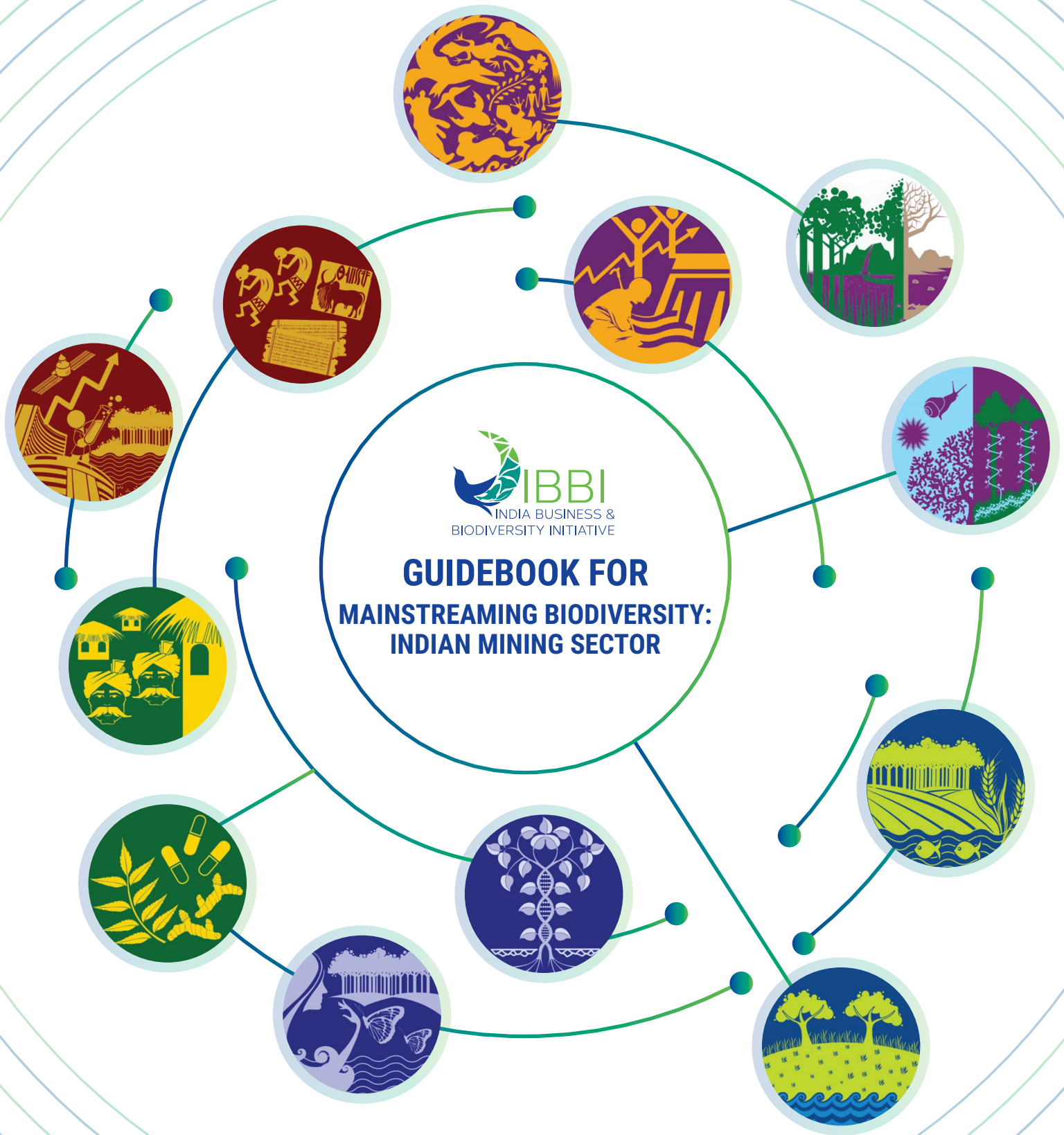




Confederation of Indian Industry



CII-ITC Centre of Excellence
for Sustainable Development



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Indian Mining Sector

Mining in India dates to the Indus valley civilization and underwent modernisation since independence. India is rich in on-shore and off-shore minerals, accounting for 95 minerals, including 4 fuel minerals, 10 metallic minerals, 23 non-metallic minerals 3 atomic and 55 minor minerals (including building and other materials).

India's ranking in 2015 as compared to world production was 2nd in barytes, and talc/steatite/pyrophyllite, 3rd in chromite, coal & lignite and zinc (slab), 4th in kyanite/ andalusite/ sillimanite, 5th in iron ore, and Steel (Crude), 6th in bauxite ore, 7th in manganese ore and 8th in aluminum¹.

The mining sector in India is a significant contributor to the economy. GDP From Mining in India averaged 752.71 INR Billion from 2011 until 2017, reaching an all-time high of 1008.85 INR Billion in the second quarter of 2017².

Biodiversity and Ecosystem Services

Biodiversity includes plants, animals and other organisms and is defined in the Convention on Biological Diversity (CBD) as “the variability among organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; it includes diversity within species, between species and of ecosystems”³.

Ecosystem services are defined as “the benefits provided by ecosystems to humans”. Ecosystem services are the goods and services that biodiversity provides. They include soil formation, the provision of food and fiber, air quality and climate regulation, the regulation of water supply and quality and the cultural and aesthetic value of certain plants and species.

Humankind and businesses are heavily dependent as well as impact biodiversity and ecosystem services. To sustain humankind and business the conservation of biodiversity and sustainable management of ecosystem is crucial.

Indian Biodiversity and Mining Sector

India is one of the megadiverse nations in the world. It is called so because the country's gamut's of life forms are wonderfully different wherever you might be. From extreme cold to extreme heat, coastal areas to rain forests, tropical jungles to mangrove belts, the extraordinary weather and climatic conditions have created homes and habitats for numerous species of plants and animals.

India has **2.4%** of the World land mass supporting **8%** of World Biodiversity

4 out of **34** Biodiversity Hotspots are in India (Himalaya, Indo- Burma, Western Ghats and Sundalands)

Total forest cover of the country as per 2017 studies is **7,08,273** sq km which is **21.54%** of the total geographical area of the country⁴

India represents as much as **11.4%** of world flora out of which **28%** of plants are endemic



771 protected areas in the country covering **1.62** lakh sq. km. area i.e., **4.93%** of the geographical area

India provides habitat to **96,000** species of animals

¹Source: Annual Report 2017-18, Ministry of Mines, Government of India

²<https://tradingeconomics.com/india/gdp-from-mining>

³<https://www.cbd.int/convention/articles/default.shtml?a=cbd-02>

⁴India State of Forest report 2017

Biodiversity and mineral resources in India are highly uneven and, in most cases, both are in the same area. Mineral reserves are spread across India along the states of Madhya Pradesh, Chhattisgarh, Jharkhand, Orissa, Maharashtra, Andhra Pradesh, Tamil Nadu and Assam. All these states have forest cover ranging from 16 % to 80% for total geographical area of the state and these forests are supporting a range of floral and faunal diversity.

Top Producer of Mineral	Forest Cover (sq km)	% Geographical Area
Odisha	51,345	32.98
Jharkhand	23,553	79.96
Andhra Pradesh	28,147	17.27
Karnataka	37,550	19.58
Andhra Pradesh	28,147	17.27
Assam	28,105	35.83
Madhya Pradesh	77,414	25.11
Tamil Nadu	26,281	20.21
Kerala	20,321	52.30
Maharashtra	50,682	16.47

Biodiversity Linkages with Mining Sector

The impacts and dependencies of mining activity on biodiversity and ecosystem services varies throughout the life cycle of mining and is also based on the methodology of ore extraction i.e. open cast mine or underground. The impact of mining sector also depends on the life of mine operation and impacts can occur over a period of time along with the geography of the area.

Mining activities are divided into two major areas - mining and ore beneficiation. Mining is further divided in to 3 categories i.e. exploration, operation and closure. Each phase of mining activity has various levels of impacts and dependencies on biodiversity and ecosystem services.



The Global Biodiversity Outlook by CBD in 2010 identifies five major drivers of biodiversity loss and due to mining activities triggers one or more drivers impacting biodiversity. Mining operations are in the biodiversity reach areas linked to all drivers of biodiversity loss.

DRIVERS OF BIODIVERSITY LOSS	MINING SECTOR	MAJOR FACTORS
<ul style="list-style-type: none"> ▶ Habitat loss and degradation ▶ Climate change ▶ Excessive nutrient load and other forms of pollution ▶ Over-exploitation and unsustainable use ▶ Invasive alien species 	<ul style="list-style-type: none"> ▶ Mine operation and Ore concentration and washing ▶ Mine operation ▶ Mine operation and Ore concentration and washing ▶ Mine operation and Ore concentration and washing ▶ Mine exploration & operation 	<ul style="list-style-type: none"> ▶ Clearing of native vegetation ▶ Loss of forest cover ▶ Over loading of soil and nutrient in nearby water bodies ▶ Clearing of land and over extraction of water ▶ Invasion of invasive species in forest areas due to opening of roads

Dependency of Mining Sector on Biodiversity and Ecosystem Services

Dependencies of mining sector on biodiversity and ecosystem services vary from phase to phase and methodology of mining.

During the exploration phase the mining sector is dependent on some ecosystem services like concentration of metals in the soil, water for workforces and wood for temporary infrastructure in the forest areas. Dependencies of exploration phase are short term.

In the mining sector, dependencies on ecosystem services during the operation phase are manifold like:

- ▶ Provisional services like food, water and fuel.
- ▶ Water- domestic use of water, irrigation for plantations along the safety zone, reclamation area and road used for transportation in mine areas.
- ▶ Plantations for dust and pollution control- Various plant species have high tolerance to dust and other pollutants.
- ▶ Land use for construction of infrastructure and other operations.

Dependencies of operation phase on these various ecosystem services are long term and have interlinkages with biodiversity like water is mostly sourced from the river or underground, food from agricultural areas and wood from nearby forest areas.

Box 1: Creation of Safety Zone on Boundaries of Mining Lease Area Under Forest (Conservation) Act, 1980⁵

- ▶ User agency shall ensure demarcation of boundary of safety zone (7.5-meter strip all along the outer boundary of the mining lease area), and its protection by erecting adequate number of 4 feet high RCC boundary pillars inscribed with DGPS coordinates and deploying adequate number of watchers under the supervision of the State Forest Department.
- ▶ Safety zone shall be maintained as green belt around the mining lease and to ensure dense canopy cover in the area, regeneration shall be taken in this area by the user agency at the project cost under the supervision of the State Forest Department.

Closing phase of mining is mostly dependent on the ability of plant species to grow on the restored areas which may have a high concentration of metals, soil quality and water availability during the first 5 to 6 years of plantation. The plantation in the closed mine areas supports control of loss of soil due to rains and substantially helps in reducing silt load movement to natural water bodies and soil degradation.

Mining of coal, non-metallic and metallic mineral deposits produces raw mineral which needs to be processed further by a specified method depending on the mineral and waste product (s) associated with it. The ore beneficiation methods and its associated processes (gravity separation / floatation / magnetic or electrostatic separation) chosen concentrates the mineral to the desired level. The ore beneficiation phase dependencies vary from ore to ore for water requirement and process involved in ore concentration. Aquatic plants and algae are used for the removal of heavy metals from waste water after the ore beneficiation.

Box 2: Phytoremediation of Industrial Mines Wastewater Using Water Hyacinth at Tata Steel, Sukinda Chromite Mines (SCM), Orissa⁶

The wastewater at Sukinda Chromite Mines (SCM) area of Odisha (India) showed high levels of toxic hexavalent chromium (Cr VI). Wastewater from chromium-contaminated mines exhibit potential threats for biotic community in the vicinity. The aim of the present investigation is to develop a suitable phytoremediation technology for the effective removal of toxic hexavalent chromium from mines' wastewater. A water hyacinth species *Eichhornia crassipes* was chosen to remediate the problem of Cr (VI) pollution from wastewater. It has been observed that this plant was able to remove 99.5% Cr (VI) of the processed water of SCM in 15 days. This aquatic plant not only removed hexavalent Cr but is also capable of reducing Total Dissolved Solids (TDS), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and other elements of water also. Large-scale experiment was also performed using 100 L of water from SCM and the same removal efficiency was achieved.

⁵<http://envfor.nic.in/sites/default/files/4-7-2014-4%20fencing%20of%20safety%20zone.pdf>

⁶<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5152555/>



Impacts of Mining Sector on Biodiversity and Ecosystem Services

Impacts of mining sector can vary across different stages based on the nature of the activity, sensitivity of the environment and cumulative activities in the areas.

Land use change and habitat destruction are major impacts of the mining sector in India as most of the mineral resources in India are in areas having good forest cover and biodiversity. Habitat destruction is the major cause for endangered species like Elephant, Tiger, Great Indian Bustard, etc.

Box 3: Habitat Destruction of Elephant in Odisha⁷

Elephants in Odisha constitute 74% of the total elephant numbers of the eastern region of India. This population is distributed within 30% of the state's geographical area. The elephant population in Odisha are facing serious conservation challenges due to habitat destruction due to expansion and impacts of mining areas, roads and railway lines construction for transportation of ore, industrial development and increasing grazing pressure on elephant habitats.

Open mining in forest areas leads to deforestation which has a significant contribution to climate change. Climate change is recognized as a very serious threat to biodiversity and ecosystem services at a global as well as national scale.

Mining sector also has a direct impact on biodiversity and ecosystem services during the operation period such as water use, generation of waste, contamination of water bodies and land mass. All these leads to degradation of aquatic and terrestrial habitat, loss of floral and faunal diversity and population declines of impacted species, among other impacts.

Ore beneficiation impacts native biodiversity because of solid waste and liquid waste tailings that result from different processes during the operations. The potential adverse effects of mineral beneficiation encompass water pollution of surface streams, groundwater contamination, air pollution, noise pollution, change in drainage pattern etc.

Indian forest areas are also known for the indigenous people and diversion of forest and loss of forest cover also limit their access to traditional worship areas, loss of traditional knowledge, food, fuel and traditional medicines.

⁷<https://www.asiannature.org/sites/default/files/The%20Asian%20Elephant%20in%20Orissa%20.pdf>

	MINING		ORE BENEFICIATION
Exploration	Operations	Closure	Ore Concentration and Washing
<ul style="list-style-type: none"> ▶ Land use changes and disturbance ▶ Disturbance of migratory land animals and sensitive fauna ▶ Fragmentation of habitat ▶ Introduction of invasive species ▶ Habitat destruction and loss of species ▶ Surface water pollution ▶ Loss of aquatic flora and fauna 	<ul style="list-style-type: none"> ▶ Infrastructure development possess threat to migratory animal species ▶ Introduction of alien and invasive species of weeds and pests ▶ Land clearing and land occupancy due to overburden ▶ Sediment-laden surface runoff causes erosion and sedimentation Runoff causes loss of soil and soil degradation ▶ Tailing affects groundwater and surface streams through seeping of contaminants and downstream impact ▶ Acid mine drainage has the potential for long-term devastating impacts on rivers, streams and aquatic life ▶ Mine waste impacts fish, animal and plant Air pollution due to acidic particles ▶ Noise, dust and exhaust emissions due to operations and transport 	<ul style="list-style-type: none"> ▶ Heavily degraded land ▶ Disturbed and fragmented ecosystem ▶ Presence of toxins in soil, retention of erosion ▶ Continuous acid leachate and acid rocks runoffs ▶ Exotic and non-native species proliferation ▶ Affected groundwater catchment ▶ Impact on landscape due to presence of exposed pit walls, pit lakes and abandoned mine plant ▶ Risk to wildlife and livestock grazing on closure site ▶ Risk of runoff of mineral waste deposits into lakes and other water bodies 	<ul style="list-style-type: none"> ▶ Land use change ▶ Extraction water from fresh water source ▶ Leeching of heavy metal ▶ Increase load of silt to water bodies ▶ Degradation of land and water quality due to mixing of metals from waste water

Mining National Biodiversity Targets (NBTs) and Mining Sector

UN Convention on Biological Diversity (CBD) mandates each Party to prepare a National Biodiversity Strategy and Action Plan (NBSAP) or an equivalent instrument, and to ensure that the strategy is mainstreamed into relevant sectoral or cross sectoral plans, programmes and policies.





CBD developed the Strategic Plan for Biodiversity 2011-2020 – A ten-year framework for action by all countries and stakeholders to save biodiversity and enhance its benefits for people. The Strategic Plan is comprised of a shared vision, a mission, strategic goals and 20 ambitious yet achievable targets, collectively known as the Aichi Targets.

Box 4: Mainstreaming of Biodiversity in the Sectors of Energy and Mining, Infrastructure, Manufacturing and Processing, and Health


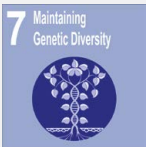

“Mainstreaming biodiversity into the sectors of energy and mining, infrastructure, manufacturing and processing, and health, is essential for halting the loss of biodiversity and for the achievement of the Strategic Plan for Biodiversity 2011-2020 and the goals and objectives of different multilateral agreements and international processes, including the 2030 Agenda for Sustainable Development.”

- Recommendation adopted by the CBD’s Subsidiary Body on Scientific, Technical and Technological Advice (CBD/SBSTTA/REC/XXI/4, 14 December 2017)⁸

India has developed 12 National Biodiversity Targets (NBTs) along with indicators for monitoring, using Aichi targets as a framework, and brought out a National Biodiversity Action Plan Addendum 2014 to NBAP 2008. Mainstreaming of biodiversity in mining sector has linkages with 7 out of 12 NBTs. Below are the NBTs having linkages with the mining sector.

NBTs		Action for mainstreaming of NBTs in Forestry sector
 <p>1 Biodiversity Awareness</p>	<p>By 2020, a significant proportion of the country's population, especially the youth, is aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.</p>	<p>Scanning of biodiversity reach areas during the exploration stage and avoidance of areas having high biodiversity values and creating awareness within employees and stakeholders for its sustainable management.</p>
 <p>3 Safeguarding Natural Habitats</p>	<p>Strategies for reducing rate of degradation, fragmentation and loss of all natural habitats are finalized and actions put in place by 2020 for environmental amelioration and human well-being.</p>	<p>Alternative analysis of mining lease areas, methodology of mining and adaptation of nature based approach to minimize impacts on biodiversity.</p>
 <p>4 Managing Invasive Species</p>	<p>By 2020, invasive alien species and pathways are identified and strategies to manage them developed so that populations of prioritized invasive alien species are managed</p>	<p>Monitoring of mine lease area, restored areas for invasive species and timely removal along with afforestation of native plant species.</p>
 <p>5 Sustainable Landscapes</p>	<p>By 2020, measures are adopted for sustainable management of agriculture, forestry and fisheries.</p>	<p>Management of mine lease area to minimize its impacts to nearby forest, natural water bodies and agriculture lands.</p>

⁸<https://www.cbd.int/doc/recommendations/sbstta-21/sbstta-21-rec-04-en.pdf>

NBTs		Action for mainstreaming of NBTs in Forestry sector
	Ecologically representative areas under terrestrial and inland water, and also coastal and marine zones, especially those of particular importance for species, biodiversity and ecosystem services, are conserved effectively and equitably, based on protected area designation and management and other area based conservation measures and are integrated into the wider landscapes and seascapes, covering over 20% of the geographic area of the country, by 2020.	Avoidance of opening mine lease area in protected areas and their Eco sensitive zones.
	By 2020, genetic diversity of cultivated plants, farm livestock, and their wild relatives, including other socioeconomically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	Conservation of native species and development of action plan for species having high conservation importance.
	By 2020, ecosystem services, especially those relating to water, human health, livelihoods and well-being, are enumerated and measures to safeguard them are identified, taking into account the needs of women and local communities, particularly the poor and vulnerable sections.	Avoidance, minimization or mitigation of mining impacts on the natural water bodies, traditional worship areas and areas having high conservation importance.

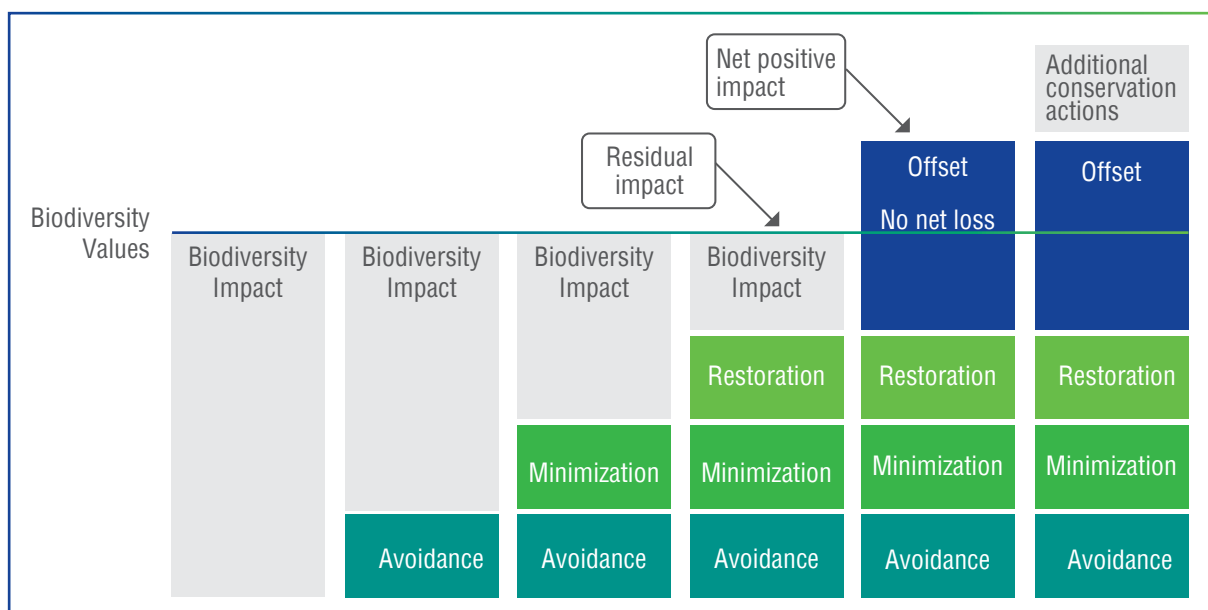
Mainstreaming Biodiversity in Mining Sector

Mainstreaming of biodiversity in mining sector includes effective planning for each stage of mining. Adaptation of no net loss or net positive impact mitigation hierarchy is an effective way for promoting the avoidance of negative impacts of the mining sector on the biodiversity.

Box 5: The Mitigation Hierarchy for Managing Biodiversity Risk⁹

No Net Loss (NNL) or Net Positive Impact (NPI) mitigation hierarchy are biodiversity goals for development projects. These goals call for negative biodiversity impacts caused by the project to be either balanced (for NNL) or outweighed (for NPI, also referred to as net gain) by biodiversity gains through compensation measures implemented in the project region. Biodiversity gains are evaluated against a baseline (e.g. a reference point or trajectory without the project occurring, or prior to the project occurring) of the relevant biodiversity values being impacted by the project.

⁹No Net Loss and Net Positive Impact Approaches for Biodiversity, IUCN, 2015



Impact mitigation is an ongoing iterative process throughout the mining project life cycle. Opportunities for impact avoidance are far greater at the exploration phase of development where it can influence siting and design. This approach necessitates quantification of losses and gains to biodiversity and extends to indirect and induced impacts where these can be reliably predicted to occur. In addition to exploration, managing biodiversity during operation, closure and ore beneficiation phase will create an opportunity for mainstreaming biodiversity in investment decisions.

Integration of Biodiversity Through Various Stages of Mining for Sustainable Development:

Mine Exploration

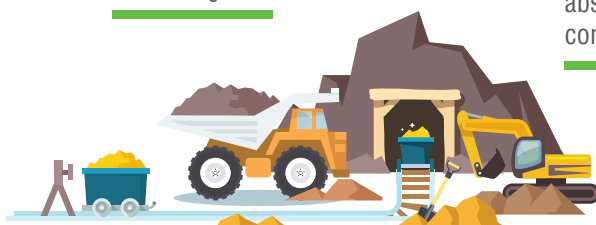
During exploration, impacts on biodiversity are limited, but become more significant as exploration progresses. The initial choice of exploration area can have a profound long-term influence on the impacts on biodiversity.

Identifying biodiversity constraints under exploration under the regulatory requirements

Determining the compatibility of exploration with designed land use

Undertaking a mapping exercise to identify the occurrence or absence of protected areas, and consider implications for mining

Ensure tracks follow natural contours to prevent erosion, are kept as small as practical, and are rehabilitated as early as possible



Involvement of local and indigenous community during the planning stage of mining.

Early stages of exploration involve sub-surface sampling to ensure that barriers to accesses are provided to protect wildlife and backfill promptly

Box 6: EIA Notification 2006¹⁰

The Environmental Clearance under the Environmental Impact Assessment (EIA) Notification, 2006 is a process which comprises of four stages viz. Stage (1) Screening (Only for Category 'B' projects and activities); Stage (2) Scoping; Stage (3) Public Consultation; and Stage (4) Appraisal.

As per "General Condition" under the EIA notification, 2006, "Any project or activity specified in Category 'B' is treated as Category 'A', if located in whole or in part within 5 km from the boundary of: (i) Protected Areas notified under the Wild Life (Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries".

Mining and ore beneficiation activities are categorized under the EIA notification and need to take environmental clearance from Expert Appraisal Committee at national level or State Level Expert Appraisal Committee at state level for new mine, expansion and ore beneficiation.

Mine Operations

- Identifying possible interfaces between mining and biodiversity, both direct and indirect

- Ensure that basic measures are undertaken to ensure that natural habitats are avoided to the extent possible through the design and location of construction facilities, storage areas etc.

- Ensure the construction materials have been obtained from approved source

- Ensure that more limited impacts from construction related infrastructure especially water and sanitation are effectively managed

- Ensure that opportunities for protection and enhancement are explored with the engagement of key stakeholders, and assessment made of external threats to biodiversity

- Stakeholder engagement and public reporting on biodiversity issues

Box 7: Coal India Limited (CIL) Water Conservation¹¹

Recharging of groundwater is taken up within mine premises as well as in nearby villages through rainwater harvesting, digging of ponds/development of lagoon, de-silting of existing ponds/tanks. There are 15,04,47 rain water harvesting projects established at north, east and west coalfields which serve as source of water to the community.

Meeting NBTs:



¹⁰<http://www.moef.gov.in/sites/default/files/final%20Booklet.pdf>

¹¹Coal India Limited Sustainability Report 2016-17:

https://www.coalindia.in/DesktopModules/DocumentList/documents/Sustainability_Report_of_CIL_for_2016-17_of_Coal_India_Limited_20092017.pdf

Box 8: Hindustan Zinc Limited (Rehabilitation)

- ▶ Overburden stabilization and rehabilitation- Hindustan Zinc limited in Rajasthan developed the innovative method of using Geo-Textile mats, or Geo soil savers.
- ▶ The innovative method of stabilizing overburden will help in soil conservation and reclamation. This helps in controlling soil erosion and sedimentation.

Meeting NBTs:



Mine Closure

Fulfilling the regulatory requirements and effective consultation with stakeholders

Complimentary opportunities for biodiversity improvement to be identified, where company can leverage the commitment and resources of other biodiversity stakeholders to achieve border biodiversity benefits

Procedures for handling top-soil and soil amelioration be included

Techniques for conserving and reusing vegetation like mulch, brush matting for erosion protection and introduction of seed and log piles for fauna habitat

Layering over-burden soil with materials favorable to plant growth

Re-establishment of native ecosystems through rehabilitation, have post-closure alternative land use & compatible measures to enhance biodiversity

Landscaping procedures for construction of erosion control & water management structures

Adequately consider management requirements to sustain conservation values in the long term, responsibilities for implementation; and funding arrangements



Box 9: Tata Steel - Noamundi Iron Mine¹² (Restoration)

- ▶ Plantation at Mining areas: Tata steel has taken measures to mitigate its mining impact through plantation at its various sites¹³. Reclamation and Rehabilitation of Mined out areas: Tata steel is recognised, encouraged and supported for their efforts in conservation of natural resources and pollution prevention, measurable contributions in the form of processes and practices of environment protection and implementation of best environmental practices.
- ▶ Bird Niche Nesting Project -At Noamundi iron mine, biodiversity assessment identified 18 species of hole nesting birds and hence nesting space was provided. Niche-Specific plants that support hole or cavity nesting birds were planted. Effective initiatives and measures taken to conserve native species. This helps in mitigating biodiversity loss and improving natural habitat and ecosystem.

Meeting NBTs:



Ore beneficiation

Selection of nature friendly methodology for the ore beneficiation

Identification of alternatives for water-based ore beneficiation such as use of city or industrial waste water to reduce intake of fresh water from natural water bodies

Selection of tailing location with low biodiversity and no linkages with the natural drainage

Recycling of water of tailing for the processes

Regular monitoring of water quality and control of water flow from tailing pond to natural water bodies

Development of long-term disaster management plan due to damages of tailing pond.

Use of nature based phyto remediation and water purification methodology



¹²Biodiversity Initiative at Tata steel: <http://tatasteelnoa-run.com/onewebmedia/Biodiversity%20Leaflet.pdf>

¹³<http://ecocitizen.tatasteel.com/initiatives/pdf/fast-facts.pdf>

Box 10: Hindustan Zinc Limited¹⁴ (Avoidance)

- ▶ HZL developed Sewage Treatment Plant with a capacity of 20 million liters/day to treat sewage of Udaipur city, leading to approx. 30% reduction in sewage inflow to the lakes and the treated water is recycle for ore beneficiation.

Due to the reduced volume of wastewater discharge the water quality of Ahar river, Pichola and Udai Sagar lake has improved.

Meeting NBTs:



¹⁴A guidebook for biodiversity management: sectoral outlook and roadmap for implementation-IBBI publication







**CII-ITC Centre of Excellence
for Sustainable Development**

CII-ITC Centre of Excellence for Sustainable Development is a not-for-profit, industry-led institution that helps business become sustainable organisations. It is on a mission to catalyse innovative ideas and solutions, in India, and globally, to enable business, and its stakeholders, in sustainable value creation. It's knowledge, action and recognition activities enable companies to be future ready, improve footprints profiles, and advocate policymakers and legislators to improve standards of sustainable business through domestic and global policy interventions.

CESD leverages its role of all-inclusive ecosystem player, partnering industry, government, and civil society. It has been a pioneer of environment management systems, biodiversity mapping, sustainability reporting, integrated reporting, and social & natural capital valuation in India, thus upgrading business in India to sustainable competitiveness.

With three locations in India, CESD operates across the country and has also been active in parts of South and South East Asia, Middle East, and Africa. It has held institutional partnerships and memberships of the United Nations Global Compact, Global Reporting Initiative, International Integrated Reporting Council, Carbon Disclosure Project, development agencies of Canada, the USA, the UK, and Germany.

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