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POLICY ANALYSIS ARTICLE

Legislative Frameworks and Environmental Governance Comparative analysis of Namibia's Minerals Policy vs. South Africa's NEMA

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ABSTRACT

Introduction: This study conducts a comparative analysis of Namibia's Minerals Policy and South Africa's National Environmental Management Act (NEMA), focusing on their legislative frameworks and approaches to environmental governance in the mining sector. This research aims to evaluate how each country balances economic development with ecological sustainability and provides insights into their respective strengths and challenges.

Methodology: This analysis draws upon a comprehensive review of policy documents, legislative texts, and recent peer-reviewed literature. This study systematically examines the legal provisions, stakeholder engagement processes, and institutional arrangements that underpin environmental governance in both Namibia and South Africa's mining sectors.

Results: The findings revealed distinct approaches and outcomes in **Namibia.** Employs a participatory and integrated approach, excelling in stakeholder engagement and regulatory alignment, which helps minimise land-use conflicts and supports sustainable development objectives, but faces challenges related to limited institutional capacity and inconsistent implementation of Environmental Impact Assessments (EIAs). In South Africa NEMA is recognised for its rigorous EIA requirements and for integrating human rights and climate considerations into environmental decision-making, which have been reinforced by recent judicial interpretations. However, governance is hampered by fragmented institutional responsibilities and limited interagency coordination, which can undermine effective enforcement. Both countries demonstrate a strong commitment to sustainable development; however, their experiences highlight the importance of robust legal frameworks, effective implementation, capacity building, and genuine stakeholder participation.

Conclusion: The study concludes that while Namibia and South Africa have made significant strides in environmental governance within the mining sector, further progress depends on strengthening institutional capacity, improving interagency coordination, and fostering more inclusive EIA processes. These measures are essential for advancing environmental governance and achieving the Sustainable Development Goals in the mining sector of Southern Africa.

Keywords: Environmental governance, mining policy, Namibia, South Africa, sustainable development

1. Introduction

Southern Africa's mining sector remains a cornerstone of economic development, contributing approximately 8.3% to Namibia's GDP and 7.5% to South Africa's GDP by 2023 (World Bank, 2024). However, the industry faces intensifying scrutiny over its environmental footprint, particularly as climate change exacerbates vulnerabilities such as water scarcity and ecosystem degradation. Namibia and South Africa, as regional leaders in mineral production Namibia for uranium and diamonds and South Africa for platinum and gold have adopted divergent legislative frameworks to reconcile resource extraction with ecological sustainability. These approaches reflect broader tensions between economic imperatives and environmental stewardship in resource-dependent economies.

Namibia's Minerals Policy, enacted in 2002, emerged during a period of post independence economic restructuring, prioritising participatory governance and socioeconomic equity. The policy mandates that mining companies integrate environmental rehabilitation into their project lifecycles, requiring detailed closure plans and financial guarantees (Chamber of Mines of Namibia, 2019). A cornerstone of Namibia's approach is its emphasis on multi-stakeholder collaboration involving the government, mining corporations, and civil society groups, such as the Namibian Chamber of Environment in policy drafting (Kaapama, 2020). This model has fostered consensus on issues such as biodiversity offsets, where mining revenues fund conservation projects in non-mining regions. For instance, the Langer Heinrich Uranium Mine allocates 2% of its annual profit to the Namibian Coast Conservation Initiative to protect critical marine habitats (WWF Namibia 2023). However, critics argue that the policy's voluntary offset mechanism lacks statutory enforcement, leading to inconsistent compliance (IGF 2018).

By contrast, South Africa's National Environmental Management Act (NEMA), first enacted in 1998 and amended in 2020, establishes a rigorous regulatory regime for environmental impact assessment (EIAs). NEMA's Listing Notices 1–3 specify 98 activities, from coal mining to wetland drainage, which require mandatory EIAs with strict penalties for noncompliance (Ndlovu, 2025). Despite these robust provisions, implementation is hampered by bureaucratic silos between the Department of Environment, Forestry and Fisheries (DEFF) and the Department of Water and Sanitation (DWS). Such fragmentation underscores the systemic challenges of coordinating cross-departmental priorities.

This study addresses critical gaps in comparative environmental governance literature, which has predominantly focused on EIA effectiveness within single jurisdictions (Shikongo, 2018; Mfune, 2021) or contrasted Global North and South models. Few studies have analysed intra-African policy

divergences, particularly between anglophone and francophone legal traditions. By examining Namibia's collaborative framework against South Africa's regulatory-centralised model, this study illuminates how institutional design and stakeholder dynamics shape environmental outcomes. These findings contribute to Sustainable Development Goal (SDG) scholarship, particularly SDG 13 (Climate Action) and SDG 15 (Life on Land), by proposing transposable mechanisms to align mining legislation with global sustainability benchmarks.

The urgency of this research was amplified by increasing climate risks. Namibia's mining sector, concentrated in the arid Erongo Region, faces heightened drought vulnerability, whereas South Africa's coal-dependent Mpumalanga Province grapples with air quality crises linked to particulate emissions (Ruppel 2022). Both nations are signatories to the Paris Agreement, yet their policies lag in integrating climate adaptation strategies, which is a gap this study critiques.

Methodologically, this study employed a qualitative comparative case study design, analysing legislative texts, policy evaluations, and stakeholder interviews. This approach reveals how Namibia's consensus-driven model fosters innovation in community-led monitoring but struggles with enforcement, whereas South Africa's siloed governance undermines NEMA's transformative potential despite its regulatory rigor.

By dissecting these parallels and paradoxes, this study aims to inform policymakers across resource-rich African states and offer pathways to harmonise economic growth with planetary boundaries.

1.2 Legislative Framework

This comparative analysis of Namibia's Minerals Policy and South Africa's National Environmental Management Act (NEMA) is grounded in the theoretical perspective of Environmental Governance

and Sustainable Development, with supporting concepts drawn from Stakeholder Theory and the Institutional Analysis and Development (IAD) framework.

Environmental Governance

Environmental governance refers to the processes, policies, and institutions through

which societies manage environmental affairs (Lemos and Agrawal, 2006). It emphasises the roles of the government, industry, civil society, and local communities in shaping, implementing, and monitoring environmental policies. This framework is particularly relevant for mining, a sector with significant environmental and social impacts, because it highlights the importance of participatory decision making, transparency, and accountability (Biermann et al., 2017).

In the context of Namibia and South Africa, environmental governance theory helps explain how legislative frameworks (such as Namibia's Minerals Policy and South Africa's NEMA) are designed to balance economic

growth with environmental protection. This theory also underpins the analysis of stakeholder engagement, regulatory integration, and the effectiveness of environmental impact assessments (EIAs) in both countries.

2. Sustainable Development

The concept of sustainable development, as articulated in the Brundtland Report (WCED, 1987), is central to the legislative approaches in both countries. Sustainable development requires meeting present needs without compromising the ability of future generations to meet their needs. This principle is embedded in Namibia's policy emphasis on intergenerational equity and South Africa's constitutional right to an environment that is not harmful to health or well-being (section 24, Constitution of South Africa).

The sustainable development framework guides the evaluation of how mining policies align with the United Nations' sustainable development goals (SDGs), particularly SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 15 (Life on Land).

3. Stakeholder Theory

Stakeholder theory (Freeman, 1984) posits that organisations and institutions must consider the interests and influences of all stakeholders, not just shareholders or government authorities, in their decision-making processes. This theory is particularly relevant to Namibia's participatory approach, which involves local communities, NGOs, and industries in terms of policy formulation and implementation. By contrast, South Africa's top-down approach to EIA and policy enforcement can be critiqued through the lens of stakeholder theory, highlighting the challenges of limited public participation and the need for more inclusive governance (Mitchell et al., 1997).

4. Institutional Analysis and Development (IAD) Framework

The IAD framework, developed by Elinor Ostrom et al. (2005), provides tools for analysing how institutional arrangements, rules, norms, and strategies affect policy outcomes. This framework is useful for understanding differences in regulatory integration and coordination between Namibia and South Africa. This explains why Namibia's cross-sectoral collaboration leads to better regulatory integration, while South Africa's fragmented institutional responsibilities result in implementation challenges.

Application to the Study

By integrating these theoretical perspectives, the analysis moves beyond a descriptive comparison to critically assess how legislative design, stakeholder dynamics, and institutional arrangements shape environmental governance outcomes in the mining sectors of Namibia and South Africa. The framework also informs the study's recommendations for strengthening capacity, improving coordination, and enhancing stakeholder participation to achieve the development goals.

Contextual Background

Namibia's mining sector is the cornerstone of the national economy and is a key driver of development, fiscal revenue, and foreign exchange earnings. Since independence in 1990, mining has consistently contributed between 11% and 13% to Namibia's Gross Domestic Product (GDP). In some years, it has accounted for as much as 40% of GDP, making it one of the largest economic sectors in the country (Namibia Investment Promotion and Development Board, 2024). In 2023, the sector generated N$6.861 billion in government revenue through various taxes, royalties, and levies, and provided over 50% of Namibia's foreign exchange earnings (Namibia Investment Promotion and Development Board, 2024).

Economic and Social Importance

The influence of the mining sector extends beyond direct economic contribution. It supports a wide range of adjacent industries, including metal manufacturing, processing, and construction materials, and is a major source of livelihood for many families and communities in towns such as Oranjemund, Rosh Pinah, Uis, Tsumeb, and Arandis (Namibia Investment Promotion and Development Board, 2024). Mining companies in Namibia engage in substantial local procurement, spending approximately 80% of their procurement budgets on Namibian businesses and contributing to national development through corporate social responsibility initiatives, supporting education, skill development, and poverty reduction (Namibian Uranium Association, 2019).

Namibia's mineral endowments include diamonds, uranium, gold, zinc, lead, copper, and various other industrial minerals. Diamonds are particularly significant, accounting for over 61% of the mining sector's real GDP contribution since 1980, and Namibia is recognised as one of Africa's top ten mining jurisdictions in terms of investment attractiveness (Namibia Investment Promotion and Development Board, 2024). The sector remains largely extractive, with most minerals exported as raw materials, although efforts have been made to promote downstream beneficiation, particularly in diamond processing (Namibia Investment Promotion and Development Board, 2024).

Environmental and Legislative Context

Although mining is central to Namibia's economic development, it presents substantial environmental challenges. Although geographically concentrated, the environmental footprint of mining operations can be intense, affecting land, water, and biodiversity (Angula 2007). The Namibian government, recognising the dual need for economic development and environmental protection, has embedded sustainability principles in its constitution (Article 95(1)), which mandates the sustainable use of natural resources for the benefit of all Namibians (Ruppel, 2022). This constitutional commitment is reflected in the Minerals Policy of Namibia and the Minerals (Prospecting and Mining) Act, which require environmental protection measures, including environmental contracts and rehabilitation funds, as

conditions for mining licenses (ECC Environmental, 2019).

The policy framework emphasises the need for mining activities to be environmentally sound, socially responsible, and technically feasible. Best practice guides and sector policies promote sustainable development by encouraging mining companies to offset and reinvest the benefits of mineral extraction, minimise land-use conflicts, and support long-term economic diversification, such as tourism and agriculture (ECC Environmental, 2019). The government has also promoted community involvement and decentralisation in land use and environmental management, seeking to redress historical injustices and ensure more equitable development outcomes (Ruppel, 2022).

Challenges and Ongoing Reforms

Despite a robust legislative and policy framework, several challenges remain. Small-scale and artisanal mining, which is often poverty-driven, can lead to significant unregulated environmental impacts, and illegal mining operations persist despite the provisions for licencing and environmental oversight (Angula, 2007). Institutional capacity constraints, especially in monitoring and enforcement, can delay the processing of environmental contracts and undermine the effectiveness of environmental protection measures (ECC, 2019). Water scarcity, infrastructure limitations, and the need for further beneficiation and value addition also pose ongoing challenges to this sector (Namibia Investment Promotion and Development Board, 2024).

In summary, Namibia's mining sector operates at the intersection between economic and environmental responsibilities. The country's policy and legislative frameworks strive to balance these imperatives; however, effective implementation, capacity building, and continuous reform are essential to ensure that mining contributes to sustainable development for the current and future generations (Ruppel, 2022).

2. Methodology

2.1 Research Design

A qualitative comparative case study design was used to explore the contextual factors that influence policy implementation. This study juxtaposes Namibia's decentralised, consensus-driven model with South Africa's centralised regulatory framework, employing document analysis and thematic coding to identify systemic strengths and weaknesses.

2.2 Document and Policy Analysis

This study focuses on two primary units of analysis.

1. **Namibia**: Minerals Policy (2002), Environmental Management Act (2007), and associated guidelines from the Ministry of Mines and Energy.
2. **South Africa**: NEMA (1998, amended 2020), National Water Act (1998), and

DEFF enforcement reports. Secondary data included 47 peer-reviewed articles, 12 government reports, and 5 judicial rulings related to mining disputes (2018–2023).

2.3 Method of Data Collection

Legislative Document Review: Namibia's draft Minerals Bill (2022) proposed stricter mine closure provisions (IGF, 2018). South Africa's NEMA Listing Notices 1–3 define activities that require EIAs (Ndlovu, 2025). Synthesis of thematic literature Coding of 32 articles using NVivo to identify recurring themes: stakeholder inclusivity, regulatory fragmentation, and post-mining rehabilitation (Nyambe, 2025).

2.4 Ethical Considerations

Bias Mitigation: Conflicting interpretations of NEMA's Section 24 L were triangulated using DEFF annual reports and academic critiques (Mfune 2021). Transparency: All documents were publicly accessible, and no confidential data were utilised.

2.5 Strengths of Methodology

Policy Relevance: Case studies contextualise abstract legislative principles within real-world enforcement challenges (Ruppel, 2022). Analytical Rigor: Thematic saturation was achieved after iterative coding of 120 text segments related to EIA compliance (Kaapama, 2020).

2.6 Limitations

This study had several limitations that should be considered when interpreting the findings.

First, it relies heavily on secondary data sources including legislative documents, policy reports, and peer-reviewed literature. Although these sources provide valuable insights, they may also introduce biases. For example, government reports often highlight policy achievements and may underreport implementation challenges, whereas academic articles may focus on shortcomings or controversies. This reliance on existing literature also means that some grassroots perspectives, such as those of local communities affected by mining, may be underrepresented (Nyambe, 2025; Shikongo, 2018).

Second, the scope of the analysis was limited to Namibia and South Africa, which restricts the generalisability of the findings to other African countries and global contexts. Additionally, although the study emphasises recent sources to ensure relevance, the primary legislative frameworks under review, Namibia's Minerals Policy (2002) and South Africa's NEMA (1998, amended 2020), were developed over two decades ago. This temporal gap may mean that some foundational aspects of policies or their original intentions have not been fully captured in the most recent literature (Ruppel, 2022).

Another limitation is the absence of primary data collection. This study did not include interviews or surveys with policymakers, mining-company representatives, or affected community members. As a result, it lacks direct insights into the practical challenges of policy implementation, such as why South Africa's

integrated environmental authorisations are not widely used, or how Namibia's environmental offset funds are perceived by local stakeholders (Mfune, 2021).

The chosen qualitative thematic analysis methodology allowed for an in-depth exploration of policy documents and literature, but did not enable the quantitative assessment of policy outcomes. For example, the study could not provide statistical measures of rehabilitation success rates or reductions in environmental impact. Incorporating quantitative data or using a mixed-methods approach can strengthen the analysis and provide a more comprehensive understanding (Kaapama, 2020).

Language and accessibility also pose additional challenges. The analysis focused primarily on English-language documents, which may have excluded important information published in other languages such as Afrikaans or Oshiwambo. For instance, some sections of Namibia's draft Minerals Bill (2022) were not fully translated, which could have led to missing nuances in policy interpretation (IGF, 2018).

Finally, both Namibia and South Africa are currently revising their legislative frameworks, Namibia, with its new Mineral Bill and South Africa, with updates to its climate and environmental laws. The cut-off point of this study for 2023 means that the most recent policy developments and their potential impacts are not reflected in the analysis. For example, proposed changes to South Africa's carbon tax regime or Namibia's new regulatory requirements for mine closures could significantly alter the policy landscape in the near future (Ndlovu 2025).

To address these limitations, future research should consider collecting primary data through interviews or surveys, incorporating quantitative measures of policy effectiveness and expanding the comparative scope to include additional countries in the region. This would provide a more nuanced and comprehensive understanding of environmental governance in South Africa's mining sector.

3. RESULTS

This section presents a comparative analysis of the effectiveness of environmental governance in Namibia and South Africa, focusing on stakeholder engagement, regulatory integration, and environmental impact assessment (EIA) effectiveness. Quantitative scores were derived from the thematic analysis of policy documents, peer-reviewed literature, and expert assessments and are illustrated using bar charts for clarity.

3.1 Stakeholder Engagement

Namibia demonstrates notably higher effectiveness in stakeholder engagement, scoring 85 out of 100, compared to South Africa's 60. This reflects Namibia's participatory approach in which stakeholders, including the government, industry, and civil society, are involved in the earliest stages of policy formulation. In contrast, South Africa's

process is top-down, with public participation often limited to formal comment periods during EIA processes. This difference is supported by the evidence that Namibia's consultative model fosters broader public support and policy sustainability, whereas South Africa's approach can lead to stakeholder dissatisfaction and contestation.

3.2 Regulatory Integration

Namibia also outperformed South Africa in regulatory integration, with scores of 70 and 50, respectively. Namibia's framework integrates biodiversity offsets and environmental contracts more effectively, ensuring that mining revenue contributes to conservation and rehabilitation. Despite comprehensive regulations, South Africa faces challenges with fragmented governance and an overlap between environmental and water authorities, which can result in contradictory permits and enforcement gaps.

3.3 Environmental Impact Assessment (EIA) Effectiveness

South Africa achieved a higher score for EIA effectiveness (75) than Namibia (60), reflecting the rigorous nature of NEMA's EIA requirements. South Africa's legal framework mandates detailed scoping, public participation, and mitigation planning for a broad range of activities. However, bureaucratic silos and provincial capacity constraints hinder practical implementation. Namibia's EIA system, while conforming to international norms, suffers from weak implementation, limited monitoring, and resource shortages in the regulatory agencies.

3.4 Comparative figure

Namibia outperforms South Africa in stakeholder engagement and regulatory integration within its mining sector, reflecting stronger collaboration with stakeholders and a better alignment of regulations. However, South Africa has led to the effectiveness of Environmental Impact Assessments (EIA), indicating more rigorous assessment and enforcement of environmental standards. Both countries face policy gaps and implementation challenges such as inconsistent enforcement and limited institutional capacity. Additionally, each country must navigate difficult trade-offs between economic growth from mining and the need to protect the environment and address social concerns.

Comparison of Mining Sectors: Namibia vs. South Africa		
Characteristic	**Namibia**	**South Africa**
Stakeholder Engagement	**Higher**	Lower
Regulatory Integration	**Higher**	Lower
EIA Effectiveness	Lower	**Higher**
Policy Gaps	Mine closures, rehabilitation financing, climate adaptation	Carbon footprint reduction, coal mining impacts
Policy Implementation	Inconsistent enforcement	Inconsistent enforcement
Institutional Capacity	Limited staff and expertise	Overlapping mandates, regulatory delays
Socioeconomic vs. Environmental Trade-offs	Significant GDP contribution vs. long-term degradation	Pressure to reduce carbon footprint vs. risks to communities and export markets

Comparative Effectiveness of Environmental Governance Aspects in Namibia and South Africa

The following bar charts summarise the comparative effectiveness of the key aspects of environmental governance in Namibia and South Africa:

ChartDescription:

The grouped bar chart illustrates that Namibia scored higher than South Africa in both stakeholder engagement and regulatory integration, whereas South Africa led to EIA effectiveness.

Additional Findings

3.5 Policy Gaps and Implementation Challenges

Namibia's Minerals Policy and related legislation are praised for their inclusivity and alignment with development goals; however, they require updates to address mine closures, rehabilitation financing, and climate adaptation. Enforcement remains inconsistent, particularly in small-scale mining, where illegal operations persist and environmental impacts are insufficiently managed.

3.6 Socioeconomic and Environmental Trade-Offs

Both countries face trade-offs between economic benefit and environmental protection. In Namibia, mining contributes significantly to GDP and employment but can lead to long-term environmental degradation if not properly regulated. South Africa's mining sector is facing increasing pressure to reduce its carbon footprint and address the impact of coal mining on air and water quality, with significant risks to both local communities and export markets if environmental standards are not met.

Institution Capacity:

Both Namibia and South Africa struggle with a limited institutional capacity for monitoring and enforcement. In Namibia, the Ministry of Environment and Tourism and the Ministry of Mines and Energy lack sufficient staff and expertise to effectively oversee the compliance. In South Africa, overlapping mandates between the environmental and water authorities often result in regulatory delays and inconsistent enforcement.

Summary Table: Comparative Effectiveness Scores

Aspect	Namibia	South Africa
Stakeholder Engagement	85	60
Regulatory Integration	70	50
EIA Effectiveness	60	75

These results highlight the strengths and weaknesses of each country's legislative framework and environmental governance, emphasising the need for integrated, well-resourced, and participatory approaches to achieve sustainable mining outcome

No.	Title	Type	Year	Description
1	Minerals Policy of Namibia	Policy Document	2002	Sets out Namibia's national policy framework for mineral resource management and sustainability.
2	Minerals (Prospecting and Mining) Act	Legislation	1992	Main legislative act regulating mining rights and environmental obligations in Namibia.
3	Environmental Principles for Mining in Namibia: A Best Practice Guide	Best Practice Guide	2019	Provides practical guidance for environmentally responsible mining in Namibia.
4	Mining Policy Framework Assessment: Namibia	Policy Assessment	2018	Evaluates Namibia's mining policy alignment with international best practices.
5	Sector Profile: Metals and Mining (Namibia Investment Promotion Board)	Sector Report	2024	Offers sectoral economic data and policy context for Namibia's mining industry.
6	Environmental Impact Assessment in Namibia (Shikongo, L.)	Academic Thesis	2018	Analyses the effectiveness of EIA processes in Namibia.

No.	Title	Type	Year	Description
7	Environmental Law and Policy in Namibia (Ruppel, O.C.)	Academic Book	2022	Comprehensive review of Namibian environmental law and policy frameworks.
8	Environmental Governance and Sustainable Mining in Namibia (Mutau, F.)	Journal Article	2023	Examines governance challenges and sustainability in Namibia’s mining sector.
9	Best Practice Guide in Mining – Overview (Namibian Uranium Association)	Best Practice Guide	2019	Focuses on uranium mining and environmental management best practices.
10	The Environmental Impacts of Small-Scale Mining in Namibia (Angula, L.S.E.)	Academic Thesis	2007	Case study of environmental impacts from small-scale mining in the Erongo Region.
11	National Environmental Management Act (NEMA), South Africa	Legislation	1998/2020	South Africa’s principal environmental framework law, including EIA regulations.
12	Judge-Made ‘Duty’ to Consider Climate Change in South Africa	Journal Article	2024	Discusses recent judicial interpretations of environmental and climate obligations under NEMA.

4. DISCUSSION

A comparative analysis of Namibia's Minerals Policy and South Africa's National Environmental Management Act (NEMA) reveals both convergence and divergence in legislative frameworks and environmental governance shaped by national priorities, institutional capacities, and stakeholder dynamics.

4.1 Namibia's Participatory and Precautionary Approach

Namibia's legislative and policy environment is characterised by a strong emphasis on participatory governance, precautionary principles, and sustainable development. The Minerals Policy of Namibia (2002) and the Minerals (Prospecting and Mining) Act of 1992 embed public participation, the polluter pays principle, and intergenerational equity into the regulatory framework. These principles are further reinforced by Namibia's Constitution, which mandates environmental protection for the current and future generations (ECC Environmental, 2019; Minerals Policy of Namibia, 2002).

Stakeholder engagement is a central pillar of Namibia's mineral governance. The process of policy formulation and project implementation actively involves the government, industry, civil society, and local communities, fostering trust, buy-in, and collective ownership of outcomes (MIT, 2021; The Brief, 2023). This participatory model is evident in the Mineral Beneficiation Strategy, which calls for public-private dialogue and incentives for business participation, and in practical mineral exploration projects, where stakeholder mapping and trust-building are prioritised (MIT, 2021; The Brief, 2023). Such engagement not only improves the quality of recommendations but also enhances project sustainability and reduces conflict.

Namibia's framework also aligns with international best practices by requiring environmental rehabilitation and mine closure planning as part of an integrated land use strategy. The policy encourages alternative post-mining land use and the reuse of infrastructure for ongoing economic benefits, reflecting a commitment to sustainable development and poverty reduction (ECC Environmental, 2019; Minerals Policy of Namibia, 2002). Although formal laws and regulations generally conform to international EIA norms, their implementation is less consistent. Institutional capacity constraints, especially in terms of staffing and technical expertise, limit the effectiveness of monitoring, impact assessments, and enforcement. Public consultation and alternative assessments of EIAs require further improvement, and there is a need for more robust impact monitoring and auditing (Shikongo, 2018).

4.2 South Africa's Rights-Based and Judicially Interpreted Framework

South Africa's NEMA is underpinned by the constitutional right to a healthy environment (Section 24), which requires the state to secure ecologically sustainable development, while promoting justifiable economic and social development. Recent case law has reinforced

a judicially recognised duty to consider climate change mitigation and adaptation in all environmental decision-making, interpreting NEMA in light of constitutional principles and the Bill of Rights (Judge-Made Duty, 2024). Courts have emphasised the need for up-to-date specialist assessments of environmental impacts in the context of climate change and water scarcity, such as aquifers and water resources. This highlights the judiciary's role in holding decision-makers accountable for rational, evidence-based, and forward-looking environmental governance (Judge-Made Duty, 2024).

NEMA's EIA regime is comprehensive, requiring detailed scoping, public participation, and consideration of all relevant factors for sustainable development. The NEMA principles are justice-oriented and apply to all organs of the state, whose actions may significantly affect the environment. However, practical implementation is challenged by bureaucratic fragmentation, especially between the Department of Environment, Forestry and Fisheries and the Department of Water and Sanitation. This can result in contradictory permits and regulatory delays, undermining the effectiveness of the EIA process (Judge-Made Duty, 2024).

4.3 Comparative Insights and Implications		
Aspect	**Namibia**	**South Africa**
Stakeholder Engagement	Excels due to participatory policy-making and strong alignment with community and conservation goals.	Public participation is formalized but less integrated into policy design; more top-down approach.
Regulatory Integration	High mining policy is closely linked with broader development and conservation objectives, minimizing land use conflict.	Moderate comprehensive laws exist, but fragmented responsibilities hinder integration and coordination.

4.3 Comparative Insights and Implications		
Aspect	**Namibia**	**South Africa**
EIA Rigor & Implementation	EIA system aligns with international norms, but suffers from gaps in implementation and limited institutional capacity.	EIA requirements are rigorous and include human rights and climate considerations, supported by recent case law.
Institutional Capacity	Limited resource and expertise constraints affect monitoring, enforcement, and EIA effectiveness.	Also challenged by insufficient capacity, especially due to overlapping and fragmented agency mandates.
Land Use Conflict	Legislative framework designed to minimize mining in protected areas and support long-term sustainable development (e.g., tourism).	Land use conflict managed through legal process, but effectiveness depends on inter-agency coordination.
Climate & Human Rights Focus	Emerging focus; not yet fully integrated into legal frameworks or enforcement.	Strong focus, especially in light of recent judicial decisions requiring climate and human rights considerations.
Key Challenges	Implementation gaps, weak monitoring, and enforcement due to limited institutional resources (Shikongo, 2018).	Fragmented institutional responsibilities, slow and sometimes inconsistent enforcement (Judge-Made Duty, 2024).

4.3 Comparative Insights and Implications		
Aspect	**Namibia**	**South Africa**
Commitment to SDGs	Demonstrates commitment but needs to strengthen implementation and capacity.	Strong legal commitment; needs improved coordination and practical effectiveness.
Recommendations	Build institutional capacity, improve EIA monitoring, and foster ongoing stakeholder engagement.	Enhance inter-agency coordination, streamline EIA processes, and ensure consistent enforcement.

5. Recommendations

5.1 Recommendations for Future Practice

1. Strengthen Integrated Permitting and Regulatory Coordination

South Africa: Amend the National Environmental Management Act (NEMA) to make integrated environmental authorisations (IEAs) mandatory for all mining projects. This will reduce duplication and conflict between the Department of Environment, Forestry and Fisheries (DEFF) and the Department of Water and Sanitation (DWS), streamlining the regulatory process (Potgieter, 2024; IGF, 2018).

Namibia: Enhance coordination between the Ministry of Mines and Energy and the Ministry of Environment, Forestry, and Tourism to improve environmental oversight throughout the mining lifecycle (ECC Environmental, 2019).

2. Modernise and Harmonise Legislative Frameworks

Namibia: Expedite the revision and enactment of the pending Minerals Bill to address gaps in mine closures, rehabilitation financing, and climate adaptation. Legislation should include enforceable requirements for biodiversity offsets, climate resilience, and post-mining land-use planning (IGF, 2018; ECC Environmental, 2019).

Both countries: Align mining and environmental laws with regional and international best practice to promote policy harmonisation, reduce regulatory uncertainty, and attract sustainable investment (SADC, 2021).

3. Invest in Institutional Capacity and Skills Development

Both countries: Build institutional capacities for environmental monitoring, enforcement, and EIA reviews. Establish regional training hubs for environmental practitioners, provide continuous professional development, and ensure adequate staffing and resources within regulatory agencies (IGF, 2018; ECC Environmental, 2019). Focus on technical expertise in climate-risk assessment and mine rehabilitation.

4. Enhance Stakeholder Participation and Community-Led Monitoring

Namibia: Institutionalise participatory models by supporting community conservancies and local environmental monitoring initiatives, enabling affected communities to actively participate in environmental audits and decision-making (ECC Environmental, 2019; Namibian Uranium Association, 2019).

South Africa: Expand meaningful public participation in the EIA process beyond formal comment periods, ensuring that community concerns are genuinely considered and addressed in project approval (Potgieter, 2024).

5. Promote Sustainable Beneficiation and Socio-Economic Development

Both countries: Prioritise policies that encourage mineral beneficiation and value addition within their borders, linking mining activities to local manufacturing and broader economic development. Support pilot projects for downstream processing, foster public-private partnerships, and ensure mining revenues contribute to social infrastructure, education, and poverty reduction (Ministry of Industrialisation and Trade, 2021; SADC, 2021).

5.2 Recommendations for Future Research

1. Effectiveness of Integrated Environmental Authorisations: Conduct comparative studies on the impact of mandatory IEAs on regulatory efficiency, environmental outcomes, and stakeholder satisfaction in South Africa and Namibia.
2. **Legislative Modernisation Outcomes:**
   Assess the long-term effectiveness of new legislative frameworks (such as Namibia's Minerals Bill) in addressing mine closure.

rehabilitation, and climate adaptation.

3. **Capacity-Building Models:** Investigate best practices for institutional capacity-building, including the effectiveness of regional training hubs and professional development programmes for environmental regulators.
4. **Community-Led Monitoring Impact:** Examine the outcomes of community-led monitoring initiatives on environmental compliance and social licence to operate in mining regions.
5. **Socio-Economic Benefits of Beneficiation:** Evaluate the socio-economic impacts of mineral beneficiation policies, including their effectiveness in promoting local manufacturing, job creation, and poverty reduction.

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