umicore
materials for a better life

# Understanding & Addressing Deforestation & Biodiversity Impacts in Global Value Chains

## Why it matters & how we can take action

# What is deforestation?

## Deforestation is the large-scale removal of trees and forests, often to clear land for agriculture, mining, or development, which can lead to habitat destruction and loss of biodiversity.

**Forests are home to 80% of Earth's land animals and plants.** Deforestation can lead to the permanent loss of ecosystems that are crucial for sustaining life, as forests provide habitat for countless species, regulate the climate, and support local communities. When forests are cleared without proper planning and analysis—considering zones, habitats, migration paths, and local species—it disrupts ecosystems, contributes to climate change, and endangers wildlife as well as the people who depend on these resources. **Forests also hold deep cultural significance** for local communities, often linked to ancestral traditions and livelihoods.

# What is biodiversity?

## Biodiversity is the variety of life in a given habitat or area and includes animals, plants, fungi & microorganisms and their interactions.

Biodiversity is linked to essential ecosystem services that support both natural systems and human activity, including:

- Soil formation and maintaining soil fertility (nutrient cycling)
- Production of organic matter from CO2 through photosynthesis
- Provision of materials like food, fuel, fibers, and building resources
- Regulation of water flows and maintenance of water quality
- Carbon capture and air purification
- Climate and weather regulation
- Waste decomposition and detoxification
- Pollination of plants, including crops
- Control of pests and diseases
- Preservation of genetic diversity

# Deforestation & Biodiversity

## Why do they matter when we talk about battery value chains?

Deforestation and biodiversity impacts are a serious issue in battery value chains potentially resulting in loss of species & exacerbating the effects of climate change.

Raw materials intended for green technology applications are increasingly associated with major environmental damage often in key biodiversity areas.

Increased awareness and collaboration among all industry actors are essential to combat this issue and protect vulnerable ecosystems.

Mining is a high-impact industry that provides essential materials for our societies. It is crucial, however, to minimize environmental impact by carefully managing operations, avoiding the most vulnerable areas, and allowing ecosystems sufficient time to recover.

84% of global mining-related deforestation (MRD) in the past 20 years occurred in just 10 countries*. Indonesia alone accounted for 25% of global MRD, followed by Brazil, Russia, and Canada. MRD is accelerating, with significantly larger areas being cleared in recent years compared to the early 2000s.

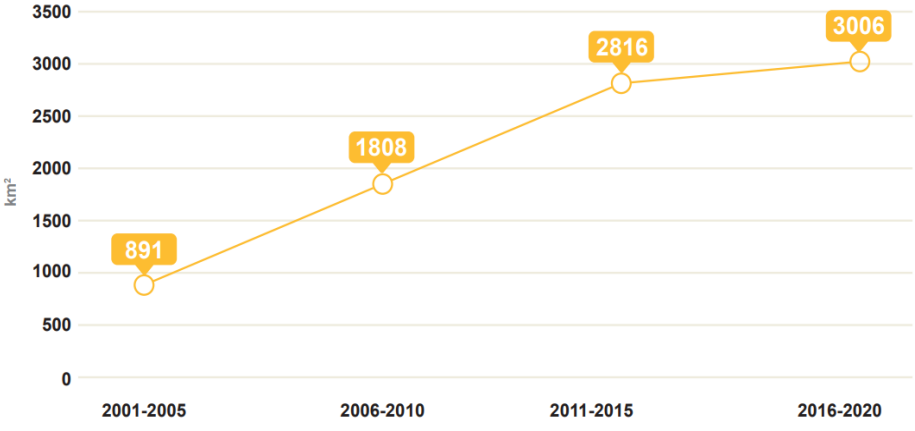



**Figure 1: Direct MRD in tropical rainforests from 2001 to 2020, by 5-year period**

* WWF-Studie-Extracted-Forests.pdf

This guidance aims to support Umicore's business partners in understanding and addressing deforestation and biodiversity risks.

# What are the impacts of mining & processing?

## Construction

The construction of infrastructure such as roads, rail lines, and pipelines can have a significant impacts:

- **Fragmentation** of habitats interrupt natural linkages between populations of plants and animals and make the smaller areas less resilient to change
- **Disruption** of surface water regimes, wetlands and groundwater systems
- **Changes** to stream and river flows may affect adjacent habitats or riverine ecology
- **Access roads** can lead to major adverse changes through the introduction of invasive species and the provision of access for new settlements, loggers, hunters which might cause additional impacts
- **Increasing the edge effect** and consequently reducing the carrying capacity of the ecosystem

Often there is intense pressure to complete construction in a short period of time, which means that environmental assessments may be cut short.

For more details, please refer to the ICMM Good Practice Guidance for Mining and Biodiversity

## Operations

Mining and processing sites also can have significant impacts:

- Impacts associated with **water and sanitation infrastructure**
- **Physical barriers** to migratory species
- **Land clearing** for pit development and expansion to extract ore
- **Overburden removal and disposal of waste** rock can occupy large areas of land and create additional impacts on biodiversity through **contaminated runoff** e.g. through erosion or high rainfall
- **Altering natural water regimes** by mine dewatering or diversion of surface water sources
- **Removal of surface or groundwater** for minerals processing
- **Noise, vibration & light pollution** e.g. from blasting & excavation may affect wildlife, especially during sensitive periods such as nesting - disturbing normal reproduction cycles
- The set-up of processing facilities, storage areas, ore stockpiles and office areas may result in **additional land clearing** and loss of biodiversity
- On-site storage and transport of **hazardous materials** may lead to accidental release of processing chemicals
- **Tailings from processing may contaminate soil, groundwater and water bodies** through seepage, run-off or catastrophic accidents, significantly harming surrounding wildlife
- **Dust pollution** deteriorates air quality and leads to sedimentation over vegetation and marine ecosystems leading to degradation and decline in species diversity

# What do we expect from our business partners?

At Umicore we expect our business partners to have systems in place that will mitigate the environmental impacts of their operations.

We expect our business partners to make a serious effort to:

- Take stock of ecosystems & biodiversity areas on their concession/ around their site of operations
- Understand the interfaces between their activities and biodiversity
- Assess the likelihood of their activities having negative impacts on biodiversity
- Mitigate potential impacts on biodiversity by implementing a biodiversity action plan (see next page)
- Explore the potential to contribute to biodiversity conservation in cooperation with relevant stakeholders

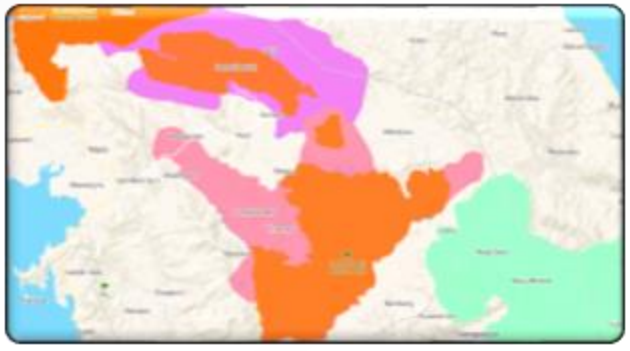
Mitigation hierarchy:

1) Prioritizing the **avoidance** of impacts on biodiversity values, ecosystem services and the conservation values in protected areas
2) **Minimizing** impacts to the extent possible
3) **Restoring** biodiversity, ecosystem services and ecological processes and habitats; and
4) Where avoidance, minimization, and restoration are not sufficient, exploring further measures to address remaining impacts, such as offsetting, as a last resort.

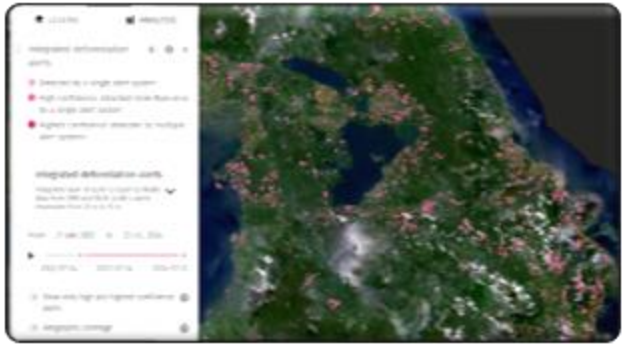
# Examples of taking stock of ecosystems & biodiversity

Concession areas often overlap with key biodiversity areas like in this example from Indonesia Better protecting people and forests in the race to electrify - Mighty Earth

Overview of different protection zones/ key biodiversity areas in Central Sulawesi on ibat-alliance.org



Deforestation alerts in Central Sulawesi on globalforestwatch.org



# Best practice: mitigating deforestation and biodiversity impacts of mining and processing

## 1. Baseline study & impact assessment
(before start of operations)

- Conduct thorough environmental and social impact assessment (ESIA) that includes the analysis of species/habitat richness as well as key biodiversity indicators for that area
- The study should include in-depth consultations with a wide range of stakeholders including local communities
- Based on the results, no-go-zones need to be identified for areas of especially high biodiversity, carbon stock or ecosystem service value*
- The full range of impacts of the project need to be assessed based on objective and scientific criteria, including
  - ➢ directly caused impacts (primary)
  - ➢ indirectly caused impacts e.g. giving access to illegal loggers through newly built roads (secondary) which include impacts to which the operations have contributed (cumulative) and induced impacts e.g. growing the workforce which leads to influx of new workers & more pollution

The High Carbon Stock (HCS) Approach*

- ❖ HCS refers to high concentrations of carbon contained in the vegetation and soils of HCS forests
- ❖ Conserving these forests plays a critical role in mitigating climate change as they absorb and store large volumes of carbon dioxide from the atmosphere
- ❖ Based on HCS analyses informed decisions can be made about concession & mine planning, avoiding HCS forest areas

*There are several methodologies to help ensure a high-quality analysis, for example the High Conservation Value approach and the High Carbon Stock Approach

## 2. Commitments & action plans

- Publicly share commitments e.g., to maintain natural ecosystems, to limit discharges below the critical level, to be compliant with applicable legislation, to enhance wildlife corridors, to restore disturbed areas when activity is completed, to strive for no overall net loss of biodiversity compared to baseline study (crucial to monitor for at least 10 years following the cessation of operations)
- Develop a biodiversity action plan in consultation with stakeholders with clear measures and goals including for example controlling access to key biodiversity areas, clear demarcation of protected areas, research and development programs, revegetation trials
- Detailed and holistic monitoring to evaluate changes in biodiversity that also includes non-mining related threats to biodiversity
- Work together with all stakeholders, e.g. communities, conservation actors, other companies operating in the area

**Crucial aspects for implementation**

- ➢ Build long-term, ongoing relationships with stakeholders
- ➢ Recognize and respect cultural differences, local customs and values
- ➢ Consider involving of neutral third party
- ➢ Foster trust by fulfilling commitments and actively listening to stakeholders
- ➢ Provide or support training for community relations staff

Sulawesi crested macaque (critically endangered)

## 3. Rehabilitation plan

The rehabilitation plan is a crucial part of managing impacts. Its goal is to restore landscapes damaged by mining and processing activities and return the land to its pre-mining condition (or better) considering the perspectives of all stakeholders.

Important elements of a rehabilitation plan include:

- Clear internal protocol for handling/ storing topsoil and overburden materials that were removed for mining/construction → ensure that the soil can be reused on rehabilitation area to provide favourable conditions for plant establishment
- Soil amelioration techniques to promote conditions favourable for growth (e.g., application of lime or gypsum)
- Techniques for conserving/ re-using vegetation incl. mulch, brush matting for erosion protection and introduction of seed and log piles for fauna habitat
- Landscaping procedures e.g. for water management structures
- Nursery and vegetation establishment approach; starting with native pioneer species that readily colonize disturbed areas before introducing more demanding plant species
- Fertilizer application and follow-up planting and maintenance programs
- Mapping of all activities across all areas to be rehabilitated

For more details, please refer to the ICMM Good Practice Guidance for Mining and Biodiversity

## What are the benefits of good deforestation and biodiversity management?

Beyond **supporting the critical global goals of preserving forests, biodiversity, and mitigating climate change**, mining & processing companies can gain several advantages by implementing a strong biodiversity management system:

- Facilitate access to land
- Strengthen reputation and secure a license to operate
- Meet investor sustainability requirements, improving access to capital
- Boost investor confidence and loyalty
- Shorten and simplify permitting processes through better relationships with regulatory authorities
- Improve community relations, reducing risks of disruptions or protests
- Build strong, supportive partnerships with NGOs
- Improve employee motivation
- Minimize risks and liabilities

# Guidance for deforestation & biodiversity due diligence

**Deforestation and biodiversity risks are an integral part of conducting environmental due diligence.** Alongside monitoring news, reports, and utilizing tools like deforestation alerts, direct engagement with partners is highly valuable and strongly recommended. Note that maturity levels may vary across suppliers and regions. Where possible, encourage a collaborative approach to improving environmental practices through information sharing, capacity building, policy development, or other initiatives.

## Examples of questions to ask as part of environmental due diligence

- Has a biodiversity baseline study/ ESIA been conducted and how did the results affect project planning?
- What kind of commitments has your company made regarding deforestation/ biodiversity?
- Are you continuously monitoring the environmental impacts of your operations and how this affects biodiversity?
- Are surrounding communities consulted on the biodiversity assessments and measures?
- Do you ask your (relevant) business partners any of these questions?
- Do your rehabilitation plans include targets on biodiversity?

Mining and mineral processing are high-impact operations, and some level of environmental impact is often unavoidable. However, with a thoughtful approach that incorporates various stakeholder perspectives, these impacts can be significantly reduced—such as by avoiding the most vulnerable forest areas. Depending on the unique local context, a combination of best practices outlined in this guide can form part of a mitigation plan when impacts are identified through the due diligence process.

Various ESG standards for mining & processing assess the performance of companies regarding biodiversity:

| Standard | Coverage of biodiversity indicators |
|---|---|
| IRMA | Far-reaching biodiversity indicators - excellent |
| Copper Mark | Based on RMI Risk Readiness Assessment - very good |
| RMI ESG standard | |
| ICMM Mining Principles | Basic |
| RMI Cobalt Refiner Standard, RMI All Minerals Standard, Joint Due Diligence Standard (all limited to OECD Annex II risks) | No coverage of any environmental indicators |

## Additional Resources

### For further reference, we recommend the following tools and resources:

1. https://www.ibat-alliance.org/ → map that provides an overview over protected areas in a given region
2. Interactive World Forest Map & Tree Cover Change Data | GFW (globalforestwatch.org) → interactive map showing deforestation, concessions, land use, protected areas etc.
3. Home - Mighty Earth Non-profit monitoring deforestation and biodiversity in hotspots
4. Mongabay Environmental journalism
5. ICMM Good Practice guidance for Mining and Biodiversity - in-depth guidance
6. Home - IRMA - The Initiative for Responsible Mining Assurance - Biodiversity chapter of the newest IRMA standard

For inquiries and additional information please contact

Umicore
Naamloze vennootschap – Société anonyme
Broekstraat 31 Rue du Marais
1000 Brussels Belgium
Tel.: +32 (0)2 227 71 11
Fax: +32 (0)2 227 79 00
www.umicore.com/contact