Environmental Impact Assessment: A force for good while saving time and money
Mining can be a force for good, if it is well managed.

Discoveries can unlock wealth, and the mining-derived revenue can generate shared value for the community at large. It can transform economies and present nations, and even continents, with a different trajectory for their future.

On the other hand, the negative effects of mining can be felt far into the future if it is not well managed.

Mining is about the long game. However, what’s the short-term top of mind thinking in the sector?
A Changing Economic Landscape

The new ‘normal’ is an era of depressed commodity prices, asset impairment charges, fixing the balance sheet and cost optimization. In parallel, stakeholder expectations remain high.

How are you adapting to the new ‘normal’ in mining? How do you demonstrate to senior management/Board that proactive management of Non-Technical Risks – environment, health, safety, social – can bring value by saving time and money in the long-term?
30% of Projects are Delivered on Schedule

Mining project delays (2008 – 2012)

- Delayed: 46%
- No delay reported, project in progress: 24%
- Delivered on schedule: 30%

Causes of delay*

- Social opposition: 42%
- Environmental concerns: 35%
- Permitting issues: 23%
- Land Access: 6%
- Health & Safety: 6%
- Extreme weather: 3%
- Commercial issues: 35%
- Revenue sharing: 6%
- Technical challenges: 3%
- No details available: 6%

*Does not total 100% due to multiple causes of delays

Sample size = 67 projects across 5 mining multinationals. Projects >$500m CAPEX reported on between 2008-2012

Source: ERM Analysis

The world’s leading sustainability consultancy
When we look across the lifecycle of mining from a sustainability lens, what stands between your conceptual project definition and project approval is the Environmental Impact Assessment process.
Non-Technical Risk (NTR) in Project Design

What is EIA?
Environmental Impact Assessment

Why is Environmental Impact Assessment (EIA) important?

Have you considered that as you advance engineering design, the EIA regulatory process (as well as the social licence to operate) becomes your critical path and the longest duration of the project schedule?

Delays in the EIA, translate directly into impacts on the project economics.
Case Study: Major Mining Company, Europe

100+ inputs from engineering, economics, environmental and social elements

The 'Optioneering' Approach: A structured approach to include 100+ combinations to arrive at preferred and alternate options.

The outcome resulted in significant changes in project direction between initial and final concept. Benefits included reduced permitting risk and increased project economics.
Embedding Non-Technical Risk (NTR) in Trade-Off Analysis

- Structured Evaluations
- Sustainable Development Considerations
- Minimize NTR Project Risk
- Undertaken at the Exploration or Concept Stage
- NTR Trade-Off Analysis
An Approach that is Flexible and Scalable

- Exploration
  - Concept Scoping Study
- Pre-Feasibility Study
- Feasibility Study
- Construction
- Operation
- Closure

Concept/Scoping Study:
- Multiple concepts/Business Cases available
- Strategic concept/Business case appraisal

Pre-Feasibility Study:
- Single concept, multiple sites available
- Alternative sites risk assessment

Features:
- Single concept and sites chosen, layouts fluid
- Site optimization and layout selection
Analyzing Potential Project Consequences

Case study
Junior mining company, Canadian project location

Issue
When taking a landscape approach, where should one site a linear facility i.e. access road or transmission line to avoid areas of highest risk (while also factoring in constructability, economics, Aboriginal values)?

Approach
Use a risk assessment approach to develop a landscape constraint map model.

A spatial view of areas shows high - low consequence severity-related ecological values.
Analyzing Risk Probabilities

**Approach continued...**
Overlay with the spatial view of the project infrastructure likely interacting with the environment.

In this simplified example, yellow represents the linear access road corridor (but applicable to any linear type facility).

Red area indicates the ore body, future mine site, which is fixed in place.

The model can analyze infinite combinations for siting the location of the access road to avoid sensitive areas on the landscape.
Probability x Consequence = Risk Assessment Rating
Final Non-Technical Risk Rating to Support Decisions

Findings
The output is a scientifically defensible way to show how the project and related infrastructure has been thoughtfully designed to take technical, economic, environmental and social aspects into consideration.

The spatial output effectively communicates to internal and external stakeholders (i.e. senior management, Board, regulators, communities).

By avoiding red areas and minimizing risk, this saves time and money for a ‘consentable’ project.
Benefits of Embedding Non-Technical Risks in Design

- Faster, cost-effective permitting process
- NTR Integration Benefits
- Reduce the potential for ‘non-technical’ delays
- Avoid costly ‘retrofitted’ design measures
- Better manage internal & external stakeholder concerns
The Takeaway Messages

Aspirational Premise

Even in this new ‘normal’ of mining, managing Non-Technical Risks is a business imperative, not just an environmental consideration.

Technical Premise

Time and cost – these are real examples of embedding Non-Technical Risk considerations in project planning to reduce risk to delays and save costs.
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