toward more formalized regulatory scenarios, rather than as static or permanent requirements.

Sweden's approach has evolved significantly since the 2007 mandate. The 2025 *State Ownership Policy* marks an evolution in the state owner's approach to SOE reporting, now recommending alignment with standards for publicly listed firms rather than explicitly referring to GRI Standards (Government of Sweden, 2025). This change was driven by an effort to align SOE disclosure with incoming requirements under the European Union's CSRD, particularly the ESRS (GRI, personal communication, April 2025).

While uncertainty remains regarding how the CSRD will apply to SOEs, the Swedish government expects SOEs to maintain or exceed their existing high sustainability reporting standards. SOEs that fall in scope under the ESRS are considered to be well prepared to comply, as GRI Standards are closely aligned with the ESRS¹⁵ and its requirement for entities to report on sustainability impacts across the value chain. For SOEs outside the CSRD scope, the government considers it possible that they will continue using GRI Standards voluntarily owing to the deep integration of impact reporting on corporate governance practices.¹⁶

Overall, the Swedish case underscores that SSIs can be more effective when integrated as governance tools, rather than treated solely as disclosure mechanisms. Embedding sustainability reporting within mandatory corporate governance frameworks, supported by board-level responsibility and clear ownership expectations, can enhance transparency, comparability, and accountability, while strengthening the state's ability to oversee and guide sustainable business practices in the mining sector.

¹⁵ See more info here:

<https://www.globalreporting.org/news/news-center/gri-welcomes-role-as-co-constructor-of-new-eu-sustainability-reporting-standards/>
<https://www.globalreporting.org/news/news-center/efrag-and-gri-enhance-collaboration-with-deeper-ties/>
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<https://www.globalreporting.org/news/news-center/eu-omnibus-and-the-csrd-key-questions-answered/>

¹⁶ Based on information received from GRI from a discussion with a senior official of the Swedish state ownership entity and board member of multiple SOEs, June 10, 2025.



6.0 Key Takeaways

To support a clearer understanding of how SSIs operate across different governance contexts, Table 1 compares the three case studies examined in this report. It summarizes each initiative's purpose, the drivers of integration, the mechanisms through which governments incorporated them into public policy, and the stages of the policy cycle involved. This comparative overview highlights common patterns and differences across the initiatives and provides practical insights for policy-makers assessing the relevance of specific sustainability initiatives for their national priorities and institutional capacities.

Table 1. Summary of case studies

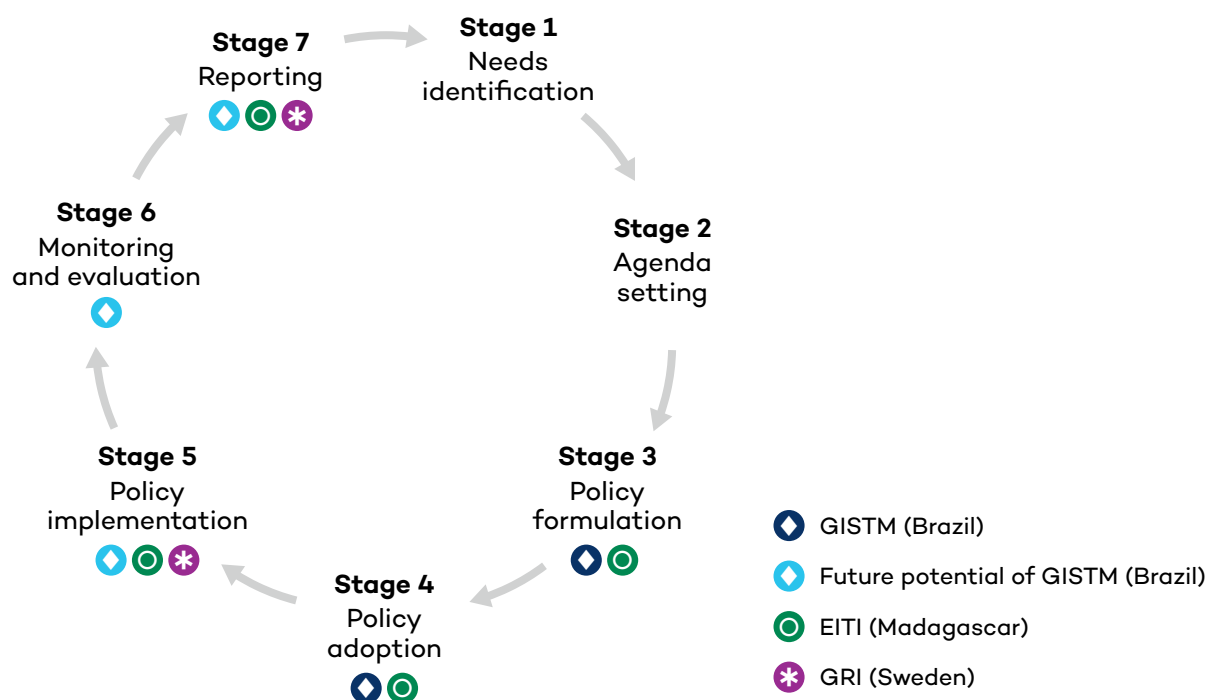
Case Study	Brazil – GISTM	Madagascar – EITI	Sweden – GRI
Type of SSI	Performance and governance standard for tailings	Transparency and governance standard for extractives	Sustainability reporting standard
Driver for integration in the country/region	Catastrophic dam failures; need for stronger oversight; local and international pressure on governments and operators	Political will to strengthen governance and fight corruption; improve transparency; embed EITI's beneficial ownership requirements in the Mining Code	Strengthen SOE governance; ensure standardized and comparable sustainability reporting; align SOEs with international expectations
Mechanism of integration	Principles used as foundation for domestic legislation: ANM Resolution 95/2022; recognition in operational management classification; state-level alignment	Direct reference in the 2023 Mining Code (Art. 297); Decree defines beneficial ownership threshold; EITI receives national financing	2007 Ownership Policy mandates GRI reporting for all SOEs; used in annual parliamentary reports
Policy cycle stages	Stage 3: Formulation; Stage 4: Adoption (potentially Stages 5–7)	Stage 3: Formulation; Stage 4: Adoption; Stage 5: Implementation; Stage 7: Reporting	Stage 5: Implementation; Stage 7: Reporting
Mode of integration (Voluntary → Mandatory)	Mode 5: Foundation for policies used as a reference for mandatory regulation	Mode 5: Foundation for policies, EITI's beneficial ownership requirements embedded into national law.	Mode 7: Mandatory requirement in policies Mandatory for SOEs for sustainability reporting

Source: Authors' summary.



The comparison illustrates the diverse ways in which governments draw on SSIs to strengthen mining sector governance. The integration across the policy cycles is shown in Figure 8 and along the voluntary–mandatory spectrum is shown in Figure 9.

Figure 8. Integration of selected SSIs along the policy cycle



Source: Authors' elaboration based on Berm.dez, 2021; Edelmann & Albrecht, 2023; Howlett & Ramesh, 2003.

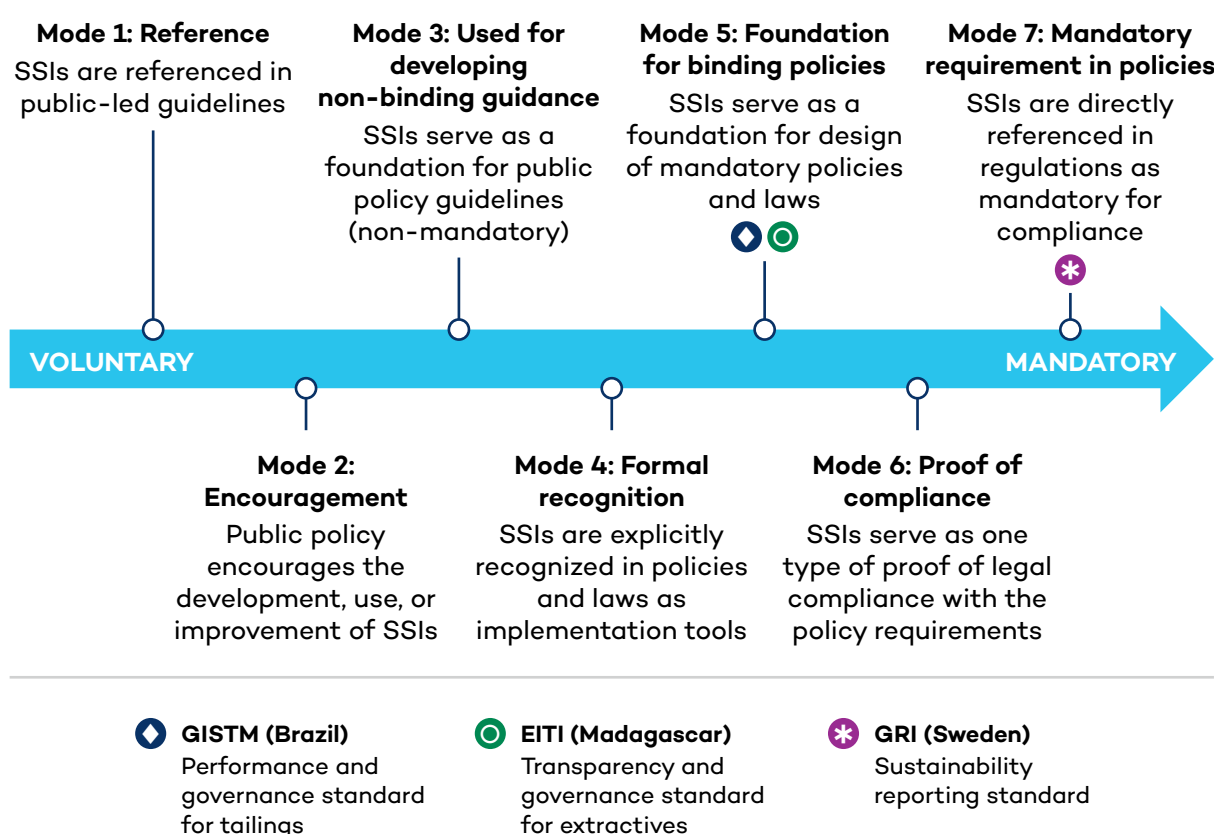
Building on these observations, the key takeaways below synthesize the cross-cutting lessons from the three cases and outline their broader implications.

- Governments are increasingly using SSIs to complement national mining governance, especially where regulatory gaps exist or specialized technical expertise is required.
- Governments tend to integrate SSIs when they provide globally recognized benchmarks, support risk management, or facilitate alignment with international markets or investor expectations.
- SSIs and public regulation are not mutually exclusive. When harmonized, they can reinforce each other, reduce duplication, and support more effective governance of the mining sector.
- Across the three cases, SSIs become integrated into public policy through three main pathways:
 - serving as a foundation for drafting laws or regulations,
 - being referenced in policy instruments as proof of compliance, and
 - being explicitly mandated in legal or administrative requirements.



- While integration most frequently occurs at the policy implementation stage, the Brazil and Madagascar cases show that SSIs can also play a significant role in policy formulation and adoption.
- Administrative capacity, audit quality, security conditions, informality, and data availability remain significant constraints on the effective implementation of SSI-aligned requirements.
- The IGF and IISD can support member countries in identifying which standards are most relevant for their needs and how to integrate them effectively, including through training and capacity building for policy-makers.
- Greater involvement of producing countries in the design and governance of sustainability initiatives is essential to ensure that international standards reflect local priorities and implementation realities.

Figure 9. Position of case study sustainability standards on the voluntary–mandatory policy integration spectrum



Source: Authors' elaboration.



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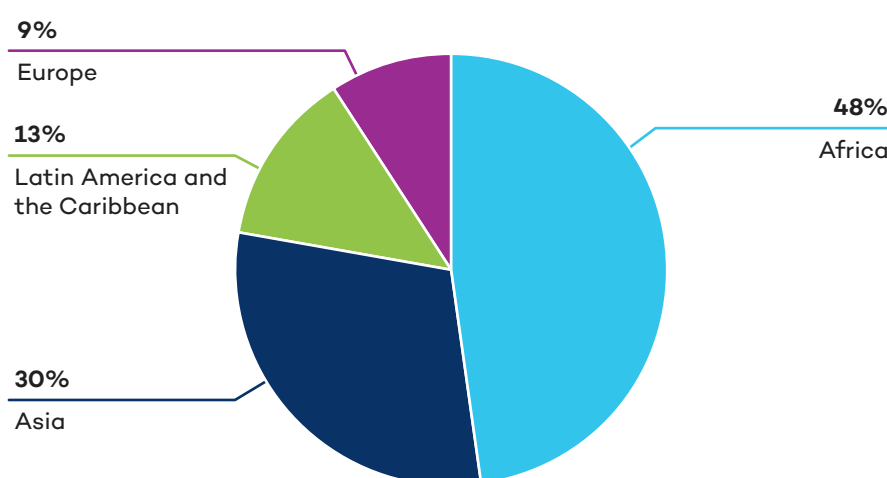
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Appendix A. Additional Information About the IGF Survey

In February and March 2025, the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF) surveyed its member countries to understand how they have incorporated sustainability standard initiatives (SSIs) into mining policy and regulatory frameworks. A total of 26 government officials from 23 countries completed the survey. Figure A1 below illustrates the regional distribution of these respondents.

Figure A1. Regional breakdown of IGF survey respondents



Survey respondents had a diversity of background and expertise; most of them (31%) came from leadership roles. Geologists and engineers, as well as research and development professionals, each accounted for 19% of the total responses. Additionally, representatives from mining operations and safety and those in external relations and legal roles each made up 15% of the sample.



Appendix B. Supplementary Information on Country Standard Case Studies

B1. Brazil and the Global Industry Standard on Tailings Management (GISTM)

Table B1. GISTM Principles reflected in ANM Resolution 95/2022

GISTM Principle	ANM Resolution 95/2022
1. Principle 2 (Governance)	Incorporated through enhanced requirements for the Dam Safety Plan (PSB) requirements
2. Principle 4 (Design, Construction and Operation)	Design criteria and periodic dam safety review based on consequence classification
3. Principle 6 (Risk Assessment)	Translated into the mandatory risk analysis for all dams with high consequence classification
4. Principle 8 (Competency)	Reflected in the definition of minimum qualifications for engineers responsible for technical documentation and oversight
5. Principle 9 (Independent Review)	Integrated through the Mandatory Engineer of Record for high-DPA [dano potencial associado/associated potential damage] dams and through mandatory periodic dam safety reviews conducted by independent consultants
6. Principle 13 (Emergency Preparedness)	Enforced via requirements for Breach Scenario Analyses and the development of Emergency Action Plans for all tailings dams included in the National Dam Safety Policy
7. Principle 15 (Transparency)	Embodied in the requirement for public reporting on dam conditions through the Brazilian National Mining Agency (ANM) website and via the Integrated Mining Dam Management System platform, which provides real-time monitoring and public data transparency (ANM, 2023)

Source: ANM, 2025.

Brazilian Mining Context

The mineral economy (including extraction and processing) contributes approximately 4% to Brazil's GDP (IPEA & Ministério de Minas e Energia, 2023). With BRL 248 billion (~USD 43.7 billion) in mining revenue in 2023, the sector employs 210,000 people according to government estimates and generated around BRL 86 billion (~USD 15.2 billion) in tax and royalty revenues (Instituto Brasileiro de Mineração, 2024b). With USD 43 billion in export value, the sector's trade balance reached nearly USD 32 billion, accounting for 32% of Brazil's total trade surplus (Instituto Brasileiro de Mineração, 2024b).



Major companies such as Vale S.A. and Anglo American dominate Brazil's mining sector. Vale, Brazil's own multinational mining giant, is the largest iron ore producer globally. In 2017, Law 13.575/2017 transformed the Brazilian National Department of Mineral Production into the National Mining Agency (Agência Nacional de Mineração [ANM]) to strengthen regulatory and political independence while streamlining the authority for regulation, supervision, and investment promotion through regulatory simplification and improved transparency (Cescon Barrieu, 2024).

Sustainability Initiatives Used in Brazil

The Brazilian mining sector has adopted several international voluntary standards and initiatives to enhance sustainability, transparency, and safety. Key examples include the Towards Sustainable Mining initiative, which focuses on topics including tailings management, community engagement, and biodiversity conservation, in close alignment with the GISTM (Mining Association of Canada, n.d.).

Brazil also follows the Organisation for Economic Co-operation and Development (OECD) Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas and endorsed the OECD *Guidelines for Multinational Enterprises on Responsible Business Conduct*. The Brazilian Mineral Resources and Reserves System (SBRR), established by ANM Resolution No. 94/2022, aligns mineral resource reporting with internationally accepted standards. The ESG Seal for Mining, launched by the Ministry of Mines and Energy, incorporates global ESG principles into certification criteria for mining companies (Ministério de Minas e Energia, 2024).

Tailings Management in Brazil

With 914 tailings dams registered as of April 2025, Brazil is a crucial case to consider in the context of tailings management. Major safety incidents, notably the Fundão (2015) and Brumadinho (2019) collapses, have caused catastrophic environmental and human losses, exposing risks of inadequate dam designs and waste leakage and creating the impetus for strengthening the governance of tailings facilities at a global level.

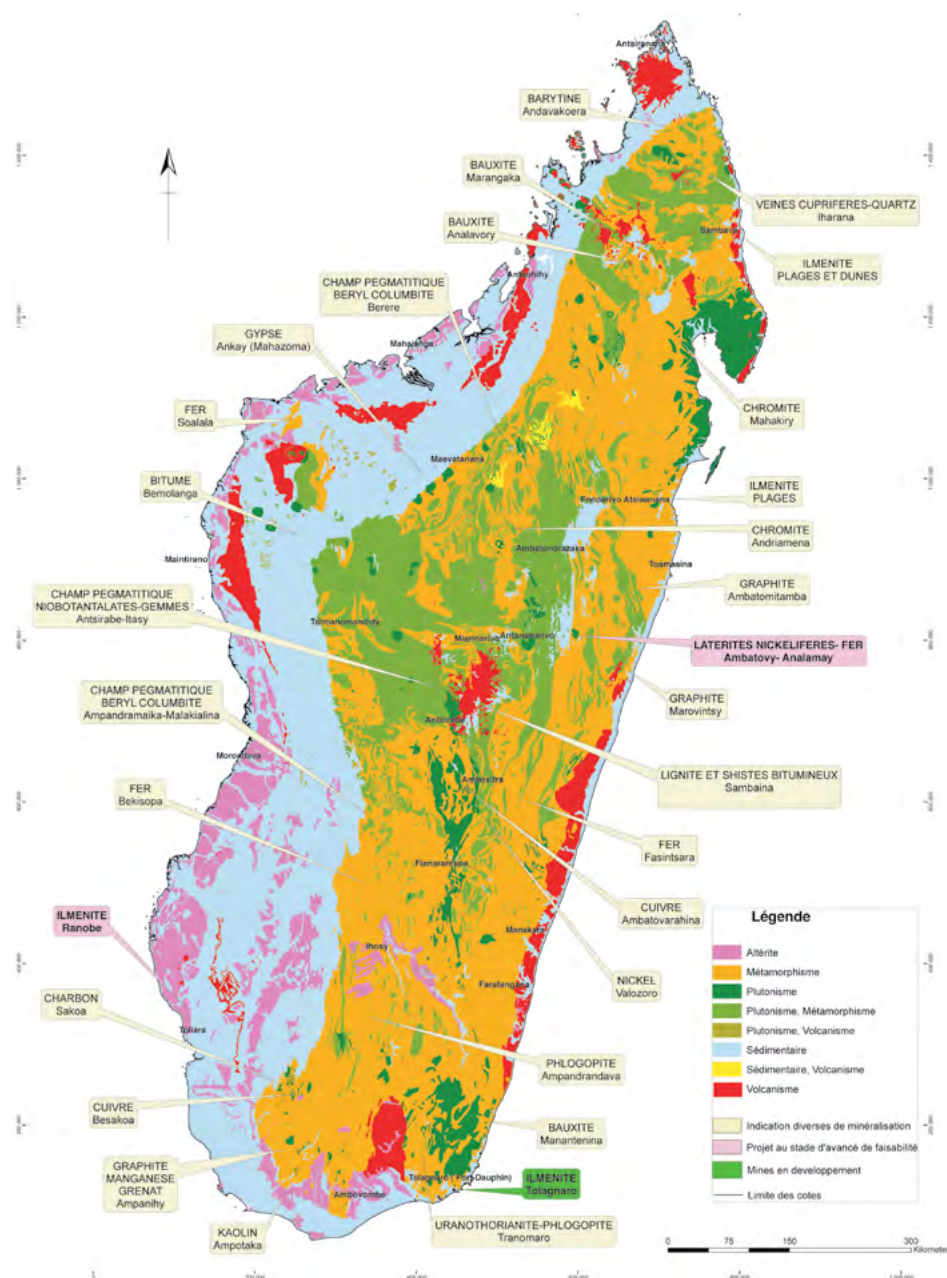
The Fundão (2015) and Brumadinho (2019) tailings dam failures served as turning points for dam safety governance in Brazil. These incidents highlighted the need to revise Federal Law No. 12,334/2010 and Ordinance No. 70389/2017, leading to important regulatory advancements such as the enactment of Law No. 14,066/2020 and ANM Resolution No. 95/2022. The events also emphasized the importance of strengthening the institutional capacity of the ANM to ensure the effective implementation and enforcement of these legal frameworks (ANM, 2025; Cescon Barrieu, 2024, p. 33-35).

B2. Madagascar and the Extractive Industries Transparency Initiative

Mining Context in Madagascar

Madagascar's geology comprises both a crystalline base and a sedimentary basin, supporting the formation of base metals, precious metals, precious stones, fine stones, industrial stones, and ornamental stones. Figure B1 illustrates the locations of potential resources in the country. Madagascar produces nickel, ilmenite, zircon, cobalt, and natural graphite.

Figure B1. Mineral potential of Madagascar



Source: Ministère des Mines, 2024.



Mining in Madagascar can be traced back to the 1600s when precious gemstones were discovered in the south of the country and when quartz crystals were exported to Europe. Artisanal and small-scale mining (ASM) of gold and precious stones mainly occurs in the centre of Madagascar. Additionally, there are several medium-sized graphite operations.

Sustainability Standard Initiatives Used in Madagascar

The Extractive Industries Transparency Initiative (EITI) is included in Madagascar's latest Mining Code from 2023. The code also states that "the Malagasy Government may subsequently decide to adhere to other international norms and standards of transparency and good governance" (Repoblikan'i Madagasikara, 2023, p. 58). Additional SSIs that some mining companies operating in Madagascar align with their policies and practices, as well as their sustainability reporting, include

- Standard on Biodiversity Offsets
- Equator Principles
- Global Industry Standard on Tailings Management
- Global Reporting Initiative
- International Council on Mining and Metals
- International Finance Corporation Performance Standards
- International Finance Corporation Performance Standards on Environmental and Social Sustainability
- International Standards ISO 14001 (for environmental management)
- OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas
- OECD Guidelines for Multinational Enterprises on Responsible Business Conduct
- Responsible Minerals Initiative Responsible Minerals Assurance Process (RMI RMAP)
- Voluntary Principles on Security and Human Rights
- United Nations Guiding Principles on Business and Human Rights
- Cobalt Refiner Supply Chain Due Diligence Standard

Source: Ambatovy, 2026a.

B3. Sweden and the GRI

Sustainability Initiatives Used in Sweden

In addition to GRI, the other SSIs used in Sweden by companies in the mining sector include the following:

- OECD Guidance for Multinationals



- OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas
- UNICEF Children's rights and principles
- ISO standards (like ISO 9001 – Quality Management, ISO 14001 – Environmental Management, ISO 45001 – Occupational Health and Safety, ISO 50001 – Energy Management)
- SA 8000 social accountability standards
- Pan-European Reserves & Resources Reporting Committee (PERC) Reporting Standard
- Extractive Industries Transparency Initiative
- Initiative for Responsible Mining Assurance (IRMA)
- Towards Sustainable Mining
- Copper Mark
- International Council on Mining and Metals (ICMM)'s Mining Principles
- Equator Principles
- UN's new principles for resourcing the energy transition
- European Sustainability Reporting Standards
- Principles of the United Nations Global Compact
- Global Industry Standard on Tailings Management
- International Copper Association
- Mining With Nature by Svemin
- Voluntary Principles on Security and Human Rights
- Science Based Targets Initiative (SBTi)
- Responsible Gold Certificate and Responsible Silver Certificate. In addition, some of the smelters are certified according to the Copper Mark, Zinc Mark, Nickel Mark

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