Issue-Based Paper on Tailings Storage Facilities (TSFs) in Zambia



Centre for Environment Justice

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1. Introduction

Zambia's mining-dependent economy thrives on the attraction of investments in the mining sector. From the neo-liberal economic reforms of 1991 onwards, the country's foreign direct investment (FDI) portfolio in the mining sector has increased (World Bank, 2020). The increase in mining investment has been exponential to the increase in the number of mining projects across the country. The increasing number of mining projects entails an increase in the volume of mine waste, particularly tailings and the corollary environmental and social disasters that accrue from their poor management. At this juncture, the economic blessing of mining appears to be an environmental and social curse to the country. This brings to the fore an increasing concern about the management and safety of tailings storage facilities (TSFs), such as tailings dams, given the extent to which their failure has continued to cause huge negative environmental and social catastrophes in Zambia.

TSFs are engineered structures designed to store tailings, i.e., the waste materials left over after the extraction and processing of valuable minerals from ore (ICOLD, 2021). Unlike conventional water-retaining dams, TSFs, such as tailings dams, are constructed progressively throughout the life of a mine and often contain large volumes of finely ground rock, water, and residual chemicals (UNEP, 2017). Depending on the type of mineral ore extracted and the processing method involved, tailings can be toxic and chemically hazardous materials of an acidic nature, which renders their storage a highly sensitive matter. For that reason, the long-term stability of a TSF requires continuous monitoring, maintenance, and effective governance from both a mining and environmental perspective (ICMM, UNEP and PRI, 2020). It is no doubt that failure of such storage facilities can have consequences of catastrophic proportion: uncontrolled release of toxic waste into the surrounding ambient environment, causing extensive environmental and socio-economic damage (Kossoff et al., 2014; Owen et al., 2020).

Foregoing, the engineering of TSFs has increasingly come under scrutiny given the aging infrastructure, inadequate monitoring systems, their climate-related vulnerabilities, the weak regulatory environment in which they are operated against an ever-increasing volume of mine waste they are expected to store from the growing mining operations (UNEP, 2017; ICOLD, 2021). It is a globally attestable fact that TSF failures can cause catastrophic damages with enormous consequences, including loss of life, environmental disasters, such as contamination of water resources, destruction of ecosystems, forced and unplanned displacement of communities, agricultural loses, and substantial financial liabilities on the part of mining companies (Azam and Li, 2010; Kossoff et al., 2014; Owen et al., 2020).

For this reason, TSF failures are no longer narrowly viewed as mining accidents, but as environmental and social disasters of catastrophic proportion. But while this view is rapidly changing, the management of TSFs and the regulatory environment within which they are operated remain confined to the narrow paradigm of mining engineering, less so in environmental and social safeguarding. This is the primary concern of the Center for Environmental Justice (CEJ), and specifically the underpinning premise of this issue-based paper on tailings management in Zambia. The paper raises four issues that call for concerted attention in the face tailings disasters; (i) the gravity of the matter, (ii) the complex nature of the problem, (iii) the vulnerability of the people it affects directly or indirectly, as a justice issue, and (iv) the enduring challenges and barriers to addressing the problem.

1.1. Background and Historical Context

The history of tailings management in Zambia is closely linked to the development of the country's mining industry. Since the discovery and large-scale extraction of copper in the Copperbelt during the early twentieth century, mining operations have generated vast quantities of waste materials requiring long-term storage. Tailings dams became the primary method of managing mine waste due to their relatively low construction costs and capacity to accommodate large volumes of tailings. Over time, however, safety regulatory concerns were ostensibly overshadowed by the country's decolonial emphasis on asserting national sovereignty and on government control and management of all national resources, as an imperative policy orientation of the independence era. In this era, the mining industry was nationalized, with mining companies operating under a command-and-control ethos of state-determined policies, laws and regulations. In essence, the state was the lawmaker, the regulator and the miner, at the same time.

The cumulative regulatory effects of this era on tailings management came to the fore in the 1970 Mufulira disaster, which remains one of the deadliest tailings-related incidents in Africa. Nearly one million tonnes of tailings entered underground mine workings, killing 89 miners. Much as the disaster exposed weaknesses in the TSF facility, management and geotechnical monitoring systems (tailings.info), it ostensibly did not expose the regulatory weaknesses of a state-owned mining operation under the then Zambia Consolidated Copper Mines (ZCCM). The privatization of the mining sector in the neo-liberal era of 1991 ushered in a paradigm shift in the regulatory system, emphasizing deregulation and environmental protection (World Bank, 1992). Deregulation entailed the state's withdrawal from interference in the day-to-day operations of mining companies, as part of the World Bank's Structural Adjustment Program (SAP). On the other hand, environmental protection from a mining perspective was left as an operational mandate of the privatized mining companies.

Table 1 below provides the historical timelines that demonstrate what has been changing over time:

Year / Period	Events
1930s - 1960	Expansion of copper mining in the Copperbelt and construction of early tailings storage facilities
1970	Mufulira Mine Tailings Disaster results in the death of 89 miners following a tailings dam breach and underground collapse
1990s	Mining sector liberalization attracts foreign investment and leads to increased mining production.
2011	Enactment of the Environmental Management Act No. 12 of 2011, strengthening environmental compliance obligations
2015 - 2020	Increased attention to mine waste management following major global tailings disasters in Brazil and Canada

2020	Launch of the Global Industry Standard on Tailings Management (GISTM) by the United Nations Environment Programme (UNEP), International Council on Mining and Metals (ICMM), and Principles for Responsible Investment (PRI).
February 2025	Sino-Metals Leach Zambia Tailings Dam No. 15 failure releases toxic acidic waste into the Mwembeshi and Kafue River systems.
2025 - 2026	Growing calls from environmental groups, civil society organizations, engineers, and affected communities for a nationwide safety audit of all tailing dams in Zambia.

However, the more recent Sino-Metal disaster of February 2025 in Chambishi shows that something is not changing alongside the changing times in Table 1. This aligns with findings at the global level, that while many TSF facilities now operate safely, major catastrophic failures continue to be part of the reality of tailings management. These findings point to the need for renewed and stronger governance and monitoring systems (ScienceDirect).

1.2. What is the Problem?

The Sino-Metals disaster in 2025 intensified public concerns about the structural integrity, engineering standards, and environmental performance of TSFs in Zambia. But while the Sino-Metals disaster stole the show by virtue of its expansive impacts, there were three other tailings failures within the space of fifteen months on the Copperbelt (Mukumba et al, 2026). The Sino-Metals disaster, the scale of damage it caused, is in public view in Zambia (ZEMA, 2025), making international headlines abroad (Associated Press, 2025). The disaster amplified the daunting existential risks that communities living near mining operations continue to face not only directly, but indirectly through tailings seepage and contamination of water resources (UNEP, 2017; ICOLD, 2021). The disaster also raised concerns over the aging TSFs and how vulnerable such infrastructure becomes in the face of extreme weather events. TSF failures globally raise concerns about inadequate monitoring systems and a weak regulatory and enforcement environment in which they operate, both from an environmental and a mining perspective (Owen et al., 2020; ICMM, UNEP and PRI, 2020).

In Zambia, the Sino-Metal disaster brought this concern into empirical reality. The fact that a similar failure occurred at the same mining facility in Chambishi District of the Copperbelt more than 14 years ago raises serious concerns about whether mining companies can learn from their disastrous pasts. While recognition of the Global Industry Standard on Tailings Management (GISTM) and its associated safeguards is appreciable, the adoption, domestication, implementation, and enforcement of these standards remain discretionary for mining companies. The GISTM addresses contemporary issues in tailings management that many existing TSF facilities were not designed to address under the historical standards under which they were engineered. This includes their ability to withstand current climate realities, such as increased rainfall variability, seismic risks, contemporary environmental protection standards, and the increasing social expectations arising from the impacts of TSF failures on communities (UNEP, 2017; ICOLD, 2021).

The historical ethos under which mining operations were designed as enclaves operating on unoccupied open lands is severely challenged by contemporary realities in which mining operations are increasingly

expanding into occupied spaces adjacent to living communities. This new reality challenges mining operations to be more transparent and accountable to the communities of people within whose spaces mining projects are domiciled. It is now deemed imperative for mining operations to provide information on the conditions, risk profiles and classifications, emergency preparedness, and the status of their TSFs in a publicly accessible manner (Mining Watch Canada, 2022; Owen et al., 2020).

1.3. Aims

Against the foregoing backdrop, the overall aim of this paper is twofold: first, to magnify the seriousness of TSF failures beyond the narrow scope of mining engineering to a broader view of them as environmental and social disasters; and second, to amplify the already growing safety concerns over tailings management in Zambia. Particularly, the call for transparency, information disclosure and enhanced safeguards systems is high on the agenda. As such, the paper is presented as a lobby and advocacy case for enhancing tailings management in Zambia at this year's Environmental Protection Dialogue, the 2026 EPD. Specifically, the paper advocates for increased mandatory adoption, domestication and implementation of the Global Industry Standards on Tailings Management (GISTM) into the national regulatory framework for tailings management.

1.4. Methodology

This paper builds on a literature review of tailings management, TSF failures, and the concomitant disasters worldwide. At home in Zambia, the paper builds on document reviews of the reports made available by regulatory authorities in the public interest after the Sino-Metals disaster. This has been augmented by narrative and discourse analyses of the court of public opinion, debates and public discussions that became an order of the day across different radio, television and podcast channels, as well as public meetings, workshops and seminars that emerged in the wake of the Sino-Metals disaster. These analyses have been triangulated with empirical observations of the far-reaching effects of the disaster beyond the point source in Chambishi on the Copperbelt. A presentation of this paper to a larger national and international audience of experts and policymakers in this year's EPD is intended to serve as validation of this discourse.

2.0. Results

An aggregate thematic analysis of the issues deriving from the foregoing is shown in Figure 1 below. The most significant thematic issue is the problem's complexity. This complexity arises from both the mining perspective of tailings management and the environmental perspective. The complexity of the problem also extends to the multiplicity, expanse and crosscutting nature of the effects of a TSF failure beyond mining. The second leading thematic issue is the gravity of the problem: how much is at stake when a TSF fails and results in a disaster? The liabilities on the part of the mining company are huge, as are the tolls on the surrounding and distant communities; ecological, municipal, and water services are disrupted. Essentially, a TSF failure draws tailings management out of the narrow purview of mining engineering. Third, the vulnerability of the affected communities is a significant thematic issue that emerges out of this discourse and narrative analysis. Community vulnerability is underpinned by the fact that people are affected by something they have no control over, know very little about, and cannot control the activity that renders them so vulnerable. This is where tailings disasters raise issues of justice. Fourth, it is the enduring challenges and barriers to addressing this problem. These challenges are a composite of legal, regulatory, institutional, economic and political factors that coalesce around the weight of the country's political economy.

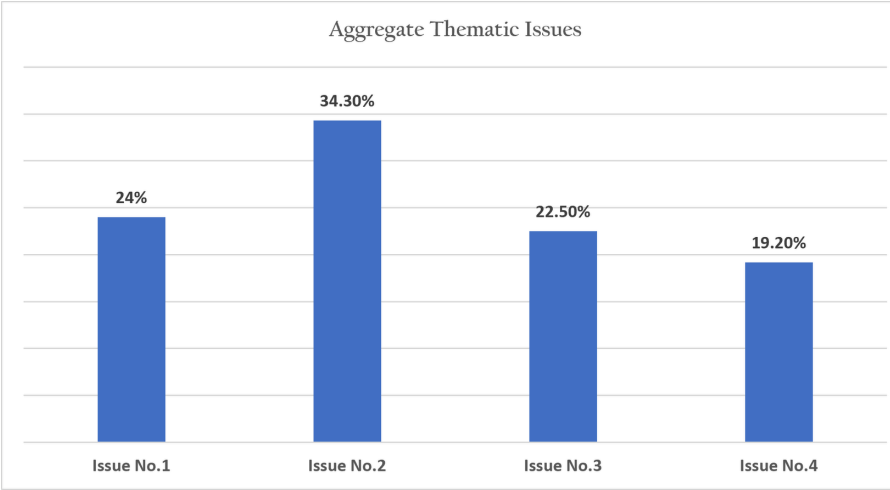


Figure 1: Aggregate Thematic Issues

3.0. Issues and Discussions

3.1. The First Issue: Gravity of the Matter

Currently, Zambia has a large number of active and inactive TSFs associated with copper, cobalt, manganese, nickel, and other mineral extraction activities, mainly in the Copperbelt Province, North-Western Province, Central Province, and Luapula Province. The risks of failure of these TSFs and the disasters that follow them are not hypothetical. They are as real as the risk they continue to pose to the environment and society. They also highlight a wide array of legal and economic liabilities for mining companies. The Sino-Metals TSF failure on 18 February 2025 released approximately 50 million liters of acidic, toxic waste into the surrounding environment. The contaminated discharge flowed into the Mwambashi River and then into the Kafue River, the major drainage vein of the Copperbelt Province and one of Zambia's most important water resources (zema.org.zm). The importance of the Kafue River is underlined by its functions as a domestic water source, supplying fresh water to Copperbelt towns. It is important for agriculture, fisheries, hydroelectricity generation and industrial activities across large parts of Zambia.

As such, a single TSF failure in Chambishi on the Copperbelt:

I. Destroyed fish and aquatic life along a stretch of hundreds of kilometers along the Mwambashi and Kafue Rivers.
II. Contaminated fresh water sources downstream, forcing the water utility company in Kitwe to shut down water supply to some Copperbelt towns, schools, colleges and universities had to be forced into temporary closures as a result of that development.
III. Disrupted agricultural production and farming activities along the affected river banks, including farmers (small-scale and commercial) who rely on the Kafue River for irrigation.
IV. Has created serious concerns over groundwater contamination and soil degradation in the long-term (AP News).

V. Forced regulatory authorities to suspend mining operations until the tailings situation was rectified.
VI. Raised a USD 220 million legal notice for compensation to facilitate the relocation, resettlement, screening, and independent medical testing, treatment, and livelihood restoration of the affected
VII. households.[1]
Raised a USD 9.7 billion legal notice for the establishment of a Victims and Environmental
VIII. Compensation and Rehabilitation Fund,[2] and
Currently, a pending case in the Constitutional Court of Zambia regarding the constitutional public interest issues that this disaster has brought to the fore.

3.1.1. Scale of Ecological, Environmental, Social and Economic Impacts of Tailings Failure (The Long-Tail Phenomenon)

The urgent attention and emergency response that tailings failures receive are often aimed at addressing the immediate, visible effects. These include the vast scope of damage caused by tailings effluent far beyond, firstly, the mining company's operations and, secondly, the communities in the vicinity of the mining operation. This damage extends far downstream to communities along the affected rivers and has multiple ripple effects across many other areas of life, the economy, and society. Beyond the local communities who depend on the polluted water resource, there are communities of farmers, the fisherfolk, and the local authority that supplies fresh water to surrounding townships from the same polluted river. The ecological damage to river- based ecosystems is enormous; a healthy, productive aquatic ecosystem that supports many livelihoods is sterilized by effluent from a failed TSF. In the vicinity of a mining operation, arable farming land is destroyed and may be rendered derelict by the toxicity of tailings effluent. The repercussions on the livelihoods of surrounding communities are dire.

However, the cumulative long-term impacts of this damage are seldom analyzed. For instance, the sedimentation of heavy metals in the polluted rivers and the cumulative impacts of bioaccumulation are neither assessed nor accounted for in the assignment of corporate environmental liability under the Polluter Pays Principle of environmental law. Meanwhile, aquatic ecosystems in polluted rivers, wetlands, and lagoons connected to these rivers continue to suffocate due to bioaccumulation of heavy metals, shortening the lifespan of aquatic species. In most cases, these ecosystems are not given ample time to naturally recover.

Downstream communities that have always subsisted on these ecosystems for their livelihoods suffer in the long run: the incomes they earn from fishing dwindle as fish stocks decline in these contaminated water bodies. These are agrarian communities that rely solely on rainfed subsistence farming, which is also heavily affected by climate change. Fishing and other alternative sources of income they rely on as means of climate adaptation are also killed by pollution of water bodies from tailings failures. The little fish stocks salvaged from these contaminated water bodies may be heavily contaminated with heavy metals due to bioaccumulation. These chemicals are consumed indirectly through fish and absorbed into the bodies of the impoverished people. This further jeopardizes the health of an already poor and vulnerable population. Those who attempt to survive on river-bed gardens use the same contaminated water to irrigate their vegetables, transferring heavy metal contamination to the vegetables. These are called long-tail impacts, which invisibly persist long beyond the visible immediate effects of tailing failure.

[1] Malisa and Partners Legal Practitioners, "Demand Notice: Demand for Damages, Compensation, Environmental Restoration and Remedial Action Arising from the Toxic Spill of 18 February 2025". Dated 28 August 2025, at para 12.0 (a).
[2] ibid, at para 12.0 (b).

The impact chain of a single tailings failure in one place is far more consequential hundreds of miles away from the point source. The issue that draws attention here is the invisibility of such long-tail impacts from (i) the analyses of such disasters, (ii) from the assignment of corporate legal liabilities on the polluter, and (iii) from the assessment of injustice and the violation of human rights accruing from tailings failures. As such, a single tailings failure in one place causes deep-seated injustices and incalculable losses, as well as unremedied human rights violations across a wider part of society over many years after the failure.

3.2. The Second Issue: Complexity of the Problem

The challenges of tailings management in Zambia are not solely technical within the narrow purview of mining engineering. They are rooted in broader political, economic, policy, legal and institutional factors.

3.2.1. Economic and Production Pressures

Mining companies operate under the constraints of rising production costs. Part of the strategy to reduce such costs entails reducing operational costs while maximizing productivity. In worst-case scenarios, investment in long-term waste management infrastructure may compete with short-term financial priorities and production targets. As such, the less urgent priorities are deferred not because they are unimportant, but because there are pressing, immediate materiality factors that a mining operation must address first. Under such circumstances, long-term investments in novel waste management technologies and improved tailings designs are effectively relegated to the waiting list. TSF failures may occur during this waiting period.

3.2.2. The Policy Framework

There are three policy instruments that may be relevant to the management of tailings in Zambia: The National Mineral Resource Development Policy, which seeks to promote responsible mineral resource development while maximizing economic benefits from mining activities. The policy recognizes the environmental risks associated with mining waste, and envisions effective waste management to ensure long-term sustainability of the mining sector. The National Policy on Environment promotes sustainable environmental management and seeks to integrate environmental considerations into national development planning. The policy emphasizes pollution prevention and control, sustainable utilization of natural resources, protection of water resources and ecosystems, public participation in environmental decision making, and environmental accountability by industries, including mining companies. The policy provides a foundation for regulating mining waste and tailings management by envisioning environmental stewardship and sustainable development. The relevance of the National Water Policy to tailings is remotely premised on the assumption that most tailings dam failures result in water pollution.

Like all other policy instruments, however, their visionary approach to the issues they aim to address does not affect the day-to-day management of activities in those areas. Their lack of legal effect compounds this weakness. For that reason, the legal and regulatory framework is of paramount importance to tailings management than policy instruments.

3.2.3. The Legal and Regulatory Framework

While the country has made significant progress in strengthening environmental governance within the mining sector, recent incidents of pollution and tailings failures have exposed weaknesses in the implementation, monitoring and enforcement of relevant laws and regulations.

Tailings management in Zambia is governed from two perspectives: the mines safety perspective under mining law and regulations, and from an environmental perspective under the Environmental Management Act of 2011. Under the Minerals Regulations Commission Act of 2024, tailings are considered a matter of mining safety, health, and the environment. Under the Environmental Management Act, they are an environmental threat and a potential source of environmental pollution. The Compliance Order issued by the Mines Safety Department (MSD) to all TSF operators in Zambia, following the Sino-Metals disasters, subtly linked the disasters to design, engineering, management, and regulatory failures. Essentially, the Compliance Order implicitly acknowledged regulatory shortcomings in tailings management.

Regulatory shortcomings arise from the fact that the primacy of tailings management lies in the containment of tailings in TSFs, which is a fundamental imperative of mining engineering. On the other hand, environmental law and its attendant regulations play a secondary role, particularly during the pre-approval assessment stage through the EIA process. Beyond this pre-approval EIA role, the environmental regulator's active role kicks in after the tailings spill out of their containment and cause environmental damage. From EIA clearance and day-to-day tailings management to the time when tailings spill from their storage, the safety and management of TSF are operational mandates for a mining company. This underscores the significance of inter-institutional coordination in the continuous monitoring of TSFs, making tailings management a broader issue of public interest rather than an enclave preserve of mining engineers.

Other legislative frameworks, such as the Water Resources Management Act of 2011 and the Public Health Act, have a tangential effect on tailings management, primarily through the application of their ex post provisions after a TSF failure. Any other law within Zambia's body of laws, and the relevant regulatory institutions, may be invoked ex post, depending on the nature and extent of the damage caused by a TSF failure.

3.2.4. The Institutional Framework

The management of tailings in Zambia is mandated by the Mines Safety Department (MSD) in the Ministry of Mines and Mineral Development. Under this domain, tailings are considered a mine safety, health and environment issue. On the other hand, tailings fall under the Zambia Environmental Management Agency (ZEMA), especially insofar as the pre-approval of their designs is concerned, through the EIA process. EIA processes extend to the monitoring through environmental audits. In short, the roles of these two institutions in tailings management are merged through the EIA process.

If the EIA process in Zambia were free of its own flaws, tailings mismanagement would not be as disastrous as it has proven to be at Sino-Metals. The shortcomings in Zambia's EIA framework are well-documented by Sishekanu and Katati (2021). Rightly so, one of the major sticking points in the EIA framework is the approval process, which requires expert opinions from different institutions, who, in some cases, hold contradictory positions on the same matter. In a country where the political economy of mining appears to outweigh every other aspect of national interest, political interference in the mining-related EIA approval processes is a real underlying, but often subtle problem.

3.3. The Third Issue: Vulnerability of the Affected People

One of the paradigm shifts that the GISTM brings to the fore is the extent to which primary stakeholders, such as communities, can be engaged in the design and planning of TSFs. This is in view of their vulnerability to tailings disasters globally. Historically, TSF design and management have been regarded as a highly technical area of expertise and a preserve of mining engineers. If communities that know nothing about mining in general and TSF in particular are to be incorporated into TSF design and planning, there is a question of what their specific role would be and what sort of knowledge they can bring to the table. The lingering difficulties that accompany such observations have left communities isolated from decision-making on TSF design and planning. As a result, communities remain vulnerable to a phenomenon in their vicinity, one they know nothing about and have no control over. To a large extent, this explains why the same communities that bear the worst suffering in the event of a catastrophic tailing disaster, as in the Sino-Metals case.

However, from a GISTM perspective, communities are crucial stakeholders (both interested and potentially affected) whose engagement in TSF design and planning is essential for land acquisition, siting, environmental impact assessments, and emergency and disaster preparedness (Global Tailings Review, 2020). The broader umbrella of stakeholders includes civil society organizations, which can play a significant role on behalf of communities and in the public interest by raising awareness of tailing risks and promoting transparency in the management of TSFs. In the same vein, the broader stakeholder base is crucial for championing legal and policy reforms, as this paper is addressing. All these efforts are aimed at minimizing community vulnerability to something they have no knowledge of and control over. When such people have to suffer because of their vulnerable status, the matter becomes an issue of environmental justice and human rights, bordering on the right to life, a clean, safe and healthy environment.

3.4. The Fourth Issue: Enduring Challenges and Barriers

3.4.1. Lack of a dedicated Tailing Management Policy

The complexity of the problem, as already alluded to, necessitates a dedicated Tailings Management Policy and a stand-alone statutory regulatory instrument. The fact that tailings are managed within regulatory frameworks that were never designed for the complexity now associated with TSF failures is a real challenge. More specifically, the current legal and regulatory frameworks for tailings management cannot be so elastic to accommodate the mandatory incorporation of GISTM safeguards.

3.4.2. Regulatory inefficiencies

The Sino-Metals disaster has been emblematic of the wide regulatory gaps in tailings management in Zambia. These gaps are largely attributed to the inefficiencies of responsible regulatory agencies, signifying, among other things, limited institutional capacity, including underfunding and low staffing levels. A significant aspect of these capacity inefficiencies is the lag in technological advancements commensurate with the need to monitor tailings disposal and storage activities across the country as mining operations continue to increase.

3.4.3. Climate Risks and Hazards

Apparently, mining is not immune to the effects of climate change on society as a whole. Heavy rains and flooding were a significant factor in weakening the TSF at Sino-Metals. Global institutions such as the

Sustainable Minerals Institute (SMI) at Queensland University in Australia have been investigating the various factors that contribute to climate variability, which weaken TSFs and cause their catastrophic failure.

3.4.4. Legacy of Tailings

The country has huge piles of abandoned tailings from inactive mining sites. These are legacies of the ZCCM era. They are liabilities that new private mine owners in the neo-liberal era of 1991 did not agree to take over under the Mining Development Agreements of the 1990s. In their abandoned state, these tailings continue to pose environmental risks, signifying poor mine closure planning and post-mining rehabilitation.

4.0. Conclusion and Recommendations

The catastrophic nature of TSF failures globally is a clear indication that tailings cannot be narrowly viewed as mining accidents or incidents. The Sino-Metals disaster in Zambia in February 2025 underscores the need to view tailings as potential environmental and social disasters. This paradigm shift in the view of TSFs equally shifts the view to tailings management, broadening it beyond the enclave of mining engineering. The GISTM safeguards provide arguably the best available pathways for broadening the view and management of tailings beyond the enclaves of mining engineering. Progressive as the GISTM safeguards may be, they can only be effective when incorporated into regulatory frameworks, becoming mandatory safeguard principles around which tailings management can revolve. The current environmental and mining regulatory frameworks for tailings management in Zambia are not elastic enough to accommodate the robustness of GISTM safeguards.

Therefore, it is hereby recommended that a stand-alone tailings statutory regulatory instrument and policy framework be developed for the purpose of sustainable tailings management. This approach widens the tailings management framework to accommodate a range of complex emerging issues that most TSFs were not designed to handle under their historical designs. Moving away from old TSFs without this new thinking is tantamount to pouring old wine into new skins and changing nothing in the end.

The gravity of the matter, the complexity of the problem at hand, the vulnerability of the people affected by this problem, and the enduring nature of the present challenges and barriers to solving it call for concerted multi-stakeholder engagement. Hence, it is hereby acknowledged that there may not be a silver bullet for this kind of wicked problem. However, the empirical record of tailings disasters in Zambia and abroad teaches us to think beyond enclaves and beyond institutional boxes.

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