TATA STEEL

#WeAlsoMakeTomorrow

TATA

Taskforce on Nature-related Financial Disclosures (TNFD) Report 2025

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Message
From CEO & MD

I am excited to share an important development in our ongoing commitment to sustainability and environmental stewardship. In line with our dedication to responsible operations, I am pleased to announce that Tata Steel is actively working towards the implementation of the TNFD (Taskforce on Nature-related Financial Disclosures) framework across its operations.

As we confront the pressing challenges of climate change, biodiversity loss, and environmental degradation, it becomes crucial for us to recognise that these issues are intertwined with our business practices. At Tata Steel, we are acutely aware of the impact our operations have on the environment and the communities where we operate. It is our responsibility to ensure that every decision we make is informed by the principles of sustainability, addressing not only economic factors but also the well-being of our ecosystems and local communities.

By adopting the TNFD framework, Tata Steel aims to lead by example within the steel industry. This initiative will enhance our ability to integrate nature-related considerations into our governance, strategic planning, and risk management processes. We are proud to take this significant step forward, reaffirming our role as stewards of the environment.

Our inaugural TNFD Report will serve as both a reflection of our achievements and a roadmap for our future initiatives. It is a testament to our unwavering commitment to sustainability and responsible business practices. We are determined to embrace nature, empower our communities, and contribute positively to the world around us.

T V Narendran

Message
From ED & CFO

The Taskforce on Nature-related Financial Disclosures (TNFD) was established in 2021 as a global market led initiative in response to the growing need to factor nature into financial and business decisions. As mentioned in the TNFD's framework document, "The science is clear. Nature is deteriorating globally and biodiversity is declining faster than at any time in human history." Globally, we are approaching a critical point of testing the resilience of nature loss and hence the urgency to halt and pull back any further erosion of nature.

The TNFD has developed a nature-related financial disclosure framework that is meant to help companies identify and act on evolving nature-related risks and opportunities, which has become the core of the nature-related strategic risk.

Tata Steel is one of the most geographically diverse steel manufacturers globally with very long and complex supply chains across continents. Therefore we are exposed to numerous nature touch points across continents. Tata Steel also has significant mining operations in iron ore and coal in India which forms one of the core parts of the business model. For decades, Tata Steel has been working on the nature conservation and preservation of the fauna and flora including a deep engagement with the indigenous communities in and around our operations. As we progress further in the TNFD adoption journey, we are working on a robust transition plan that will help adjust our business model and value chains in an appropriate manner and help address the nature related dependencies, impacts, risks and opportunities. As a hard-to-abate sector on decarbonisation, Tata Steel works on an integrated transition plan covering climate, nature and social considerations with the Tata Steel Foundation working deeply with the communities to improve the quality of life of the communities.

We are actively engaging with our partners, suppliers, and local communities to drive meaningful change and will continue to explore new solutions that reduce our ecological footprint.

As a member of the Taskforce since inception, it is personally gratifying that we have formally embarked on the adoption journey and I am pleased to present Tata Steel's inaugural TNFD Report, an important milestone in our journey towards becoming more conscious of the risks of nature loss and also demonstrates our commitment to continue to be a responsible organisation.

The enclosed report currently covers our India business and outlines our efforts to assess, manage, and mitigate the risks associated with our operations and their effects on biodiversity and ecosystems.

Koushik Chatterjee

About the Company

Tata Steel, founded in 1907, is a leading global steel manufacturer with operations in over 70 countries, including India, the UK, the Netherlands, Canada and Thailand. We are committed to innovation, operational excellence, and sustainable development across our business locations. Our ESG commitments align with global sustainability goals, encompassing responsible resource management, decarbonisation, and community well-being.

Green cover at Tata Steel Kalinganagar

Tata Steel, as a responsible corporate entity, has long recognised the intertwined challenges of climate change, biodiversity loss and resource depletion. As a founding member of the Task Force on Climate-related Financial Disclosures (TCFD) and Taskforce on Nature-related Financial Disclosures (TNFD), the Company has been instrumental in shaping both the standards and has developed a set of disclosure recommendations and guidance that encourage and enable business and finance to assess, report and act on their nature-related dependencies, impacts, risks and opportunities.

Carbon Capture Unit at Tata Steel Jamshedpur

Koushik Chatterjee, Executive Director & Chief Financial Officer, Tata Steel Limited, is part of the Taskforce (TNFD) which consists of 40 senior executives from financial institutions, corporates and market service providers across the globe. He also chaired the TNFD India Consultation Group.

Sir Dorabji Tata Park

JN Tata Park, West Bokaro Division

About The Report

Purpose and Objective

In alignment with Project Aalingana of Tata Group, this report reinforces Tata Steel's commitment to integrating nature-related considerations into its business strategy, risk management and financial decision-making for long-term value creation and business resilience. As our first TNFD report, it provides a structured assessment of how our operations interact with nature and the steps we take to build resilience in a nature-conscious economy.
We strive to apply the Taskforce's recommendations towards addressing nature-related impacts, dependencies, risks and opportunities across four pillars: Governance, Strategy, Risk & Impact Management, and Metrics & Targets, enabling us to align our corporate reporting with global sustainability targets.

Reporting framework and alignment

This report has been prepared in alignment with TNFD framework's LEAP (Locate, Evaluate, Assess, and Prepare) approach for assessing nature-related issues. It inherently references Global Reporting Initiative (GRI), ensuring that our disclosures are consistent with recognised best practices in sustainability reporting. In addition, the report is aligned with Business Responsibility & Sustainability Reporting (BRSR) issued by the Securities and Exchange Board of India (SEBI), the Greenhouse Gas Protocol, International Financial Reporting Standards, S2 (IFRS) (erstwhile TCFD), Global Biodiversity Framework (GBF) and the United Nations Sustainable Development Goals (UN SDGs).

Methodology and Approach

We have employed a comprehensive and data-driven approach, incorporating both sectoral and site-specific assessments. This includes utilising tools such as ArcGIS (a Geographic Information System software), ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure), World Wildlife Fund (WWF) Biodiversity Risk Filter, Ecosystem Services Review, and Aqueduct Water Risk Atlas to analyse the materiality of nature-related considerations of our operations, value chain and strategy. The LEAP methodology ensures a thorough and transparent implementation of the 14 recommendations of TNFD.

Data Transparency and Assurance

We are committed to ensuring data accuracy, reliability and transparency in our reporting. Wherever applicable, we have incorporated third-party verified data and disclosed any assumptions or limitations. Future reports will continue to refine data accuracy and integrate evolving best practices.

Scope and Coverage

This report covers direct operations, including raw material sites, integrated steel manufacturing sites, downstream units, and other sites of the standalone entity – Tata Steel Limited. It also covers NINL, a wholly-owned subsidiary of Tata Steel Limited, and critical suppliers in select categories.

Reporting Period and Frequency

This report covers Tata Steel's nature-related disclosures for FY 2023-24 and FY 2024-25. As part of our sustainability journey, we will endeavour to regularly update our TNFD disclosures, ensuring alignment with evolving risks, regulatory requirements, and stakeholder expectations.

Time horizons considered

Short Term	Long Term
0-5 Years	>5 Years

This report is Tata Steel's inaugural TNFD disclosure. While TNFD recommendations are currently voluntary, we understand and embrace the importance of proactive adoption of the framework. We are committed to enhancing our processes for ongoing improvement and believe that this report serves as a significant step in our journey towards a more sustainable and nature-positive future.

Forward-Looking Statements

Certain statements in this report may constitute forward-looking statements. These include all statements other than statements of historical facts, including those regarding the Company's strategy, management plans, commitments and objectives for future operations. Forward-looking statements are necessarily dependent on assumptions, data or methods that may be incorrect or imprecise and that may be incapable of being realised, and as such, are not intended to be a guarantee of future results, but constitute our current expectations based on reasonable assumptions. Actual results could differ materially from those projected in any forward-looking statements due to various events, risks, uncertainties and other factors. We neither assume any obligation nor intend to update or revise any forward-looking statements, whether because of new information, future events or otherwise, except as required by law.

Requirements and Recommendations

The TNFD includes a set of six general requirements for nature-related disclosures and a set of 14 recommended disclosures.

TNFD Requirements

The six general requirements are as follows:

1. The application of materiality
2. The scope of disclosures
3. The location of nature-related issues
4. Integration with other sustainability-related disclosures
5. The time horizons considered
6. The engagement of indigenous peoples, local communities and affected stakeholders in the identification and assessment of the organisation's nature-related issues.

TNFD Recommendations

The 14 TNFD recommendations are structured into four pillars similar to TCFD.

Governance | Strategy | Risk and Impact Management | Metrics and Targets

The six general requirements have been applied across the four pillars of the TNFD recommended disclosures to ensure consistency in the information disclosed.

Governance

Governance

In a rapidly evolving global landscape, having a robust governance structure in place to manage nature-related issues is paramount for an organisation like Tata Steel, where we are constantly seeking to align our strategies with sustainable practices.

POLICIES

The Tata Code of Conduct (TCoC) lays down the principles and standards that govern the actions of Tata Steel and its employees. Several relevant policies addressing nature-related issues have been formulated and implemented towards the practical application of TCoC.

These policies guide us in making, developing and deploying our long-term sustainability strategy.

- Biodiversity Policy
- Environment Policy
- Climate Change Policy
- Sustainability Policy
- Energy Policy
- Responsible Supply Chain Policy
- Business and Human Rights Policy
- Social Accountability Policy

MATERIALITY ASSESSMENT

The materiality assessment is a comprehensive exercise conducted by an independent third-party at regular intervals, with various stakeholders, including senior management, investors, employees, contracted workers, local communities, suppliers, customers, media representatives, regulatory bodies, industry bodies, and non-governmental organisations (NGOs).

Through the two-pronged assessment (Impact and Financial Materiality) done in FY 2022-23, Tata Steel identified 15 high-priority material issues across environmental, social, and governance domains, with six specifically related to nature. These include Greenhouse Gas Emissions & Climate Change Management, Circular Economy/Recycling of By-products, Water Consumption and Effluent Discharge, Energy Efficiency/Energy Management, Air Pollution/Air Quality Management, and Biodiversity.

To read more, please refer to Tata Steel's Integrated Report for FY 2024-25

GOVERNANCE MECHANISMS

Tata Steel has embraced 'Leadership in Sustainability' as one of its four Strategic Objectives. The Board has formed specific committees, including executive directors, to take a comprehensive approach to evaluating climate and nature-related risks and impacts. Overseeing this effort, Tata Steel's CEO and Managing Director chairs the Apex Committees. Tata Steel has established Centres of Excellence (CoEs), chaired by the senior management, which include cross-functional team members from various departments within the organisation for implementation.

Board-level Committees

- **Safety, Health and Environment Committee**
  Reviews the Safety, Health and Environment (SHE) performance including nature-related key performance indicators quarterly.
- **Corporate Social Responsibility & Sustainability Committee**
  Reviews the long-term sustainability strategy including nature-related and CSR activities of the organisation.
- **Risk Management Committee**
  Reviews appropriate early warning indicators and mitigation strategies for the identified risks.

Management Committees

- **Apex Risk Review Committee**
- **Apex Business Responsibility and Sustainability Report (BRSR) Committee**
- **Apex Business & Human Rights Committee**

These committees are responsible for setting strategic objectives, monitoring performance, identifying risks, and proposing mitigation plans and new initiatives.

Department-level Planning and Implementation

A. Centres of Excellence

Two CoEs have been established to pursue development of biodiversity management and climate response strategies and suggest policy level interventions:

- Centre of Excellence for Biodiversity Management
- Centre of Excellence for GHG Emission Reduction and Mitigation

Each CoE is split into a steering committee and a working group. The steering committee is chaired by Tata Steel's senior leadership team and the working group is a cross functional team consisting of subject matter experts and site level managers who work on implementing nature-related strategy.

B. Total Operational Performance (TOP) in Technology

The programme has been institutionalised to work closely with the business units to identify and prioritise critical projects. A Programme Management Group (PMG) monitors and facilitates implementation of these critical projects in a timely manner.

The programme currently has 3 units – Sustainability, Iron Making and Construction – running simultaneously in a wave and each wave runs for 3 months. On completion of each wave, the ideas are reviewed and approved by the 10-member steering committee, chaired by CEO & MD. The approved ideas are tracked for implementation by PMG.

The 'Sustainability' unit comprises three areas – Decarbonisation, Valourisation, and Water.

STAKEHOLDER ENGAGEMENT

Human Rights and Environmental Commitments

Tata Steel recognises upholding of human rights as an integral aspect of doing business. The Company is dedicated to safeguarding human rights and adheres to 14 Human Rights Principles and 6 rightsholders including the local community. Rights of Indigenous Peoples, Land Rights and Resettlement, Right to Clean Air and Water are a few fundamental human rights principles available to all rightsholders, including indigenous peoples.

Tata Steel's human rights governance structure includes an Apex Business & Human Rights Committee, which oversees human rights commitments, and the Working Committee on Business & Human Rights ensures compliance with global human rights principles.

Tata Steel has institutionalised Human Rights Due Diligence (HRDD) audits as part of its business strategy. In FY 2023-24, Tata Steel conducted a third-party Human Rights due diligence of the value chain to identify vulnerable areas, potential human rights issues, and their remediation along with global benchmarking for best practices. The due diligence protocol is based on the United Nations Guiding Principles on Business and Human Rights (UNGPs), Organisation for Economic Co-operation and Development (OECD) guidelines, International Finance Corporation's Performance Standards (IFC PS), SA8000:2014, International Labour Organisation (ILO) framework, Tata Group Business and Human Rights Guidelines, and relevant national laws.

Tata Steel ensures compliance with regulatory requirement and environmental laws, including (but not limited to) The Environment (Protection) Act, 1986; The Water (Prevention and Control of Pollution) Act, 1974; The Air (Prevention and Control of Pollution) Act, 1981; The Mines and Minerals (Regulation and Development) Act, 1957; Wildlife Protection Amendment Act 2022; Biological Diversity Act, 2002; The Forest (Conservation) Act,1980; Compensatory Afforestation Fund Act, 2016; Environmental Impact Assessment Notification, 2006; The Mines and Minerals (Regulation and Development) Act of 1957; The Mineral Concession Rules, 1960; The Mineral Conservation and Development Rules, 1988; Ash Content Notification, 1997; Disposal of Fly Ash Notification, 1999; Public Hearing Notification, 1997; Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006; and The National Green Tribunal Act, 2010. The Company also follows the ISO 14001:2015 standard across all steel manufacturing sites.

To learn more about Tata Steel's Grievance Mechanisms and Human Rights Monitoring, please refer to Tata Steel's Business Responsibility and Sustainability Report FY2024-25 (part of Tata Steel's Integrated Report).

Tata Steel's human rights governance structure includes an Apex Business & Human Rights Committee, which oversees human rights commitments, and the Working Committee on Business & Human Rights ensures compliance with global human rights principles.

Navigating Nature-related Risks Through Community Engagement

Beyond the human rights engagement, Tata Steel engages with local community and other stakeholders through community programmes, grievance redressal forums, and participatory dialogues, ensuring a continuous and evolving stakeholder engagement process. Engagement with the indigenous peoples, local communities, affected and other stakeholders are conducted through culturally appropriate methods, ensuring full disclosure of purpose, scope, and potential implications of engagement activities.

The Company carries out multiple development activities which have been designed to address the socio-development and nature-related issues. These activities are majorly implemented as CSR activities by Tata Steel Foundation, a wholly owned subsidiary of Tata Steel Limited.

The identified indigenous peoples, local communities, affected and other stakeholders are engaged through public hearings, consultations and focus group discussions to hear about and discuss their issues.

Support to local farmers

Stakeholder engagement is a priority for Tata Steel as the business influences water ecosystems, natural habitat of communities in the proximate business locations.

Strengthening agriculture livelihood

Strategy

Strategy

With business and sustainability becoming increasingly inter-related, it is pertinent for companies to develop a comprehensive understanding of how nature-related impacts, dependencies, risks, and opportunities influence our business.

Guided by its corporate vision of being the global steel industry benchmark for Value Creation and Corporate Citizenship, one of Tata Steel's four Strategic Objectives is to achieve "Leadership in Sustainability". It states the goals related to GHG emissions, water and waste. We have also defined biodiversity-specific goals in alignment with Tata Group's Project Aalingana targets for achieving environmental sustainability.

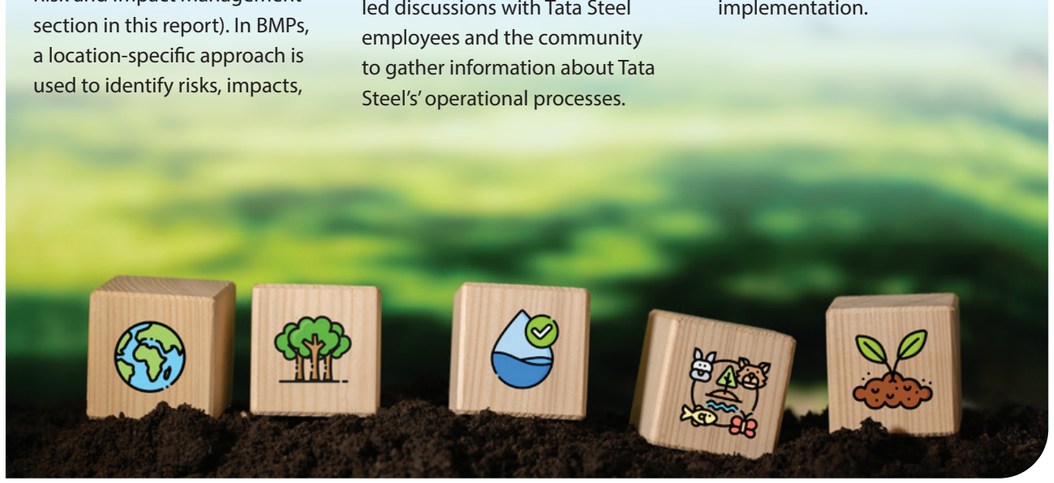
Cross-functional working groups and committees consisting of personnel from strategy, operations, raw material division, supply chain, technology, environment and sustainability keep engaging throughout the year to develop, deploy, implement and review strategies and actions in place to address the material issues of GHG emissions, water, waste, air and biodiversity.

Biodiversity Management

Biodiversity Management Plans (BMPs) are one of the levers of Tata Steel's Biodiversity Strategy, providing a structured and strategic approach to ecological conservation and sustainable management at a site. These are designed based on the mitigation hierarchy and AR3T framework (please refer to the Risk and Impact Management section in this report). In BMPs, a location-specific approach is used to identify risks, impacts, and actions to be taken for redressal and mitigation.

The action plan is developed after a baseline assessment of the site and buffer areas to determine the exposure to critical biodiversity. We conduct biodiversity and ground truthing studies, secondary research and stakeholder interactions to determine the risks emanating from the Company's operations. This third-party review employs standard tools and questionnaire-led discussions with Tata Steel employees and the community to gather information about Tata Steel's' operational processes. This helps identify the degree of dependencies and potential impacts on ecosystem services. The BMPs thus prepared are integrated with the requirements of progressive mine closure plans, environment clearance conditions, and global standards on biodiversity conservation and mine restoration.

The steering committee of the CoE for Biodiversity Management reviews the progress on BMP implementation.



FOLLOWING THE LEAP APPROACH

Tata Steel has embraced the TNFD's LEAP (Locate, Evaluate, Assess and Prepare) approach for developing a comprehensive understanding of nature-related dynamics.

- **L**ocate your interface with nature
- **E**valuate your dependencies and impacts on nature
- **A**ssess your nature-related risks and opportunities
- **P**repare to respond to, and report on, material nature-related issues, aligned with the TNFD's recommended disclosures

	LEAP Indicators	Implementation at Tata Steel
LOCATE	L1. Span of the business model and value chain	Direct operations including steelmaking, upstream and downstream operations in Tata Steel Limited and its subsidiary NINL. Critical suppliers from select categories.
	L2. Dependency and impact screening	The ENCORE tool is used to assess various sectors of Tata Steel operations and WWF Risk Filter tool for industry screening.
	L3. Interface with nature	Biomes and Ecoregions have been mapped for all sites using the RESOLVE Ecoregions and Biomes.
	L4. Interface with sensitive locations	We don't have any sites in close proximity to critical biodiversity and have made detailed disclosure using Aqueduct's Water Risk Atlas for overall water risk and water stress.
EVALUATE	E1. Identification of environmental assets and ecosystem services	Ecosystem Services (ES) Review has been conducted for each operational site to prioritise ecosystem services.
	E2. Identification of dependencies and impacts (Business Sectors)	The ENCORE tool and Biodiversity Risk Filter have been deployed for evaluating corporate and sectoral impacts and dependencies.
	E3. Dependency and Impact analysis (size and scale)	The size and scale of impacts and dependencies have been reported using the Ecosystem Services (ES) Review tool. The priorities have been identified.
	E4. Impact Materiality Assessment	Tata Steel has considered the impacts on the Company's operations, employees, local communities and other stakeholders as material impact. ES Review is used to identify material impact.
ASSESS	A1. Risk and Opportunity identification	ES Review has been used to identify the risk and opportunity for the Company. For screening of risks at all operational sites and certain categories of critical suppliers, the WWF risk filter has been used.
	A2. Adjustment of existing risk mitigation and risk and opportunity management	Tata Steel has a defined strategy with 6 levers for management of risk and opportunity.
	A3. Risk and opportunity measurement and prioritisation	Ecosystem Services (ES) Review tool has been used to prioritise ecosystem services and identify risk and opportunities.
	A4. Risk and opportunity materiality assessment	We have considered all medium and high impacts and dependencies for prioritisation of ecosystem services which lead to identification of risks and opportunities.
PREPARE	P1. Strategy and resource allocation	The analysis of the study is a key input to business decisions and the progress is reviewed by the Centre of Excellence for Biodiversity Management.
	P2. Target setting and performance management	Tata Steel has set itself time-bound sustainability targets (please refer to the section Metrics & Targets in this report). These also include biodiversity goal.
	P3. Reporting	The disclosures in this report are in accordance with the 14 TNFD recommendations.
	P4. Presentation	Our nature-related disclosures are available at forums like Tata Steel's Corporate Website, Integrated Report, Business Responsibility and Sustainability Report and TNFD Report

BIOMES AND ECOREGIONS FOR SITES

Tata Steel's extensive direct operations in India encompass 47 sites (including NINL) classified into 8 different ISIC (International Standard Industrial Classification of All Economic Activities) sectors as per their operations. These sites are spanning across 3 biomes and 12 ecoregions.

The sectors include Manufacture of basic iron and steel, Mining of iron ores, Mining of non-ferrous metal ores, Mining of hard coal, Manufacture of other fabricated metal products and metalworking service activities, Manufacture of general-purpose machinery, Manufacture of coke oven products and Electric power generation, transmission and distribution.

Desert and Xeric Shrubland

Tropical and Subtropical Dry Broadleaf Forest

Tropical and Subtropical Moist Broadleaf Forest

Biomes and Ecoregions

Tata Steel is committed to the conservation, enhancement, and restoration of biodiversity across its operational footprint. To inform our biodiversity management strategies, we have mapped the biome and ecoregion of each of our operational sites. This mapping leverages the RESOLVE Ecoregions and Biomes, a recommended and curated resource from Environmental Systems Research Institute, Inc. (Esri), and a featured layer within ArcGIS.

Biomes are large geographic areas characterised by distinct climate conditions and biodiversity. Ecoregions (ecosystems of regional extent), define distinct biogeographic assemblages and ecological habitats within biomes. They consist of distinct assemblages of biodiversity. Understanding the biomes and ecoregions is important for conservation planning as they delineate the natural boundaries necessary for maintaining ecological processes.

Site Name	Biomes	Ecoregions
Manufacture of basic iron and steel		
Athagarh		
Balasore		
Bamnipal		
CRC West		
CRM Bara		
CRM Sahibabad		
Gopalpur		
Hosur		
Jajpur		
Joda		
Khopoli		
Ludhiana		
Metaliks		
NINL		
Sponge Iron Joda		
Tata Steel Gamharia		
Tata Steel Jamshedpur		
Tata Steel Kalinganagar		
Tata Steel Meramandali		
Tinplate		
Tubes Jamshedpur		
Tubes Sahibabad		
Wires Jamshedpur		
Wires Tarapur		
Mining of iron ores		
Gandhalpada		
Joda East		
Kalmang		
Katamati		
Khondbond		
Koira		
Noamundi		
Vijaya II		
Mining of non-ferrous metal ores		
Bamebari		
Joda West		
Kamarda		
Saruabil		
Sukinda		
Tiringpahar		
Mining of hard coal		
Jharia		
West Bokaro		
Manufacture of other fabricated metal products; metalworking service activities		
Aurangabad		
Chakan		
Tata Growth Shop		
Manufacture of general-purpose machinery		
Kharagpur		
Manufacture of coke oven products		
Haldia		
Electric power generation, transmission and distribution		
Power Plant Angul		
Power Plant Athagarh		

Biomes

- Tropical & Subtropical Dry Broadleaf Forests
- Tropical & Subtropical Moist Broadleaf Forests
- Deserts & Xeric Shrublands

Ecoregions

- Chhota-Nagpur dry deciduous forests
- East Deccan moist deciduous forests
- Malabar Coast moist forests
- Narmada Valley dry deciduous forests
- South Deccan Plateau dry deciduous forests
- Orissa semi-evergreen forests
- Aravalli west thorn scrub forests
- Lower Gangetic Plains moist deciduous forests
- Upper Gangetic Plains moist deciduous forests
- North Western Ghats montane rain forests
- Deccan thorn scrub forests

NATURE-RELATED IMPACTS AND DEPENDENCIES

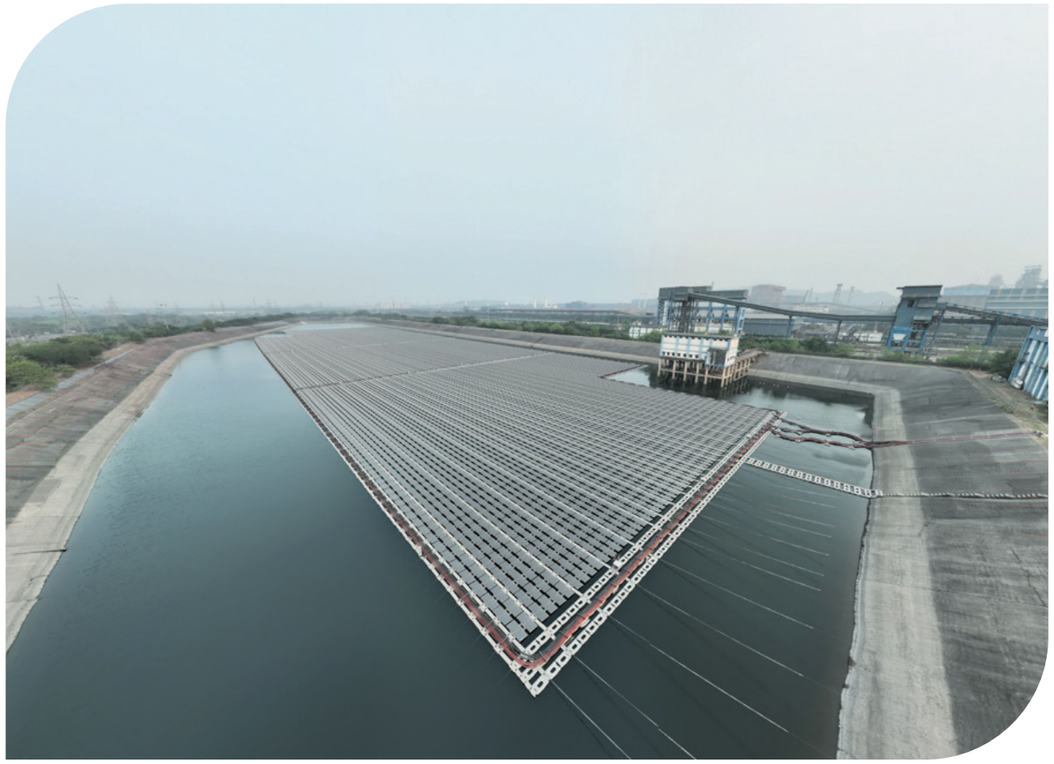
Nature-related impacts and dependencies are directly linked to business risk because a business's reliance on nature (dependency) and its effect on nature (impact) determines its exposure to environmental and operational risks. If a business depends on nature (e.g. clean water, stable climate, etc.) and these resources are degraded, it faces risks such as – operational risk due to water scarcity which can disrupt manufacturing process. If a business negatively impacts nature (e.g. air pollution), it creates risk for itself and others such as regulatory risk due to imposition of fines on high emission industries. Thus, to build a comprehensive understanding of nature-related risks in the context of Tata Steel, a detailed screening of impacts and dependencies is conducted taking a drill down approach - beginning at the industry level, narrowing down to the sector and finally analysing the dynamics at individual site level.

I. Industry Level Assessment - Metals and Mining

WWF Risk Filter's Inform module was used to screen biodiversity-related direct impacts and dependencies in the metals & mining industry.

Dependency		Impact	
Indicators	**Physical Risk**	**Indicators**	**Physical Risk**
Provisioning Services		**Pressures on Biodiversity**	
Water Availability		Land, Freshwater and Sea Use Change	
Forest Productivity and Distance to Markets		Forest Canopy Loss	
Regulating & Supporting Services - Enabling		Invasive	
Water Condition		Pollution	
Air Condition		**Environmental Factors**	
Regulating Services - Mitigating		Protected/Conserved Areas	
Landslides		Key Biodiversity Areas	
Wildfire Hazard		Other Important Delineated Areas	
Extreme Heat		Ecosystem Condition	
Tropical Cyclones		Range Rarity	
Additional Reputational Factors		**Socioeconomic Factors**	
Media Scrutiny		Indigenous Peoples (IPs); Local Communities (LCs) Lands and Territories	
Political Situation		Resource Scarcity: Food - Water - Air	
Sites of International Interest		Labor/Human Rights	
Risk Preparation		Financial Inequality	

Nil | Very Low | Low | Medium | High | Very High



Solar Plant on Water Reservoir, Tata Steel Kalinganagar

City Forest, Kadma, Jamshedpur

II. Sector Level Assessment

Our sites have been classified into eight categories according to the International Standard Industrial Classification of All Economic Activities (ISIC). For each sector, a comprehensive impact and dependency analysis has been conducted using the ENCORE tool.

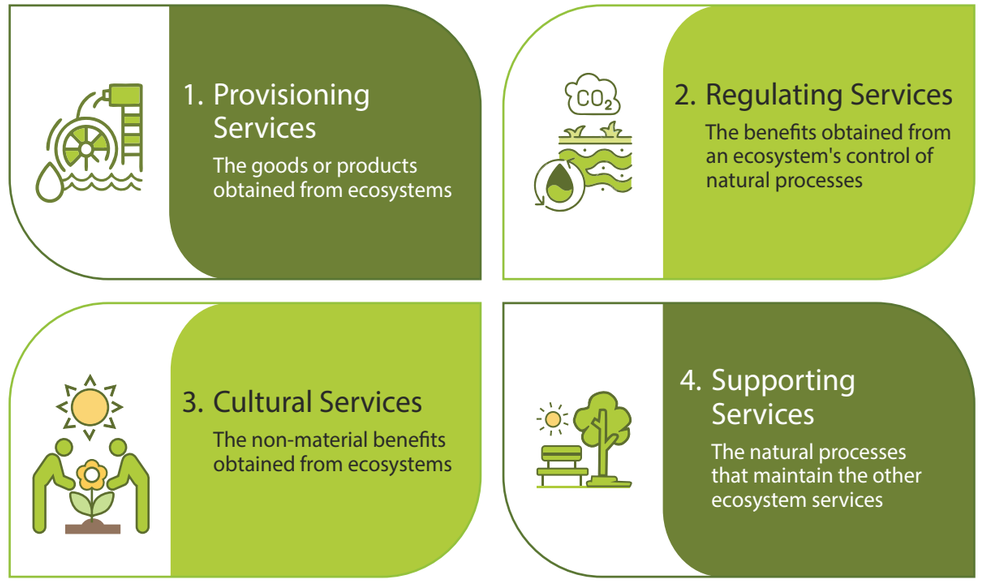
Categories	Sectors							
	Manufacture of basic iron and steel	Manufacture of other fabricated metal products; metalworking service activities	Manufacture of general-purpose machinery	Fossil fuels energy production	Manufacture of coke oven products	Mining of iron ores	Mining of non-ferrous metal ores	Mining of hard coal
Number of Sites of Tata Steel in each ISIC Category	**24**	**3**	**1**	**2**	**1**	**8**	**6**	**2**
Disturbances (e.g. noise, light)								
Area of freshwater use								
Emissions of GHG								
Area of Seabed use								
Emissions of non-GHG air pollutants								
Other abiotic resources extraction								
Generation and release of solid waste								
Area of land use								
Emissions of toxic pollutants to water and soil								
Volume of water use								
Introduction of invasive species								
Water supply								
Biomass Provisioning								
Global Climate Regulation Services								
Rainfall pattern regulation services (at sub-continental scale)								
Local (micro and meso) climate regulation services								
Air filtration services								
Soil and sediment retention services								
Solid waste remediation								
Water purification services								
Water flow regulation services								
Flood mitigation services								
Storm mitigation services								
Noise attenuation services								
Other regulating and maintenance service - Dilution by atmosphere and ecosystem								
Other regulating and maintenance service - Mediation of sensory impacts (other than noise)								

Nil | Very Low | Low | Medium | High | Very High

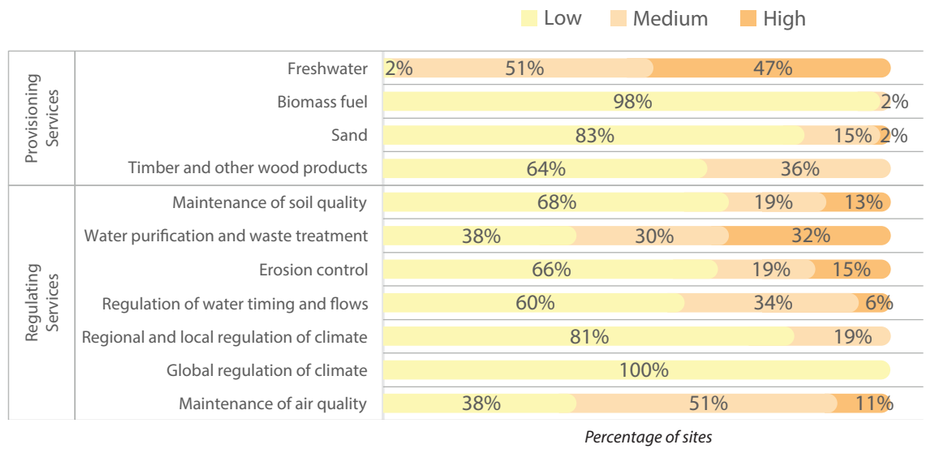
III. Company Level Assessment

Tata Steel has adopted the Ecosystem Services Review mechanism to identify priority services and understand the level of dependence and impact on each ecosystem service for each site. This site-level assessment ensures that the varied impacts and dependencies on ecosystem services are identified and appropriately considered for prioritisation.

Categories of Ecosystem Services

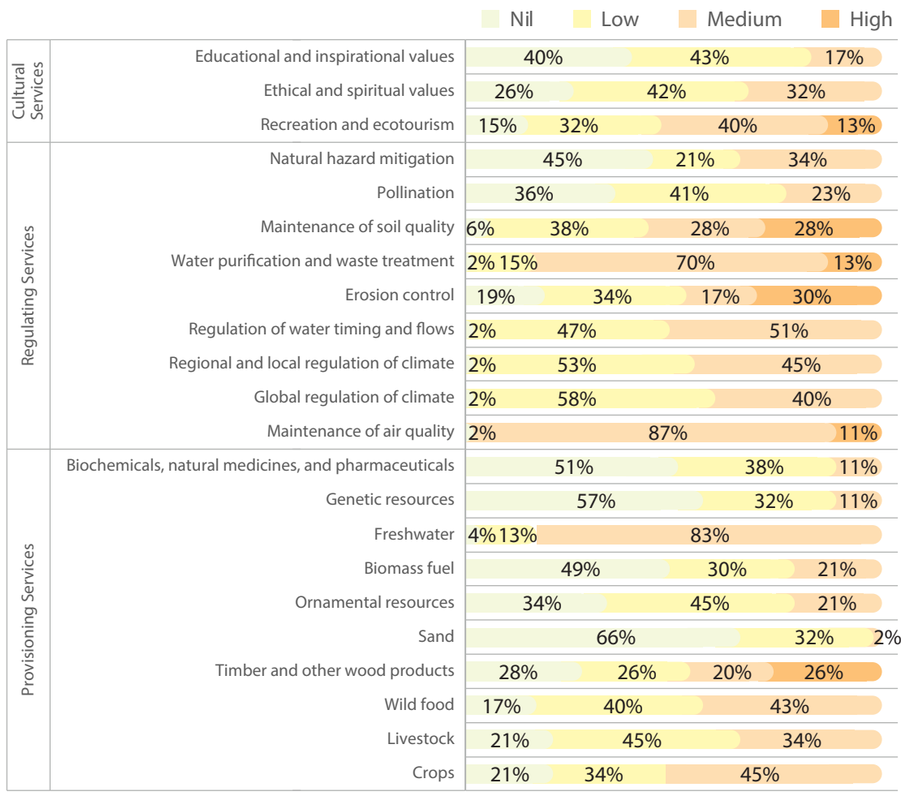


1. Dependence on Ecosystem Services by Sites



Please refer to the Annexure II for details. Services which are low in all operational sites are not considered material and have not been listed above, in accordance with the ES Review guidelines.

2. Impact on Ecosystem Services by Sites



Percentage of sites with relevant impact

Please refer to the Annexure III for details. Based on the ES Review methodology, we have excluded Supporting Ecosystem Services to avoid double counting as these services are fundamental and manifest themselves in many of the Provisioning, Regulating, and Cultural Services.

Water Harvesting Park, Noamundi

RISK AND OPPORTUNITY

Tata Steel has used the WWF Risk Filter to screen the Company's biodiversity risk. The risk analysis includes physical and reputational categories.

Physical risk arises from the dependency of business on nature and is affected by both natural and human-induced conditions. It consists of the following categories:

1) Provisioning Services
2) Regulating & Supporting Services – Enabling
3) Regulating Services – Mitigating
4) Cultural Services
5) Pressures on Biodiversity

Reputational risks arise from a company's actual or perceived impacts on nature and people. Impact covers both actual and perceived impact of the business. It is the perception of stakeholders including local community on the Company's focus on sustainability and a sense of responsibility. It has the power to impact brand value and market share. It consists of the following categories:

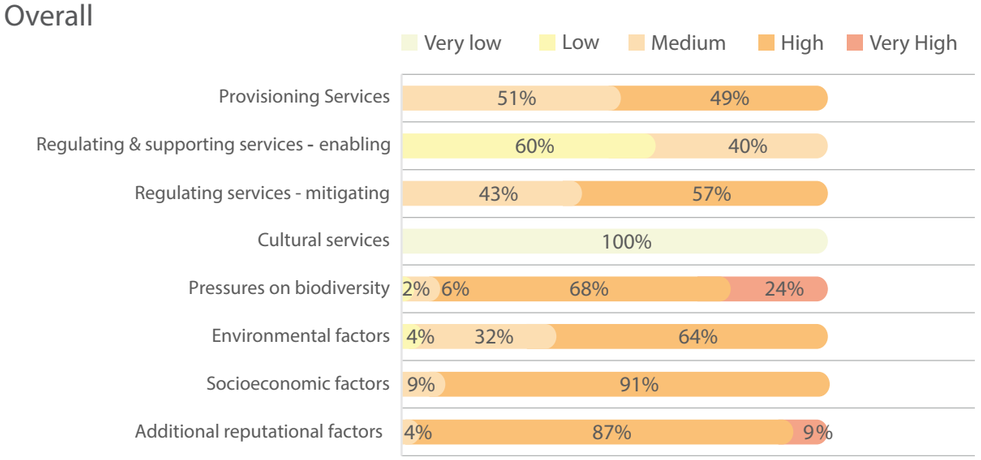
1) Environmental Factors
2) Socioeconomic Factors
3) Additional Reputational Factors

The following charts show risk analysis summary of sites and prominent groups (Groups with more than 5 sites) based on ISIC classification - Manufacture of basic iron and steel, Mining of iron ores and Mining of non-ferrous metal ores. This demonstrates our overall risk and its distribution.

Solar plant, Noamundi

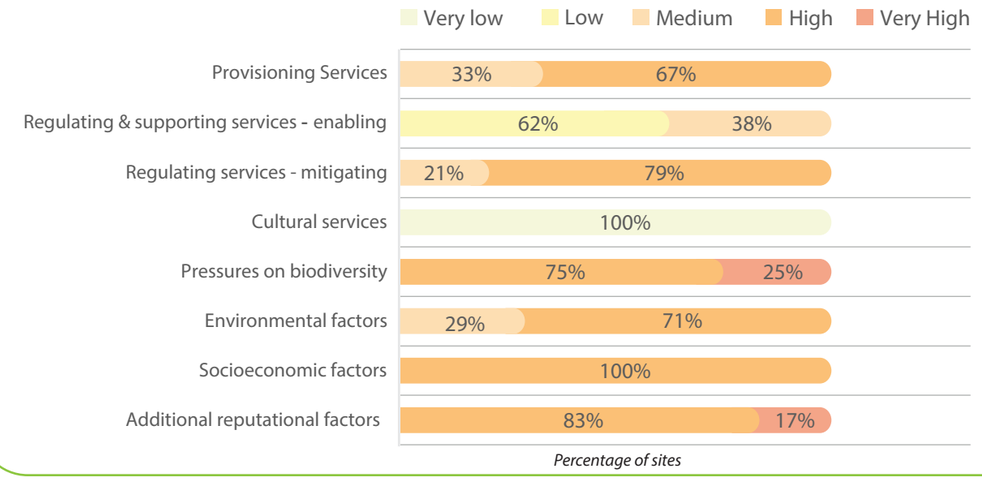
Risk Analysis

Overall



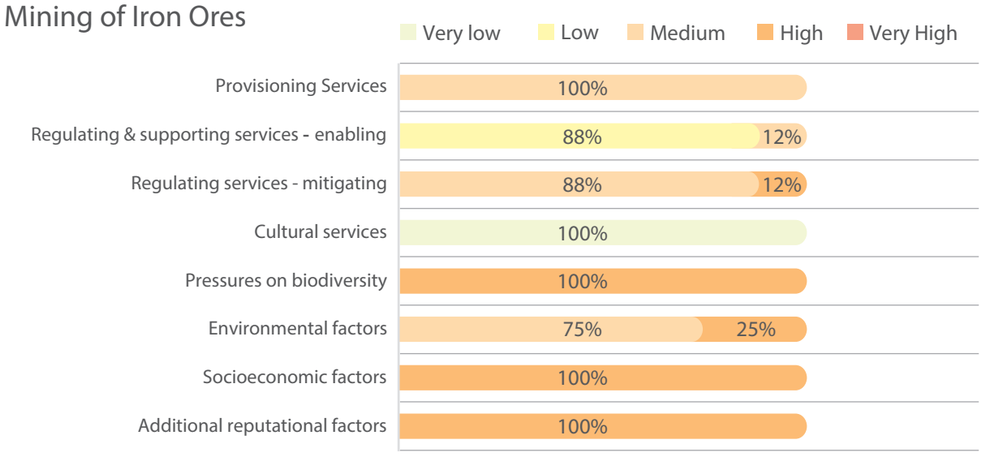
Percentage of sites

Manufacture of Basic Iron and Steel



Percentage of sites

Mining of Iron Ores

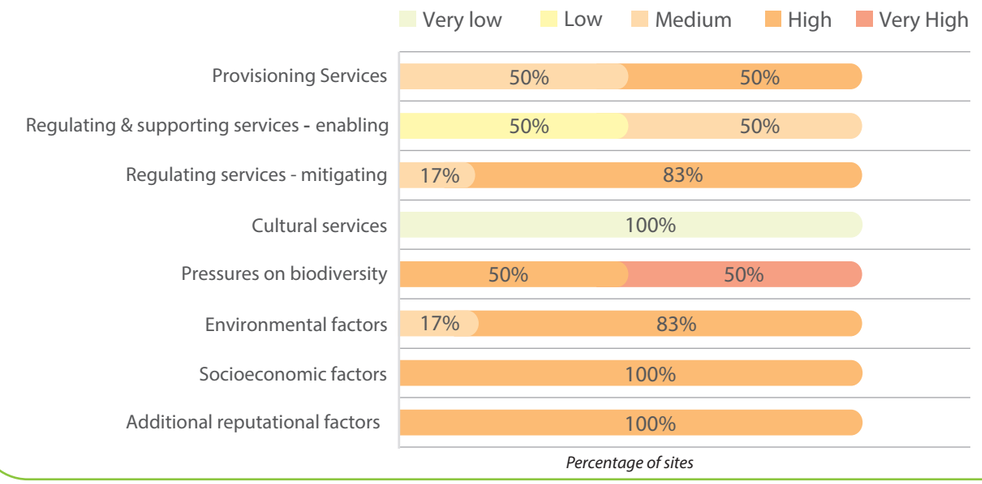


Percentage of sites

Noamundi mines producing 9.5 million tonnes iron ore per annum

Tata Steel, Kalinganagar

Mining of Non-ferrous Metal Ores



Percentage of sites

Site-level Risk Analysis through the WWF Risk Filter

WWF Risk Filter's Assess module has been used to analyse the risks for all categories for each site. The analysis is essential for initial screening of risks which will be used as an input during the corporate ecosystem review's identification of risk and opportunity.

Site Name	**Scape Physical Risk**	Provisioning Services	Regulating & Supporting Services - Enabling	Regulating Services - Mitigating	Pressures on Biodiversity	**Scape Reputational Risk**	Environmental Factors	Socioeconomic Factors	Additional Reputational Factors
Athagarh									
Aurangabad									
Balasore									
Bamebari									
Bamnipal									
Chakan									
CRC West									
CRM Bara									
CRM Sahibabad									
Gandhalpada									
Gopalpur									
Haldia									
Hosur									
Jajpur									
Jharia									
Joda									
Joda East									
Joda West									
Kalmang									
Kamarda									
Katamati									
Kharagpur									
Khondbond									
Khopoli									
Koira									
Ludhiana									
Metaliks									
NINL									
Noamundi									
Power Plant Angul									
Power Plant Athagarh									
Saruabil									
Sponge Iron Joda									

Site Name	**Scape Physical Risk**	Provisioning Services	Regulating & Supporting Services - Enabling	Regulating Services - Mitigating	Pressures on Biodiversity	**Scape Reputational Risk**	Environmental Factors	Socioeconomic Factors	Additional Reputational Factors
Sukinda									
Tata Growth Shop									
Tata Steel Gamharia									
Tata Steel Jamshedpur									
Tata Steel Kalinganagar									
Tata Steel Meramandali									
Tinplate									
Tiringpahar									
Tubes Jamshedpur									
Tubes Sahibabad									
Vijaya II									
West Bokaro									
Wires Jamshedpur									
Wires Tarapur									

Note: Cultural Services is not applicable to any of our sites, hence is not included in the table.

WWF Biodiversity Risk Filter levels

Very Low | Low | Medium | High | Very High

Niche nesting, Noamundi

Risks and Opportunities based on impact and dependency assessment

I. Priority Ecosystem Services

Tata Steel has prioritised six ecosystem services that are integral to its operations and the surrounding environment particularly in mining, steel production and community engagement. The prioritisation is done using the Ecosystem Services Review methodology.

Freshwater

Inland bodies of water, groundwater, rainwater, and surface waters for household, industrial, and agricultural uses.

Example: *Freshwater for drinking, cleaning, cooling, industrial processes, electricity generation, or mode of transportation.*

Maintenance of Air Quality

Influence ecosystems have on air quality by emitting chemicals to the atmosphere (i.e., serving as a source) or extracting chemicals from the atmosphere (i.e., serving as a sink).

Example: *Lakes serve as a sink for industrial emissions of sulfur compounds, tree and shrub leaves trap air pollutants near roadways.*

Water Purification and Waste Treatment

Role ecosystems play in the filtration and decomposition of organic wastes and pollutants in water, assimilation and detoxification of compounds through soil and subsoil processes.

Example: *Wetlands remove harmful pollutants from water by trapping metals and organic materials. Soil microbes degrade organic waste, rendering it less harmful.*

Maintenance of Soil Quality

Role ecosystems play in sustaining soil's biological activity, diversity and productivity; regulating and partitioning water and solute flow; storing and recycling nutrients and gases; among other functions.

Example: *Some organisms aid in decomposition of organic matter, increasing soil nutrient levels. Some organisms aerate soil, improve soil chemistry, and increase moisture retention.*

Erosion Control

Role ecosystems play in retaining and replenishing soil and sand deposits.

Example: *Vegetation such as grass and trees prevent soil loss due to wind and rain, prevents siltation of waterways, coral reefs, oyster reefs, and sea grass beds and reduces loss of land and beaches due to waves and storms.*

Regulation of Climate

Influence ecosystems have on climate by emitting greenhouse gases to the environment

Example: *Forests capture and store carbon dioxide*

II. Underlying Direct Drivers

The prioritised ecosystem services are influenced by three key underlying direct drivers:

1. Changes in Land Use and Land Cover is a driver for declining trends in the maintenance of soil quality and erosion control. Tata Steel mining and plant sites have contributed to changes in land use. In response to it, Tata Steel has adopted the mitigation hierarchy framework to effectively tackle the issue.
2. GHG emissions and other air pollutants lead to negative impacts on maintenance of air quality and climate. Steel is a hard-to-abate sector with a large carbon footprint. Tata Steel is committed to Net Zero emissions by 2045.
3. Discharge of Pollutants is a driver for declining trends in these prioritised ecosystem services - freshwater, water purification and waste treatment, and maintenance of soil quality. Tata Steel has set circular economy-related targets and is working towards achieving Zero Effluent Discharge (ZED) status for its operating sites.

These drivers have a direct and measurable impact on the condition and functioning of ecosystems that support Tata Steel's operations. Understanding and managing these drivers is critical to ensuring the resilience and continuity of the ecosystem services on which the Company depends.

The overutilisation of these ecosystem services by agricultural, industrial and domestic sector is leading to their decline. Government is engaging with industries and communities to incentivise conservation.

The three drivers are interlinked and reflect both biophysical and transition risks, helping us prioritise mitigation actions and prepare site-level management plans.

Brahmani and Subarnarekha River Basin Study

Brahmani River Basin Study
Tata Steel's production units in Meramandali and Kalinganagar rely heavily on the Brahmani River for their water supply. Recognising the increasing risk of water scarcity due to factors like climate change and growing demand, Tata Steel commissioned a comprehensive hydrogeological and hydrological study of the Brahmani River Basin. This study, conducted by competent third-party, involved detailed assessments of the Angul and Kalinganagar sub-watersheds, focusing on water availability, demand projections (current and up to 2050), and the identification of water-stressed areas. It also assessed the environmental water quality around Tata Steel's units to ensure compliance with statutory regulations.

The study's findings is enabling the development of a basin-scale water management plan and specific recommendations for Tata Steel's water stewardship interventions. These interventions aim to enhance the robustness of water supply to Tata Steel's units while ensuring the sustainability of the entire Brahmani River basin. This includes recommendations for managing upstream sub-watersheds to improve water security and mitigating potential risks associated with seasonal variations in river flow and groundwater levels.

Subarnarekha River Basin Study
Tata Steel conducted another study with the CII-Triveni Water Institute to comprehensively assess water resource availability and risks within the Subarnarekha River Basin. The study employed a robust methodology, utilising CII's WATSCAN tool, a GIS and remote sensing-based decision support system, to analyse various datasets including topography, land use, soil characteristics, weather patterns, streamflow data, and groundwater levels. This facilitated a detailed evaluation of water generation, accumulation, and losses within the basin, identifying areas facing relatively higher water challenges.

To handle identified water risks, Tata Steel will leverage the study's findings to implement effective water management strategies. The assessment will inform the development of a comprehensive management plan, incorporating a review of existing conservation measures (pond rejuvenation, storage creation, recharge initiatives) while also identifying new strategies, such as surface and subsurface storage solutions and groundwater recharge strategies. Additionally, the plan will address climate change and land use change scenarios to ensure long-term water security for the Tata Steel plant and the surrounding community.

Freshwater is a prioritised ecosystem service and these river basin studies will drive Tata Steel's efforts towards achieving our water-related targets.

III. Identification of Risks and Opportunities

Category	Potential Risk/Opportunity	Tata Steel's Approach to Address the Risk/Opportunity
Operational **Risk**	✦ Loss of social license to operate ✦ Instability due to soil erosion ✦ Degraded air quality	✦ Tata Steel constantly engages with local communities through Tata Steel Foundation (Tata Steel's CSR arm). The Company also prioritises 15 United Nations Sustainability Development Goals which are relevant to the community and our stakeholders. ✦ In the mining locations, our BMPs target soil management, especially for topsoil management and avoidance of soil erosion. ✦ Tata Steel has set itself a target of Net Zero emissions by 2045. Please refer to the Metrics and Targets section in this report for other sustainability-related targets.
Regulatory and Legal **Risk**	✦ Non-compliance related to biodiversity ✦ Risk to expansion of operations	✦ Tata Steel complies with all regulatory requirements and has taken voluntary commitments for biodiversity conservation. ✦ We adhere to all regulatory requirements for expansion by getting the permits and social licence to operate. Biodiversity plays an important role in it.
Reputational **Risk**	✦ Risk to brand image	✦ Tata Steel believes in continuous stakeholder engagement for business growth and sustenance. Its long-term relationship with customers, suppliers, and communities is key to the Company's business sustainability and core strategy. ✦ Our relationship with national and local media and our social media presence helps Tata Steel reach out to the public and various stakeholders to communicate the brand's sustainability vision and initiatives and drive corporate equity.
Financing **Risk**	✦ Increased cost of capital or more rigorous lending requirements	✦ Effective biodiversity and ecosystem services management have a positive influence on Tata Steel's sustainability ratings which in turn will help in improved credit ratings.
Market and Product **Opportunity**	✦ Carbon credit market	✦ Tata Steel may voluntarily develop a Nature-based Solutions (NbS) project beyond its own operations and participate in the voluntary carbon credit market.

Tata Steel has adopted a multi-pronged strategy for capitalising on the Market and Product opportunity. We are actively managing our impacts through changes in our process, such as introduction of biochar in our Jamshedpur operations. We have replaced over 30,000 tonnes of fossil fuel with biochar (biomass-based charcoal) and have also conducted a trial of biomass usage in ferrochrome making at its Athagarh plant in Odisha's Cuttack district.

We regularly engage with relevant government and non-government agencies for different sustainability domains for policy engagement. Leadership in these forums influence the sector and other stakeholders positively.

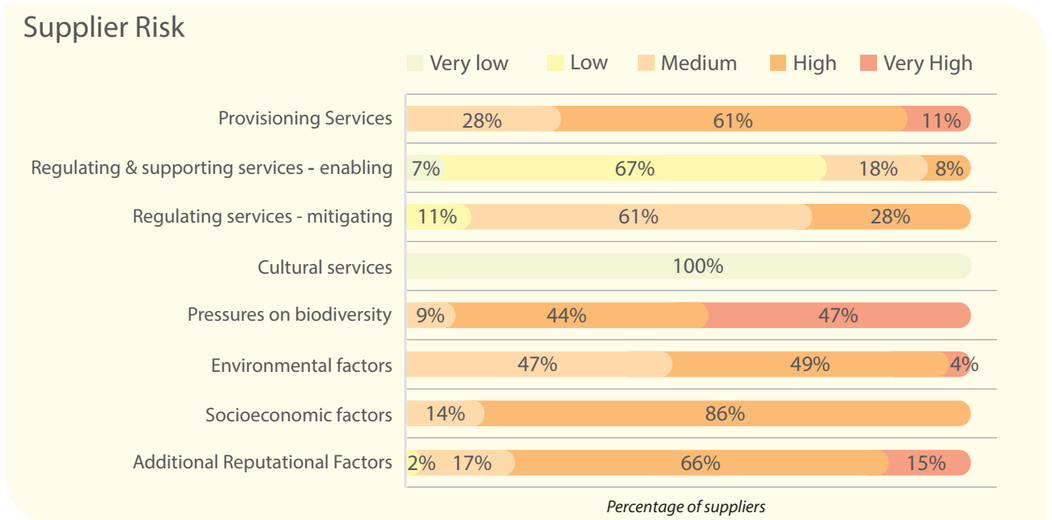
Water Treatment Plant, Meramandali

RESPONSIBLE SUPPLY CHAIN STRATEGY

Tata Steel has adopted a comprehensive Responsible Supply Chain Policy based on four principles – Fair Business Practices, Health and Safety, Human Rights, and Environmental Protection. This policy covers all business associates with whom we interact directly and indirectly for business or transactional dealings. It includes partners like suppliers/vendors, distributors, Steel Processing Centres (SPCs), franchises and downstream processing agencies. All partners are expected to comply with all four policy principles over time.

Partners who have management systems accredited to ISO 14001:2015 or equivalent are considered in compliance with the Environmental Protection principle. In its absence, we recommend that the partners follow the relevant principles laid out within the Tata Steel policies related to environment and energy, such as the Sustainability Policy, Environmental Policy, Energy Policy, Biodiversity Policy and Climate Change Policy for Tata group companies.

Tata Steel is assessing its suppliers from key categories, including coal, pellets, flux, ferroalloys, metals etc., using the WWF Risk Filter.



Percentage of suppliers

Beyond this, we engage a globally renowned independent agency to conduct assessments of our supplier partners, evaluating their alignment with the principles outlined in our Responsible Supply Chain Policy. Supplier partners are rated based on their responses to a comprehensive questionnaire. The responses are verified based on the evidence provided. The assessment enables us to determine the maturity of our partners on the four core principles of our Responsible Supply Chain Policy. The assessment guides our engagement with the suppliers, contracts, and policies based on business needs.

Vendors agree to comply with Tata Steel's relevant policies, including the Environment Policy. This ensures that Tata Steel's standards are enforced throughout the value chain.

Building a sustainable supply chain

Risk & Impact Management

Risk & Impact Management

Through its Biodiversity Policy, Tata Steel proactively integrates biodiversity considerations into all stages of its operations. The policy prescribes biodiversity assessments for our sites, establishing baselines to track impacts and guide the development of site-specific management plans.

This pre-emptive approach minimises potential negative impacts on biodiversity, reduces legal and reputational risks associated with environmental damage, and ensures compliance with relevant environmental regulations. The biodiversity conservation efforts further demonstrate a dedication to minimising operational impacts and fostering sustainable practices.

Collaboration with stakeholders, investment in technological solutions, and the continuous improvement of biodiversity data increase the effectiveness of risk mitigation strategies and promote positive environmental and social outcomes for local communities.

BIODIVERSITY AND NATURAL CAPITAL MANAGEMENT PROCESS

Tata Steel considers six levers for comprehensive biodiversity and natural capital assessment and planning, as applicable.

First Lever: Screening

We have completed the screening of all our sites using several reputed tools and databases. These instruments provide an entry point for our planning and assessment.

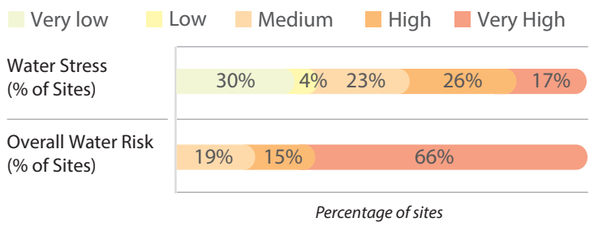
The WWF Risk Filter tool was used to conduct an industry-level analysis of biodiversity (e.g., freshwater, marine, forest, grasslands, wetlands) and includes some specific indicators related to water (e.g., water scarcity, water quality, fragmentation status of rivers). For details, please refer to Nature-related Impacts and Dependencies in the Strategy section of this report.

We also assessed all our sites and sectors identified by International Standard Industrial Classification of All Economic Activities (ISIC) to develop an understanding of site-level risks and their severity.

We have used ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure) to explore nature-related considerations. This has been done on a sectoral level by classifying all our sites based on ISIC. The ENCORE tool is managed by Global Canopy, the UN Environment Programme Finance Initiative (UNEP FI), and the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), which together form the ENCORE Partnership.

Freshwater is a prioritised ecosystem service. We have used Aqueduct's Water Risk Atlas hosted on World Resources Institute (WRI). We have analysed the overall water risk and site level water stress (See below).

Water Risk Analysis



Second Lever: Third-party Biodiversity Assessment

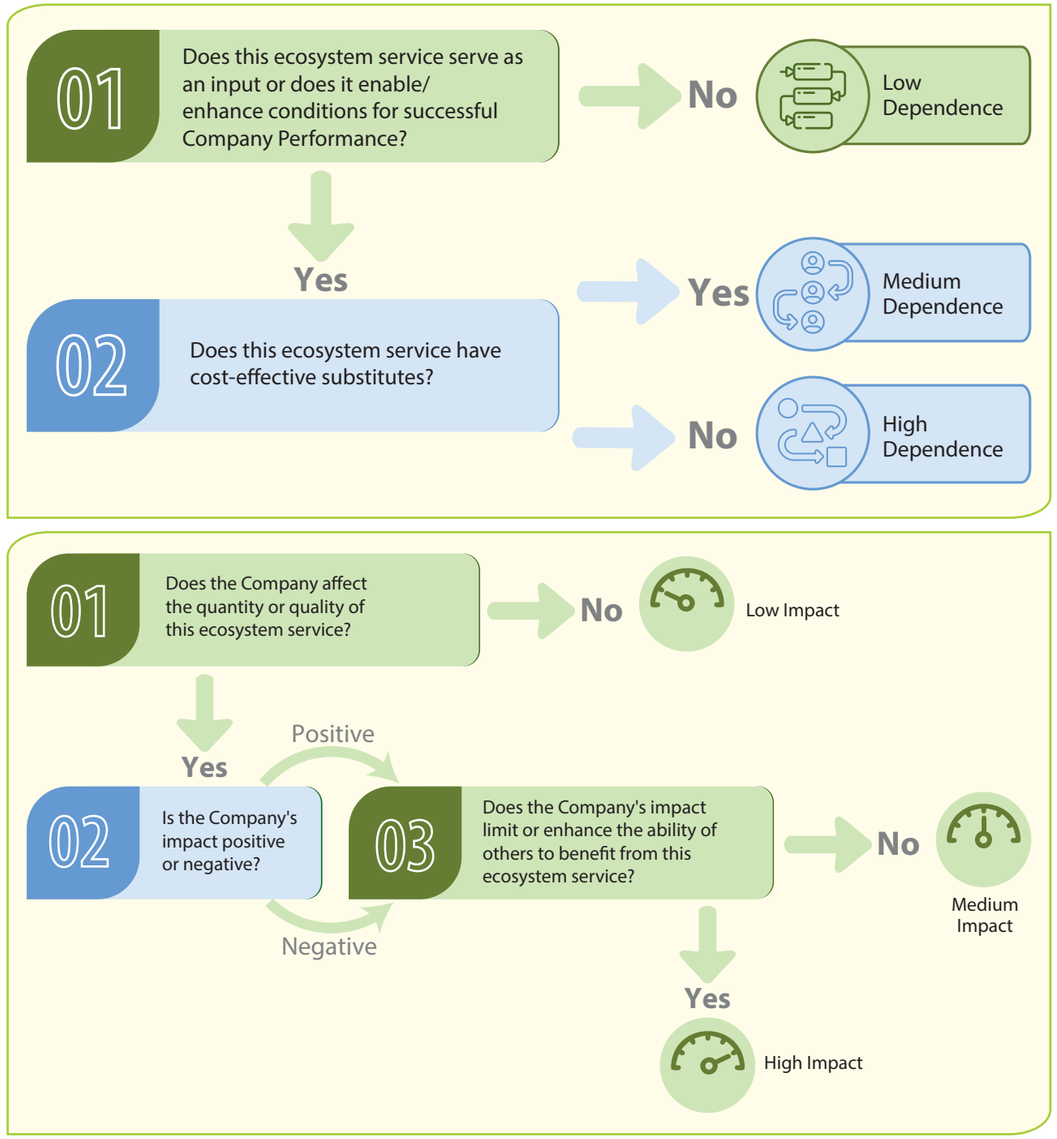
Tata Steel collaborates with organisations such as the International Union for Conservation of Nature (IUCN) and Terracon Ecotech to conduct seasonal studies for our sites. Experts from these organisations conduct site visits in the core and buffer areas of the operational site.

Based on the biodiversity sensitivity and other factors, the experts collect qualitative and quantitative information about the site. We also classify the species inventory through the IUCN Red List, Global Invasive Species Database and Wildlife Protection Act. It allows us to prioritise species conservation and plan initiatives such as Sukinda Ecorace (Please refer to the Shining Cases section in this report)

These plans aim to mitigate the impact on biodiversity caused by its operations and enhance biodiversity value.

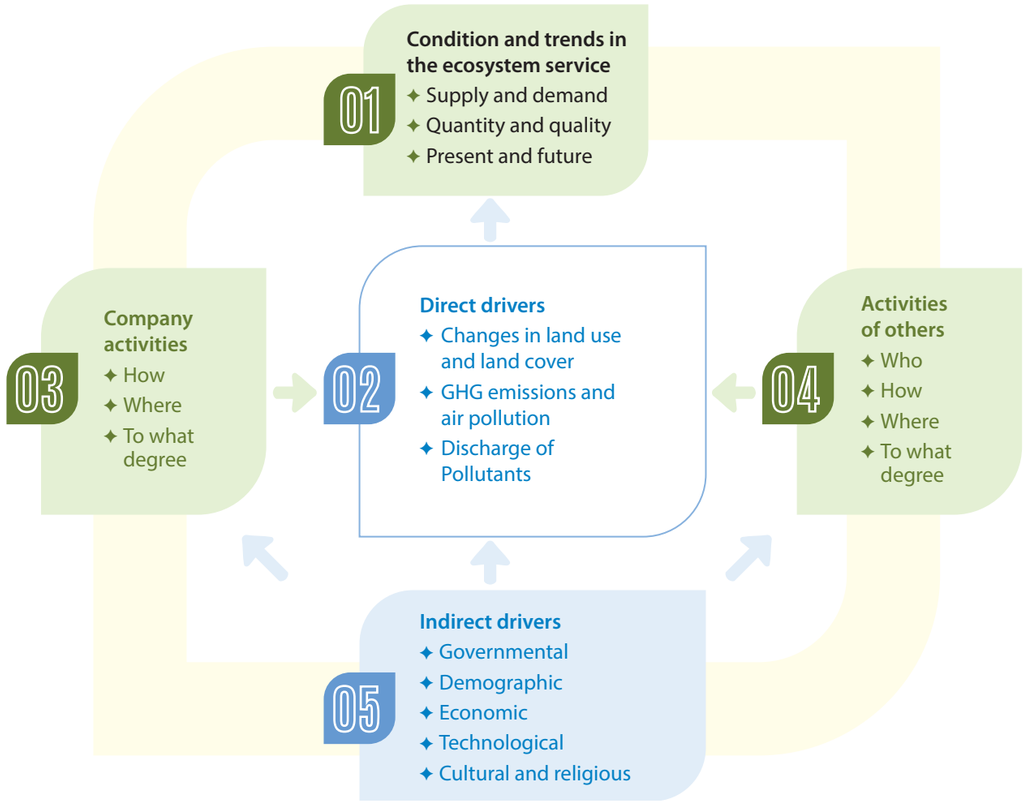
Third Lever: Ecosystem Services Review

We use the Ecosystem Services (ES) Review[1] to understand the impact and dependency of each site.



[1] *The ES Review was developed by the World Resources Institute with support from the Meridian Institute and the World Business Council for Sustainable Development (WBCSD).*

Through the exercise, we prioritise a few key ecosystem services with the highest impact and dependency, which are then used for constructing the Ecosystem Service Trends and Drivers Framework for Tata Steel.



It helps in identifying business risks and opportunities in the following areas:

✦ Operational ✦ Regulatory and legal ✦ Reputational ✦ Market and product ✦ Financing

Dimna Dam - Jamshedpur city's water source

Fourth Lever: Development of Biodiversity Management Plan

After biodiversity assessment, a detailed Biodiversity Management Plan (BMP) is developed. Tata Steel has a Standard Operating Process for BMP development which ensures syndication between experts and on-site teams responsible for implementation. It consists of 4 steps: assessment, recommendation, tracking, and scorecard generation.

Fifth Lever: Implementation & Tracking of Biodiversity Management Plan

BMP recommendation trackers are used to ensure timely implementation. These trackers help in prioritising the actions and focusing on high impact recommendations from the BMP. The trackers are periodically reviewed in the Centre of Excellence for Biodiversity Management with the steering committee and working groups.

Sixth Lever: Scorecard for Post implementation Assessment

The scorecard helps in ascertaining the progress of the site towards mitigating the impact and enhancing biodiversity. The tool has been developed by third party experts.

Sir Dorabji Tata Botanical Park, Noamundi

RISK MITIGATION HIERARCHY

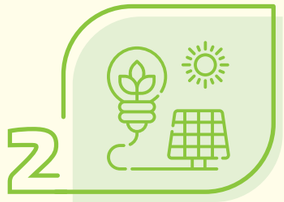
Steps	Examples
Avoid Selecting alternative sites, designs, or approaches to ensure that harmful effects do not occur in the first place.	*There are no operating sites in or near critical biodiversity. The Biodiversity Policy also expresses the Company's commitment to avoid acquisition of properties whose development may result in loss of critical habitat for species with special conservation status*
Minimise If avoidance is not possible then actions should be taken to reduce the severity, extent or duration of negative impacts. This includes modifying project designs, implementing best practices, or using new technologies.	*Tata Steel controls dust emission through various methods across sites which help reduce the impact on the nearby ecosystem.*
Restore/Rehabilitate If impact does occur, efforts should be made to restore/rehabilitate affected areas. This involves actions such as reforestation.	*Various initiatives like regenerated forest of Noamundi (311 acres), restoration of the 62-acre Jugsalai muck dump formed due to dumping cinder and slag, etc.*
Offset/Compensate As a last resort, when there is some residual impact despite previous steps, offset measures are implemented to compensate for the damage.	*In the Nature Trail, Jamshedpur, 17 acres of land has been converted into an Urban Forest. This includes dense tree plantations of native species and bamboo plantations with more than 21,000 tree saplings, comprising myriad ecosystems that enhance the green cover. The project also provides wetland restoration along a 650-metre-long rivulet cutting across this eco-park.*
Regenerate Renewing, restoring, or reviving a depleted or damaged resource. It often refers to the process of natural recovery, where ecosystems or biological systems heal and rejuvenate over time, returning to a healthy state.	*Industrial development has led to loss of habitat for birds, impacting their ability to nest. In Noamundi, specific nesting spaces have been allocated to help the birds thrive and enhance pollination, improving ecosystem productivity.*
Transform Using holistic approaches to integrate ecological integrity, social equity, and economic viability.	*Tata Steel positively impacted people and contributed to species conservation through the Sukinda Eco-race project. Please refer to the Shining Cases section in this report.*

COMMUNITY ENGAGEMENT FOR RISK AND IMPACT MANAGEMENT

The Company constantly strives to prioritise people and the planet (Triple Bottom Line approach) for sustainable outcomes, with identification and resolution to public concerns and priorities concerning nature-related issues in the direct business operations and value chain. Over the years, a diverse range of initiatives have been implemented to restore and preserve our ecosystems with the engagement of indigenous peoples, local communities, affected people, and other stakeholders.

Water Ecosystems Projects (WEPs)

WEPs have been strategically designed to address poor irrigation facilities, domestic water needs and excess soil surface runoff. Water harvesting structures and watersheds have been developed across remote villages wherein the indigenous peoples, local communities, affected people, and other stakeholders have played a significant role in planning, developing, monitoring and maintaining the structures. The initiative has resulted in a groundwater storage potential of 115.6 million cubic feet in FY 2024-25. This sustainable model aims to create a water conservation potential of 1,000 million cubic feet by 2030.



Solar Light Installations

Solar lights have been installed across proximate villages to provide inexhaustible and affordable form of energy with zero carbon footprint. In FY 2024-25, 13 villages and 16 hamlets were fully equipped with solar lightings.

The Livelihoods Programme

The Livelihoods programme catering to climate-related risks – provides a Climate Resilient Agricultural (CRA) approach for supporting consistent agricultural produce in inconsistent climatic conditions. Capacity-building training, soil health testing and agro-based weather advisories have been successfully driving a positive change in the lives of farmers. Over 33,000 farmers were engaged in CRA practices in FY 2024-25.

Biodiversity Conservation Activities in Odisha

Safeguard Red List Index threatened species (International Union for Conservation of Nature) – Blackbuck, Indian Peafowl and Olive Ridley (the Gahirmatha Beach in Odisha is one of the largest nesting sites in the world). Community awareness, knowledge-building sessions, and beach cleaning activities by local communities have contributed to a safer habitat for survival and reproduction of these species.

Shining Cases

REVIVING TASAR SILKWORM

Tata Steel's Tasar Sericulture Initiative as a Model for Biodiversity Conservation and Sustainable Livelihoods

The Tasar Sericulture initiative by Tata Steel commenced in FY 2014-15 in Bamnipal, Odisha, considering the region's abundance of host plants essential for rearing tasar silkworms. The project was expanded to the Jajpur district in FY 2021-22 to develop the entire value chain and create a tasar corridor. The tasar larvae species, called *Antheria mylitta*, has 44 ecoraces in different tasar-growing regions in India. In Odisha, eight ecoraces are found in different ecological niches. The Daba variety from Bamnipal-Jajpur area is highly valued among farmers due to its higher silk content and the region's favourable climate.

Host plant for silk worm

Another ecorace called Sukinda ecorace was one of the popular varieties cultivated by farmers in the early 1990s. The ecorace was only confined to the Sukinda region due to its unique tropical humid climate. Due to various climate change effects, rapid industrialisation, pollution, etc., the variety had been declared extinct for the previous 15 years by the Central Silk Board (CSB).

The Sukinda ecorace tasar variety is unique in colour (yellow) and has a very fine texture and natural dyeing threads.

Silk worm larvae

Recognising the ecological and economic significance of this unique variety, the CSB undertook initiatives to revive it. In FY 2022-23, Tata Steel Foundation partnered with CSB and the Odisha State Sericulture Department to conserve and revive this variety, thereby addressing biodiversity loss and supporting the local economy.

PROJECT GOALS

Cocoon Replication
Effective conservation strategies to replicate tasar cocoons.

Income Generation
Introducing alternative tasar varieties that offer high-quality products and greater disease resistance.

Skill Preservation
Honouring and enhancing local farmers' traditional skills and cultural heritage related to tasar sericulture.

Value Chain Development
Establishing a comprehensive value chain, ensuring all aspects from production to market are viable and sustainable.

PROJECT EXECUTION

1. **Setting Clear Targets:** The program established a five-year target, allowing for systematic progress monitoring.
2. **Partnerships:** Collaboration with the local stakeholders and silk board facilitated technical and financial support.
3. **Workshops:** Organising workshops contributed to mapping out the project's roadmap and fostering collaboration among experts.
4. **Formal Agreements:** Signing a non-financial Memorandum of Agreement (MoA) with the Central Tasar Research & Training Institute ensured technical support assistance critical for project execution.
5. **Community Involvement:** Engaging local farmer groups in Sukinda helped fortify community support and commitment to tasar cultivation and conservation efforts.

Sukinda ecorace cocoon

Joint discussions with stakeholders

Producing silk yarns

The current plan extends through FY 2026-27, focusing on increasing cocoon production and making higher-value commercial varieties available for the local farmers.

Stakeholder consultations

A STORY OF REVIVAL

100-Hectare Kakudia Dump Regenerated

Tata Steel has regenerated the 100 hectare Kakudia Dump of Sukinda mine in Jajpur, Odisha. The overburden dump was reclaimed through the standard operating procedure for reclamation and rehabilitation involving scientifically engineered process of afforestation. The plantation was undertaken with involvement of local stakeholders. It demonstrates a mine re-creating the original land use and enhancing ecosystem services.

To restore the 100 hectares, more than 5 lakh saplings were planted and monitored regularly with the intent to create a dense forest. The habitat promotes development of an ecosystem of native flora and fauna.

The plantations also support the local community to fulfil their needs and generate alternate source of livelihood. The bamboo planted may be cultivated after maturity for commercial purposes by the community members.

The initiative resulted in 30 species of trees, 6 species of shrubs, 14 species of herbs, 3 species of climbers, 3 species of grass and 1 species of Bamboo. The survey indicated the presence of 6 mammal, 18 avifaunal (bird) and 20 butterfly species in the area.

The restoration of habitat is improving the diversity of faunal species while improving ecosystem integrity.

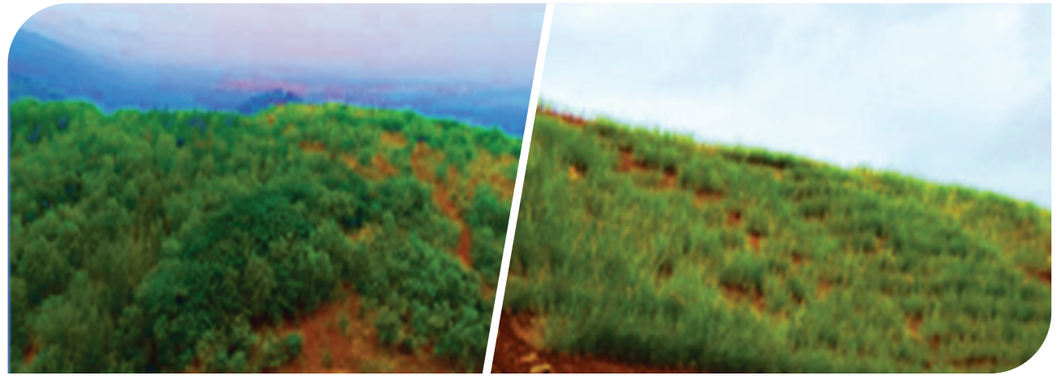
a) Dump before Eco-restoration

Kakudia Dump near Sukinda mine area in Jajpur, Odisha

b) Eco-restoration in process

Eco-restoration project at Kakudia Dump

c) Dump after Eco-restoration



Eco-restoration of Kakudia Dump

d) Improvement of faunal diversity

Various Species of Moths Attracted to Light Trap

Spotted Dove

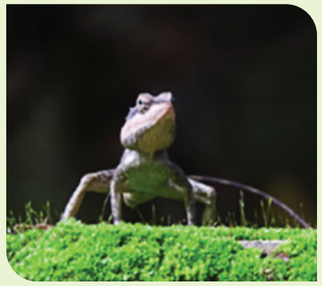
Indian Chameleon Sighted in Buffer Area

Scaly-breasted Munia

Baronet

Wild Boar mark (Kankudia Dump)

Short-toed Snake Eagle



Blanford's Rock Agama

Emergence of new life with eco-restoration

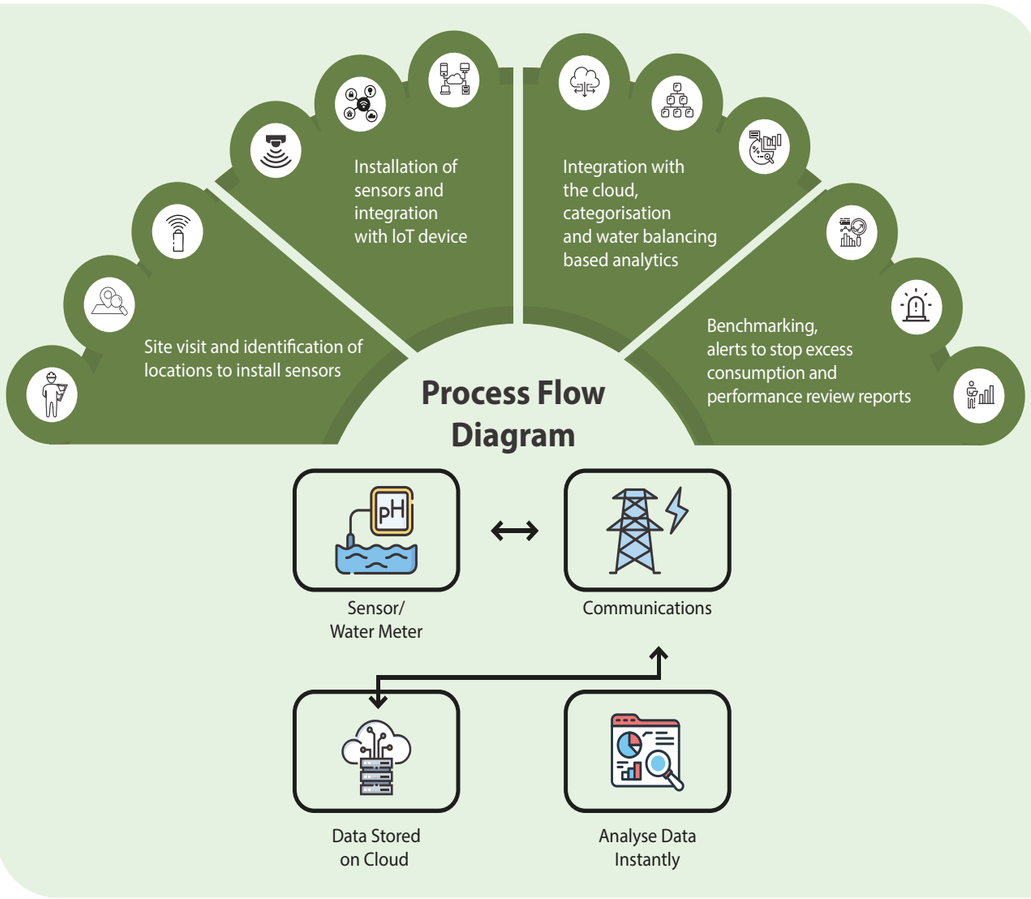
TRANSFORMING FUTURE

Smart Water Management at Ferro Alloys and Minerals Division

India is facing a severe water crisis, with nearly 600 million people facing high to extreme water stress. This crisis is exacerbated by factors like rapid urbanisation, industrialisation, and inefficient agricultural practices. In such a scenario, industries play a significant role in water consumption and conservation efforts.

Ferroalloy making consumes significant amount of water from mining to production. However, there is issue in real time monitoring of end-to-end water stock and usage at the mines and plants, with no control on measuring existing consumption patterns, water wastage detection, leakage detection and excessive water usage detection, etc.

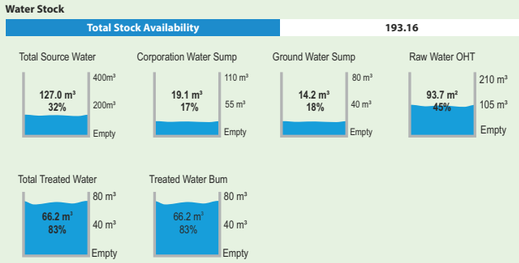
Tata Steel, focused on improving water use efficiency through digitalisation of the water circuit. The IoT based Smart Water Management System was installed at Sukinda Chromite Mines and Athagarh Ferro Alloys Plant followed by a structured methodology adhered to the Define, Measure, Analyse, Improve, and Control (DMAIC) approach. By leveraging advanced technologies, such as IoT sensors, data analytics, and automation, Tata Steel optimised water usage, minimised wastage, and ensured sustainable water management practices in its mining operations. The process flow is given below:



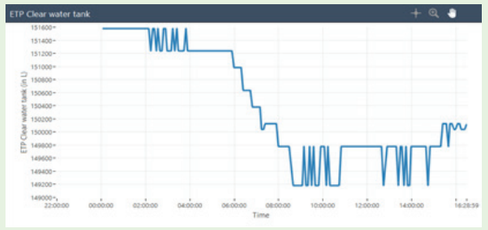
Benefits of Implementation of Smart Water Management System:

1. It is designed to gather meaningful and actionable data about the water flow and distribution in the infrastructure.
2. Real-time 24*7 monitoring through web and mobile app with wide scale integration across the facility helps increase the operational efficiency of the water infrastructure.
3. This consumption pattern obtained over a period of time helps identify inefficiencies in the water infrastructure. Thus, this system identifies the water usage pattern and takes corrective action by immediately alerting the ground maintenance personnel.
4. Unlike manual methods, data with a time stamp on it opens doors for enormous improvement in existing consumption patterns.
5. Insightful reports on the water consumption pattern are sent to the user, which also ensures that the non-revenue water loss is reduced.
6. Automating the measurement procedure reduces human errors and lowers the need to hire additional manpower.

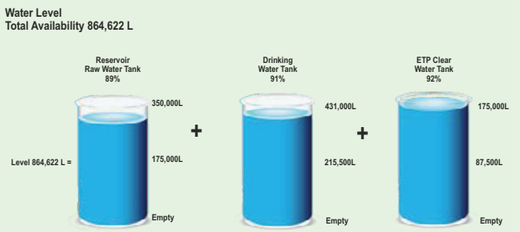
Realtime 24*7 Water KPI Monitoring



Reports - Time Series Based Analytics

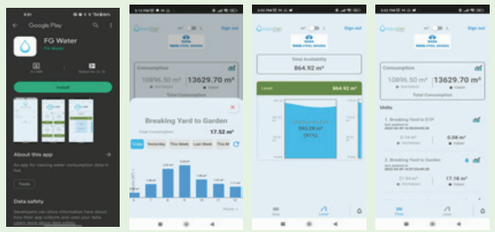


Realtime 24*7 Water KPI Monitoring



Mobile App Real Time Dashboard

Mobile App FG water Available on Android – play store platform



Final Impact:

1. Total water intake has been reduced by 26% for ferroalloys making at Athagarh plant.
2. 43% reduction of raw water usage in slag cooling process.
3. 100% leakage arrest due to system generated alerts.

REWILDING WITH MIYAWAKI

Breathing Life into Industrial Wasteland

To utilise vacant waste land area inside Tata Steel Jamshedpur Works area for enhancement of green cover Miyawaki plantation method was adopted. The rewilding project was expected to arrest dust and fugitive emissions, conserve soil erosion, have a positive impact on microclimate and improve aesthetic beauty of Jamshedpur Works.

IMPLEMENTATION

A. 5S model

1 **Sorting:** Removal of all unwanted materials from the site, including iron debris, wooden slats, electrical wires, and plastic items.

2 **Systematic Arrangement:** All biodegradable waste found on-site was repurposed as manure, while any barricading materials were set aside for future use.

3 **Shining:** Following the systematic use of biodegradable waste, the area was thoroughly cleaned to maintain a tidy environment.

4 **Standardising:** After levelling and dressing the land, standardised planting pits were dug throughout the project area to ensure uniformity.

5 **Sustaining:** To ensure the successful growth of newly planted seedlings and saplings, regular weeding, watering, and manuring were conducted at scheduled intervals.

Solar Panels, WTP Building, Kalinganagar

B. DMADV framework for improvement

It is a systematic improvement approach used to develop new processes or products at Six Sigma quality levels.

Stage Define

Description: Define the process and design goals

Action: The afforestation project focuses on a novel planting methodology that enhances the growth rate of seedlings and saplings through the innovative Miyawaki Method.

Stage Measure

Description: Assess customer needs and specifications

Action: The Miyawaki model of plantation successfully achieved a 1% increase in green cover, thereby effectively fulfilling customer demands in alignment with our business objectives.

Stage Analyse

Description: Evaluate different process options to determine how well they meet customer needs

Action: Our analysis revealed that when comparing the growth of identical species using various plantation methods, the Miyawaki method consistently demonstrated a faster growth rate.

Stage Design

Description: Create a detailed process to meet customer expectations

Action: The Miyawaki method involves layering biodegradable waste and soil alternately across the planting area. This consists of three to four layers of soil interspersed with biodegradable materials, optimising growth conditions.

Stage Validate

Description: Verify the performance of the design to ensure it meets customer needs

Action: We analysed growth parameters such as height and diameter. The data indicated that trees grown using the Miyawaki method outperformed those at other sites, confirming its effectiveness in afforestation efforts.

NOTEWORTHY OUTCOMES

Enhanced Seedling Growth

The method employed produced a higher growth rate of seedlings compared to other plantation techniques.

Improved Crown Growth

We achieved significant increases in crown growth with denser and larger crown.

Low Maintenance

After three years, maintenance requirements decreased significantly, allowing for successful establishment of the seedlings.

Soil and Water Conservation

The project effectively conserved soil and water resources.

Micro-Climate Benefits

It contributed to a reduction in environmental temperatures, positively impacting the micro-climate of the surrounding area.

Metrics and Targets

Metrics & Targets

The TNFD framework's Global Core and Sector Specific Metrics help in assessing and disclosing the environmental impact, risks, opportunities and dependencies on nature. The Company tracks critical indicators such as water consumption, greenhouse gas emissions, air emissions, waste management, land use change and biodiversity indicators.

Indicator	Metric		UoM	FY 2023-24	FY 2024-25
Climate Change 06 07 13					
GHG Emissions	GHG emissions as per GHG Protocol	Scope 1	Million tCO_2e	62	64
		Scope 2	Million tCO_2e	5	5
		Scope 3	Million tCO_2e	22	23
Land/freshwater/ocean-use change 00 1,2, 5,11 13					
Total spatial footprint	Total surface area controlled or managed by the organisation	Area of mining operations	Square Kilometres	17.41	17.41
Pollution/Pollution Removal 06 7,11 13					
Water	Volume of water discharged		Cubic Metres	1,42,08,410	1,22,52,899
Waste generation and disposal	Weight of hazardous and non-hazardous waste generated by type	Plastic	Metric Tonnes	2,381	2,458
		E-waste	Metric Tonnes	326	219
		Biomedical waste	Metric Tonnes	23	256
		Construction and demolition waste	Metric Tonnes	3,071	1,714
		Battery waste	Metric Tonnes	307	691
		Other hazardous waste	Metric Tonnes	15,35,066	12,73,744
		Other non-hazardous waste	Metric Tonnes	1,69,89,548	1,67,35,382
		Total waste generated	Metric Tonnes	1,85,30,722	1,80,14,463
	Waste incinerated (with and without energy recovery)		Metric Tonnes	1,816	4,113
	Waste sent to landfill		Metric Tonnes	3,59,176	16,017
	Other disposal methods		Metric Tonnes	4,84,206	-
	Reused		Metric Tonnes	74,75,074	31,74,843
	Recycled		Metric Tonnes	1,26,36,445	1,70,09,075
	Other recovery operations		Metric Tonnes	-	-
Plastic Pollution	Plastic Footprint	Plastics (polymers, durable goods and packaging) used or sold, broken down into raw material content	Metric Tonnes	2,381	2,458
Non-GHG Air Pollutants	Particulate Matter	PM	Kilotonnes/ Year	9	8
	Nitrogen Oxides	NOx	Kilotonnes/ Year	22	25
	Sulphur Oxides	SOx	Kilotonnes/ Year	46	47
	Volatile Organic Compounds (VOC)	VOC or Non-Methane VOC	Kilotonnes/ Year	Not material for steel manufacturing company	
	Ammonia	NH_3	Kilotonnes/ Year		
Resource use/replenishment 06 11 06					
Water withdrawal and consumption from areas of water scarcity, including identification of water source	Water Withdrawal	Total	Cubic Metres	11,53,37,391	11,52,97,131
		Surface	Cubic Metres	7,45,12,178	7,38,03,619
		Ground	Cubic Metres	1,33,02,945	1,23,87,882
		Third party	Cubic Metres	98,63,809	1,03,03,512
		Other sources	Cubic Metres	1,76,58,459	1,88,02,118
	Water Consumption	Total	Cubic Metres	10,11,28,980	10,30,44,232
Invasive alien species (IAS) and other 06 7,11 13					
Measures against unintentional introduction of invasive species	Proportion of high-risk activities operated under appropriate measures to prevent unintentional introduction of IAS, or low-risk designed activities.	Number of sites with measures against invasive alien species	No.	17	27
Risk 01 00 00					
Significant fines/penalties received/litigation action in the year due to negative nature-related impacts	Value with description	Value	₹	6,75,000	Nil
		Description	–	Non-compliance with the provisions of the Water Act, 1974	Nil

Legend:

Alignment with Business Responsibility and Sustainability Reporting (BRSR) | *Alignment with Global Biodiversity Framework (GBF)* | *Alignment with United Nations Sustainable Development Goals (UNSDGs)*

Note 1: Metrics include data for Tata Steel Limited (as assured for BRSR) and NINL. For details, please refer to Tata Steel's Business Responsibility and Sustainability Report FY 2024-25 (part of Tata Steel's Integrated Report).

Note 2: Given the company's extensive operations, spanning from mining to the production of a wide array of steel products, a large variety of waste streams are generated across sites. To effectively manage this complexity and ensure consistent practices, central guidelines were formulated in FY2024-25 specifically to streamline the categorization and utilization of waste throughout all units. This crucial initiative directly supports the company's target of achieving zero waste to landfill. By standardizing how waste is identified and processed, these guidelines optimize pathways for reuse, recycling, and other forms of utilization, significantly reducing the volume of waste sent to landfills and improving overall resource efficiency and environmental performance.

Tata Steel has set ambitious nature-related targets to minimise its environmental footprint. These targets are in alignment with Tata Group's sustainability initiative – Project Aalingana – and reflect our commitment to balancing industrial growth with environmental responsibility.

2045

- Net Zero emissions for the Tata Steel Group

2030

- Reduce emission intensity by 10-15%# over FY 2024-25 for Tata Steel Limited
- Achieve benchmark status for specific stack dust emission intensity in India
- Achieve specific freshwater consumption of <1.5 m^3 per tonne of crude steel across all sites in India
- Invest in at least one Nature-based Solutions project by FY 2026-27
- Cover key raw material, steel making and downstream facilities across Tata Steel Group under Biodiversity Management Plans by FY 2026-27
- Sustain material efficiency at 100% at all Indian steelmaking sites
- Build a 3 MTPA steel recycling business in India

depending upon regulatory framework

Noamundi cactus garden

Rejuvenated Pond, Zoological Park, Jamshedpur

Tata Steel is constantly working towards achieving these nature-related targets through a holistic approach with substantially visible results in air, water, biodiversity, waste management, GHG emissions and clean energy domain.

We recognise the critical importance of water in steel production and have implemented innovative conservation initiatives, such as dry reduction processes, water recovery systems, and a central effluent treatment plant utilising reverse osmosis to recycle treated effluents for various applications, including coke quenching and horticulture.

To improve air quality, Tata Steel has implemented advanced pollution control technologies, resulting in a 98% reduction in stack dust emissions at Jamshedpur since FY 1994-95, 74% at Kalinganagar since FY 2016-17, 51% at Meramandali since acquisition in FY 2018-19 and 65% at Gamharia since acquisition in FY 2019-20.

Committed to a 'Zero Waste to Landfill' goal, Tata Steel manages around 16 million tonnes of by-products annually through its dedicated Industrial By-Products Management Division, achieving 100% solid waste utilisation and introducing eco-friendly products like Tata Aggreto and Tata Nirman.

To mitigate its carbon footprint, the Company embraces a circular economy model, focusing on steel scrap recycling, exemplified by the upcoming electric arc furnace-based steelmaking unit in Ludhiana with a capacity of 0.75 million tonnes per annum.

Tata Steel will add 2.8 lakh MWh and 4.2 lakh MWh renewable power at Jamshedpur and Kalinganagar respectively in FY 2025-26, through a 966 MW renewable energy power purchase agreement with Tata Power Company Limited.

Tata Steel is constantly working towards achieving these nature-related targets through a holistic approach with substantially visible results in air, water, biodiversity, waste management, GHG emissions and clean energy domain.

The Way Ahead

This report marks the initial steps in our journey toward a more comprehensive approach to managing nature-related challenges. Our practices will evolve as we progress.

We take a holistic view of natural capital management and have been working extensively in the areas of water, air, waste management, circular economy, clean energy, biodiversity and GHG emissions. Going forward, the Company plans to further deepen the integration of ecosystem consideration into its business decisions and operations through the following means:

Adoption and Scaling of Nature-Based Solutions

To mitigate nature-related risks and contribute positively to biodiversity, Tata Steel will implement and scale up Nature-based Solutions (NbS), which include expanding green cover in our operating areas, substituting coal with biochar in our manufacturing operations, strengthening watershed management practices, investing in regenerative forestry, restoring wetlands, and augmenting sustainable mining practices. These initiatives not only aim to reduce the Company's ecological footprint but also enhance the resilience of local ecosystems.

Embedding Nature Considerations into Strategic Decision-making

To ensure that nature-related risks and opportunities are systematically integrated into business processes, we will evaluate the financial impact of ecosystem degradation and plan our efforts dedicated to preserving and restoring natural habitats. This will further help us make informed decisions and promote sustainable practices.

Asoka tree at Gopalpur

Waterbody near Joda

Broadening the Scope of Initiatives and Disclosures

Tata Steel will work towards expanding the scope of its nature-related initiatives and disclosures to include customers and suppliers, ensuring that sustainability issues are addressed throughout the value chain.

Strengthening Stakeholder Engagement

Tata Steel has built deep relationships with the communities in all its operating areas and with other stakeholders. We will continue to engage and collaborate with local communities, vendors, channel partners, customers, media, and governmental organisations to share knowledge and resources to achieve common sustainability goals.

Flora around Joda

Annexures

Annexure I – TNFD Content Index

TNFD Pillars	TNFD Recommendations	Page No.
Governance	A. Describe the board's oversight of nature-related dependencies, impacts, risks and opportunities.	10-15
	B. Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities.	
	C. Describe the organisation's human rights policies and engagement activities, and oversight by the board and management, with respect to indigenous peoples, local communities, affected and other stakeholders, in the organisation's assessment of, and response to, nature-related dependencies, impacts, risks and opportunities.	
Strategy	A. Describe the nature-related dependencies, impacts, risks and opportunities the organisation has identified over the short, medium and long term.	16-35
	B. Describe the effect nature-related dependencies, impacts, risks and opportunities have had on the organisation's business model, value chain, strategy and financial planning, as well as any transition plans or analysis in place.	
	C. Describe the resilience of the organisation's strategy to nature-related risks and opportunities, taking into consideration different scenarios.	
	D. Disclose the locations of assets and/or activities in the organisation's direct operations and, where possible, upstream and downstream value chain(s) that meet the criteria for priority locations.	
Risk & Impact Management	A. (i) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations.	36-43
	A. (ii) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its upstream and downstream value chain(s).	
	B. Describe the organisation's processes for managing nature-related dependencies, impacts, risks and opportunities.	
	C. Describe how processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into and inform the organisation's overall risk management processes.	
Metrics & Targets	A. Disclose the metrics used by the organisation to assess and manage material nature-related risks and opportunities in line with its strategy and risk management process.	54-59
	B. Disclose the metrics used by the organisation to assess and manage dependencies and impacts on nature.	
	C. Describe the targets and goals used by the organisation to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.	

Annexure II – Dependency by Sites

Tata Steel has used the Ecosystem Services Review approach to do a structured assessment of their dependency on ecosystem services to identify priority ecosystem services which will likely be the source of risk and opportunity.

Site Name	Provisioning Services				Regulating services						
	Timber and other wood products	Sand	Biomass fuel	Freshwater	Maintenance of air quality	Global Regulation of climate	Regional and local regulation of climate	Regulation of water timing and flows	Erosion control	Water purification and waste treatment	Maintenance of soil quality
Athagarh	Low	Medium	Low	High	Medium	Low	Low	Low	Low	High	Low
Aurangabad	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Balasore	Low	Low	Low	Medium	Medium	Low	Low	Low	Low	Medium	Low
Bamebari	Medium	Medium	Low	High	High	Low	Medium	High	High	High	High
Bamnipal	Low	Low	Low	High	Medium	Low	Low	Low	Low	Medium	Low
Chakan	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
CRC West	Low	Medium	Low	High	Low	Low	Low	Low	Low	Low	Low
CRM Bara	Low	Medium	Low	High	Medium	Low	Low	Low	Low	Medium	Low
CRM Sahibabad	Low	Low	Low	Low	Medium	Low	Low	Low	Low	High	Low
Gandhalpada	Medium	Low	Low	High	Medium	Low	Medium	Medium	Medium	Medium	High
Gopalpur	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Haldia	Low	Low	Low	Medium	High	Low	Medium	Medium	Medium	Medium	Medium
Hosur	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Medium	Low
Jajpur	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Jharia	Medium	High	Low	High	Low	Low	Low	Medium	Medium	Low	Low
Joda	Medium	Low	Low	High	Medium	Low	Low	Medium	Low	Medium	Low
Joda East	Medium	Low	Low	High	Medium	Low	Low	Medium	High	High	Medium
Joda West	Medium	Low	Low	High	Low	Low	Low	Low	Low	Low	Low
Kalmang	Medium	Low	Low	High	Medium	Low	Medium	Medium	Medium	High	High
Kamarda	Low	Low	Low	Medium	Medium	Low	Medium	Medium	High	High	High
Katamati	Medium	Low	Low	High	Medium	Low	Low	Medium	High	High	High
Kharagpur	Low	Low	Low	Low	Low	Low	Low	Low	Low	Medium	Low
Khondbond	Medium	Low	Low	High	Medium	Low	Medium	Medium	High	High	Low
Khopoli	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Koira	Medium	Low	Low	Medium	High	Low	Low	Medium	Medium	High	Medium
Ludhiana	Medium	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Metaliks	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
NINL	Low	Low	Low	High	Medium	Low	Low	Low	Low	High	Medium
Noamundi	Medium	Low	Low	High	Medium	Low	Low	Medium	Medium	High	Medium
Power Plant Angul	Low	Low	Low	Medium	Medium	Low	Low	Low	Low	Low	Low
Power Plant Athagarh	Low	Medium	Low	High	Low	Low	Low	Medium	Low	Low	Low
Saruabil	Medium	Low	Low	High	Medium	Low	Low	High	High	High	Medium
Sponge Iron Joda	Medium	Low	Low	High	Medium	Low	Low	Medium	Low	High	Low
Sukinda	Medium	Medium	Low	High	High	Low	Low	Medium	High	High	High
Tata Growth Shop	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Medium	Low
Tata Steel Gamharia	Low	Low	Low	Medium	Medium	Low	Low	Low	Low	Medium	Low
Tata Steel Jamshedpur	Low	Low	Medium	Medium	Low	Low	Low	Low	Low	Low	Low
Tata Steel Kalinganagar	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Tata Steel Meramandali	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Tinplate	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Tiringpahar	Medium	Low	Low	High	Medium	Low	Medium	Medium	Medium	Medium	Low
Tubes Jamshedpur	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Tubes Sahibabad	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low
Vijaya II	Low	Medium	Low	High	Medium	Low	Low	Medium	Medium	Medium	Medium
West Bokaro	Low	Low	Low	Medium	Medium	Low	Medium	Medium	Medium	Medium	Medium
Wires Jamshedpur	Low	Low	Low	Medium	High	Low	Low	Low	Low	High	Medium
Wires Tarapur	Medium	Low	Low	High	Medium	Low	Low	Low	Low	Medium	Low

Nil | Low | Medium | High

Annexure III – Impact by Site

Tata Steel has used the Ecosystem Services Review approach to do a structured assessment of their impact on ecosystem services to identify priority ecosystem services which will likely be the source of risk and opportunity.

Site Name	Provisioning Services										Regulating services									Cultural services		
	Crops	Livestock	Wild food	Timber and other wood products	Sand	Ornamental resources	Biomass fuel	Freshwater	Genetic resources	Biochemicals, natural medicines, and pharmaceuticals	Maintenance of air quality	Global Regulation of climate	Regional and local regulation of climate	Regulation of water timing and flows	Erosion control	Water purification and waste treatment	Maintenance of soil quality	Pollination	Natural hazard mitigation	Recreation and ecotourism	Ethical and spiritual values	Educational and inspirational values
Athagarh																						
Aurangabad																						
Balasore																						
Bamebari																						
Bamnipal																						
Chakan																						
CRC West																						
CRM Bara																						
CRM Sahibabad																						
Gandhalpada																						
Gopalpur																						
Haldia																						
Hosur																						
Jajpur																						
Jharia																						
Joda																						
Joda East																						
Joda West																						
Kalmang																						
Kamarda																						
Katamati																						
Kharagpur																						
Khondbond																						
Khopoli																						
Koira																						
Ludhiana																						
Metaliks																						
NINL																						
Noamundi																						
Power Plant Angul																						
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Tubes Jamshedpur																						
Tubes Sahibabad																						
Vijaya II																						
West Bokaro																						
Wires Jamshedpur																						
Wires Tarapur																						

Nil Low Medium High

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