

ESGS CONFERENCE 2026

CLIMATE CHANGE IN MINING:

Risks, Governance, Sustainability,
and Environmental Management

DATE: 26-27 AUGUST 2026
VENUE: GLENBURN LODGE,
MULDERSDRIFT

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Building on the success of the inaugural 2024 event, the second ESGS Conference in 2026 will focus on the overarching theme of Climate Change in Mining. The conference will bring together mining leaders, policymakers, financiers, and sustainability experts to explore how the industry can adapt, innovate, and thrive in the face of climate challenges.

Abstract Book

THE SOUTHERN AFRICAN INSTITUTE OF MINING AND
METALLURGY JOHANNESBURG 2026

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FOREWORD

On behalf of the Southern African Institute of Mining and Metallurgy (SAIMM), it is my privilege to welcome you to the 2026 Conference on Climate Change in Mining: Risks, Governance, Sustainability, and Environmental Management and to the hospitality of the Glenburn Lodge & Spa, situated within the Cradle of Humankind – a World Heritage Site.

Mining remains a cornerstone of economic development in Southern Africa, yet it is also one of the industries most exposed to the profound challenges of climate change. Rising temperatures, shifting rainfall patterns, water scarcity, and biodiversity loss are no longer distant risks—they are realities reshaping our operations, communities, and responsibilities.

This gathering builds on the success of our inaugural event, reaffirming SAIMM's commitment to fostering dialogue, knowledge exchange, and collaborative solutions. The challenges we face may be complex, but they also present opportunities to reframe mining as a driver of resilience, innovation, and sustainable development.

We encourage all delegates to engage actively, share insights, and forge partnerships that extend beyond this conference. Together, we can ensure that mining not only adapts to climate change but contributes meaningfully to a more sustainable and equitable future.

I trust that the proceedings of this conference will allow you to build the additional perspective that enables you to rise to the challenge of embedding

ESG-Sustainability in your professional lives and businesses. I encourage you to participate in the proceedings, debate the issues and enjoy networking with solution-oriented people on this journey to enable environmental and social sustainability in the minerals Industry.

Finally, a heartfelt thank you to the Organising Committee, the SAIMM conferencing team and our willing and generous sponsors, without whom this conference would not have been possible.

Take Care and please Stay Safe.

Gordon Smith
Chair: Organising Committee
26 August 2026

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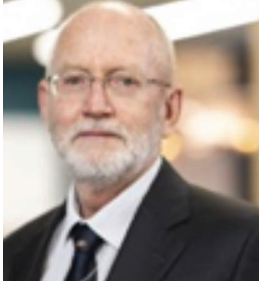
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Conference Chairperson



Gordon Smith

Pr Eng, PhD, MBA, MSc Eng, BSc Eng (mining)

Gordon is a registered Professional Engineer, an Honorary Life Fellow and Past President of the Southern African Institute of Mining and Metallurgy with academic, industry technical and managerial qualifications. Gordon has extensive experience in the field of business leadership, strategic planning, operational management, business start-ups, feasibility studies, mineral property valuation, prospect evaluation, mine design and planning, rock mechanics, mine economics, risk management, techno-economic evaluation and project management, with an emphasis on systems analyses and optimization, across a variety of precious metal, base metal, ferrous metals, chrome, diamond, semi-precious stone, and coal operations. Following retirement from the Technical, Safety and Sustainability Executive role at Anglo American Platinum Ltd in late 2020 he conducted carbon neutrality related capital project investment assurance reviews across Anglo American plc operations globally, before transitioning to an independent minerals industry advisor and non-executive director in 2024. Gordon serves on several company Boards and has been associated with the University of the Witwatersrand, School of Mining Engineering as an Associate or Adjunct Professor since 2014.

Keynote Presenters



Shamini Harrington

Senior Executive Environment, Health, ER and Legacies
Minerals Council South Africa

Shamini Harrington joined the Minerals Council in March 2025 as Senior Executive: Environment, Health, Legacies and Employee Relations. She has more than two decades of experience in environmental and sustainability roles. She began her career as a researcher at the CSIR before transitioning to the corporate sector, focusing on environment and climate change management. She spent nearly 20 years at Sasol, leading sustainability initiatives and shaping the company's greenhouse gases targets and climate strategy and establishing the company's sustainability structure and functions. She is a seasoned expert in her field both nationally and internationally on various advocacy matters. Shamini also represented South Africa at the UN Framework Convention on Climate Change, and chairs key committees on environment and just transition.



Michael Solomon

Adjunct Professor
University of Cape Town

Professor Solomon is a mining engineer with 43 years of experience in the gold, platinum, diamond and coal sectors. He was the first operational CEO of Wesizwe Platinum, a large platinum producing underground mine he took the company from first borehole through listing on the JSE and the raising of the full funding for the capital construction of the Bakubung Platinum Mine, which is now in production.

He served on the Board of ASX-listed Gold One (the precursor company to Sibanye Stillwater) as Chairman of the Audit and Risk Committee and the Health, Safety and Environment Committee.

He is an Adjunct Professor in the Department of Chemical Engineering at the University of Cape Town where he specialises in the economic diversification and decarbonisation of mines.

He is a Non-Executive Director of Sedibelo Resources Limited for whom he chairs the Board Technical Committee and sits on the ESG Committee.

He has recently been awarded an Honorary Life Fellowship of the Southern African Institute of Mining and Metallurgy (SAIMM) for his contribution to mining in South Africa. He has served as a Member of Council of the Institute for over a decade and he chairs the SAIMM ESGS Committee.



Daniel Mminele

Chairman
Nedbank Group Ltd

Daniel is an Independent Non-Executive Director at Nedbank Group Limited and Nedbank Limited, having been appointed Chair in June 2023. Additionally, he serves as a Non-Executive Director of Africa50 and at the Youth Employment Service (RF) NPC.

Daniel has held prominent leadership roles, including Chair of Alexander Forbes Group Holdings Limited and Alexander Forbes Investments Limited, and was the Chief Executive of ABSA Group and ABSA Bank Limited. He also served two terms as Deputy Governor of the South African Reserve Bank (SARB), overseeing financial markets, international economic relations and policy, as well as the Human and Operations Cluster. He was, among others, a member of the Monetary Policy Committee, the Financial Stability Committee, and the Prudential Committee. He also previously served as South Africa's deputy at the G20 and BRICS and served as Chair of Deputies of the International Monetary and Financial Committee at the International Monetary Fund.

His early career included roles at African Merchant Bank, Commerzbank in South Africa, and WestLB in the UK and Germany, specialising in corporate credit risk analysis, project finance, and structured finance.

In 2022, Daniel led the Presidential Climate Finance Task Team, driving the Just Energy Transition Partnership and the development of the Just Energy Transition Investment Plan. During 2025 Daniel chaired the B20 Task Force on Energy Mix and Just Transition as part of South Africa's G20 Presidency.

Daniel is on the Board of Directors of Salzburg Global Seminar, an independent organisation dedicated to creating spaces for impactful conversations that overcome barriers and help to shape a better world.

In 2018, Daniel was honoured with Germany's Great Order of Merit for his efforts in strengthening German-South African relations and has also received a Lifetime Achiever Award from ABSIP.

Beyond the design storm: from compliance metrics to adaptive operations for consecutive minor events in dams

A.M. Cassa, F.W. van Zyl

Knight Piésold (Pty) Ltd, South Africa

Return water dams at mines are commonly assessed against single-event compliance criteria, typically the 1-in-50 year 24-hour storm, with probable maximum precipitation used as an upper check. Although useful for design verification, these criteria do not adequately represent the operational risk posed by sequences of smaller storms occurring over days to weeks. In practice, spills are often driven by cumulative inflow, antecedent wetness, reduced recovery time between storms, sedimentation and limitations in pumping and operational response.

This paper presents a sequence-based framework for assessing the performance of return water dams and linked tailings storage facilities under consecutive minor rainfall events. The framework uses continuous water balance simulation, rainfall sequencing, antecedent wetness response and climate stress testing to evaluate spill likelihood, time at risk for freeboard exceedance and recovery capacity. A case study based on observed rainfall at a South African mine site is used to illustrate the problem. During January 2026, 831 mm of rainfall was recorded over 11 days, equivalent to about 145% of the local mean annual precipitation. Within this sequence, daily events reached approximately the 5-year to 20 year range, while the 72-hour and 7-day accumulations approached the local 50-year design depths. The findings support a shift from a design storm philosophy towards a design sequence and adaptive operations approach.



Amanda Marilù Cassa

Senior Civil Engineer
Knight Piésold (Pty) Ltd

Amanda Cassa is a Senior Civil Engineer at Knight Piésold. She is a Professional Civil Engineer and was awarded her Doctorate in Civil Engineering focusing on hydraulics in water supply pipes. Her specialities lie in water management and hydrology. Her projects range in the water field including baseline monitoring and analysis (water flow and quality in rivers), surface water specialist studies for inclusion in EIAs, compliance audits, stormwater management, floodlines and water balance modelling. She has previously worked on various projects

throughout Southern Africa, DRC, Tanzania, Mozambique and Ghana involving water management and baseline monitoring on mines and industrial plants. Among her accomplishments, she has lectured at the University of Johannesburg and co-authored a textbook on engineering hydrology that is used at several universities in South Africa. Her research has been presented at several national and international conferences and has been published in several peer reviewed journals. Currently the water balance lead in the Mine Residue department at Knight Piésold.



Frans Willem van Zyl

Civil Engineer
Knight Piésold (Pty) Ltd

Frans van Zyl is a Civil Engineer at Knight Piésold with experience in project management, material engineering, product development and training. He holds a master's degree in Civil Engineering, with research focused on polymer concrete for rapid pothole repair in asphalt surfaces. Before joining Knight Piésold, he worked on the design and development of solar mounting structures, with responsibilities in procurement and project management, while contributing to product and service improvement. Frans also has extensive experience in tutoring and

training. He is committed to knowledge sharing, mentoring and supporting the development of others within the engineering profession.

Developing climate-adjusted projected rainfall records to support mine water risk assessment and adaptation planning

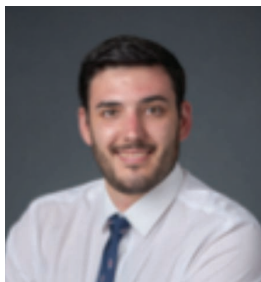
J.A. Cah

SRK Consulting, South Africa

Climate change is altering rainfall regimes, runoff responses, and water-related risk profiles across mining operations, increasing the importance of incorporating projected climatic conditions into mine water planning. This paper outlines the process of sourcing and downscaling global climate model outputs to regional and site-specific scales. It further considers methods for evaluating uncertainty and translating the projected changes in rainfall and associated climate drivers into scenario-dependent future meteorological records. Emphasis is placed on developing records that are statistically consistent with observed trends, while accounting for plausible future changes to improve confidence in projected conditions.

The development of higher-confidence long-term rainfall records enhances the assessment of extreme rainfall risk beyond conventional, isolated design-storm assumptions. By reducing uncertainty in the intensity, duration, frequency, seasonality, and sequencing of high-rainfall periods, these records provide a more robust basis for evaluating the response of mine water systems to both individual extreme events and cumulative rainfall. This enables more defensible estimation of flood volumes, exceedance probabilities, freeboard requirements, storage resilience, and operational trigger levels under plausible future climate scenarios.

The resulting long-term projected meteorological records can be applied within a range of modelling frameworks to evaluate future mine water conditions. The generated rainfall and evaporation records can also support assessments of water supply, storage requirements, discharge or treatment needs, tailings management, mine planning, and closure planning under projected climate conditions. This paper will include case studies demonstrating how improved future rainfall records can increase confidence in projected outcomes and inform practical decisions relating to design, upgrades, operational management, risk thresholds, and adaptive management measures required to support climate change adaptation for SRK clients.



Joss Alexander Cahill

Hydrologist
SRK Consulting

Joss A. Cahill is a dedicated hydrologist with over four years of experience in the field, and currently works at SRK Consulting. He is pursuing a Master of Science in Hydrology at the University of KwaZulu-Natal, where he also completed his Bachelor of Science (Honours) in Hydrology, and a Bachelor of Science in Life and Earth Sciences, specializing in Hydrology and Soil Science.

Joss's expertise encompasses a wide range of hydrological disciplines, including ACUR and PCSWMM modeling, Geographic Information Systems (GIS), hydrological fieldwork, and coding in R. He is particularly focused on climate change impact assessments, leveraging his skills to address complex environmental challenges.

Throughout his career, Joss has contributed to numerous significant projects. Notably, he has developed hydrologic models and tools for water balance assessments, demonstrating his ability to integrate data and model future scenarios effectively. His work often involves creating hydrological models to simulate land use changes, showcasing his proficiency in handling complex datasets and predicting environmental impacts.

Joss has also been involved in ecological assessments, where he processed remotely sensed data to evaluate wetland dynamics. His technical acumen extends to urban hydrology, where he has assisted in modelling urban runoff and subsurface processes. This work provided valuable insights into sustainable urban water management. In addition to his technical skills, Joss has conducted various field tests, including Guelph permeameter infiltration tests and geophysics resistivity tests, to determine soil hydrological parameters for diverse regions. His fieldwork experience is complimented by his analytical skills, which he applies to hydrogeological and hydrological assessments.

Joss's commitment to advancing hydrological science is further exemplified by his involvement in climate change impact assessments across Africa. In these roles, he has developed climate baselines and generated site-specific projections for various meteorological and extreme event parameters, contributing to a deeper understanding of climate-related risks and adaptation strategies.

Joss is adept at communicating complex hydrological concepts to diverse audiences, making him an asset in multidisciplinary teams. His dedication to sustainable water management and environmental stewardship aligns with SRK Consulting's commitment to responsible mining practices. Joss is eager to continue contributing to innovative hydrological solutions and is open to collaborative opportunities that address the pressing environmental challenges of our time.

Bridging the gap from EIA to Corporate Risk

M. Rommelspacher, B. Woythal, S. Schoeman

Digby Wells, South Africa

Mining companies increasingly recognise climate change as a material enterprise and operational risk - yet many still struggle to govern it coherently across project and corporate systems. A common pattern is a structural mismatch between corporate risk registers (board- and audit-facing, often financially framed, standardised, and control-oriented) and ESIA/ESMP risk registers (project-facing, impact-oriented, specialist-led, and permit-driven).

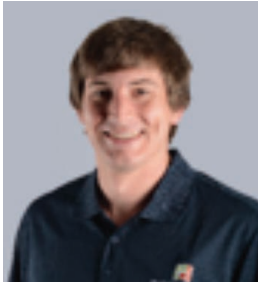
In South Africa, this mismatch is amplified by legacy. Many existing mines are several decades old: most broke ground in the previous century, while widely adopted climate-risk guidance, disclosure expectations, and climate data practices are relatively recent. This gap limits effective decision-making, accountability, and assurance, particularly at board and executive level. Climate risks are identified through ESIA's for new mines and new infrastructure but are not consistently carried into enterprise decision systems that were designed for a different era of risk. Conversely, corporate climate risks are discussed at a high level, but are not traceably tied back to site-specific evidence, management commitments, and monitoring triggers that determine whether risk is truly controlled on the ground.

This paper uses climate change as a case study to demonstrate how broader ESG can function as a structured integrating framework that reconciles these two risk worlds. Climate is an ideal 'proof case' because it is inherently cross-cutting: it spans Environmental impacts (water scarcity, extreme events, tailings and stormwater management, biodiversity stressors), Social consequences (community water competition, health and safety under heat stress, livelihood disruption, just transition dynamics), and Governance requirements (oversight, assurance, internal controls, and credible disclosure to lenders and investors). If an organisation can translate climate risk cleanly from ESIA practice into enterprise governance, the same mechanism can be applied to other ESG priorities.

Drawing on practitioner experience and site-based application, we propose an implementation-ready approach built around a simple ESG 'crosswalk':

1. Define climate risk in decision-ready terms
2. Translate ESIA risks into enterprise risk statements
3. Bind controls to ESIA evidence

When combined with structured, site-based workshops that harness institutional knowledge and operational reality, this approach can be highly effective in bringing legacy mines into a 21st-century sustainability mindset. The key outcome is not a 'bigger register,' but better translatability - ensuring that expert insights generated through robust ESIA processes are systematically translated into decision-ready risk information, clear ownership of controls, and demonstrable risk mitigation. This provides a practical pathway for embedding climate risk governance into enterprise risk management and ESG oversight across the mine lifecycle.



Matthias Rommelspacher

Climate Change Team Lead

Digby Wells Environmental

Matthias Rommelspacher is an environmental engineer with a focus on climate change, specifically mitigation and adaption strategies. This includes helping companies determine their GHG footprint, GHG trajectory and potential GHG emission targets to assist in the world's journey to net zero. He also has experience in the carbon credit space, including the validation and verification of projects. He has completed several climate change risk and vulnerability assessments, both within the context of legal compliance for Environmental Impact Assessments

as well as to assist in corporate risk management. This work has been with a wide variety of sectors, including the chemical, energy, agriculture, mining and waste sectors.

Advancing enterprise risk management in mining: integrating physical climate change risk intelligence and risk velocity for enhanced organisational resilience – the Valterra Platinum approach

C.J. van Zyl, I.C. Pernusch

Valterra Platinum, South Africa

Valterra Platinum has embarked on a comprehensive transformation of its Integrated Risk Management philosophy to address two accelerating forces shaping the mining sector: the intensification of physical climate change impacts and the rising prominence of rapid onset, high velocity risks. This paper presents Valterra's integrated approach, combining science based climate risk intelligence with an advanced three dimensional risk assessment methodology that incorporates risk velocity alongside likelihood and impact.

The first component outlines Valterra's Physical Climate Change Risk and Resilience (PCCRR) framework, grounded in a five step, science driven model that includes climate intelligence gathering, hazard assessment, adaptation planning, investment evaluation, and continuous monitoring.

Leveraging regionalised climate projections through the various Intelligence platforms, Valterra maps long term hazards such as extreme temperatures, flooding, drought, lightning, water security challenges, and power supply disruptions. These insights inform scenario based planning, Business Continuity Management strategies, and Trigger Action Response Plans across all operations. The result is a structured, forward looking process that embeds climate resilience into operational decisions, infrastructure design, community impact planning, and long term sustainability initiatives.

The second component demonstrates how Valterra enhances risk prioritisation by formally integrating Risk Velocity—the time-to-impact of a risk—into its enterprise risk ranking methodology. Through extensive scenario testing, global benchmarking, and alignment with leading frameworks such as COSO ERM, KING IV/V and ISO 31000, Valterra adopted a multiplicative model: (Likelihood × Impact) × Velocity. This approach elevates the visibility of fast escalating risks including cyber threats, extreme weather events, social media-driven reputation crises, and supply chain disruptions. The expanded score range significantly improves differentiation at the top end of the risk profile, enabling faster executive response, clearer escalation protocols, and more agile resource allocation.

Integrating PCCRR insights with high velocity risk modelling positions Valterra Platinum at the forefront of mining-sector resilience. The combined philosophy strengthens risk foresight, enhances governance maturity, and supports a proactive, data driven approach to safeguarding people, operations, communities, and value chains in an increasingly volatile global environment. This paper offers a replicable model for mining companies seeking to modernise their enterprise risk frameworks and embed climate adaptation into strategic planning.



Christiaan van Zyl

Senior Company Manager – Integrated Risk Management
Valterra Platinum

Christiaan Jacobus van Zyl is a highly accomplished senior executive and risk management professional with more than 30 years of experience spanning mining, minerals processing, strategic planning, business development, operational risk management, assurance, and business resilience. He currently serves as Senior Company Manager: Integrated and Operational Risk Management at Valtterra Platinum, where he provides end-to-end leadership of enterprise, functional, and operational risk management across the business, ensuring alignment with corporate

strategy, governance requirements, and operational excellence objectives.

Throughout his career, Chris has established a strong reputation for translating complex risk and business strategies into practical, value-adding operational frameworks. His expertise includes integrated risk management, operational risk management, business continuity management, critical control management, assurance, scenario planning, strategic business planning, portfolio optimization, and organizational resilience. He is particularly recognized for helping organizations identify, prioritize, monitor, and govern material risks while embedding risk-informed decision-making into strategic and operational processes.

Prior to joining Valtterra Platinum, Chris held a series of senior leadership roles within Anglo American Platinum, where he led Integrated Risk Management, Operational Risk Management, and Technical Assurance functions. In these roles he drove the implementation of risk management frameworks, facilitated the identification and management of priority unwanted events, strengthened assurance practices, and provided executive-level insights on risk performance and organizational resilience.

Chris also spent over six years with De Beers Group Services as Group Principal for Operational Risk Management and Group Principal for Scenario Planning. During this period, he led the development of enterprise risk frameworks, operational risk maturity initiatives, critical control effectiveness programs, and long-term supply and resource planning models. His work supported strategic decision-making at group level and helped strengthen organizational capability through the integration of risk, strategy, and performance management.

Earlier in his career, Chris held several technical, operational, and strategic positions across the De Beers Group in South Africa and Canada, including Metallurgical Manager at the Snap Lake Project in Canada, Strategic Business Planning Manager, Ore Processing Business Analyst, Plant Manager, Section Head, and Process Engineer. These roles provided him with deep technical expertise in mining and mineral processing, project development, operational readiness, business case evaluation, financial analysis, and large-scale capital project execution.

Chris possesses a multidisciplinary academic background that combines engineering, business, finance, project management, and strategic leadership. His qualifications include studies in Extractive Metallurgical Engineering, a Bachelor of Commerce in Financial Management, a National Diploma in Project Management, a Graduate Diploma in Engineering (Mining Engineering: Mineral Economics), a Master of Science in Mining Engineering, the Program for Management Development through GIBS, and the Oxford Scenarios Programme through the University of Oxford.

A strategic thinker with strong operational grounding, Chris is passionate about building resilient organizations, strengthening governance, and enabling sustainable business performance through effective risk leadership. His career reflects a unique blend of technical expertise, commercial acumen, and executive leadership that has contributed significantly to the mining industry's risk management and strategic planning disciplines.

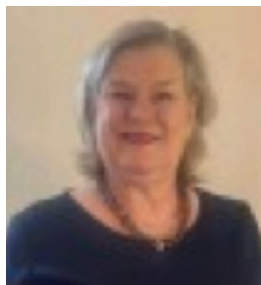
How regional water stewardship can mitigate water stress in mining communities

C. Hudson¹, D. Viljoen¹, J. Brown¹, Dr. H. Coetzee^{1,2}

¹MineCare Evolution, South Africa

²University of the Free State, South Africa

Water stress in mining communities arises from intensive abstraction, declining groundwater tables, and contamination from mining influenced water and tailings effluent. Regional water stewardship provides a systems-based approach to mitigate these pressures by embedding mining operations within catchment-scale hydrological planning. Technical interventions include the reuse and treatment of mining-influenced water, integration of closed-loop recycling systems, and deployment of appropriate passive and active treatment technologies to reduce pollutant loads. At the regional level, stewardship frameworks enable coordinated allocation models that balance industrial and agricultural demand with municipal and ecological requirements, supported by hydrological modelling and scenario analysis under climate variability. Collaborative monitoring networks and shared data platforms strengthen transparency, while investment in green infrastructure—such as constructed wetlands and aquifer recharge schemes—enhances resilience. By shifting from site-specific compliance to basin-wide optimisation, regional water stewardship reduces cumulative impacts, secures long-term water availability, and supports sustainable socio-economic development in mining-dependent regions.



Carla Hudson

CEO

MineCare Evolution (Pty) Ltd

Carla is a geologist and environmental management specialist with wide-ranging experience across mining, exploration, consulting, and sustainability programmes in Africa. She began her career as one of the first female underground mining geologists at JCI's South Deep Shaft and later worked as a Senior Exploration Geochemist on projects across multiple countries. She went on to specialise in EIA and mine closure work, held environmental leadership roles including Environmental Manager at South Deep, and completed a Master's in Sustainable

Development (Environmental Management and Climate Change) at SOAS, University of London. She has since led initiatives in mine water management, sustainable mine closure and the just energy transition, and is currently CEO of MineCare Evolution, focused on economic diversification for mining communities.

Land use change accounting and its implications for the mining sector

R. Lyth

Carbon Trust, South Africa

Mining is inherently a land-intensive activity. Operations require the clearing and conversion of natural ecosystems – forests, grasslands, wetlands – for mine sites, processing plants, tailings storage facilities, waste dumps, and associated infrastructure. Despite this, land use change (LUC) emissions have historically been excluded from most mining companies' greenhouse gas (GHG) inventories, largely due to the absence of clear corporate accounting guidance and the perceived immateriality of these emissions relative to energy and process-related sources.

This is changing. The publication of the GHG Protocol Land Sector and Removals Standard in January 2026 – mandatory for corporate GHG inventories from January 2027 – introduces, for the first time, a comprehensive framework for attributing LUC emissions to corporate Scope 1 and Scope 3 boundaries. In parallel, the Science Based Targets initiative (SBTi) FLAG Guidance (v1.2, March 2026) requires companies whose land-related emissions exceed 20% of total emissions to set standalone Forest, Land and Agriculture (FLAG) targets. For mining companies operating across ecologically sensitive biomes, these requirements present both a compliance challenge and a strategic opportunity.

This paper explores what land use change accounting looks like in practice for the mining sector. Drawing on pilot assessments conducted with mining companies across Southern Africa and South America, it examines how LUC emissions are quantified using IPCC-based carbon stock methods, how spatial boundaries and data requirements are defined, and what the results reveal about the materiality of LUC emissions relative to existing Scope 1 and 3 inventories. It also considers the practical challenges encountered, including data availability, the distinction between direct and statistical LUC approaches, the treatment of mine rehabilitation and restoration activities, and the boundary uncertainties associated with compensation and reforestation programmes that occur outside of a company's owned or managed land.

The paper highlights early findings and lessons from these pilot assessments, including what mining companies can expect in terms of data intensity, methodological choices, and the implications for FLAG target-setting thresholds. It discusses how LUC accounting intersects with broader nature-related disclosure frameworks, such as the Taskforce on Nature-related Financial Disclosures (TNFD), and how an integrated approach to land use can unlock co-benefits between climate action, biodiversity management, and sustainable land stewardship.

Ultimately, this paper argues that the mining sector cannot afford to wait for full regulatory clarity before engaging with LUC accounting. Pilot assessments offer a pragmatic entry point, enabling companies to understand their exposure, test methodologies, build internal capacity, and position themselves ahead of mandatory reporting deadlines. By sharing practical experience from the front line of LUC implementation in mining, this paper aims to demystify the topic and encourage broader industry uptake.



Rykala Lyth

Analyst

Carbon Trust

Rykala Lyth is an Analyst at the Carbon Trust, where she supports the delivery of climate and sustainability advisory projects, with a focus on the mining sector and broader heavy industry. Her work spans organisational and value chain carbon footprinting, climate risk and opportunity assessments, land-use change assessments and the development of climate-related disclosures aligned to international frameworks.

The role of carbon offsets in decarbonisation strategy development

D. van Wyk¹, S. Thakurdin¹, S. Gangl²

¹Hatch, South Africa

²Hatch, Canada

To ensure that global warming is limited to 1.5°C above pre-industrial levels, it is critical that companies reach net zero by 2050. Net zero is achieved when the total greenhouse gas emissions produced are equal to the emissions removed from the atmosphere. To reach this goal, companies are tasked with developing a decarbonisation strategy specifically tailored to their organisation considering relevant abatement technologies, implementational enablers and barriers as well as funding considerations. Avoidance of GHG emissions is not always possible and mitigation of GHG emissions can only go so far; therefore, carbon offsets are required for the remaining last bit of emissions. Carbon offsets are mechanisms that allow individuals, companies, or governments to compensate for their greenhouse gas emissions by funding projects that reduce, remove, or avoid an equivalent number of emissions elsewhere. Carbon offsets can stem from projects which entail any of the following activities: leveraging natural processes to remove and store carbon, removing carbon dioxide from the atmosphere, renewable energy and waste management. Offsets can be sourced from international or national markets depending on how they are expected to be used. Offsets can be used for voluntary purposes such as to reach decarbonisation targets, as well as in some cases for regulatory purposes such as to limit carbon tax exposure. When incorporating carbon offsets into a decarbonisation strategy, it is important to note the limitations of offsets with regards to regulations, standards or legislation of the operation's jurisdiction. Offsets are provided with ratings which serve as an indicator for the quality of the offset. This quality rating is based on various factors such as additionality, permanence and transparency of the project or activity generating the offset. Due to misuse of offsets in the past, governments are seeking to introduce legislation to limit the use of offsets for regulatory purposes to only those which fit Article 6 criteria. This will impact the offset market supply as well as the price of offsets. Offset pricing in the free market is very volatile and fluctuates depending on supply and demand; most companies are therefore looking to fixed contracts with regards to procuring offsets. All these factors impact how offsets should be used by companies to reach their decarbonisation goals.



Dian van Wyk

Junior Engineer
Hatch

Dian graduated from the North-West University with a bachelor's degree in chemical engineering. Upon graduating, he joined Hatch as a junior process engineer in the Climate Change business unit. During his time at Hatch, he has worked on decarbonization projects for various mining-, mineral processing-, hydrometallurgy-, energy- and port-operations across the world. His focus area is on preparing decarbonization strategies for clients which includes greenhouse gas (GHG) emissions profiling, opportunity identification and quantification, and decarbonization

pathway development. Dian's project experience includes climate change adaptation analysis and risk identification and mitigation. Dian is knowledgeable on global climate change standards, regulations, and carbon credits. His knowledge of carbon regulations includes reporting standards and carbon tax obligations for various global regions to incorporate these levers into a company's decarbonization strategy.

Beyond the mine gate: Making Scope 3 decarbonisation actionable in mining

C. Humphrey

Carbon Trust, South Africa

The mining sector faces a fundamental decarbonisation challenge: the majority of its greenhouse gas emissions occur outside its direct operational control. For most mining and metals companies, Scope 3 emissions, particularly from downstream processing and end-use, represent the dominant share of their total footprint. While reporting and disclosure of Scope 3 emissions have advanced significantly in recent years, translating this insight into actionable decarbonisation strategies remains complex and, in many cases, poorly defined. The result is a widening gap between corporate climate commitments and the practical strategies available to deliver on them.

This paper argues that the mitigation hierarchy, a well-established principle in environmental management, offers a pragmatic and credible framework for structuring Scope 3 decarbonisation in mining. Rather than treating value chain emissions as a reporting exercise, mining companies should systematically prioritise interventions that avoid and reduce emissions before considering compensation measures. This means focusing first on levers within the company's sphere of influence: low-carbon procurement, supplier engagement, process efficiency improvements across the value chain, product stewardship, and strategic partnerships that drive structural change in downstream industries.

Carbon offsets, while potentially forming part of a broader climate strategy, should be positioned as a residual mechanism of last resort, applied only to genuinely hard-to-abate emissions after all feasible abatement options have been exhausted. Overreliance on offsets risks undermining the credibility of corporate climate commitments and delaying the structural interventions required for long-term decarbonisation.

To ground these concepts in practice, the paper draws on experience across mining and metals value chains – including platinum group metals, gold, and copper – to illustrate where on the mitigation hierarchy the most impactful levers sit, and where common pitfalls arise. These include overreliance on linear reduction assumptions in target-setting, the risk of 'paper decarbonisation' through asset divestment rather than genuine emissions reduction, and the misalignment between organisational targets and system-level decarbonisation outcomes.

Ultimately, this paper makes the case that effective Scope 3 decarbonisation in mining is not constrained by a lack of ambition, but by a need for clearer frameworks, grounded in the mitigation hierarchy, to translate ambition into action. By reframing Scope 3 from a compliance-driven reporting requirement to a strategic decision-making tool, mining companies can play a more proactive and credible role in enabling the broader low-carbon transition.



Catherine Humphrey

Associate

Carbon Trust Africa

Catherine Humphrey is an Associate at the Carbon Trust, based in Johannesburg, South Africa, where she delivers sustainability consulting services to private and public sector clients across Africa and internationally. Over the course of nearly five years at the Carbon Trust, she has developed deep expertise in climate change management, carbon footprinting, and decarbonisation strategy – with a particular focus on the mining and metals sector. Her work spans the full value chain, from organisational and Scope 3 emissions accounting to science-based

target setting and transition planning, supporting multinational mining and industrial companies in understanding their carbon footprints, setting credible reduction targets, and developing strategies aligned with global best practice.

Technology innovation for sustainable mining: Using digital tools to drive ESG performance

P. de Kock

IsoMetrix, South Africa

As the mining industry faces intensifying pressure from regulators, investors, and communities, sustainability has shifted from a strategic ambition to an operational imperative. Yet for many organisations, environmental, social and governance (ESG) commitments remain difficult to translate into consistent, measurable performance on the ground. This session positions technology not as a support function, but as the critical enabler that turns sustainability goals into actionable, auditable outcomes.

Mining companies today are managing increasingly complex ESG requirements, from climate reporting and water stewardship to safety performance and social impact. These demands are often addressed through fragmented systems, manual processes, and disconnected datasets, limiting visibility and undermining confidence in reported outcomes. The result is a gap between intention and execution – where strong commitments are not always matched by reliable, defensible performance data.

This session will explore how integrated digital platforms are transforming the way mining organisations manage ESG. By unifying data across environmental, health, safety, and governance functions, modern software solutions provide a single source of truth that supports real-time decision-making and cross-functional accountability. Attendees will gain insight into how leading organisations are moving beyond spreadsheets and siloed tools toward connected systems that streamline data collection, standardise processes, and improve reporting accuracy.

A key focus will be on measurability and auditability – two factors that are increasingly critical as ESG disclosures face greater scrutiny. Participants will learn how digital tools can automate data validation, enforce governance structures, and create transparent audit trails that stand up to regulatory and investor expectations. This not only reduces risk but also builds credibility with stakeholders who demand clear evidence of progress.

The session will also address the operationalisation of ESG strategies. Technology enables organisations to embed sustainability into day-to-day activities by linking high-level goals to site-level actions. Through configurable workflows, automated alerts, and performance dashboards, companies can track progress in real time, identify gaps early, and ensure accountability across teams. This shift from retrospective reporting to proactive management is essential for achieving meaningful and sustained ESG outcomes.

Importantly, this paper will go beyond theory to highlight practical applications within the mining context. Real-world examples will demonstrate how digital transformation initiatives have improved safety performance, reduced environmental impact, and enhanced compliance in complex operating environments. These examples will resonate with both technical and business audiences, illustrating tangible value rather than abstract concepts.

For SAIMM attendees, this session offers a timely and relevant perspective on one of the industry's most pressing challenges: how to make ESG work in practice. It aligns directly with the conference theme of climate change in mining by showing how technology can support emissions tracking, energy efficiency initiatives, and climate risk management. At the same time, it broadens the conversation to include the systems and processes required to sustain long-term performance across all ESG pillars.

Ultimately, this session reframes technology as the foundation of sustainable mining. It demonstrates that achieving ESG excellence is not solely about setting ambitious targets, but about equipping organisations with the tools to manage, measure, and continuously improve their performance. For professionals responsible for sustainability, operations, risk, and compliance, this is an opportunity to explore how digital innovation can unlock greater efficiency, transparency, and impact.

By bringing together strategic insight and practical examples, this session will resonate with a wide cross-section of SAIMM members — from sustainability leaders and technical specialists to executives driving digital transformation. It speaks directly to the realities they face and offers a clear path forward, making it a compelling and valuable addition to the conference programme.



Paul de Kock

Founder, IsoMetrix
IsoMetrix

Paul de Kock is a founder of IsoMetrix and an experienced leader in integrated risk, governance, sustainability, compliance and HSE, with more than 25 years of experience working across mining, energy, petrochemical and other complex, high-risk industries.

Throughout his career, Paul has focused on helping organizations understand and manage the interconnected risks that influence operational performance, environmental outcomes and long-term

resilience.

His experience is particularly relevant as the mining industry responds to climate change and the growing need to embed climate-related risks and sustainability considerations into operational and strategic decision-making. Paul brings a practical perspective on how organizations can move beyond sustainability reporting to integrate risk, environmental performance, compliance and operational controls into the way their businesses are managed.

As founder of IsoMetrix, Paul has helped shape an integrated approach to managing risk, safety, sustainability and compliance—enabling organizations to connect data and processes across the enterprise and turn information into actionable insight.

He is passionate about the role technology, integrated risk management and better decision-making can play in helping mining organizations build greater resilience in a rapidly changing climate and regulatory environment.

At the ESGS Conference, Paul will bring more than two decades of experience at the intersection of risk, operational performance and sustainability, exploring what it takes for mining organizations to move from measuring climate and ESG performance to actively managing the risks and opportunities that will shape the industry's future.

Changing the narrative: Economic transition from mining dependency to a sustainable post-mining economy

M. Solomon

University of Cape Town, South Africa

As we approach 175 years of industrial-scale commercial mining in the so-called developed countries, several factors emerge about the role that mining plays in society.

The defining concept of sustainable development is accredited to the Swede, Brundtland in 1980. Until then there had been an evolving awareness of environment and consciousness of the impact of humanity on the environment, but Brundtland was arguably the first to express this evolution in developmental terms. Since then, the world and within it, the much-maligned mining industry, has seen a progression in the concepts of sustainability and the way the mining industry responds. Soon after Brundtland, thinking developed around the concepts of sustainability in mining; ostensibly contradictions in terms, as the mining process is fundamentally the exploitation of non-renewable resources (agriculture represents the exploitation of renewable resources). The sector explored the question of mining and sustainability and what emerged from these many dialogues defined the sustainability in mining as being the propensity of mining to catalyse secondary and tertiary sectors to the industry, which would in turn create the enabling environment for other, sustainable sectors. Unsurprisingly, mines are typically discovered in remote areas with little infrastructure and other forms of economic development. However, the excavation of a mine, be it underground or open cast, brings with it various forms of infrastructure: social (housing, hospitals, clinics, schools), industrial infrastructure (workshops, warehouses, stores), commercial infrastructure (offices, shops, banks) administrative infrastructure (police stations, government offices, social welfare), transport infrastructure (roads, railway lines, airfields, trucking services), bulk infrastructure (water, electricity and waste reticulation systems) and communications infrastructure (telephone, internet). While these are established specifically to support mining activity, they constitute the enabling environment of other forms of economic activity. Agriculture is the obvious emergent beneficiary sector. It needs all the infrastructure listed to establish and flourish. Workshops are of specific focus as there is no difference in technology between mining and agricultural equipment. Transport bringing in intermediate inputs for mining provides access to markets for agricultural products on the empty return leg. Following that logic, agriculture creates its own secondary and tertiary sectors which diversify the dependence on mining activity. This denotes the first level of economic diversification which over the decades of the Life of Mine, become an evolving substitute sector that will, with its secondary and tertiary sectors, continue its economic contribution once the mine closes. Unfortunately, as we have observed from the manifestation of the resources curse that plagues extractive resource-dependent emerging economies, this does not happen without both planning and good governance.

Since the 1960s and before Brundtlandt, the mining sector started changing its attitude towards environmental management. This began with a commitment to physical environmental rehabilitation where the waste dumps and what were then referred to as slimes dams, were grassed over and vegetated. After Brundtlandt, mining companies started thinking more cohesively about what sustainability and mining meant. In the mid-to-late 1980s we were talking about Minerals-Driven Sustainable Development. In the 1990s we witnessed the evolution of the Mining and Metals Sustainable Development imperative, the MMSD, an offshoot of the more global Millenium Development Goals, which in time delivered very little and faded into academic obscurity. The year 2015 saw the release of the Sustainable Development Goals (SDGs), which have become the contemporary framework and the common language of sustainability. In that year, the World Economic Forum released the Atlas of SDGs in Mining, of which I was an author. Operationalising the SDGs in mining became the responsible mining mantra and 12 years later, the SDGs are still the dominant framework for mining to define its contribution to a sustainable economy. However, our thinking around this development has evolved, and the key issue around governance has emerged and the narrative has now moved to 'ESG' and 'ESGS': Environmental, Social, Governance and Sustainability. Where we are now, the E, or environmental, has been supplemented with Social and Governance which leads to the final 'S', Sustainability, for which

the E, S and G are critical factors.

Over the last decade, and particularly the last five years, the sector has had a clear focus on Responsible Mining, which prioritises environmental stewardship, social responsibility, and ethical governance throughout the entire mining lifecycle. This includes avoiding, minimising and mitigating environmental impacts, respecting human rights, ensuring worker safety, engaging with communities, and fostering long-term social and economic development.

Implicitly, these factors refer to our membership, the world's top Mining Companies, as this is our constituency. However, this is equally relevant to other mining constituencies: Government, Organised Labour, Mining-Impacted Communities and other stakeholders in the sector.

Whatever is expected of the mining companies with respect to engaging with communities and ensuring, to the extent possible, that mining leads to a sustainable post-mining economy for dependent communities, once mines close, the mining-impacted communities end up 'holding the baby' of economically distressed and socially disrupted communities, often with damaged environments that are critical to their sustainable future. As we are abundantly aware, political cycles are short-term: 3-5 years and governments, while the process of establishing and maintaining sustainability post-mining economies for communities are long-term. For this reason they are not high on political agendas and in emerging economies, where most of the traditional and new mining activity takes place, governments seldom have the institutional capacity to deal with these issues. The responsibility and stewardship of sustainable post-mining economies therefore falls to the longer-term leadership in these impacted communities, typically Traditional Leadership.

'Changing the Narrative'

This deals with fundamentally changing the dynamics of mine closure and communities. There are a number of themes to this changing narrative.

A common misperception is that of Mine Closure as a discrete event, whereas, in reality it is a predestined and often indeterminate natural part of the mining process and life cycle. Consequently, 'Mine Closure' should be regarded as a milestone in a broader construct of its being a critical stage in the longer-term mining Economy.

Mining is the First Phase pioneer economic catalysis in otherwise economically constrained areas that should be leveraged at the outset to spawn, maintain and diversify secondary and tertiary sectors.

These secondary and tertiary enterprises represent the Second Phase of the mining economy which represents the often unseen and unappreciated benefit of the sector: that of economic multipliers that drive GDP and the broader, often remote economies associated with mining but not exclusive to it.

The Third Phase in this construct is the propensity of these Second Phase sectors to provide an enabling environment for the establishment and development of other forms of mining-unrelated but longer-term, sustainable sectors. The obvious sector in the rural environments is agriculture as mining infrastructure, services and markets are almost perfectly aligned with those of mining. As agriculture is also a primary industry, this in turn catalysis further secondary and tertiary sectors and downstream processing and trading industries.

Very little of this happens organically and very often these multipliers reverse once the primary industry of mining contracts.

The 'Changing of Narrative' is therefore to shift the dialogue from the negative concept of mine closure and its attendant legacy and economic consequences to a more positive narrative of Economic Transition to a Sustainable Post-mining Economy.

Leadership, Responsibility and Governance

A prerequisite to the traction and sustainability of economic transition to a post-mining economy is that of planning and shared responsibility. Civil society, particularly mining-impacted communities, see the responsibility of a post-mining economy to be the responsibility of the mining company. The harsh reality of this perception is that once a mine commences its contraction towards closure, there are

increasingly less financial resources with which to support affected and dependent communities, and this ultimately comes to a natural end. In fact, responsibility for mine closure lies with the civil society that benefited from mining during its operational life and the government that benefited from the rents and taxes; not only from the mining companies themselves but their employees, the corporate taxes and VAT from the secondary and tertiary industries that mining spawned and their employees. Economic transition from mining is a shared responsibility and should be regarded as such.

This leads to the second 'Change in Narrative'. Whatever happens to a mine, however long its defined life may be, it will die. Fact. Thereafter, the leaders of the mining-dependent communities are left, literally and figuratively, holding the baby of socio-economic distress and its implications into the future. It is therefore contingent on these community leaders to assume this mantle of responsibility and lead the process of economic transition, not follow it as passive victims.

In the context of Community, this defines Governance. Navigating communities through mining, its decline and ultimate cessation is a long-term process that encompasses the tensions between long-term hereditary traditional leadership and short-term political leadership. Maintaining this consistent leadership in an increasingly unstable social and political world is difficult. Through social media and increasingly high standards of living that detract from traditional ways of life, younger generations are progressively more sophisticated and less cognisant and respectful of traditional values and mores. Despite this, traditional leadership, when responsible and benign, is a constant that still demands respect. Taking responsibility for the sustainable post-mining economy and welfare of mining-impacted communities falls to the mantle of traditional leadership of these mining-impacted communities and their leaders need to step up to the plate and assume these existential challenges. Along with this, they need to lead the dialogue on mine closure, the tenets of which must be consistent with what the community sees as its future, for which they are singularly responsible. Community leading the dialogue and assuming responsibility for its own post-mining future is the ultimate 'Change in Narrative' in this process.

Conclusion

The harsh reality facing mining-impacted communities is that preparing for a sustainable post-mining economy is not the sole responsibility of the mining companies on which they, for decades, have become dependent. Most certainly the mining companies have a level of responsibility regarding responsible mining during the currency of mining and best practice rehabilitation once their operations cease. As important, government has, inherently at various levels, benefited from a profitable life of mine: from taxation, FDI, balance of payments and not least, economic multipliers. Government responsibility in its various forms, modalities, competencies and generations will be primarily responsible for socio-economic health and stability in the long-term. However, mining companies are primarily responsible to their shareholders and other stakeholders, including the regulators, not only the communities. Government economic planners and regulators for their part have diverse responsibilities of which mining-dependent communities are merely one element.

The change in the narrative is around mining-impacted communities taking ultimate responsibility for their future and the degree to which they can effectively do so resorts to their leadership: strong, ethical, wise and committed leadership will be able to navigate their constituencies through these difficult waters and their attendant storms. Weak, corrupt political leadership is not concerned with the long-term but only with short-term harvesting for personal benefit.

The degree to which communities can leverage the responsibility for a post-mining sustainable economy from mining companies and government relies on the strength and commitment of mining-impacted communities and their leadership. Changing the narrative is their prerogative, and these communities must forego their typical victim mentality and lead the change, not blindly follow and endure the consequences.

Remote sensing and AI for climate-resilient mine water stewardship: A framework for scalable environmental monitoring in the Witwatersrand

M.B. Smith

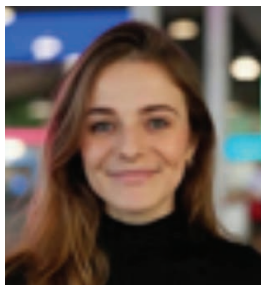
University of the Witwatersrand, South Africa

Climate change is compounding the environmental risks associated with acidic mine-impacted water (MIW) across South Africa's Witwatersrand region. Shifting precipitation patterns, increased drought frequency, and extreme rainfall events are altering the hydrological dynamics that govern acid mine drainage (AMD), a MIW variant, generation, transport, and dilution, while simultaneously straining the capacity of conventional, field-based monitoring systems to provide timely, decision-ready data. Against this backdrop, there is an urgent need for climate-resilient environmental monitoring frameworks that are scalable, low-cost, and capable of supporting proactive water stewardship and environmental, social and governance (ESG) reporting obligations.

This study evaluates a framework that integrates monthly composited Sentinel-2 satellite imagery with field-sampled water quality measurements and site metadata from the Witwatersrand, spanning 2017 to 2025 – a period that captures meaningful climate variability. Images were pre-processed using cloud-cover thresholds ($\leq 35\%$) and Scene Classification Layer masking to ensure consistency. Machine learning models, including Random Forest, Extra Trees, and Histogram-based Gradient Boosting, were trained using forward-chaining, month-blocked cross-validation, a temporal design that mirrors the real-world challenge of predicting water quality under evolving environmental conditions.

Key results demonstrate that several AMD-relevant parameters can be reliably estimated from freely available satellite data. Sulfate, a principal AMD indicator with direct implications for downstream water use and regulatory compliance, achieved strong predictive accuracy ($R^2 = 0.708$), with a classification variant supporting sulfate regime screening at macro $F1 \approx 0.786$. Optically active parameters – total suspended solids ($R^2 = 0.454$) and turbidity ($R^2 = 0.315$) – transferred robustly across sites, while pH showed moderate performance ($R^2 = 0.404$). Dissolved iron did not generalise, reflecting the spectral limitations of current satellite sensors for dissolved metal inference. Importantly, the framework incorporates uncertainty quantification, enabling risk-aware interpretation of predictions rather than false precision.

For the mining industry, navigating tightening lender requirements, sustainable development goals-aligned ESG commitments, and increasing scrutiny on water stewardship, this framework offers a practical pathway to continuous, cost-effective environmental intelligence. It supports proactive identification of water quality deterioration, reducing remediation costs and regulatory exposure while enabling more credible ESG disclosure. The eight-year dataset also positions the framework as a tool for longitudinal climate impact assessment, tracking how AMD dynamics shift in response to changing hydrological conditions over time. By embedding AI and Earth observation into operational water governance, mining companies can move from reactive compliance toward adaptive, climate-resilient environmental stewardship, a critical step in demonstrating the sector's commitment to sustainable and responsible resource extraction.



Megan Beth Smith

Masters Candidate (MSc Chemical Engineering)
University of the Witwatersrand

Megan Smith is a technology strategist and engineer with over six years of experience spanning cloud and AI infrastructure, digital transformation, and enterprise architecture across Africa.

She holds a BSc in Chemical Engineering from the University of the Witwatersrand and is currently awaiting examination of her MSc, also from Wits, where her research focused on leveraging remote sensing and machine learning for enhanced water quality management. Her master's

work developed a scalable, uncertainty-aware framework integrating Sentinel-2 satellite imagery with field-sampled measurements to monitor acid mine-impacted water quality in South Africa's Witwatersrand region.

Professionally, Megan has held senior roles at Microsoft and IBM, where she has led strategic technology engagements with enterprise clients, driven IT/OT convergence across energy, mining, and manufacturing sectors, and championed ESG-aligned infrastructure programs across the African continent. Her work sits at the intersection of environmental data science, industrial technology strategy, and emerging market execution.

Water for a just transition: Water allocations, efficiency and governance in South Africa's coal regions

M.J. Cole^{1,2}

¹University of Cape Town, South Africa

²University of the Witwatersrand, South Africa

The focus of discussions and policy on the just energy transition has been on the expected impacts on coal revenues, workers and communities. South Africa's dependence on coal and high unemployment levels makes it vulnerable to the negative impacts of the energy transition, with over 100,000 workers and millions of community members affected. Very little has been said about the role of water in the just transition even though coal-fired power generation and coal mining require significant amounts of water. Coal plant and mine closures imply the release of large water allocations that can be used for other economic activities and to support impacted communities. In South Africa, Eskom's oldest coal-fired power plants – Camden, Grootvlei, Hendrina and Arnot – are expected to be retired in 2029 and 2030, while 15 coal mines are expected to close by 2030. These plants and mines are located in water-constrained regions in western Mpumalanga and receive their water from the complex Integrated Vaal River System (IVRS). Their impending closures raise the question of how their water will be reallocated to other sectors in the region. This paper seeks to support just water allocation decisions by providing a comprehensive assessment of water allocations, water-use efficiency, and water governance in the Mpumalanga coal region. The paper shows that power generation and coal mining are allocated over half of water in the Mpumalanga coal region, highlighting the significant potential for water reallocation as plants and mines close. Over 80 water-use licences were approved for coal mining over the last 10 years, and mine dewatering contributes to supply, thus closure poses both a risk and an opportunity. Eskom is currently not using 44% of its bulk water-use authorisation, and there may be 283 Mm³/a available to reallocate by 2030 as the older wet-cooled plants are retired. However, delays to the Lesotho River Highlands Project Phase 2 are putting pressure on the IVRS and any water released by plants or mines is unlikely to be available for any other use until it comes online. Mining is the most water use-efficient in terms of job creation and income generation, followed by agriculture and power generation; although there are significant variations in water use at individual mines and farms. Mpumalanga's local municipalities supply potable water to and dispose of sewage in their jurisdictions; poor governance and non-compliance of regulations pose critical health risks, leading to significant national interest in involving the private sector in water service delivery. One route forward is to establish Special Purpose Vehicles, similar to the Vaal Corporation Water Utility, as partnerships between local municipalities, Eskom and Rand Water. Strategic thinking underpinned by justice principles is required on the reallocation of water from coal plants and mines as South Africa moves towards a just energy transition.

Keywords: energy transition, water-use efficiency, mine water use, just transition, governance

The full paper will be published in the SAIMM Journal

Megan Cole

Honorary Senior Research Fellow

Wits Mining Institute

Dr Megan Cole is a senior research specialist with over 20 years of industry and academic experience in mining, water, energy, climate change and sustainable development in Africa, the UK, the Caribbean and Indonesia. Megan has a DPhil in Sustainability Science from the University of Oxford, a MScEng in Geotechnical Engineering from the University of Witwatersrand and a BScHons in Geology from the University of Cape Town. She has a Y1 NRF Rating (potential to be a researcher with considerable international recognition) and has published numerous papers in high impact journals such as PNAS, Resources Policy and Nature Reviews Earth & Environment. She is an honorary senior research fellow at the Wits Mining Institute at the University of the Witwatersrand. Megan is a member of the Southern African Institute of Mining and Metallurgy (SAIMM) ESGS Committee. Her research focuses on mining community vulnerability, critical minerals, the just energy transition, water equity, mine closure, economic diversification of mining areas, and ESG risks in mining. She developed and maintains the South African Mine Closure Risk and Opportunity Atlas. Her early career work set new benchmarks for geotechnical engineering in mining and was recognised with her being featured in the 'Mail & Guardian Book of South African Women' in 2009 and nominated for South Africa's Most Influential Woman in Business and Government, 2010.

Soil Macrofauna as bioindicators of ecological recovery in a tailings storage facility in the Zambian Copperbelt: Implications for mine wasteland restoration

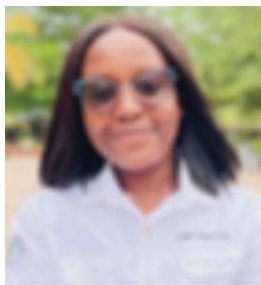
M. Kasimbo¹, T. Johnson¹, T.M. Mwamba^{1,2}, S. Syampungani^{1,3}

¹Copperbelt University, Zambia

²University of Lubumbashi, Democratic Republic of the Congo

³University of Pretoria, South Africa

Mining activities generate tailings storage facilities (TSFs) that are often difficult and costly to rehabilitate due to poor soil structure, low organic content, and elevated concentrations of potentially toxic elements (PTEs). This paper assesses how soil macrofauna, especially ecosystem engineering groups such as ants and termites, can serve as practical bioindicators of ecological recovery within the decommissioned Uchi TSF in the Zambian Copperbelt. Macrofauna were sampled between May and August 2024 across 34 plots distributed among eight stratified zones representing contrasting soil and vegetation conditions. Sampling was conducted using hand-sorting of soil monoliths (0-40 cm depth) and pitfall trapping. Environmental variables included soil type, vegetation composition and concentrations of twelve elements determined using X-ray fluorescence analysis. Community structure was analysed using diversity indices, generalised linear models and multivariate ordination techniques, including principal component analysis (PCA), redundancy analysis (RDA) and non-metric multidimensional scaling (NMDS). A total of 4364 macrofauna individuals representing 16 orders were recorded within the TSF. Community composition was strongly dominated by Hymenoptera and Isoptera, with Formicidae accounting for the majority of individuals. Macrofauna abundance exhibited spatial heterogeneity across the facility, with higher densities occurring in vegetated zones with red and brown soils and in the upper 0-20 cm soil layer. Multivariate analysis indicated that heavy metal concentrations constituted the dominant environmental gradient structuring macrofauna, although vegetation structure and soil characteristics also contributed to observed distribution patterns. Contrary to commonly reported toxicity effects, several metals showed positive associations with total abundance, reflecting pollution-induced community restructuring in which tolerant taxa persist while sensitive groups decline. Functional group analysis identified five ecological groups, with soil ecosystem engineers representing 79% of the community, followed by litter transformers/dwellers (11%), predators (6%), herbivores (3%) and microbial feeders (1%). The dominance of ecosystem engineers suggests that bioturbation, soil aggregation and nutrient redistribution processes are already occurring within portions of the TSF. By integrating soil macrofauna into TSF assessment programs, mining companies can track biological recovery more accurately, reduce closure uncertainty and demonstrate measurable progress towards environmental, social and environmental milestones. This nature-based indicator approach offers a cost-effective and operationally relevant tool to support evidence-driven mine closure planning and long-term environmental sustainability.



Mukanzala Kasimbo

Master of Philosophy Student and Tutor

O.R. Tambo Africa Research Chair Initiative – The Copperbelt University

Mukanzala Kasimbo is an early-career researcher and Master of Philosophy student under the O.R. Tambo Africa Research Chair Initiative (ORTARCHI) at the Copperbelt University. Her research focuses on soil macrofauna communities and their role in ecosystem processes, with particular emphasis on their potential applications in restoring mining-degraded landscapes in Sub-Saharan Africa. Through her work, she seeks to better understand how soil organisms contribute to ecological recovery in heavily disturbed environments such as mine

tailings storage facilities. Mukanzala holds a Bachelor of Science degree in Biology from the Copperbelt University. During her undergraduate training, she developed a strong interest in ecological systems, environmental sustainability and the interactions between soil organisms and ecosystem functioning. This academic foundation led her to pursue postgraduate research that integrates soil ecology, environmental science and restoration ecology to address pressing environmental challenges associated with mining activities. Her long-term goal is to contribute to research and policy initiatives that promote sustainable environmental management and ecological restoration in mining regions across Africa.

In addition to her research activities, Mukanzala is actively involved in undergraduate teaching and mentorship. She tutors introductory biology at the Copperbelt University, where she supports first-year students in developing foundational knowledge in biological sciences. Through this role, she is committed to fostering curiosity in scientific inquiry.

A survey of tailings disposal practices at independent chrome processing facilities in South Africa

S. Naidoo

Mineral Exco (Pty) Ltd, South Africa

Chrome is recognised globally as a critical mineral due to its strategic importance to global industrial production and supply chains, particularly in the manufacture of stainless steel and other composite alloys. Sustained growth in demand for chrome-bearing products has stimulated the rise in mining activity and the expansion of beneficiation capacity, resulting in higher volumes of chrome concentrate entering the market. A significant consequence of this growth is increasingly large quantities of tailings being generated. The management, storage and disposal of tailings poses significant environmental and operational impacts. Although tailings storage and disposal practices at mine-based processing facilities are generally well regulated and monitored, stand-alone chrome wash plants remain relatively unexplored in the published literature on tailings and waste management. As independent wash plants occupy an important position within the chrome value chain, particularly within toll-treatment arrangements, this lack of knowledge represents a notable gap in current understanding. This paper draws on a survey, comprising a structured questionnaire, administered to a selected sample of independent chrome wash plants in South Africa. The research seeks to examine how tailings generated by these independent facilities are managed, stored, and disposed of and to identify the operational, economic and regulatory factors that influence their capacity for effective tailings management. Addressing this gap is important when considering the formulation and implementation of frameworks governing waste management, environmental risk mitigation and sustainable beneficiation in the chrome industry. In doing so, the paper aims to contribute to broader discussions on sustainable mineral processing, waste governance, and the environmental implications of an expanding chrome industry.



Sandesh Naidoo

Director

Mineral Exco (Pty) Ltd

Sandesh Naidoo is a multidisciplinary professional with over 20 years of experience spanning finance, law, and the mining and metals sector. He is a Director at Mineral Exco (Pty) Ltd, an admitted attorney of the High Court of South Africa, and holds B.Comm and LL.B qualifications. His professional background combines financial management, commercial law, governance, regulatory compliance, and risk management, enabling him to operate effectively across complex and highly regulated business environments.

Over the course of his career, Mr Naidoo has advised and supported businesses in regulated industries, bringing a strong commercial and legal perspective to strategic and operational decision-making. Since 2020, his work has focused on mineral and chrome processing, where he has transitioned from advisory roles into direct operational and entrepreneurial involvement, including the establishment of a processing facility. This experience has provided him with practical insight into the operational, technical, and commercial challenges across the mineral processing value chain.

He is currently working towards a M.Sc in Mining Engineering, further strengthening his technical and engineering understanding to complement his legal and commercial expertise. Mr Naidoo engages with the mining industry from a strategic, operational, and governance perspective, with particular interest in sustainable processing, operational optimisation, and long-term value creation. His work is guided by an integrated approach that bridges strategy, regulation, and operations within the mining and mineral processing sector.

Conditional formalisation in artisanal mining: Using competitive ESG aggregator models to direct capital flows towards environmental compliance in Zimbabwe

H.T. Muchemedzi

Magaya Mining, South Africa

The artisanal and small-scale mining (ASM) sector in Zimbabwe contributes significantly to national gold production; however, it remains largely informal. This circumstance results in persistent environmental degradation, including mercury use and land disturbance. A primary structural challenge is the absence of transparent, regulated financing mechanisms that can direct capital into non-compliant operations beyond effective oversight. Drawing on extensive field experience as a production manager, sustainability manager and business development officer within Zimbabwe's ASM sector, this paper delineates systemic deficiencies in financing frameworks, production coordination and environmental compliance. It also highlights inefficiencies in processing systems and the limited mechanisms available for enforcing environmental, social and governance (ESG) standards at the operational level.

This paper introduces the concept of Conditional Formalisation, a framework in which access to mining rights, funding and formal markets is contingent on adherence to ESG standards. Central to this approach is the development of a competitive ecosystem of licensed ASM aggregators, regulated service providers that integrate financing, processing, technical oversight and market access for artisanal miners.

Unlike traditional centralised models, multiple aggregators operate within the same geographic region, competing to attract miners through transparent pricing, efficient processing and reliable financial backing. These aggregators serve as ESG-compliant investment platforms, channelling capital from institutional and local investors into ASM operations while meeting rigorous disclosure and performance standards. By embedding ESG criteria into capital deployment, the model enforces a 'follow-the-money' approach, ensuring that gold production remains traceable and aligns with quantifiable environmental and social key performance indicators.

To mitigate collateral constraints in ASM financing, the model employs a dynamic, multi-layered collateral system. Instead of relying solely on static asset-backed securities, it combines geological validation, production-based repayments and cash flow controls. Capital is disbursed in phases through a risk-validation methodology, commencing with low-cost assessments such as trenching and sampling and subsequently scaling as confidence in resources and production increases. Gold output, processed and sold via aggregators, serves as the primary security for repayment, with revenues structured for automatic fund recovery.

Regulatory bodies, including the Ministry of Mines and investment authorities, oversee aggregator licensing, enforce mandatory green finance disclosure requirements and audit both capital sources and their deployment. Drawing on field experience in Zimbabwe's ASM sector, this paper demonstrates how integrating financing, compliance, processing and market access within a competitive framework can reduce environmental harm, enhance accountability and facilitate the transition of ASM into a formal, investable sector.

The paper concludes that organising ASM through regulated, ESG-aligned intermediary platforms provides a scalable pathway to synchronise mineral production with national climate objectives while unlocking new avenues for sustainable investment

Hopewell Takundiswa Muchemedzi

Business Development Officer (Kwekwe District)

Magaya Mining

Hopewell Muchemedzi is a renowned Mining Engineer and Business Development Specialist with over 3 years of diverse experience in Zimbabwe's extractive industries. He currently works at Magaya Mining (Pvt) Ltd, where he focuses on mineral processing, operational sustainability and corporate growth. His career is driven by a passion for transforming the Artisanal and Small-Scale Mining (ASM) sector from an informal activity into a structured, investment-ready and ESG-compliant part of the economy.

Hopewell earned a Bachelor of Engineering in Mining and Mineral Processing from Midlands State University. He is also pursuing advanced financial qualifications, including being a CFA Level 1 candidate and working toward the FMVA certification. This combination of hands-on engineering expertise and sophisticated financial skills enables him to effectively communicate between technical teams and investors.

At Magaya Mining, Hopewell has led initiatives focused on long-term sustainability. He has held key roles such as Production Manager and Sustainability Manager, managed a complex portfolio of Small-to medium-scale mine operations and piloted an ASM sustainability model in Chegutu, Zimbabwe. Recently, he served as Rapporteur for the planetGOLD Zimbabwe workshop, contributing to national policies for mercury-free gold processing and ASM formalisation.

His professional approach centres on Conditional Formalisation, the belief that market access and capital are key drivers of environmental compliance. Hopewell advocates for developing competitive aggregator models with transparent pricing and technical oversight to de-risk ASM operations and attract global "Green Finance." He aims to build a traceable, "follow-the-money" system in line with the Paris Agreement and Zimbabwe's NDS2, integrating requirements from ZIDA and the Ministry of Mines.

As he works toward becoming a leader in M&A and Corporate Development in the mining sector, his core goal remains to ensure that every dollar invested in Zimbabwean mining is environmentally sustainable and financially rewarding.

Sustainable finance as a catalyst for mining decarbonisation

I. Ramaipato

Carbon Trust Africa, South Africa

As climate risk becomes an increasingly material factor in capital allocation, mining companies are under growing pressure to align their strategies and operations with global net zero targets. At the same time, the sector remains central to the energy transition, supplying critical minerals such as lithium, copper, nickel and platinum group metals. This places mining in a complex position: it is both essential to decarbonisation and inherently emissions-intensive. While many companies have set ambitious climate commitments, these are often not matched by credible transition plans, limiting their ability to withstand investor and lender scrutiny.

Net zero targets alone are insufficient to secure financing or drive real-world emissions reductions. Mining companies face multiple barriers to implementation, including high capital intensity, uncertainty regarding decarbonisation technologies, exposure to Scope 3 emissions, infrastructure constraints, and rising investor expectations for disclosure and governance. These challenges highlight the need for credible, clearly defined transition pathways that link long-term climate ambition to near- and medium-term operational interventions, supported by robust governance, transparent disclosure and measurable decarbonisation milestones.

Sustainable finance mechanisms are increasingly being used to support mining decarbonisation by aligning financial terms with climate performance. Instruments such as sustainability-linked loans, green and transition bonds, blended finance structures and climate-linked investment frameworks can improve access to capital while incentivising emissions reductions and operational improvements. Financiers play a central role in this process by embedding climate expectations into due diligence, pricing and covenants, thereby shaping accountability and directing capital toward lower-carbon mining activities.

This paper argues that sustainable finance should be understood not only as a funding mechanism but as a strategic enabler of credible mining transition pathways. Stronger alignment between mining companies and financial institutions can accelerate decarbonisation, maintain sector competitiveness and support a just transition while ensuring the continued supply of critical minerals essential to the global energy transition.



Ikaneng Ramaipato

Analyst, Corporate Sustainability
Carbon Trust

As an Analyst at the Carbon Trust, I specialize in Corporate Sustainability, with a focus on supporting financial institutions and industries like mining in their journey toward decarbonisation. I work with organizations to develop actionable decarbonisation strategies, set ambitious SBTi targets, and implement practical solutions that align with both sustainability goals and business objectives.

I am also pursuing a Master of Science in Environmental Science at the University of the Witwatersrand.

I aspire to make a positive impact in the industry by applying my knowledge and skills to address environmental challenges and opportunities facing businesses and society.

De-risking mining investments for a low-carbon future: Climate finance strategies in emerging markets

O.T. Sentsho

Morton Energy Partners, South Africa

Emerging-market mining jurisdictions supply a dominant share of the critical minerals required for the global energy transition. Climate-related risks, including carbon pricing, water stress, extreme weather variability, and transition-policy uncertainty, increasingly distort project cash flows and elevate investor risk premiums. This study applies panel data econometric modelling and Monte Carlo simulation to a dataset of ten mining operations across five emerging-market jurisdictions over the period 2021 to 2024, using publicly available audited annual reports and climate disclosure data. The panel regression identifies country risk premium as the statistically dominant driver of the weighted average cost of capital, with a coefficient of 0.628 ($p < 0.001$, within- $R^2 = 0.91$). All variance inflation factors are below 5.0, confirming the absence of problematic collinearity. An alternative specification excluding the country risk premium reduces the within- R^2 to 0.36 and produces a significant carbon exposure coefficient, confirming that the country risk premium absorbs — rather than suppresses — climate risk variation through the sovereign risk transmission channel. The Monte Carlo simulation demonstrates that stacking three climate finance instruments — green bond refinancing, development finance institution concessional first-loss tranches, and public-private partnership risk-sharing guarantees — produces a mean cost of capital reduction of 23.1% at the base calibration. Sensitivity analysis confirms the result is robust: across the full range of calibration assumptions tested, the WACC reduction ranges from 17.7% to 27.9%, consistently exceeding the study's initial estimate. A taxonomy gap in current development finance institution eligibility frameworks is identified, enabling climate finance instruments to reduce the cost of capital for fossil fuel operations within inadequate carbon pricing regimes. The paper provides an empirically grounded and fully replicable framework for aligning mining capital allocation with sustainability imperatives.

Keywords: blended finance; cost of capital; emerging markets; green bonds; mining investment; Monte Carlo simulation; country risk premium; climate finance



Olebogeng Tefo Sentsho

Founder and Chief Executive Officer
Morton Energy Partners

Olebogeng Tefo Sentsho is the Founder and Chief Executive Officer of Morton Energy Partners (MEP), a transition finance advisory practice focused on unlocking bankable climate finance for African mining and industrial decarbonisation. Under the Morton Energy Partners brand, she has developed CLOVR™, a structured finance platform built around the Carbon-adjusted Lending Opportunity Framework (CLOF™), which reprices sovereign and project-level risk to route bankable transition deals to lenders, development finance institutions (DFIs), and insurers

operating across Sub-Saharan Africa.

She is also a PhD candidate in the School of Mining Engineering at the University of the Witwatersrand, where her research examines mineral economics and the intersection of climate finance, carbon-backed valuation, and sovereign risk in resource-dependent economies. She holds an LLB from Wits, and her academic work is thematically aligned with, though conducted independently of, her commercial practice at MEP, giving her a vantage point that bridges rigorous financial-economic research with deal-level structuring experience. Her recent research includes work on financing mineral decarbonisation through climate bonds and carbon-backed valuation as a new asset class for mining, as well as a framework for sovereign wealth fund climate bond issuance in extractive economies.

This scholarship informs her advisory work at MEP, where she has led the development of buy-side and sell-side transaction materials for mining and PGM assets, and has structured investor engagement for CLOVR™ with capital-structuring partners across the DFI and institutional investor landscape. Beyond her advisory and academic work, she is the author of *Mines Create Economies*, a mining entrepreneurship textbook set in Africa that follows a fictional character through the full mine lifecycle, written to build practical financial and commercial literacy among students and early-career professionals entering the mining sector.

Tefo's work sits at the intersection of African mining, structured finance, and climate policy, with a consistent focus on building proprietary frameworks that formalise how sovereign and project risk is priced, structured, and de-risked for climate-aligned capital. She brings to the ESGS Conference a practitioner's perspective on how transition finance instruments can be structured to accelerate decarbonisation in mining without inadvertently subsidising high-emission assets — a theme central to her ongoing research and advisory practice.

ASPASA on our environmental compliance audit and ASPASA member on the practical application

L. van den Berg, S. Mbali

ASPASA, South Africa

ASPASA was established in 1990 and in 1993 adopted the About Face (Environmental) Audit to assist small surface mines with compliance requirements with regards to environmental management. The audit protocol has been reviewed and amended various times starting in 1996 to ensure members are always brought up to speed with latest requirements for sustainable environmental management systems and later updated to incorporate ISO14001 aspects.

Initially, the audit protocol was about educating mines on day-to-day management of environmental requirements. Over the years it now broadly deals with Environmental, Social and Governance (ESG). We started off with the basics of ESG, keeping records of compliance documents, data capturing of water, waste, electricity, and diesel usage. To date, the audit also introduced the concept of carbon emissions and footprints. Carbon emission and footprint determination proved to be a very complex calculation for our small role players (generally not having kilns and dryers) and understanding the various scopes and where they fit in.

Objective/Aim

The objective of this paper is to give an outline of the ASPASA audit protocol and let an industry member present on the practical application/implementation of the protocol to drive ESG practices in small mining.

Methods

The methods used are historic audit reviews and outcomes since 1993 to date, from our members and aligning with current environmental legislation on ESG. This has led to various industry members now monitoring data of their operations on carbon footprint, electricity usage, diesel, air quality, water and waste management rehabilitation to indicate practical implementation of the protocol requirements.

Results

Audit results of 2025

Industry member statistics on carbon footprint, electricity usage, diesel, water and waste management, and rehabilitation with targets and objectives of improvement.

Implications and conclusions

ASPASA has found that in many instances it is only a matter of education regarding the latest legal requirements and leading practices. Giving small mines templates to guide them and check utilisation of these templates through the audit process, giving improvement guidance face to face. Knowledge of the Environmental Management Programme, other relevant authorisations (Water Licence, Air Emissions Licence etc.) by the manager and team is a key aspect in improving any environmental process. This is the cornerstone of our audit process.



Letisha van den Berg

Director
ASPASA

Letisha's started in the Quarry industry in 1998 and her operational exposure and expertise has taken her from Regional SHE Practitioner to National SHE Manager and ultimately, Group SHEQ Manager. A strong advocate for small surface mines, she is now the Director of ASPASA, working to amplify their voice on government platforms. Letisha also serves on the Boards of MHSC as an employer representative, Minerals Council of South Africa representing small mines and Institute of Quarrying South Africa. She was recently appointed as the first female

President of the Institute of Quarrying South Africa.

Championing the often-overlooked small surface mines, Letisha highlights their crucial role in supporting South Africa's economy through infrastructure development and maintenance. These mines produce essential minerals that purify water, enable clean living, and build strong foundations – truly the backbone of everyday life. As Letisha puts it, "We are not small, Quarries Lay the foundations for everything that lasts."



Siphumelelo Mbali

Group Manager: Environment
Afrimat

Siphumelelo has 12 years working within mining industry. He has worked as an Environmental Consultant with projects including diamond mines, copper, Iron and aggregates. Currently, working as a Group Manager: environment for Afrimat Group, he mainly focuses on:

- Establishing and maintaining environmental strategy for Afrimat Group to support the triple bottom line
- Ensure proper management and implementation of Afrimat

Environmental Management System

- Reducing Afrimat Carbon footprint and adhering to ESG standards
- Monitoring and ensuring efficient use of environmental resources i.e water, waste, energy efficiency etc

Climate-resilient mining: Building inclusive leadership, innovation and human capability for the mine of the future

M. Seabela

WIMSA, South Africa

The mining industry is entering a period of profound transformation as climate change, decarbonisation, technological advancement, evolving stakeholder expectations and changing workforce dynamics converge. These are fundamentally reshaping how mining companies operate, compete and create value. While climate resilience is often viewed through the lens of infrastructure, water, energy and environmental management, sustainable resilience ultimately depends on the adaptability, capability and leadership of people. Climate resilience should be considered a strategic organisational capability and not solely an operational or environmental objective. Organisations that successfully navigate the potential disruption will be those that combine resilient assets with inclusive leadership, innovation and a future-ready workforce.

Three critical enablers are explored:

- Inclusive Leadership that strengthens decision-making, broadens perspectives and improves responses to complex and uncertain challenges;
- Innovation and Digital Transformation through automation, artificial intelligence and advanced analytics that enhance operational resilience and performance; and
- Human Capability Development that equips the workforce with the skills, agility and mindset required for an increasingly digital and low-carbon future.

The paper presents a practical framework built around five strategic actions: Anticipate, include, innovate, enable and adapt. Together, these actions align climate preparedness with leadership effectiveness, technology adoption, workforce development and cross-sector collaboration.

As mining evolves toward more automated, connected and sustainable operations, organisations have a unique opportunity to redesign leadership, work and talent systems to be more inclusive and future-focused. Expanding opportunities for women, young professionals and historically underrepresented talent is not only a social imperative but a strategic advantage in addressing future skills and leadership demands. The central message is clear: the mine of the future requires technology, infrastructure and capital investment. However, the quality of leadership, the capacity for innovation and the ability of people to anticipate change and drive transformation will determine its success.

Building these capabilities today will position mining organisations to achieve long-term environmental resilience, operational excellence and sustainable growth in an increasingly complex and uncertain world.



Mogaleadi Seabela

President
WiMSA

Mogaleadi is the President of Women in Mining South Africa (WiMSA) and a multi-award-winning mining engineer with extensive experience across multiple commodities and regions. She holds a master's degree in mining engineering from the University of the Witwatersrand. Her MSc research work focused on the impact of human factors on technology adoption in mining. Her career spans production and mining technical services, leading to her current role as CPM Application Manager at Anglo American, where she supports the group with optimising

contractor management through technology solutions. She has a strong track record of leading teams through complex operational and technological transitions while sustaining high performance.

An advocate for diversity, inclusion and has championed women empowerment initiatives throughout her career. Some of her accolades include the 100 Global Inspirational Women in Mining (WIMUK100), the winner of the 18th Annual Standard Bank Top Women in Science award and 2015 Rising Star in Mining and Minerals category.

Mogaleadi has a deep passion for education and actively works with schools, universities and organisations such as WiMSA, to support future leaders through mentorship and professional development.

