



SUSTAINABLE MINING CHARTER

PART B
Implementation Roadmap
and Guidelines



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1. Introduction

1.1 PURPOSE OF PART B OF THE CHARTER

Part A of the Sustainable Mining Charter provides the frameworks and approaches which can be used by mine teams to improve sustainability performance across the seven thematic areas :



Part B has been developed to help ensure the effectiveness of the Charter by offering implementation guidance to mine teams. It provides mine teams with a sustainability implementation roadmap, which provides guidance on identifying mine level sustainability goals, designing interventions across the seven thematic areas to achieve these goals, guidance for ensuring effective implementation and frameworks for reviewing and reporting mine level sustainability performance.

1.2 SUSTAINABILITY IMPLEMENTATION ROAD MAP FOR A MINE

The development of a sustainable mining implementation roadmap for a mine requires the establishing of long-term mine sustainability goals. These goals are distilled into short term – one or two year – targets and then interventions are designed to achieve these targets. The roadmap outlines the key steps which mine teams can follow in order to improve sustainability performance across the seven thematic areas. These steps include:

/ Understanding mine site conditions and the maturity of mine practices: Mine site conditions include environmental and socio-economic conditions in which the mine operates. Understanding these is critical for identifying the challenges faced by the mine and for designing effective interventions. Understanding the maturity of existing sustainability practices is also key to developing a baseline, which can then be used to identify gaps and design-appropriate interventions.

/ Developing mine sustainability goals: The development of long-term sustainability goals for a mine requires consideration of multiple factors including the corporate sustainability goals and the needs of local communities. It should also include mine-specific factors such as the mine's stage in its life cycle, the duration of the lease, and the type of mineral being extracted. These goals should be aligned with overall mine development plans and should focus on improving mine sustainability beyond the compliance requirements.

/ Setting targets and developing interventions: Once long-term sustainability goals have been developed for the mine, action plans for yearly targets need to be established. This process should take into account the maturity of current sustainability practices and the mine life/lease duration; it should also incorporate inputs from the mine development plan and should be guided by what has been learned from progressive closure.

1.2 SUSTAINABILITY IMPLEMENTATION ROAD MAP FOR A MINE (CONT..)

- / **Execution plan development:** This stage involves developing project plans, identifying teams, clarifying roles and responsibilities, and carrying out the project.
- / **Reviewing and reporting:** A reporting mechanism and architecture for conducting reviews should be developed in order to ensure effective

implementation and timely course correction. Information generated by reports and reviews should be incorporated into the further refining of the actions plans and targets of the various initiatives.

FIGURE 1. SUSTAINABILITY IMPLEMENTATION ROAD MAP FOR A MINE







2. UNDERSTANDING SITE CONDITIONS AND MATURITY OF MINE PRACTICES




2.1 UNDERSTANDING SITE CONDITIONS

In order to develop a sustainability strategy across the seven thematic areas, mine teams need to understand current baseline conditions. This understanding is key to assessing the challenges in different areas; it also

helps in the formulation of sustainability goals for the mine. Across the thematic areas, mine teams should have access to baseline data, including:

FOCUS AREA	BASELINE ASSESSMENTS
 SUSTAINABLE LAND USE	<ul style="list-style-type: none"> / Location, topography, and geological maps / Land patches that are available, with plot sizes and ownership information / Slope and terrain / Soil composition (including water and mineral content) and drainage capacity
 WATER STEWARDSHIP	<ul style="list-style-type: none"> / Results of hydrogeological studies of the core zone (5 km radius) and buffer zone (10 km radius) of the mine lease / Annual and seasonal rainfall trends / Projection of water consumption in mining operations / Projection of impact on water resources in terms of quality and quantity / Current sources of water for drinking, household use, irrigation, and other usages / Presence of watershed and rainwater harvesting structures on reclaimed and community land
 WASTE MANAGEMENT	<ul style="list-style-type: none"> / Assessment of slope for slope stability of overburden dump / Assessment of necessary conditions for waste management in clearances, consent forms, and other documents / Projection of the waste that will be produced under various categories / Availability of an authorised waste recycler/handler
 EMISSION REDUCTION	<ul style="list-style-type: none"> / Analysis of ambient air quality (AAQ) standards as laid out by the Ministry of Environment, Forestry and Climate Change / Assessment of AAQ parameters in core and buffer zones / Calculation of Scope 1 and Scope 2 greenhouse gas (GHG) emissions / Conducting of energy audit to identify areas for improvements in energy efficiency / Conducting of feasibility studies for adoption of renewable energy

2.1 UNDERSTANDING SITE CONDITIONS (CONT.)

FOCUS AREA	BASELINE ASSESSMENTS
 BIODIVERSITY CONSERVATION	<ul style="list-style-type: none"> / Inventory of: <ul style="list-style-type: none"> o forest trees and orchids o avian species o mammal species o other relevant biodiversity parameters o density and list of endangered species (if any) / Assessment of forest and animal migration patches: <ul style="list-style-type: none"> o Any endemic species o New species that can be introduced / Assessment of weather and seasonality trends
 LOCAL ECONOMIC DEVELOPMENT	<ul style="list-style-type: none"> / Assessment of mining communities: <ul style="list-style-type: none"> o demographic details (gender, age) o education, skill level, healthcare, livelihoods, connectivity, infrastructure status o short- and long-term needs and aspirations o local resources and available skills o local heritage, art and culture status
 HEALTH & SAFETY	<ul style="list-style-type: none"> / Assessment of the physical, chemical, and biological safety of the community / Assessment of leading and lagging indicators / Assessment of the global and Indian-industry averages of leading and lagging indicators / Periodic Medical Examination of employees

These data points help the mine identify current conditions and key challenges across different areas of the mine's functioning. These can then be used as inputs in the development of sustainability goals for the mine. A mine, for example, may be situated in an area affected by water shortages,

as indicated by maps showing a low water table, lack of water resources in the area, and poor rainfall. Under such conditions, water management will be an important focus area and long-term goals for the mine can include minimising water usage and increasing recycling practices.

2.1 UNDERSTANDING SITE CONDITIONS (CONT.)

2.1.1 CONDUCTING BASELINE STUDIES

Baseline data may be available in some cases; however, where the mine team needs to collect additional environmental and socio-economic data, a baseline study will be necessary. To ensure effective use of resources, mines can plan for an effective baseline assessment by:

- 1) Identifying the baseline study area:** This should encompass the geographic area of the mine as well as its anticipated area of influence, that is, the area which is likely to be affected by mining activities. Mine planners may want to collect details about a specific land parcel; in such cases, the area of interest should be clearly identified before conducting the baseline study.
- 2) Scoping:** In order to avoid wasting resources, decisions should be made in advance as to the factors about which data is to be collected, the data-collection methods to be used, and whether data can be collected by mine teams or if external agencies should be deployed to conduct the study.
- 3) Conducting an advance data survey:** Before undertaking field studies, a survey should be undertaken of the baseline data that is already available from government studies or other public resources. Using such existing data, the mine team can develop a preliminary baseline report across the thematic areas which can help determine field survey needs.
- 4) Carrying out field-based assessments:** Field-based assessments can be used to fill the gaps remaining after the preliminary data survey. Because field assessments for large mining areas require significant time, resources, and cost commitments, they should be planned in detail in advance to avoid wastage. Mines typically employ external contractors for carrying out field assessments. The process of selecting such an external agency should include a consideration of their experience, the costs that will be incurred, and the appropriateness and scientific rigour of the methodology to be followed.

FIGURE 2. STEPS FOR CONDUCTING A BASELINE STUDY



2.2 UNDERSTANDING THE MATURITY OF MINE PRACTICES

Self-assessment questionnaires (SAQs) can be used by mines to determine the current maturity of sustainability practices across different thematic areas. SAQs provide a quick understanding of the practices being followed and of the degree of evolved maturity of these practices across different thematic areas. Mine teams can assess current performance through allotting scores out of 10. Table 1 shows a sample SAQ for land management, and Annexure A details SAQs for all thematic areas.

SAQs can help mine teams track year-on-year scores so as to understand performance across different thematic areas. Thematic areas where scores have not improved require additional focus; in such cases, teams should determine the root cause of low scores and identify practices that can be incorporated or improved to ensure better performance.

TABLE 1. Self-Assessment Questionnaire on Land Management

S.I.NO.	QUESTION	RESPONSE (Y/N)
1	Has survey been conducted to identify total land to be displaced, soil characteristics, native vegetation etc. ?	
2	Has the impact of land disturbance on the local environment and communities been clearly identified ?	
3	Has the mine received any regulatory notice related to land rehabilitation ?	
4	Does the mine have a dedicated team for land management ?	
5	Have key performance indicators been defined for land management ?	
6	Have specific goals been defined by the mine for land management in the current year?	
7	Did we achieve the goals defined last year? Is there an internal review mechanism to monitor achievement against these goals ?	
8	Does the mine have a land rehabilitation plan which will generate benefits (income, health, education, etc) for the community?	
9	Does the land rehabilitation plan align with local environmental conditions and needs of the community ?	
10	Were the local stakeholders involved in designing the land management plans?	

To ensure better process integrity, regular external audits can be planned. The SAQs are not static documents, and as practices achieve greater

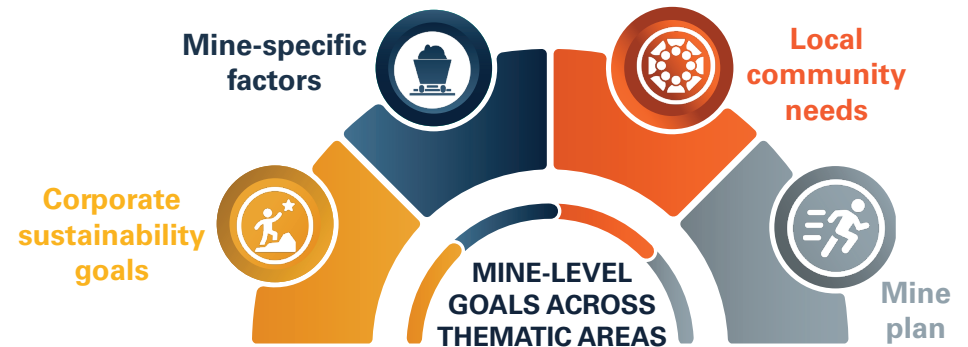
maturity mine teams can modify the evaluation criteria to ensure continued effective assessment.

3. MINE SUSTAINABILITY GOALS DEVELOPMENT

Overview

A key aspect of mine-level sustainability performance is the development of specific and quantifiable goals across the seven thematic areas. These should include corporate sustainability goals as well as the needs of local communities. Further specific mine-level factors will affect the implementation and outcome of different initiatives across thematic areas and hence should be taken into consideration during goal development.

FIGURE 3. FACTORS AFFECTING MINE-LEVEL SUSTAINABILITY GOALS



3.1 MINE-SPECIFIC FACTORS

Mine sustainability goals are affected by the type of mineral being mined, the type of mine (open cast or underground), and the mining methodology. Because these aspects affect various elements of the project such as waste generation, impact on land, and water usage, they need to be taken into consideration during the development of mine sustainability goals. The relevant operational characteristics of a mining project are outlined below, though a mine team can incorporate further factors based on site-level specifics:

1) Type of mineral, extraction methodology, and nature of operations: This refers to the differences between mines resulting from the type of mineral (coal, bauxite), extraction methodology (open cast, underground), and the type of operations (manual or automated). Each of these will influence the sustainability goals that can be planned across the thematic areas.

a. Type of mineral: The nature of a mineral, the challenges of its extraction, and the life cycle of mining operations will impact the sustainability

goals that the mine can hope to achieve and the interventions that can be planned; for example:

- i. Minerals such as coal typically have a longer mine life cycle and more complicated mining processes. Sustainability interventions should thus be designed to incorporate the associated challenges; for example, the land reclamation process for a coal mine is typically more time consuming and challenging. Mines should therefore set corresponding goals with regard to land reclamation and design interventions.
- ii. For minerals such as bauxite, which have a comparatively short mine life cycle, sustainability goals and interventions should ensure that desired results are achieved within that reduced time.

b. Extraction methodology: Underground and open cast mines impact the environment differently; sustainability approaches specific to each methodology should therefore be designed. Open cast mining operations,

3.1 MINE-SPECIFIC FACTORS (CONT.)

for example, have a larger ecological footprint than underground mines; this is due to the high volume of materials involved, wider impact, and greater displacement of land. Sustainability interventions for such mines therefore require more planning and broader coverage. Underground mines, on the other hand, face challenges related to worker safety which impact their sustainability planning.

c. Nature of operations: Sustainability goals and the nature of interventions are impacted by the type of operations, particularly whether they are labour intensive or have a higher degree of mechanisation/automation. A more highly automated mine, for example, will need to prioritise local employment generation as the mine operations themselves will offer few employment opportunities for local unskilled labour.

2) Mine and land lease duration: Lease duration determines the time left before mine closure; this will influence the initiatives that can be planned, their timelines, and mine sustainability goals. A mine with a shorter lease (under five years), for example, should avoid a goal which focuses on increasing the tree cover in the area as the typical lead time for ensuring successful reforestation is typically about 10 years.

3) Land availability: This refers to the total land available to the mine for carrying out sustainability projects after regulatory and tenancy requirements have been met. Land availability will directly impact the interventions that can be planned as well as goals such as increasing tree cover or the development of renewable energy capacity in the mine.



3.2 CORPORATE SUSTAINABILITY GOALS

Corporate sustainability goals are defined for company-wide operations; they identify, and set goals for, the various material aspects of the business.

Table 2 shows Hindalco’s corporate sustainability goals across the seven thematic areas.

TABLE 2. Hindalco Corporate Sustainability Goals across Thematic Areas

S.I.NO.	MATERIAL TOPICS	Goals
1	Water stewardship	/ Reduce specific water consumption
2	Waste management	/ Minimise waste generation and maximise waste utilisation
3	Emissions Reduction	/ Reduce greenhouse gas emissions and increase the share of renewables in overall emissions
4	Biodiversity management	/ Strive toward the achievement of Sustainable Development Goal 15, with the aim of No Net Loss (NNL) of biodiversity and prevention of operations in critical habitats
5	Local economic development	<ul style="list-style-type: none"> / Provide support through capacity building sessions on agriculture and allied activities; conduct vocational and technical skills development training in various skill areas / Promote education as a means of socio-economic development; focus on preschools, educational support programmes, vocational and technical education training, and school infrastructure / Provide best in-class healthcare services to local communities / Focus on raising the standard of living through the development of infrastructure in local communities
6	Health and safety	<ul style="list-style-type: none"> / Through a three-pronged approach, utilise leadership for safety, world-class processes and practices, and right organisation for implementation to achieve a target of “zero harm” / Set and maintain a target of zero fatalities and avoidance of all life-threatening occupational diseases

Source: Sustainability Report of Hindalco, 2020¹

Mine teams can use these goals as a reference for developing mine-level targets and identifying key focus areas within different thematic areas. In terms of Emissions Reduction, for example, the corporate sustainability target is focused on utilising renewable energy as a key lever. Mine teams

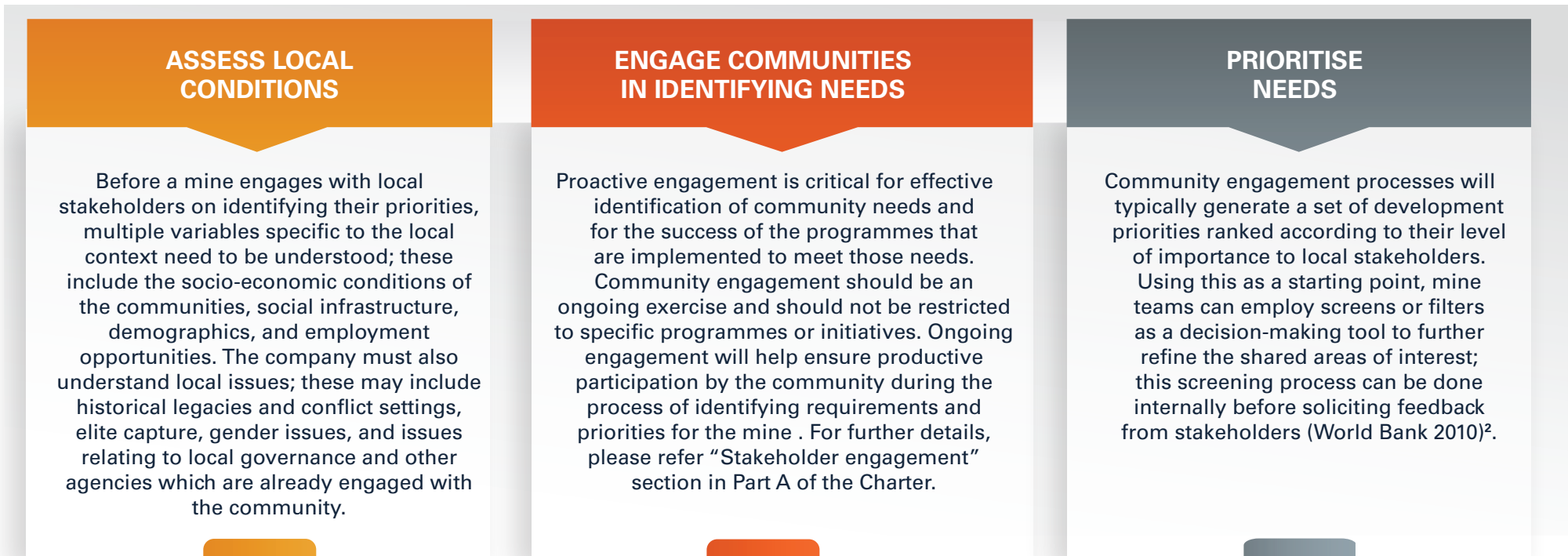
can assess the applicability of renewable energy in the context of a specific project; at a bauxite mine, for example, which has lower land availability, emissions reduction efforts may focus on other levers such as process improvement or use of biofuels and electric vehicles.

3.3 LOCAL COMMUNITY NEEDS

Mining operations in an area affect its social ecosystem. Mines therefore require an approach which incorporates the needs of local communities into the development of mine goals; proactive stakeholder engagement and

baselining are required in order to understand the local context. Figure 4 outlines the three broad stages in the process of identifying and prioritising local community needs.

FIGURE 4. STAGES OF UNDERSTANDING AND ADDRESSING LOCAL COMMUNITY NEEDS



Examples of different types of filters that can be used by the company include:

/ Level of stakeholder priority (high, medium, low)

/ Level of risk or opportunity presented (high, medium, low)

/ Fit with company sustainability principles

/ Fit with government development priorities and plans

/ Local capacity and ease of implementation

/ Ability of company to add value/comparative advantage

/ Number of people benefiting versus cost

3.3 LOCAL COMMUNITY NEEDS (CONT.)

A mine team may find it useful to assess different developmental needs and issues in light of project-level risks and opportunities. Questions to be asked could include:

/ **What is the risk to the company of not addressing these issues?**

/ **What is the level of opportunity presented in terms of ease of implementation, probability of success, and likely impact?**

Table 3 details the risks and opportunities related to community health and employment interventions. The mine team should prioritise programmes to address community issues that pose a high level of risk for the mine and which are likely to have a strong positive impact if successfully implemented.

TABLE 3. Risk Opportunity Matrix

COMMUNITY ISSUE	NATURE OF RISK	NATURE OF OPPORTUNITY	LEVEL OF RISK	LEVEL OF OPPORTUNITY
INADEQUATE HEALTHCARE FACILITIES	Potential loss of productivity among employees living in communities with poor healthcare services	The company can help set up healthcare facilities and collaborate with governments to strengthen existing infrastructure	High	Medium
HIGH RATES OF UNEMPLOYMENT	Possible frustration and anti-company sentiments due to high unemployment and low levels of education	The company can set up programmes to promote skills training and can invest in entrepreneurial initiatives to increase the income prospects of local residents	High	High

Source: World Bank (2010)

In order to rank risks and opportunities as high/medium/low it is important to establish a common definition of what these ratings mean. While evaluating risks, for example, factors to consider include:

- / **How great a risk does the issue pose to the company in terms of project delays and disruptions, potential interference with the social license to operate, or possible undermining of the company’s reputation?**
- / **Is the issue considered high priority by most local stakeholders or by only a select minority?**
- / **What is the probability or likelihood of a “risk event” if the need or issue is not addressed?**
- / **Has the issue drawn the attention of NGOs or media?**

The level of opportunity presented by each issue can be similarly evaluated. It can be assessed by understanding the ease of implementation, cost, and potential impact. Considerations thus include:

- / **Are there potential partner organisations with sufficient expertise and implementation capacity?**
- / **Is the issue supported by government and included in local/regional/national development plans?**
- / **How practical and/or easy is it to carry out the activity (that is, can it be done readily by the company or is a third party required)?**
- / **What is the potential for impact (that is, what is the likelihood that the intervention will result in broad-based benefits)?**

3.3 LOCAL COMMUNITY NEEDS (CONT.)

Community needs can be prioritised through combining risk and opportunity ratings. Ideally, the mine should identify needs that constitute a potential high risk for the company if no action is taken, but which also

present a strong opportunity, that is, easy implementation, high probability of success, and significant impact.

3.4 MINE PLAN

The mine development plan and closure plans should be considered as baseline to which the mine team must adhere while developing the mine sustainability goals. Mines should set sustainability goals that add value over and above the statutory requirements and which exceed those prescribed by the closure plan.

The details provided in the mine development plan will act as inputs to the design of interventions and to the execution planning process. The mine development plan, for example, provides details about how mining will proceed throughout a particular land parcel; it can therefore be used to guide reclamation planning.

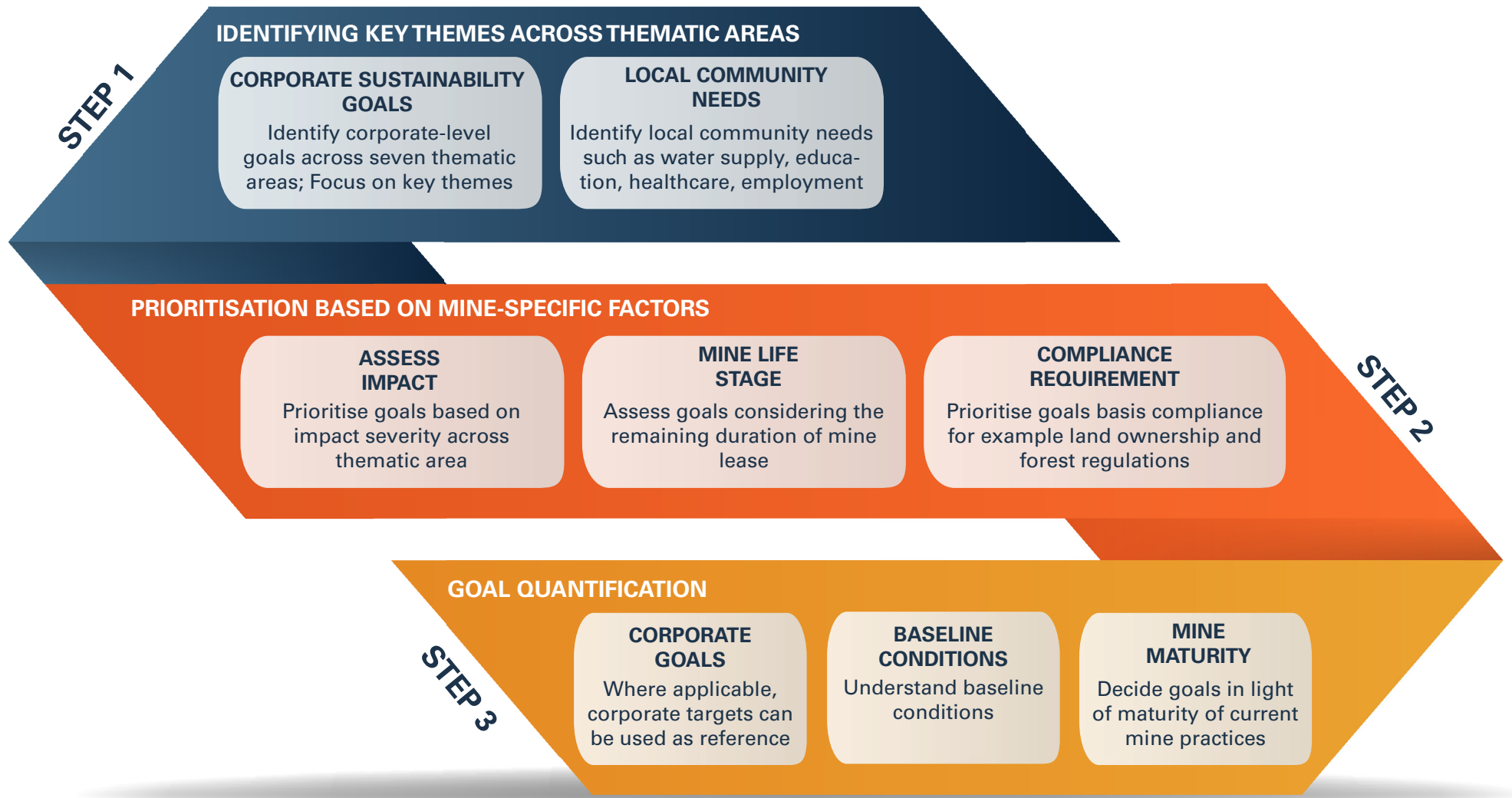
3.5 MINE SUSTAINABILITY GOALS DEVELOPMENT FRAMEWORK

Mines can use the approach outlined in Figure 5 to develop sustainability goals, incorporating the factors detailed above. While a consideration of corporate sustainability goals and local community needs will help identify key themes across different areas, mine-specific factors can be used to prioritise themes. Goal quantification will depend on baseline conditions,

the current maturity of the mine, and the mine plan. Figure 5 presents the steps in developing a mine sustainability goals framework. The factors listed are not exhaustive, and during the mine's goal development the mine team can include others which they feel are critical.

3.5 MINE SUSTAINABILITY GOALS DEVELOPMENT FRAMEWORK (CONT.)

FIGURE 5. STEPS IN DEVELOPING A MINE SUSTAINABILITY GOALS FRAMEWORK

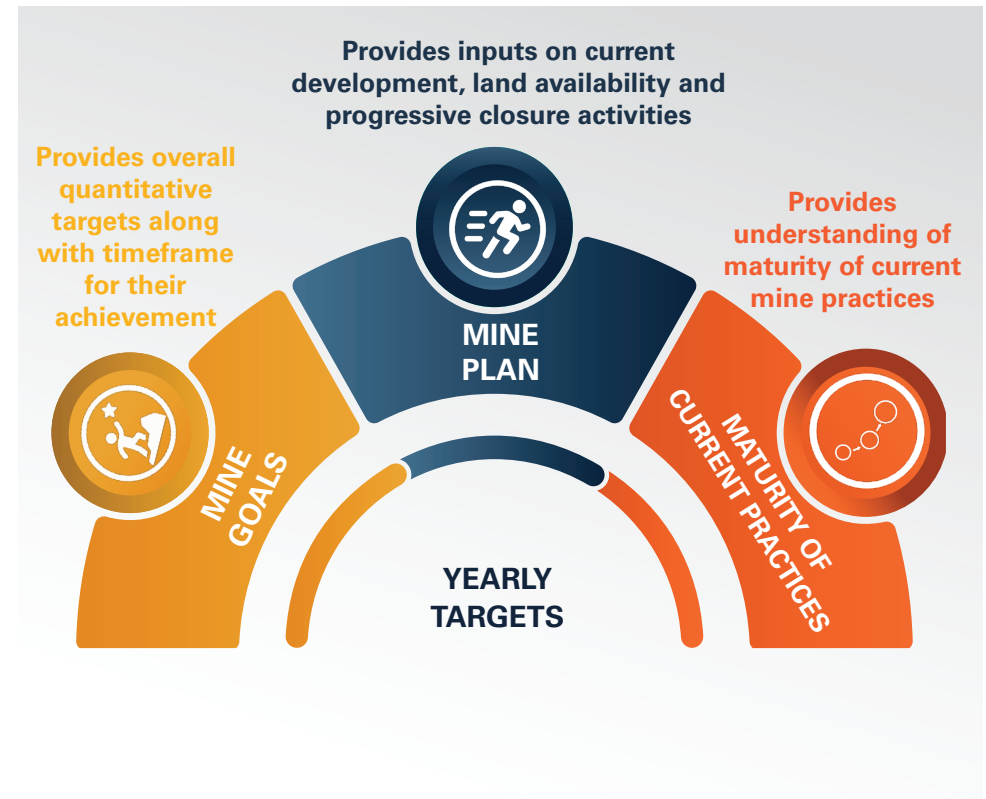


4. TARGET SETTING AND INTERVENTION DEVELOPMENT

4.1 TARGET SETTING

Once sustainability goals for the seven thematic areas have been developed, mines should develop yearly targets for each area. These targets will depend on the overall mine goals, the mine plan, and the maturity of current practices. Mine teams can set yearly targets utilising the key factors listed above. Teams can start with an overall goal in a particular thematic area, which is to be achieved in the course of the mine's life cycle. This can be synchronised with the time remaining on the lease and the maturity of current practices in order to break goals down into yearly targets. The maturity of current practices focuses on understanding the existing skills, expertise, and experience within the team; this is critical to ensuring successful implementation of interventions and achieving targets.

FIGURE 6. TARGET-SETTING PROCESS



4.2 DEVELOPMENT OF INTERVENTIONS

Interventions across different thematic areas can be developed using the frameworks and approaches provided in Part A of the Charter. Table 4 details

the factors that mine teams should consider while developing interventions.

TABLE 4. Framework for Developing Interventions

S.I.NO.	FACTOR	DESCRIPTION
1	Technical feasibility	Interventions should be technically feasible and not too difficult to implement. Greater complexity leads to higher costs and increased probability of failure.
2	Budgetary constraints	Cost is a key consideration for intervention selection. Teams should have a clear understanding of budgetary constraints.
3	Impact	The impact of interventions should be clearly understood in light of the effort and cost required for their implementation.
4	Implementation challenges	The broad challenges associated with implementation of interventions should be clearly mapped out.
5	Experience and knowledge within the team	Teams should check if sufficient experience and know-how regarding a possible solution is available within the team. If not, teams should explore the utilisation of external experts who can provide guidance and training.
6	Availability of implementation partners	For interventions which depend on new techniques or technologies, mine teams should assess the availability of implementation partners.
7	Previous implementation cases	Mine teams should familiarise themselves with similar interventions carried by other mining companies; this can help mine teams to better understand potential challenges and thus be better prepared.

5. DEVELOPMENT OF EXECUTION PLAN

PROCESS

This stage focuses on planning for the execution of different interventions designed for the seven thematic areas. Once yearly targets and interventions have been identified, mine teams should develop detailed execution plans that clearly identify the personnel and the financial and technical support that a project requires. Activity-level plans should be developed to clearly identify the time and budget required by a particular project and the roles and responsibilities of the different team members.

The development of an effective action plan requires that the following activities be carried out:

- 1. Set up an action team:** Building an effective and efficient team is an essential part of action plan development. In order to help leverage collective experience and expedite decision-making, a corporate- and site-level sustainability team should be set up which includes representatives from various cross-functional areas such as corporate planning, human resources, finance, operations, and corporate social responsibility. In case of lack of expertise in a particular area, mine teams should explore onboarding external experts who can significantly improve chances of success and help in building the skill levels of existing teams.
- 2. Defining key performance indicators:** To translate goals and targets into an action plan and to ensure effective implementation, the responsibilities and targets of each stakeholder must be defined. The scope of sustainability is not just limited to the sustainability team; it

encompasses various other departments. Key performance indicators (KPIs) should therefore be set to ensure coordination among departments.

- 3. Allocation of budget:** Allotment of adequate financial resources will facilitate the smooth implementation of activities.
- 4. Training and capacity building:** Training of team members and other relevant stakeholders is required to raise awareness around sustainable mining and deepen their understanding of the seven focus areas.

Initiatives that can be implemented to enhance awareness and capacity building include:

- / **Awareness sessions on sustainable mining during the induction of new employees**
 - / **Internal e-mailers, magazine subscriptions, and newsletters for raising awareness**
 - / **Organisation-wide collection of ideas to improve sustainability performance**
- 5. Developing a project plan:** A focused, area-specific list of activities with a defined timeline must be developed and adequate financial and human resources should be deployed to implement these activities. Project plan development should not be a static activity; it should be regularly updated and monitored in order to identify any risks which may impact the schedule.

6. REVIEW AND REPORTING

6.1 REVIEW

An effective review mechanism ensures continuous monitoring of progress against targets, as well as identification and mitigation of potential risks that may affect implementation. Cascaded reviews can be conducted across multiple levels to ensure the effective implementation of different interventions and provide support to the executing teams. The participants

in, and agenda of, the review will differ depending on the level at which it is being conducted. Table 5 shows a suggested review architecture, which a mine can use as a reference when designing a review mechanism for their specific context.

TABLE 5. Suggested Review Architecture

REVIEW FREQUENCY	REVIEW PARTICIPANTS	OBJECTIVE (AGENDA)
DAILY	Project leaders and team members	<ul style="list-style-type: none"> / Track weekly progress and align targets / Assess plan for the following week / Identify and manage key operational constraints
WEEKLY	Sustainability head and project leaders, with other participants added as per requirements	<ul style="list-style-type: none"> / Align overall progress against targets / Revise actions plans if required / Review additional budgetary or resource requirements
MONTHLY	Mine head, sustainability head, functional head, and project leaders	<ul style="list-style-type: none"> / Assess overall progress on initiative against targets / Review additional budgetary and resource requirements / Gauge need for support on organisational issues impacting progress
QUARTERLY	Business head, mine heads, and sustainability head	<ul style="list-style-type: none"> / Assess overall mine-level performance / Review key strategic issues and challenges
BIANNUALLY	Managing director, business head, mine heads, and sustainability head	<ul style="list-style-type: none"> / Review sustainability performance for mining vertical / Review progress on key initiatives and challenges / Set strategic directions and goals for the remainder of the year

6.1 REVIEW (CONT)

To ensure an effective and successful review, mine teams should focus on the following questions:

- 1. Review of performance: How do achievements compare to goals?**
- 2. Identification of root causes: What are the reasons for the level of achievement?**
- 3. Set targets for subsequent week/month: Based on the level of achievement to date, what targets should be reached by next meeting?**
- 4. Agree on action items: What actions need to be taken and what work needs to be done in order to reach targets?**
- 5. Additional requirements: What support is required to achieve targets?**

6.2 REPORTING

Mines can use the sustainability scorecard for reporting on sustainability performance across different thematic areas and for assessing overall mine performance (Annexure B). Details on how to use the sustainability dashboard have been provided in Annexure 2.

Using the mine maturity index in the sustainability scorecard, mine teams can report performance in different areas as well as overall mine performance.

Mine-level external audits can also be conducted to ensure objective tracking of performance and to enhance improvement of sustainability practices.

ANNEXURES



ANNEXURE 1 / SELF-ASSESSMENT QUESTIONS FOR EACH THEMATIC AREA

Self-assessment questionnaires (SAQs) can be used by mine teams to assess the maturity of current sustainability practices across the seven thematic areas. SAQs have been prepared for all the thematic areas; they follow a Yes/No response scoring pattern, with Yes = 1 and No = 0. Based on

the scores obtained, teams can assess the maturity of practices and identify key gaps across different thematic areas. Table A1 lists the SAQ questions for each thematic area.

TABLE A1. Self-Assessment Questions for each Thematic Area

1. SUSTAINABLE LAND MANAGEMENT

S.I.NO.	QUESTION	RESPONSE (Y/N)
1	Has survey been conducted to identify total land to be displaced, soil characteristics, native vegetation etc. ?	
2	Has the impact of land disturbance on the local environment and communities been clearly identified ?	
3	Has the mine received any regulatory notice related to land rehabilitation ?	
4	Does the mine have a dedicated team for land management ?	
5	Have key performance indicators been defined for land management ?	
6	Have specific goals been defined by the mine for land management in the current year?	
7	Did we achieve the goals defined last year? Is there an internal review mechanism to monitor achievement against these goals ?	
8	Does the mine have a land rehabilitation plan which will generate benefits (income, health, education, etc) for the community?	
9	Does the land rehabilitation plan align with local environmental conditions and needs of the community ?	
10	Were the local stakeholders involved in designing the land management plans?	

2. WATER STEWARDSHIP

S.I.NO.	QUESTION	RESPONSE (Y/N)
1	Has a hydrogeological study been conducted for the mine?	
2	Have the impacts on water resources including diversions been clearly identified?	
3	Has the mine received any regulatory notice related to water management?	
4	Does the mine have a dedicated team for water management?	
5	Have key performance indicators been defined for water management?	
6	Have specific water management goals been defined by the mine for the current year?	
7	Did the mine achieve the goals set last year? Is there an internal review mechanism to monitor achievement against these goals ?	
8	Does the mine have an action plan for optimizing water usage for the current year ?	
9	Does the mine have an plan for improving water quality for this year ?	
10	Were the local stakeholders involved in the design of water management plans	

3. WASTE MANAGEMENT

S.I.NO.	QUESTION	RESPONSE (Y/N)
1	Has there been clear identification of hazardous and non hazardous waste generated by the mine?	
2	Have the risks associated with overburden, waste rock, tailing, sludge etc. been clearly identified?	
3	Has the mine received any regulatory notice related to waste management?	
4	Does the mine have a dedicated team for waste management?	
5	Have key performance indicators been defined for waste management ?	
6	Have specific waste management goals been defined by the mine for the current year?	
7	Did we achieve the goals defined last year ? Is there an internal review mechanism to monitor achievement against these goals ?	
8	Does the mine have an action plan to reduce waste generation for the current year ?	
9	Does the mine have an action plan to improve waste recycling for the current year ?	
10	Were the local stakeholders involved in designing the waste management plans	

4. EMISSIONS REDUCTION

S.I.NO.	QUESTION	RESPONSE (Y/N)
1	Have GHG and non-GHG emissions been identified for different operations?	
2	Has an energy audit been conducted for the mine?	
3	Has the mine received any regulatory notice related to Emissions Reduction?	
4	Does the mine have a dedicated team for Emissions Reduction?	
5	Have key performance indicators been defined for the mine's Emissions Reduction?	
6	Have specific Emissions Reduction goals been defined by the mine for the current year?	
7	Did we achieve the goals defined last year ? Is there an internal review mechanism to monitor achievement against these goals ?	
8	Does the mine have an action plan to reduce GHG emissions for the current year ?	
9	Does the mine have an action plan to reduce sulphur oxides (Sox),nitrous oxides (Nox) and other significant emissions for the current year ?	
10	Were the local stakeholders involved in designing the Emissions Reduction plan?	

5. BIODIVERSITY MANAGEMENT

S.I.NO.	QUESTION	RESPONSE (Y/N)
1	Have details of local flora, animal species etc. been captured?	
2	Has the impact of mining on local biodiversity been clearly identified?	
3	Has the mine received any regulatory notice related to biodiversity management?	
4	Does the mine have a dedicated team for biodiversity management?	
5	Have key performance indicators been defined for biodiversity management in the mine?	
6	Have specific biodiversity management goals been defined by the mine for the current year?	
7	Did the mine achieve the goals defined last year ?	
8	Have action plans been developed to reduce or mitigate damage to native flora for the current year?	
9	Have action plans been developed to restore native biodiversity after mine closure?	
10	Were the local stakeholders involved in designing the biodiversity management plans	

6. HEALTH AND SAFETY

S.I. NO.	QUESTION	RESPONSE (Y/N)
1	Have the different type of health & safety risks from mining operations for mine workers been clearly identified?	
2	Have different type of health & safety risks from mining operations for local communities been clearly identified?	
3	Has there been any major health & safety incident (fatality) during the year ?	
4	Does the mine have a dedicated health & safety policy for contractors as well ?	
5	Does the mine have key performance indicators for managing employee as well as community health & safety ?	
6	Have goals been identified at mine level for health and safety management for the current year ?	
7	Did the mine achieve the goals set last year ?	
8	Have any initiatives been taken for improving health and well-being of mining communities in the current year ?	
9	Have any specific action plans been prepared for the current year to reduce worker health and safety risks?	
10	Were the local stakeholders involved in designing the health & safety management plans?	

7. LOCAL ECONOMIC DEVELOPMENT

S.I.NO.	QUESTION	RESPONSE (Y/N)
1	Has a baseline study been conducted to identify the income levels , skills and occupation of members of local community ?	
2	Has there been a clear identification of the needs of community in terms of infrastructure, health facilities, employment etc.?	
3	Have any community development, upskilling or social infrastructure development programs been implemented in the local community ?	
4	Does the mine have a dedicated team for managing relationship with local communities ?	
5	Have key performance indicators been defined to measure mine's performance in local economic development initiatives ?	
6	Have specific local economic development goals been identified for the mine?	
7	Did the mine achieve the goals defined last year?	
8	Have plans been developed to improve income levels/ employment opportunities for local communities in the current year (including procurement of goods and services from communities, skills training, etc.)?	
9	Have plans been developed to improve the community's social infrastructure (educations, health, etc) for the current year?	
10	Were the local stakeholders involved in designing the local economic development plans?	

ANNEXURE 2 / SUSTAINABILITY SCORECARD

12.2 SUSTAINABILITY SCORECARD AND MATURITY INDEX

The sustainability scorecard focuses on internal reporting. It provides a structured framework for quantifying the sustainability performance of a mine using a defined set of key performance indicators and weightages that are assigned to each focus area. The maturity matrix provides the user with a set of maturity levels which may be assigned to a mine based on its sustainability score.

STEP 1: DEFINE SCORING PARAMETER

Scoring parameters define a quantitative metric for measuring the performance of each focus area at different levels of the implementation plan. Table B1 presents the scorecard used in each of the focus areas.



TABLE B1.

Scorecard of Performance for each Focus Area

	Maximum Total Score
Level 1: Baseline Assessment 1.00	
No baseline assessment is conducted	0.00
Baseline assessment is conducted internally	0.50
Baseline assessment is conducted by an external party	0.75
Baseline assessment is conducted by an external party and published publicly	1.00
Level 2: Goal & Target Setting 1.00	
Goals setting not completed	0.00
Quantitative goals have been set for the focus area	0.50
Goal have been set and have been disclosed in public domain	1.00
Level 3: Action Plan Development 1.00	
Annual work plan is not developed for the assessment year	0.00
Annual work plan is developed for the assessment year	1.00
Level 4: Implementation, Monitoring and Review 1.00	
Less than 20% of the target is achieved	0.00
20% of the target is achieved	0.20
40% of the target is achieved	0.40
60% of the target is achieved	0.60
80% of the target is achieved	0.80
100% of the target is achieved	1.00
Level 5: Reporting, External Audit and Assurance 1.00	
No audit is conducted	0.0
Internal audit is conducted	0.25
External audit is conducted	0.50
Performance reported in public domain (with internal and external audits)	0.75
Performance results are assured by a third party	1.00
Total Maximum Score Possible	5.00

12.2 SUSTAINABILITY SCORECARD AND MATURITY INDEX (CONT.)

STEP 2: DEFINE WEIGHTAGE

Each focus area is assigned a weightage to measure the overall score of a mine. These weightages should be defined by the corporate-level committee and should be based on the type of local risks (social, environmental, and economic), the mineral extracted, and the topography, hydrogeology, and mining methods.

STEP 3: DEVELOP SCORECARD

The overall mine site score can be generated on the basis of the weightage assigned and the score generated for each of the thematic areas.

MATURITY INDEX

The index shown in Table B4 can be used to define a mine's level of maturity on the sustainability path.

TABLE B2. Sustainability Scorecard Showing Weightage of each Focus Area of the Mine's Operations

Focus Areas	Weightage
Sustainable Land Use	[x1]
Water Stewardship	[x2]
Waste Management	[x3]
Emission Reduction	[x4]
Biodiversity Conservation	[x5]
Local Economic Development	[x6]
Health and Safety	[x7]
Total Score	1.00

TABLE B3. Calculation of Total Sustainability Score of a Mine, as Determined by the sum of Weighted Scores

Focus Areas	Weightage (W)	Score (S)	Weighted Score (W*S)
Sustainable Land Use	[x1]	[y1]	[x1 * y1]
Water Stewardship	[x2]	[y2]	[x2 * y2]
Waste Management	[x3]	[y3]	[x3 * y3]
Emission Reduction	[x4]	[y4]	[x4 * y4]
Biodiversity Conservation	[x5]	[y5]	[x5 * y5]
Local Economic Development	[x6]	[y6]	[x6 * y6]
Health and Safety	[x7]	[y7]	[x7 * y7]
Total Score (out of 5)			[sum]

TABLE B4. Maturity Index Showing Level of Maturity of a Mine's Sustainability Path

Maturity Level	Score Range	
	Minimum	Maximum
Stage 1	0	2
Stage 2	2	3.5
Stage 3	3.5	4.5
Stage 4	4.5	5

/ REFERENCE

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ABOUT HINDALCO INDUSTRIES LIMITED

Hindalco Industries Limited [HIL] is the metals flagship company of the Aditya Birla Group. An \$18 billion metals powerhouse, Hindalco is the world's largest aluminium company by revenues, and a major player in copper. It is also one of Asia's largest producers of primary aluminium.



Guided by its purpose of building a greener, stronger, smarter world, Hindalco provides innovative solutions for a sustainable planet. Its wholly-owned subsidiary Novelis Inc. is the world's largest producer of aluminium beverage can stock and the largest recycler of used beverage cans (UBCs). The Company operates several bauxite and coal mines in India for captive consumption in its aluminium business.

Hindalco's copper facility in India comprises a world-class copper smelter, downstream facilities, a fertiliser plant and a captive jetty. The copper smelter is among the world's largest custom smelters at a single location.

Hindalco's global footprint spans 47 manufacturing units across 10 countries.



ABOUT VIKAASA: Founded as India2022, Vikaasa is a business-led coalition creating new a growth model for India in line with the United Nation's Sustainable Development Goals. The member companies of Vikaasa will incubate and pilot new growth models creating impact at scale.

Core team members for this project: Debashis Ghosh, Susant Kumar Guru, Anoma Basu from Hindalco and Nakul Gupta, Vaibhav Doshi, Nishant Shekhar, Ashish Verma from Xynteo.

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SUSTAINABLE MINING CHARTER

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