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IFRS S2 Aligned Supplement: Toward Adaptive Climate Risk Management

PRESENTED BY

Climate Sense and Satarla

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List of Contributors

The authors comprise key contributors to Metals & Mining TPT guidance and ISO 14090 climate adaptation guidance, and so can provide deep subject matter expertise in climate change transition and adaptation. All authors have extensive experience in navigating the complex and dynamic challenges that entities globally face both today and tomorrow.

In partnership, Satarla bring deep expertise in risk management, sustainability, and operations, especially across metals and mining, while Climate Sense brings adaptive climate risk management, monitoring-evaluation-learning, and capability assessment methods that can be embedded into mining clients' existing risk, planning, and governance processes.

Climate Sense is a consultancy enabling clients to strengthen climate change adaptive decision making at organisational and system levels. It protects long term interests through the decisions made today; managing risk, ensuring compliance, increasing competitiveness, strengthening returns on investment, reducing social and environmental impacts, getting the most from stakeholder engagement and enhancing license to trade through strategic monitoring evaluation and learning.

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Satarla is a consultancy of experts that bridges sustainability and risk management through consulting, training, research, and effective communication, with deep expertise and experience within the metals and mining sector. Satarla has a passion for enabling more responsible exploration, extraction, and use of raw materials, and led on the drafting of the TPT Metals & Mining Sector Reporting Guidance.

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Introduction

This IFRS S2 Aligned Supplement examines how entities progressively build the adaptive capabilities required to manage physical climate risks in practice, moving from treating adaptation and resilience as peripheral considerations to **embedding adaptive climate risk management across the organisation**. The Supplement is structured around four distinct but interdependent maturity journeys (i.e., Baseline, Starting Out, Taking Ownership of Climate Risks, Practicing Adaptive Climate Risk Management) which together describe how intent, execution, collaboration, measurement, and accountability evolve as adaptation becomes more systematic and decision-relevant.

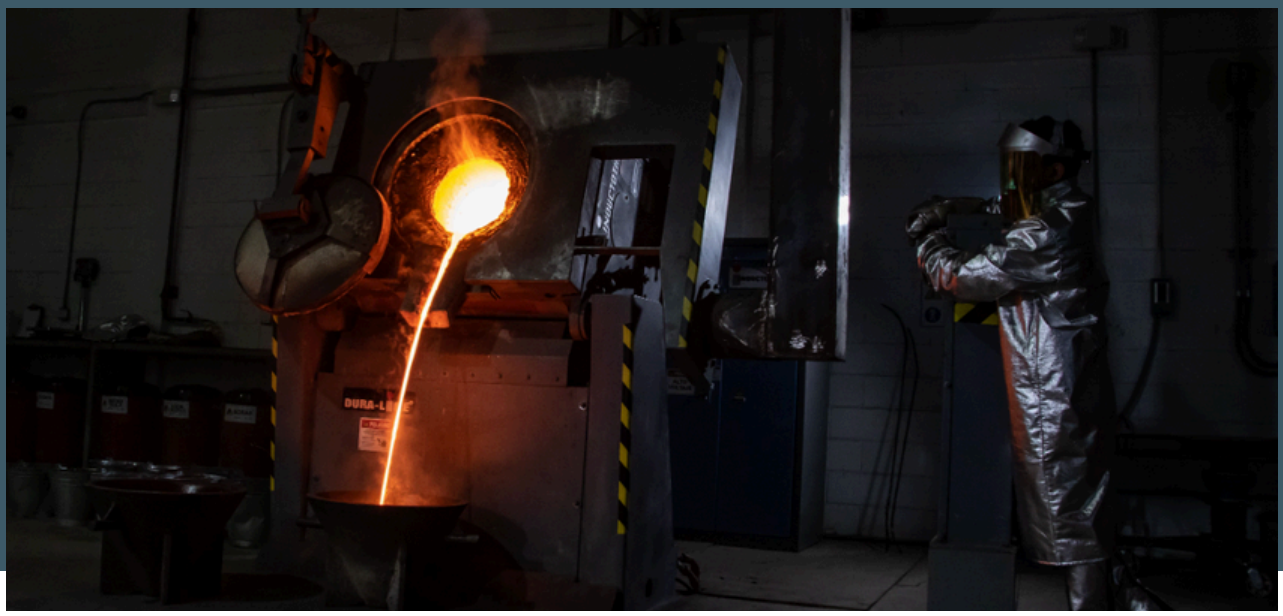
The white paper asserts that "mature" adaptive capabilities are key to successful climate risk assessment, adaptation planning, and adaptive capacity building - and therefore climate resilient transition planning. It focuses on adaptive capability as a critical sub-set of adaptive capacity: while adaptive capacity reflects the underlying resources, priorities, and systems that shape an entity's potential to respond to climate risk, adaptive capability captures the skills, evidence, decision rights, and implementation authority that determine whether timely and proportionate adaptation action actually occurs. These four maturity journeys recognise that entities may sit at different levels across sites, functions, or value-chain stages, and that progress is rarely linear. They are therefore designed to support self-assessment, internal dialogue, and prioritisation of capacity-building efforts, rather than serving as a compliance checklist.

The IFRS Supplement provides a **coherent narrative of an entity's maturity journey**, described in alignment with the four TCFD and IFRS aligned pillars (i.e., "strategy", "risk management", "metrics and targets", and "governance"), as well as "engagement". Whist "engagement" is not a pillar of IFRS, it is a facet of TPT guidance, and it has been included as a separate theme throughout this technical supplement for multiple reasons. Not only does this help bridge the gap between the two frameworks, but it also reflects the particular importance of stakeholder communication within the Metals and Mining sector.

How to Use This Supplement

This supplement outlines the maturity journey that any entity could take. To ensure that the examples presented in the next sections are relevant to a diverse range of entities within the sector, a composite profile was developed to act as both an "everyperson" and a "strawperson". For each IFRS S2 pillar (i.e., strategy, risk management, metrics and targets, and governance; and additionally engagement), this profile is examined against what an entity may:

- already have or be doing ("Baseline"),
- be doing or considering in its first steps in moving forward on a journey to maturity, with respect to adaptive capabilities ("Starting Out"),
- extend its actions and considerations to as it becomes adapted ("Taking Ownership"); and,
- do and/or consider when it becomes adaptive (Practicing Adaptive Climate Risk Management").



Maturity Journey

Baseline

This section describes a common baseline position in which climate adaptation activities exist but are likely to be more incidental rather than intentional. At this stage, entities are not starting from zero; many already recognise weather- and climate-related issues through permitting, safety management, environmental assessment, community engagement, and investor disclosures. However, these activities are typically fragmented, may be more reactive than proactive, and are often driven by immediate requirements rather than by a structured, long-term, forward-looking approach to climate risk and resilience. Climate change is acknowledged, but it is not yet treated as a core consideration in the assessment of asset performance, operational continuity, or capital allocation. Adaptation outcomes may occur, but they do so as a by-product of existing processes rather than through a deliberate adaptation strategy or an integrated transition plan.

In **strategy**, climate-related elements already appear in existing studies, assessments, and approvals. For example, IPCC-aligned scenarios may be referenced in forward-looking assessments of physical conditions and environmental impacts within project-level permits, plans, and reports at various stages of the asset life cycle (e.g. PEA, PFS, Feasibility Studies, CRIRSCO-aligned reports, EIAs). Operationally, most sites can respond to weather-related incidents as they occur, but they may do so in an event-driven, short-term manner. There may be no formalised structure to anticipate and manage long-term climate-related disruptions or opportunities such as shifting water availability, changing geotechnical stability, or chronic heat stress over the life of the asset. The result is that physical climate risk is acknowledged, but not yet systematically integrated into core business planning or capital allocation.

In **risk management**, internal climate discussions are often centred on sustainability reporting and mitigation commitments, for example, compliance-driven disclosures to investors and the setting or tracking of emissions reduction targets. These activities are important, and in many entities, they are relatively mature. However, they are typically framed around transition and reputational risk (e.g. greenhouse gas emissions and social acceptance) rather than adaptation, asset resilience, or continuity of operations under progressively harsher physical climate conditions. There may be exceptions to this, for instance where water scarcity is a key topic that is requiring effective planning, or where TSF stability is being considered on longer time frames than other parts of an operation. In practice, this means physical climate risk is not yet consistently treated as a core operational or financial risk category; it is more commonly treated as an ESG topic that sits adjacent to permitting, environment, or corporate responsibility.

On **engagement**, community and stakeholder engagement teams are often in regular contact with local communities, Indigenous partners, workers, suppliers, and authorities. They play a critical role in building early social acceptance and maintaining open lines of communication through the project life cycle. Stakeholder engagement may be active, and social acceptance positive, with topics covering shared value and exploring collaboration opportunities. However, these engagements may not always frame climate change explicitly as a shared risk and opportunity.

In **metrics and targets**, data collection is generally structured to satisfy environmental disclosure requirements and investor expectations. Metrics are commonly designed to demonstrate compliance and environmental performance. Qualitative indicators are often used to describe climate-related risk, including a qualitative understanding of which parts of the operation and value chain are responsible for most greenhouse gas emissions. However, quantitative, site-level assessments of sensitivity to future climate stressors (for example, changes in precipitation extremes, temperature thresholds, or water scarcity) are less developed. This may result in an inconsistent approach to tracking progress on adaptation and resilience measures.

In **governance**, most entities already have defined structures for accountability on environmental compliance, permitting, safety, and disclosure. Climate-related risks may appear as standing agenda items in Board and senior management meetings, and they may surface during annual risk reviews. However, these discussions are often limited in scope and tend to focus on compliance exposure and near-term risk (including acute weather-related incidents) rather than on long-term adaptation requirements.

At the site level, “weather-related” risks such as storm damage, heat stress, or flooding are typically acknowledged in routine processes such as toolbox talks. These practices show that climate hazards are known and managed in day-to-day operations. In most cases, conversations about physical climate risk are still triggered by recent events or immediate safety concerns, rather than guided by a forward-looking resilience framework.

Overall: Climate adaptation activities take place, sometimes in many places across the entity, but they are not yet integrated. It is present in reporting, permitting, engagement, and safety. However, it may be less present in core business decisions about long-term asset viability, value chain resilience, future operating conditions, and community co-adaptation.

Starting Out

This section describes the early-stage position of an entity that is beginning to consider adaptation in decision-making. Much of the actions taken are grounded in disclosure framework alignment with some further considerations regarding meeting the expectations of stakeholders (e.g. investors, regulators, lenders, and permitting authorities). At this stage, climate-related activity is visible to senior leadership, appears in corporate reporting, and is beginning to influence site-level thinking. Climate change is treated as a topic that must be addressed, but it is not yet embedded throughout the business as a driver of how assets are planned, operated, expanded, or closed. Adaptation, where it exists, is emerging in pockets, not systematically deployed.

From a **strategy** perspective, climate change is now discussed at the senior management and Board level, typically in line with expectations set by frameworks such as the Task Force on Climate-related Financial Disclosures (TCFD) or International Sustainability Standards Board (ISSB). These conversations acknowledge that climate change poses risks to the business, and the entity may begin to recognise the importance of scenario analysis to inform disclosure and to support access to capital. However, these strategic discussions tend to remain contained within formal governance forums. Outside of those forums, climate change is not consistently framed as an operating risk or strategic driver, particularly at regional or site level. The strategic focus, where it exists, is primarily on risk mitigation (e.g., emissions, permitting, and demonstrating alignment with the low-carbon transition) rather than on adaptation to changing physical conditions.

In **risk management**, climate-related physical events such as flooding, extreme heat, and water shortages are regularly identified as potential threats to safe and continuous operations. At the corporate level, these risks may be captured in high-level policy statements, noted in risk registers, or acknowledged in corporate reporting, but integration into budgeting across operations is still fragmented – with the notable exception of key risks which may be pertinent and require effective long-term management, e.g., water scarcity and TSF stability. Site-level attention tends to remain reactive and driven by recent weather impacts or near-term milestones such as project approval, expansion decisions, and closure obligations. Teams may start mapping broad categories of current and future risk, for example, pit flooding, heat stress on processing infrastructure, or reduced water availability for processing circuits.

Vulnerability assessments and climate risk assessments may be occurring, but they may be inconsistent, qualitative, and/or conducted in isolation by different sites or even different site teams, which means results are not comparable across jurisdictions. Adaptation is generally not captured through a common framework. Some entities convene internal workshops to create a shared understanding of how climate risks could manifest across assets, but these workshops are not yet systematically tied to decisions about design standards, investment timing, procurement criteria, or production planning.

Roles and responsibilities for identifying, assessing, and responding to climate risk are beginning to be defined. Even so, capability to translate identified risks into specific adaptation actions, triggers, and escalation pathways remains limited. In larger entities, corporate teams may have begun to define internal thresholds to identify high-risk sites based on exposure to climate hazards such as pit flooding, water scarcity, or extreme heat affecting equipment performance. These thresholds are typically determined centrally, kept confidential, and used to guide head-office decision-making. Input from asset-level teams into this process can be limited, reinforcing a top-down approach to climate risk.

Engagement of communities, workers, Indigenous rights holders, local authorities, and other stakeholders is more structured. Discussions increasingly include short-term, physical climate risks that directly affect operations and safety, such as flood risks during drilling seasons or extreme temperatures affecting workforce exposure. Systematic stakeholder mapping to understand local climate vulnerabilities, exposure, and adaptive capability may have begun and in some cases is formalised.

Elements of an adaptation management cycle are established. Responsibilities are clarified, climate and community specialists are appointed to oversee site-level engagement, and structured feedback loops (for example, through site workshops) start to be generated. These mechanisms, however, remain largely site-driven and are not yet embedded across the enterprise. Communication of climate strategy, both internally and externally, remains cautious. The entity may be hesitant to share lessons learned or gaps in performance, viewing such transparency as creating reputational or regulatory exposure rather than contributing to collective resilience planning. A high-level public policy position on climate change risk may be issued, but operational detail tends not to be part of that public narrative.

In **metrics and targets**, reporting capability is developing. At this stage, the entity shows emerging alignment with the “metrics and targets” expectations of the TCFD, but adaptation-related metrics are still treated as supplemental to the main business objectives of exploration, permitting, and continued operation. The entity is typically able to calculate Scope 1 and Scope 2 greenhouse gas emissions using methodologies aligned with the Greenhouse Gas Protocol and may have begun to identify and quantify key elements of Scope 3 emissions, often using spend-based methods. Water data, including consumption and withdrawal volumes measured at pump and flow-meter level, may be consolidated at site level to produce metrics that go beyond permit compliance and begin to signal understanding of broader basin-level water impact. Some tracking of adaptation action is occurring, but the process is ad hoc, often driven by individual site managers, and is often initiated following a disruptive climate-related event that affected production or safety.

Vulnerability and impact assessments are not yet consistently applied across all assets, meaning exposure, sensitivity, and adaptive capacity are still not quantified to a standard baseline across the portfolio. Where assessments are being piloted, they are often desktop exercises aimed at generating first-pass quantified outputs to satisfy investors, rather than technically validated inputs to operational planning. Cross-functional working groups may be in place to explore the development of more advanced adaptation metrics. These groups often identify the need for new indicators such as the percentage of assets screened under climate scenarios, the percentage of sites with defined dry-season water stress triggers, or comparative rankings of site adaptive capability. Target-setting is more structured, led mainly by Sustainability teams with some involvement from Finance departments. Some internal targets are established to demonstrate accountability to investors and regulators. These targets are usually framed at a high level, such as the percentage of assets to undergo climate risk assessment within a given period, which allows flexibility across different geographies and life-of-asset stages.

In **governance**, responsibilities for climate change are beginning to be explicitly assigned to senior management and, in some cases, to individual members of the C-suite. Many entities at this stage have issued a public policy statement on climate risk. This marks a shift from informal acknowledgement of climate in meetings to a defined governance position. Decision-making authority for climate-related issues is increasingly allocated both at the site level and at the corporate head office. Cross-functional leadership teams are building a conceptual understanding of climate adaptation and may have begun to define monitoring and review commitments for climate-related risks and opportunities, but the emphasis remains on responding to changes that have already occurred, not preparing for plausible future states of the operating environment.

At site level, climate and weather risks are embedded into daily routines through safety moments at the start of shifts and similar mechanisms. These “speak-up” practices help normalise discussion of climate-related operational hazards and create informal early warning channels. Champions at site level become important actors, building awareness of physical climate risks, initiate preliminary vulnerability assessments, and advocate for integrating resilience considerations into development activities. At Board level, climate-related vulnerability and impact assessments (particularly where they relate to material exposures such as water scarcity, pit flooding, or supply chain delays) are beginning to inform strategic and financial considerations.

Overall: Taken together, this stage reflects an entity that understands that climate change can affect its ability to operate, finance, and expand. As such, it is beginning to formalise roles, metrics, engagement processes, and governance structures accordingly. Full integration of adaptation into core planning, design standards, capital decisions, and long-term portfolio strategy are not yet in place. Future work to progress maturity will focus on a shift from meeting minimum expectations to actively managing physical climate risk as a determinant of operational performance, asset value, and long-term licence to operate.

Taking ownership

This section describes an entity that is beginning to take ownership of climate risk management beyond compliance. The objective at this stage is to become adapted; that is, to put in place practical and credible measures to manage climate risks that can already be identified with reasonable confidence using current information, tools, and governance systems. The defining characteristic of this stage is that climate risk and adaptation are no longer managed only to satisfy external expectations. Instead, the entity is actively amending its existing processes (strategy, risk management, engagement, metrics, and governance) so that they can account for physical climate risks that affect asset integrity, continuity of operations, and social acceptance over the life of the asset. Adaptation is not yet fully embedded across the full breadth of the entity, and exposure to uncertainty is still managed conservatively by focusing on known or probable risks. However, important shifts are underway.

From a **strategy** standpoint, climate considerations expand from a narrow focus on emissions and approvals to include probable future physical climate risks that have not yet been experienced but may become material within the lifetime of the asset — even where that asset is still pre-operational and infrastructure is minimal. Management continues to integrate guidance consistent with the Task Force on Climate-related Financial Disclosures (TCFD) and International Sustainability Standards Board (ISSB) and uses public-domain climate scenarios to begin building location-specific views of exposure. Scenario analysis is being tailored to specific sites, thresholds for adaptation are being described (for example, rainfall levels that would compromise pit stability, or heat thresholds that would limit safe working hours), and early elements of an adaptation management cycle are being introduced. ISO-aligned approaches (e.g., ISO 14090 for adaptation planning and ISO 14091 for climate risk and vulnerability assessment) start to appear in internal processes, even under constrained budgets. The entity begins to define exposure, sensitivity, and adaptive capacity for each site using consistent criteria and to document adaptation pathways that link identified risks to potential actions.

In **risk management**, climate risks are increasingly treated as operational continuity risks that can and should be managed within existing systems. The entity starts to embed adaptation in its sustainability strategy and business continuity planning in a way that is broadly consistent with ISO 14090 and ISO 14091, including attention to avoiding maladaptation. Rather than reacting only after disruptive events, leadership supports site-specific adaptation pathways with defined climate-hazard triggers. These pathways identify when an intervention should be activated, under what conditions, and by whom. Climate risk assessments begin to use structured risk matrices and impact–feasibility analyses to prioritise hazards and select actions that are technically and financially realistic. Projections are used to explore how physical hazards could evolve, even if the analysis remains more reliable for frequent, high-probability events than for low-probability, high-consequence “tail risks.” Enterprise risk management processes and crisis management frameworks start to integrate climate triggers such as haul road washout, water scarcity, or heat stress impacts on labour availability. Roles and responsibilities for managing these risks are clarified, and “adaptation champions” are recognised at both corporate and site levels.

This marks a shift away from top-down, corporate-only control: site-level workshops, regional knowledge-sharing hubs, and feedback loops from late-life or near-closure assets begin to inform forward planning for projects that are still in feasibility or development. While these steps remain partly reactive and sometimes slowed by internal approval processes, they signal a move toward structured, comparative assessment and the use of operational data (rainfall, water use, ambient temperature, equipment performance) to financially prioritise adaptation measures across the portfolio.

This stage reflects a step towards proactive management: climate is still largely addressed through existing systems, but those systems are being deliberately adjusted so they can handle foreseeable climate stresses without waiting for regulator intervention.

Engagement strategy evolves toward engagement that explicitly incorporates adaptation planning and shared resilience. Stakeholder mapping becomes more systematic and begins to align with ISO 14091-style analysis of vulnerability, exposure, and adaptive capability. The entity seeks to understand interdependencies between its operations and the surrounding system, e.g., whether shared roads are both critical haul routes and critical community lifelines, whether regional power networks are vulnerable to extreme heat, or whether municipal water sources are already under stress and could become contested in drought conditions. Qualitative vulnerability and impact assessments increasingly involve both internal technical staff and external stakeholders (local communities, workforce, municipal authorities) and begin to consider not only how climate affects the asset, but how the asset's adaptation choices could affect social stability, water security, or local infrastructure. Structures for engagement become more explicit: site-level sustainability champions, managers or climate leads are tasked with convening workshops, capturing lessons, and feeding results into planning. Internal knowledge-sharing begins to emerge across sites and regions, although full transparency across the portfolio may still be limited by perceived reputational exposure when past responses to climate events are viewed as inadequate.

Metrics and targets begin to move from disclosure to decision support. The entity expands emissions quantification to include Scope 3 categories using more primary data from suppliers, creating more actionable decarbonisation levers. More importantly for adaptation, leadership begins to generate an adaptation management cycle for metrics, defining how climate-relevant indicators are collected, reviewed, escalated, and revised. Early quantitative indicators of vulnerability and adaptive capability start to be produced using desktop tools (e.g. CaDD Explorer-type approaches) that create consistent scoring across assets. This supports partial operationalisation of ISO 14091 by making exposure, sensitivity, and adaptive capability comparable between, for example, a water-stressed processing plant and a storm-exposed logistics corridor.

Metrics begin to quantify resilience investments and track implementation of adaptation actions over defined timeframes. Feedback loops strengthen as insights from near-closure or remediation sites (for example, unexpected water management costs or unplanned road failures under extreme rainfall) are formally fed into feasibility assessments and design standards for earlier-stage projects. Such sites can either be those within an entity's own portfolio, or those that may be comparable in location, operational set-up or risk portfolio but controlled by other entities. Climate indicators are also assessed alongside other sustainability and social indicators to avoid maladaptation, for example ensuring that water reuse systems meant to protect production do not undermine community water access. Targets become more structured, using SMART framing, and are increasingly set at enterprise level for investor and regulator visibility, while still allowing local flexibility in how they are met. Typical emerging targets include the share of assets assessed for climate risk under defined scenarios, the proportion of TSFs exposed to extreme rainfall, and percentage of sites with defined water stress triggers or documented workforce heat thresholds.

Governance at this stage shows the beginnings of integrated climate governance that combines corporate oversight with meaningful site-level influence. Climate risk is recognised as more than a disclosure obligation; it is treated as an operational and financial exposure that is both current and foreseeable. Corporate decision-making begins to incorporate the structured quantitative vulnerability and impact assessments, supplemented by expert judgement from internal specialists and existing advisors, and informed by direct experience from older assets (including closure, remediation, and reclamation stages). Governance processes start holding explicit space for proactive adaptation, rather than allocating resources only after a disruption. The entity deliberately considers material risks that have not yet occurred but are reasonably likely within asset life (e.g., the loss of haul road access due to more intense precipitation or recurring extreme heat that structurally limits labour availability for certain shifts). Authority and accountability for climate risk management are increasingly defined, and resources are allocated to those roles. In effect, the entity is starting to own climate risk on its own terms, not just because stakeholders demand it.

Overall. This stage reflects a shift in culture. The entity is still operating within its current systems, but it is actively modifying those systems so that they can anticipate, monitor, and respond to climate risks that are both material and technically manageable today. The entity's stated objective becomes twofold: first, to become adapted in practice at priority sites and functions; and second, to manage those climate risks that can be confidently identified, tracked, and acted on with existing tools, roles, budgets, and governance.

Practicing adaptive climate risk management

This section describes an entity that has moved beyond compliance and is actively taking ownership of climate risk management and adaptation. At this stage, the objective is to become adapted and to manage the climate risks that can be confidently identified and addressed with existing systems, processes, and decision structures. The entity is no longer treating climate as an external reporting obligation or a narrow element of ESG performance. Instead, physical climate risk is treated as a core strategic, operational, and financial consideration across the full asset lifecycle. The entity is deliberately amending its planning, risk management, engagement, metrics, and governance practices so that climate risks are embedded into how the business runs, capital is allocated, assets are designed, and performance is evaluated. Adaptation is managed as an ongoing cycle with defined leadership, resources, and decision rules, rather than as a one-time exercise. This includes a recognition that resilience is not a fixed end-state: conditions will continue to change, there will be uncertainty, and unforeseen impacts will occur. The entity plans explicitly for that uncertainty and builds capability to identify, escalate, and respond to it.

Strategically, a mature entity systematically integrates physical climate risk into business planning, valuation, and external positioning. Downscaled climate risk analyses are conducted for all sites and at all stages of development, potentially using both public-domain datasets and commercial products. These analyses identify material hazards, quantify exposure over long time horizons (including post-closure), and characterise thresholds that would disrupt business-as-usual operations. They inform investor disclosures, partnership negotiations, procurement expectations, and design standards for new projects, and they are used to present the business as a credible counterpart with a realistic view of its physical risk and resilience pathway. Adaptation is treated as a strategic discipline, with ISO 14090-style adaptation management cycles established, climate adaptation and mitigation treated as distinct but coordinated responsibilities, and roles for adaptation planning defined across functions and regions.

Site-level risk data feeds into enterprise strategy, and strategic decisions on capital planning, mine design, energy systems, water security, logistics, labour safety, and post-closure liabilities are made with explicit reference to climate thresholds, scenario-based futures, and residual risk that remains after control measures. Scenario analysis, including probabilistic assessment of extremes and structured thresholds analysis, is used to align long-term investment with plausible operating conditions rather than historical norms. Horizon scanning and iterative review are built in, with the explicit expectation that not all climate impacts can be forecast in advance and that capability to respond to unanticipated events is itself a strategic requirement.

In **risk management**, climate risk is now institutionalised. It sits inside enterprise risk governance, business continuity planning, mine planning, and operational decision-making rather than adjacent to them. Vulnerability and impact assessments are standardised and quantitative across the portfolio. They identify acute and chronic risks, including extreme rainfall, water scarcity, wildfire, permafrost thaw, heat stress, and infrastructure failure, and translate those risks into operational thresholds, response triggers, and financial implications. Adaptation pathways are not theoretical; they are actively used to determine when and how to intervene, and at what cost. Sites deploy monitoring systems and feed data (e.g., rainfall intensity, groundwater availability, thermal stress, haul road integrity, power reliability) into real-time decision-making tools (e.g., dashboards) which support escalation protocols, safety procedures, and maintenance planning, and inform structured decisions on resilience capital allocation. Lessons learned from extreme events and closure-stage sites are not archived; they are fed into exploration, acquisition due diligence, JV negotiations, and procurement standards so that the next generation of assets is designed and financed with an explicit understanding of physical climate exposure.

Engagement is treated as a strategic function of climate adaptation. It is continuous, structured, and explicitly linked to resilience planning rather than reactive, compliance-driven consultation. Stakeholders including municipal authorities, Indigenous rights holders, communities, workforce representatives, supply chain actors, and infrastructure operators participate directly in vulnerability and impact assessments. Climate risk is framed as shared risk, not only operational risk. Importantly, information is no longer contained within the entity, and data relevant to shared risks such as water levels, flood risk, or network vulnerabilities is shared with stakeholders, recognising that operational continuity and regional resilience are interdependent. The entity maps interdependencies (e.g. haul roads that are also community lifelines; shared power networks vulnerable to heat stress; drought-constrained water sources) and builds adaptation plans that account for both its own continuity and local adaptive capability. Mature entities also begin to operate as partners in regional resilience, co-investing with governments and other stakeholders in infrastructure and systems that protect both operations and the surrounding communities and supply chains. Engagement becomes a reputational and financial differentiator, used to demonstrate that the entity can operate credibly in climate-exposed jurisdictions because it is actively contributing to the resilience of the broader system in which it operates.

Metrics and targets shift from basic performance reporting to integrated management tools. The entity develops climate resilience KPIs that are directly aligned with strategic decision-making, ISSB disclosure expectations, and ISO 14090 / ISO 14091-compliant assessment cycles. These metrics quantify exposure, sensitivity, and adaptive capacity across the full life of each asset, including post-closure, and they are explicitly tied to defined thresholds and triggers for intervention. Financial metrics such as Climate Value at Risk, Climate Risk-Adjusted Returns, Cost Avoidance Estimates, and Adaptation Payback Periods are calculated and used in investment cases, capital allocation decisions, and acquisition due diligence. The entity tracks not only whether adaptation measures are in place, but whether they are effective in reducing real risk. Training and capability are monitored and resourced, with site-level personnel equipped through structured learning (including eLearning programs) to interpret and apply climate metrics, and governance structures assign responsibility for data integrity and escalation both centrally and at site level. Metrics are embedded in performance management. Corporate finance teams and site managers work from a shared evidence base, and results are reported internally and externally using consistent formats that allow investors, partners, and regulators to understand how climate risk influences asset value and operating resilience.

Governance is integrated, multi-level, and directive. Climate risk and adaptation sit within defined governance structures with clear escalation pathways from site to corporate to Board. Climate adaptation has formal standing in executive decision-making, often through a Board-level adaptation or integrated sustainability committee and cross-functional expert panels and receives distinct budget allocations. Governance draws on structured vulnerability and impact assessments, enterprise risk dashboards, and community and supply chain risk intelligence, and applies them to capital planning, permitting strategy, acquisition screening, JV structuring, asset prioritisation, closure sequencing, and long-term liabilities. Importantly, governance at this stage recognises uncertainty and explicitly plans for it. Champions for adaptation are formally recognised and empowered within the governance structure, and accountability for resilience outcomes is distributed rather than isolated within sustainability teams. The entity does not assume that all future conditions can be forecast using historical experience. Instead, it expects that there will be climate-related events and compound hazards that exceed design assumptions, and it requires that the business maintain adaptive capability to respond.

Overall: Climate risk is managed as a core business risk with life-of-asset implications, and adaptation decisions are treated as strategic investment decisions, not discretionary add-ons. There is a strong focus on ‘lessons learnt’, which are shared with internal and relevant external stakeholders to improve future business practice and reflect interdependencies. Uncertainty is considered and embraced as part of everyday and strategic decision making.