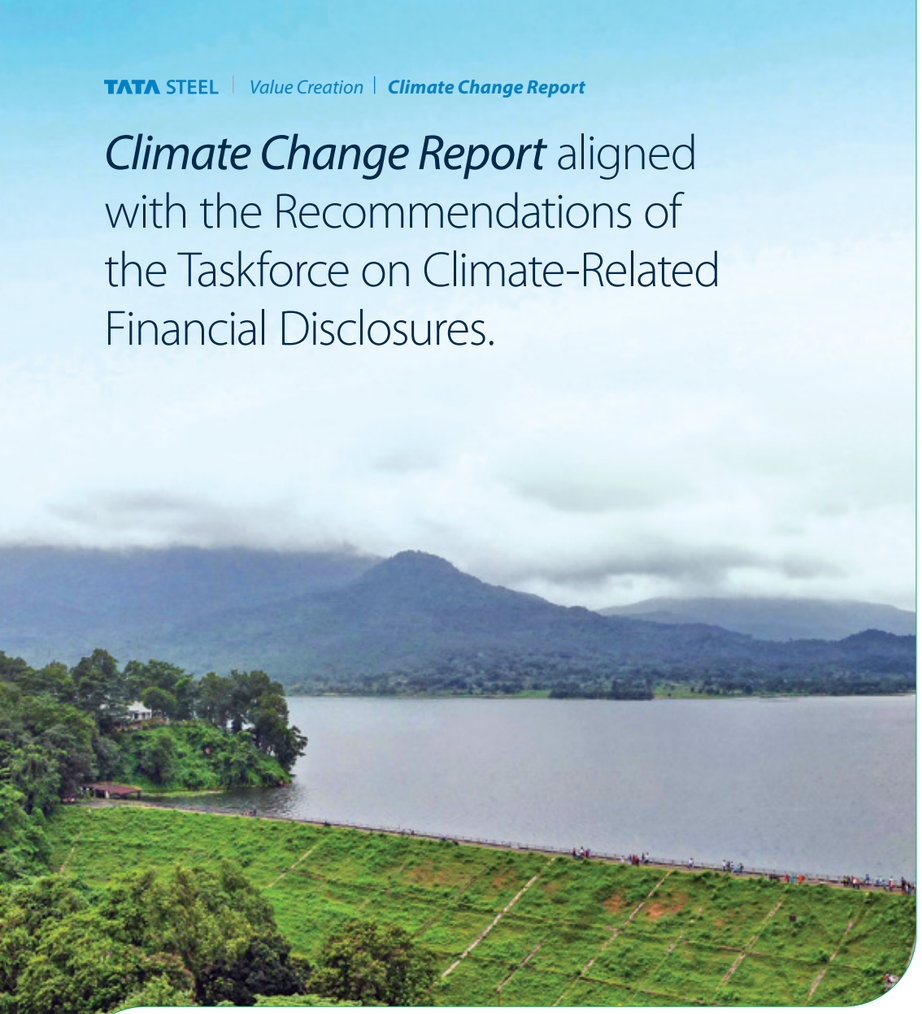
Climate Change Report aligned with the Recommendations of the Taskforce on Climate-Related Financial Disclosures.



Steel is a material of choice for economic growth and development worldwide, be it infrastructure, construction, energy, capital goods, conveyance, automotive, packaging, sustainable homes, and many other sectors. While it is the foundation of sustainable economic growth, the steel industry, like cement, power, chemical refining, airlines, etc. is a hard-to-abate sector from a climate change perspective.

70% of global steel production occurs through the traditional blast furnace route using coal as a reductant. While cost-effective and yielding high-quality output, the process creates a significant carbon footprint. Though the electric arc furnace production route, which utilises scrap which is comparatively sustainable, its range of value-added steel grades remains limited. The limited availability of scrap is also a challenge as most scrap metal is available in economically advanced regions, such as the US and Europe, which have a long history of infrastructure investment.

Steel producers worldwide are confronted with finding ways to reduce the emissions generated by steel production. These pathways will need to consider the availability of resources in specific regions, ensure a fair transition for the ecosystem and supply chain, and provide a financially viable and technologically sustainable solution.

As a responsible corporate citizen, Tata Steel places a strong emphasis on environmental, social and governance aspects in its corporate strategy. In the FY2022-23, the Company adopted the target to be Net Zero by 2045 across its operations. It aligns with the Tata Group target as part of 'Project Aalingana' and is an ambitious endeavour underlining the Company's strong commitment to

Rainwater harvesting park, Noamundi

sustainability. The Company is working towards the target as it evaluates investment priorities for achieving climate goals, considering shareholder value creation, customers' future needs, broader societal needs, and long-term growth.

The financial investments required for progressing towards Net Zero will be very significant and require the following critical enablers:

1. Availability of fiscal support to make the transition viable and affordable.
2. Policy support towards infrastructure development for new energy and last mile access to cleaner fuels including hydrogen
3. Policy support towards pricing of carbon emissions so as to incentivise reduction in CO_2, with a level playing field between importers and local producers
4. Policy support towards encouragement of consumption of low-emission steel especially in public sector and infrastructure projects
5. End customer and value chain's demand and willingness to pay for low-carbon, greener steel products
6. Scrapping policy and level playing regulatory policies for scrap sourcing being a highly unorganised sector in many parts of the world

Tata Steel is developing bespoke decarbonisation plans for its steelmaking operations in Europe, anchored around the demand for low-carbon steel products in the geography, the regulatory developments in the region, availability of viable transition options and fiscal and policy support for the transition. Several potential technology solutions are being evaluated and developed for decarbonisation of Tata Steel's steel operations globally. Given the options at various stages of development, and a bouquet of solutions is expected to emerge over the next decade for the India operations.

Tata Steel continues to promote circularity. Tata Steel UK has announced its decision to close its existing blast-furnace based heavy end operations and transition its entire steel production to a ~3 MTPA electric arc furnace (EAF) to be commissioned around end 2027, which will rely largely on available local scrap in the UK and reduce direct CO_2 emissions in its operations by ~5 MTPA. Tata Steel already operates electric arc furnace-based steelmaking facilities in Thailand, which recycle steel scrap and have a very low CO_2 emission intensity. The Company is setting up its first scrap-based greenfield EAF steelmaking facility in India, in Punjab. Tata Steel will also explore expanding the same process route to other locations in India.

As a founding member of TCFD (Task Force on Climate-related Financial Disclosures), Tata Steel played a crucial role in developing the TCFD standard. It is also one of the first companies in India to have adopted the recommendations of TCFD, pursuant to which it has undertaken extensive physical climate risk assessments and transition climate risk assessments using independent third-party experts across all its major steelmaking sites in line with the recommendations and incorporated them in its Enterprise Risk Management Framework.

This report discusses the four pillars of TCFD:

- Governance
- Strategy
- Risk Management
- Metric & Targets

A. Governance

Dalma View Point, Jamshedpur. Municipal solid waste dump transformed into a lush green picnic area

Tata Steel has adopted 'Leadership in Sustainability' as one of the four long-term strategic objectives. The Management undertakes climate risk assessment and identification of potential mitigation actions through a cascaded process across the organisation, which its Board of Directors then reviews. The Board has constituted specific committees (including the executive directors representing the business) which take a comprehensive approach to assessing climate risks and impacts and recommend appropriate strategies to deal with them:

- Corporate Social Responsibility and Sustainability Committee
- Safety, Health and Environment Committee
- Risk Management Committee

Under the supervision of the Board, Tata Steel's CEO & MD chairs the Apex Environment and Sustainability Committee. The committee sets the strategic objectives, reviews and monitors actions and performance, identifies risks, and proposes mitigation plans and new initiatives. The operating teams then develop the strategy, evaluate options, engage with relevant internal and external stakeholders, and pursue responsible advocacy to shape policy and carry out projects proactively.

Tata Steel has also created the Centre of Excellence (CoE) for GHG Emissions for greenhouse gas reduction and mitigation. It is chaired by the Vice President - Safety, Health and Sustainability and has cross-functional members from all parts of the organisation. The CoE for GHG Emissions also governs the budget against the sustainability corpus to support projects in reducing carbon emissions and water consumption.

Tata Steel has formulated a Decarbonisation Governance framework for continued monitoring, evaluation, and reporting of decarbonisation initiatives. It consists of 4 Vice-President led Tribes, to lead decarbonisation projects in respective focus areas, reporting to a steering committee chaired by the CEO & MD. The Project Management Office, led by Vice President - Safety, Health & Sustainability, drives project implementation.

Tata Steel's subsidiary companies' boards set their respective sustainability goals, which are aligned with Tata Steel's climate risk strategy and Net Zero by 2045 ambition. The Company's businesses in Europe have set themselves more accelerated decarbonisation targets given the climate regulatory framework in the European Union and the UK and societal priorities. The CEO & MD and ED & CFO of Tata Steel also chair the boards of key subsidiary companies, which facilitates the alignment of ESG governance across businesses and regions.

B. Strategy

Within the strategic transition framework to low carbon business configuration, Tata Steel's decarbonisation pathway is nuanced in each geography based on local regulatory context, policy support, competitively priced green energy availability and the associated delivery infrastructure and customers' willingness to pay for green steel.

Tata Steel Jamshedpur, part of Global Lighthouse Network. Applying Industry 4.0 solutions to drive financial and operational impact

India

India is currently the second-largest steel-producing country in the world. The National Steel Policy of India envisages 300 MT of annual steel production in India by 2030, and local demand is expected to continue increasing 4-5 times the current levels by the middle of this century. To capitalise on the opportunity, Tata Steel has a stated ambition to double its steelmaking capacity in India to 40 MTPA.

India's growth trajectory poses decarbonisation challenges for the blast furnace-dominated domestic steel industry. The sparse availability of competitively priced low-carbon fuel (Green Hydrogen and Natural Gas) and the associated delivery infrastructure significantly constrain the viability of such technologies at scale.

The relatively low level of embedded steel within the country's steel-intensive assets like infrastructure, automotive, and consumer goods indicates a low rate of scrap recovery from the supply chain in the medium term, as end-of-life steel recovery will take time to mature.

On the other hand, local iron ore reserves present a more natural and viable input for steelmaking. Carbon capture and storage technologies are nascent, while technology solutions for substituting carbon in blast furnaces are at the pilot or concept stage.

As yet, India has no regulated market or defined allocation of carbon credits to industry, which is necessary to build an economic framework and the foundation for the investment thesis for decarbonisation. It may be noted that India has already introduced the requisite legislation for an Indian carbon market through The Energy Conservation (Amendment) Bill, 2022. The Indian Carbon Market is being developed by the Bureau of Energy Efficiency in India. Initially, it is expected to cover select sectors, including the iron and steel sector, and then gradually expand to cover other sectors. The form and coverage of the Indian Carbon Market are expected to play a crucial role in India's emission reduction trajectory.

Tata Steel's transition strategy will seek to reduce reliance on fossil fuels in India progressively and will take into consideration both the regulatory development and the Company's decarbonisation ambitions:

Up to 2030

1. Installation and commissioning of modular scrap-based EAF plants strategically in India in scrap generating regions
2. Increasing the share of renewable energy in the power mix
3. Using higher amounts of scrap in its existing ore-based BOF steelmaking process assets
4. Reduction in use of coal by utilising lower CO_2 emission fuels such as biochar, natural gas, and coke oven gas
5. Piloting new low TRL (Technology Readiness Level) technologies in partnership with academia and OEMs (Original Equipment Manufacturers)

Up to 2045

1. Continuing capacity addition in India using the scrap-based EAF route
2. Full replacement of any fossil-based grid power with renewable power in the mix
3. Addition of new and alternate iron-making technologies like hydrogen/ gas-based DRI
4. Scale-up of HIsarna direct smelting technology
5. Scale-up of gas injection directly into blast furnaces to sharply reduce coal and coke use
6. Sustainable production, storage, and use of Green Hydrogen across the steel value chain
7. Upscaling pilots of Carbon Capture Utilisation and Storage (CCUS) and dovetailing with the existing processes
8. Developing value-added products using captured carbon.

The two low CO_2 candidate technologies for ore-based steel production that are likely to become scalable are:

(i) Retrofitting existing blast furnace-based facilities with CCUS solutions

(ii) DRI with Green Hydrogen, and any other hydrogen-enriched gas supplemented with the installation of EAF-type melting facilities for DRI

Tata Steel has identified both technologies as technology leadership focus areas and actively engages with technology providers, academia, and other companies regarding their development and scale-up.

To increase renewable energy use, Tata Steel commissioned a floating solar power project with a capacity of 10.8 MWp (Megawatt peak) on its upper cooling pond in the plant, bringing the total capacity to 20.34 MWp solar projects in the Jamshedpur Plant.

Tata Steel obtained environmental clearance and begun construction for the upcoming 0.75 MTPA scrap-based EAF facility in Ludhiana, Punjab, India.

Tata Steel has entered into a definitive agreement with Tata Power to source 379 MW of captive renewable power, which will reduce 50 MT of carbon emissions over the 25-year contract period. This arrangement will replace part of the existing coal-based power generation in the Company's Jamshedpur plant and cater to the Kalinganagar facility's requirements and the Ludhiana, Punjab, India EAF project.

Further, Tata Steel is in discussion with Tata Power Renewable Energy Limited to set up a captive solar power plant with 70 MW capacity in the state of Maharashtra. This project will generate ~17 MW of renewable power and reduce 115 kilotonnes of carbon annually. This will make ~49% of Tarapur and Khopoli power green. With this, Tata Steel Limited's total installed captive renewable power capacity will be 1,036 MW, meeting around 16% power requirement.

Tata Steel also completed a first-in-the-world trial of hydrogen injection in the E Blast Furnace in Jamshedpur, of up to 40% of injection capacity for 3.5 days.

As part of its ongoing efforts to decarbonise the steel sector, Tata Steel announced 'Tata Steel - Sprint to Zero' 2023 Challenge, an initiative to fund innovative research and development projects in low carbon hydrogen that offers tech-led or tech-enabled solutions to address green hydrogen technologies for the industrial sector's sustainable future. The announcement is part of the UK-India Hydrogen Partnerships, which builds on the UK-India Hydrogen Hub announced by the UK and Indian Prime Ministers in 2022. Tata Steel is the first sponsor of the UK-India Hydrogen Partnerships sprint series to support innovative projects in low-carbon hydrogen. The Company will also offer experiential engagement to selected entities as part of the Challenge, including priority access to its integrated steel plants.

Tata Steel has become the first Indian steel company to join hands with the Leadership Group for Industry Transition (LeadIT), aiming to collaborate with countries and companies striving to achieve Net Zero emissions in heavy industry. Backed by the World Economic Forum, LeadIT was instituted by the governments of Sweden and India during the UN Climate Action Summit in September 2019. This collaboration allows Tata Steel to gain valuable insights, best practices, and innovative ideas related to sustainable practices and green technologies in the steel sector.

Tata Steel and ABB have signed a memorandum of understanding (MoU) to co-create innovative models and technologies to help reduce steel production's carbon footprint. ABB will bring global experience in automation, electrification, and digitalisation to the mining and metals industries.

As part of scrap recycling in steelmaking, Tata Steel is increasing its share of scrap utilisation across Jamshedpur, Kalinganagar, Meramandali, and Gamharia. Using the short sea route, Tata Steel launched the Multimodal Service to streamline the scrap supply chain and move scrap from Chennai to Tata Steel sites. It is a first-of-its-kind green supply chain solution to containerise scrap movement on the east coast of India.

Tata Steel also received the first batch of deliveries of next-generation, green-fuel-powered commercial vehicles, including Prima tractor-trailers, tippers, and the Ultra EV bus, all powered by low and emission-free technologies – LNG and electric batteries. The green-fuel-powered vehicle will address the Scope 3 emissions in road transportation and reduce 0.74 kg CO_2/km using Electric Vehicles (EV) and 0.13 kg CO_2/km using LNG.

Tata Steel is also evaluating the feasibility of investments in gas-based DRI production, using natural gas, coke oven gas, or syngas from coal gasification as a transitional technology until cost-competitive Green Hydrogen becomes available.

Tata Steel has completed pilot projects at Tata Steel Meramandali and Tata Steel Nederland which makes use of E-Liability carbon accounting methodology. This methodology, developed by Prof Robert S Kaplan and Prof Karthik Ramanna, aims to help companies tackle ESG reporting in a more targeted and auditable way by measuring GHG emissions at a product level rather than an entity level. It thereby goes beyond the Greenhouse Gas Protocol and uses traditional accounting principles for carbon accounting.

Committed to sustainability, Tata Steel Nederland

Europe

Tata Steel aims to achieve a CO_2 reduction of about 40% as early as 2030 for its steelmaking site in IJmuiden, the Netherlands. For Tata Steel Nederland downstream sites, the ambition is to be carbon neutral by 2030.

The Company is engaged in a transformational project to replace its existing heavy-end iron and steelmaking assets at Port Talbot in the UK with an EAF. The transformation is expected to reduce direct emissions from the site by approximately 5 MT and reduce the direct CO_2 emissions per tonne of crude steel production by over than 90%. This transformation represents a huge stride forward for Tata Steel UK in meeting its Net Zero by 2045 ambition.

Driven by a combination of government action and the increasing expectations of customers and broader society, the pressure to decarbonise its steelmaking operations has been felt keenly in the UK and the Netherlands. The Dutch and the UK governments seek leadership positions in global climate action. The European Commission adopted its 'Fit for 55' package of proposals in 2021 to align the EU's climate, energy, land use, transport, and taxation policies with the legal objective of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990. Since then, the EU institutions have increased the stringency of the cornerstone EU Emissions Trading System (EU ETS).

Also, in specific industry sectors (cement, aluminium, fertilisers, electric energy production, hydrogen, iron and steel, some precursors, and a limited number of downstream products), free allocation of EU ETS will be gradually phased out. It is due to the introduction of the Carbon Border Adjustment Mechanism (CBAM), a new measure to mitigate the risk of carbon leakage as the EU ramps up its climate ambition.

The United Kingdom was amongst the first countries to legislate for Net Zero by 2050 and, in early 2021, announced its acceptance of the recommendations of its statutory advisory committee on climate change (UKCCC) to ensure (i) the UK achieves a 78% reduction in emissions by 2035 (compared to 1990) and (ii) that ore-based steelmaking in the UK achieves 'near-zero' emissions by 2035. In 2023, the UK government announced that it would tighten emissions reduction trajectory across the traded sector (i.e., those in the UK Emissions Trading Scheme (UK ETS)) in line with its Net Zero by 2050 legislation, which equates to a ~53% reduction in emissions by 2030 compared to 2019. It has also announced its commitment to a robust suite of measures to mitigate carbon leakage, including a UK CBAM, mandatory product standards, and measures to grow market demand for low-carbon products. The UK CBAM is expected to be effective from 2027.

Tata Steel understands that CBAMs for the EU and UK are vital to ensure a level playing field for steel producers in those regions while governments are pursuing climate policies that increase the cost of emitting CO_2. The precise design of CBAM requires careful attention to ensure that the extra costs faced by steel producers in the EU and UK do not cause the relocation of steel production and steel-intensive manufacturing to countries and regions of the world with little or no cost of emitting CO_2. At the same time, it is essential that a level playing field be maintained between the UK and the EU.

Tata Steel is committed to working closely with policymakers to deliver a profoundly significant contribution to achieving national emissions reduction aspirations. The Group's emission reduction commitments, participation in global initiatives and other actions to date are evidence of this. Across Europe, there is a growing recognition that steelmakers need government support to decarbonise. Steelmakers and governments in several countries are working together to develop their decarbonisation plans, with such discussions covering a selection of suitable technology, access to abundant, green energy supply and infrastructure at a competitive price, possible fiscal support from the national governments, and the need to create

a competitive regulatory environment. The agreement between Tata Steel and the UK Government to co-invest in the transition to EAF steelmaking at Port Talbot represents a milestone in joint decarbonisation efforts by a steel company and national Government.

The Netherlands

Tata Steel's steel manufacturing plant at IJmuiden, in the Netherlands, has two blast furnaces with a steelmaking capacity of 7 MTPA. Through consistent energy efficiency and process improvements since 1990, the plant has reduced approximately 15% of its CO_2 emissions per tonne of steel. With its CO_2 intensity being 7% lower than the European average, the IJmuiden plant is one of the most CO_2 efficient steel plants in the world (among the top three as per the World Steel Association benchmark).

Tata Steel has made a public commitment in the Netherlands to reduce its CO_2 emissions by 5 MT by 2030 through an accelerated transition process.

In November 2023, Tata Steel presented the updated Green Steel Plan to the government, covering the following three key objectives:

Clean: In the Netherlands, Tata Steel intends to prioritise reducing particulate matter and nitrogen dioxides. In addition to measures already being taken to reduce particulate matter, the Green Steel Plan contains non-statutory measures to cover raw material storage. These canopies prevent the drift of fine and coarse dust. Tata Steel is already implementing measures to reduce nitrogen oxide emissions, such as constructing a large DeNOx installation at the Pellet Factory, which will be operational in 2025, reducing NOx emissions by around 80% versus its 2019 baseline.

IJmuiden plant, the Netherlands - one of the most CO_2 efficient steel plants in the world

Green: From 2030 onwards, Tata Steel Nederland intends to reduce its CO_2 emissions by 5 MT, annually. To achieve this, the Company plans to replace Blast Furnace 7 and Coking and Gas Plant 2 (to be closed by 2029) with a Direct Reduced Iron Plant (DRP) combined with an electric arc furnace. The DRP will initially run on natural gas. As cost-competitive hydrogen becomes available in sufficient quantity, the plant would be able to run on hydrogen without any modification. The iron from this DRP will be used in the EAF and supplemented with scrap in a much larger quantity than currently used in the IJmuiden plant.

Circular: By 2030, the Company plans to increase the use of scrap in the IJmuiden plant to approximately 30% of total annual production. Thus, it will become less dependent on primary raw materials and more supportive of the circular economy principles.

The Green Steel Plan is a significant move towards reducing environmental and climate impact as quickly as possible. It will probably be the most prominent industrial transition in the Netherlands in the coming years. Tata Steel is discussing the Green Steel Plan with the Ministry of Economic Affairs, the province of North Holland, and simultaneously engaging with suppliers, customers, the local community, and other stakeholders.

The Green Steel Plan entails significant investment by Tata Steel and can succeed only with policy and financial support from the government. With the submission of the plan, a new phase has begun in the discussion between Tata Steel and the Dutch government, and both parties will continue to discuss and negotiate to reach a final agreement for its implementation.

Tata Steel has introduced Zeremis® Carbon Lite – steel with an allocated carbon footprint reduction of up to 90%, gaining traction among customers in various industries, including automotive, construction, and new mobility sectors. Tata Steel has signed a Memorandum of Understanding (MoU) with Snop and Gedia for the long-term steel supply with a lower environmental footprint. Initially, Tata Steel intends to provide Gedia with Zeremis® Carbon Lite steel, with an allocated carbon footprint reduction of up to 90%. Tata Steel will provide Zeremis®-embodied green steel when the IJmuiden steelworks adopts its new steelmaking route.

Tata Steel has also launched Zeremis® Delivered, which allows customers to receive their steel orders through lower-emission transportation methods. The service enables customers to reduce their Scope 3 emissions and other emissions linked to the transportation of steel. Under the Zeremis® Delivered brand, the Company has introduced a broad range of zero-emission logistics solutions across modalities such as battery electrification and fuel cell technologies.

Tata Steel has signed an agreement with Swedish metal company Boliden to procure low-carbon zinc, which has one of the lowest CO_2 footprints of any refined zinc globally. According to Boliden, the supplied zinc emits less than 1 tonne of CO_2 per tonne of zinc, compared to the industry average of 3.6 tonnes.

Tata Steel has also completed over thirty environmental investments from the Roadmap Plus programme to reduce air emissions, including dust and noise pollution at IJmuiden. For example, three new dedusting installations were implemented in IJmuiden at the beginning of 2024. In the Pellet Plant at IJmuiden, a dust-removal installation was fitted. With this expansion, Tata Steel expects to reduce emissions of particulate matter, lead and other heavy metals by approximately 80% at the Pellet Plant.

In February 2024, Tata Steel started two major projects as part of the Roadmap Plus improvement programme:

» DeNOx installation at the pellet plant will capture NOx compounds and reduce nitrogen oxide emissions by 80% versus a 2019 baseline.

» An 18-metre high and 1,000-metre long windbreaker to reduce dust emissions from raw material storage.

Tata Steel Nederland has also completed the pilot project, which makes use of E-Liability carbon accounting methodology.

Tata Steel UK

The United Kingdom

On September 15, 2023, Tata Steel announced that it had reached an agreement with the UK government on proposals that would see the two blast furnaces at Port Talbot replaced with an electric arc furnace (EAF). The EAF and associated investments will cost £1.25 billion. The UK government will pay £500 million, and Tata Steel will fund the balance. To be able to deliver the proposed electric arc furnace by 2027, Tata Steel has begun engineering design work and construction planning for a furnace that would be among the most modern in the world.

The project will bolster the UK's steel security and be the first leap towards decarbonising the UK steel industry, potentially reducing direct carbon emissions by 5 MTPA, a 90% reduction in direct emissions. It will also be transformational regarding the UK's progress towards a more circular economy, leveraging domestically available scrap steel and promoting value addition.

Subsequently, after seven months of formal and informal national-level discussions with the UK trade unions, Tata Steel has announced its decision to proceed with closure of the existing heavy-end assets. The two Blast Furnaces, No.5 and No.4, at Port Talbot will close by the end of June 2024 and September 2024, respectively. Following the closure of Blast Furnace No.4, the remaining heavy-end assets will wind down.

During the transition period and project phase, Tata Steel will ensure uninterrupted and reliable product supply to fulfil customer and market commitments, through the import of hot rolled coil and slabs from stable and responsible supply chains, including its plants in India and the Netherlands, to feed its downstream units.

Tata Steel has already progressed the EAF investment programme to an advanced engineering stage and expects to place equipment orders by September 2024. Based on current timelines, construction on the project will begin by August 2025. Tata Steel has also accepted a revised and updated connection offer from National Grid, the UK's power infrastructure company, ensuring it will have the power infrastructure to commission the EAF on schedule by the end of 2027.

C. Risk Management

Tata Steel uses its Enterprise Risk Management process to manage climate change risks across the organisation in an integrated and uniform manner. The process identifies and assesses business risks using a two-pronged approach, i.e. bottom-up and top-down, to ensure comprehensive risk identification and to minimise blind spots. Appropriate early warning indicators and mitigation strategies are identified for review by the Risk Management Committee of the Board.

Tata Steel has also undertaken a detailed and systematic assessment of the physical and transition risks in a Climate Risk assessment focusing on its key steelmaking sites in India, the Netherlands, and the UK. An independent third-party advisor conducted the assessment in line with the TCFD recommendations.

Championing the cause of a sustainable tomorrow for all

Summary of Climate-Related Risks for Tata Steel

Physical risk

Description

Operational disruption in steelmaking facilities due to extreme climate (physical) events leading to loss in profitability

Impact

Operating cost, lost revenue and capex

Mitigation

Tata Steel Limited

Tata Steel Nederland BV

Tata Steel UK Limited

1. Natural Hazard and Climate Change Hotspot analysis for key operating locations covering major upstream mining sites, steelmaking facilities and ports that are part of the major supply chain networks
2. Augment structural designs to avoid damage and disruptions due to high wind speed, where applicable
3. Maximise water recycling within the plants, utilise treated municipal wastewater, harvest rainwater, and increase stormwater recovery to minimise dependency on freshwater demand in operations

Transition risk

Description

Development in climate change regulations and disclosure standards, reducing access to capital and increasing the cost of funding

Impact

Interest cost

Mitigation

Tata Steel Group

1. Tap the pool of sustainability-linked financing for growth and decarbonisation investment
2. Prepare and communicate the decarbonisation action plan to external stakeholders for achieving carbon emission reduction targets

Description

Inability to address stakeholders' expectations (regulatory bodies, community and society, customers, etc.) regarding environmental impact may affect operations, lead to the closure of select assets, cause reputational damage and lead to the withdrawal of social licence to operate

Impact

Operating cost, asset closure

Mitigation

Tata Steel Limited

1. Implement key projects such as achieving zero effluent discharge, installing pollution control equipment, etc.
2. Strengthen online monitoring for real-time detection of abnormalities

Tata Steel UK Limited

1. Asset integrity monitoring programme and failure reduction programme
2. Set up and implement a transparent and regular engagement with the community to provide them with information, communicate action plans, understand their concerns, take appropriate action, and provide updates on the actions underway

Tata Steel Nederland BV

1. Roadmap 2030 and Roadmap+ programmes, including the dust reduction programme and construction of the Pellet Plant DeNox facility
2. Asset integrity monitoring programme and failure reduction programme,
3. Assure compliance with the best available technology regarding stack dust measurements
4. Set up and implement transparent and regular engagement with the community to provide them with information, communicate action plans, understand their concerns, take appropriate action, and provide updates on the actions underway

Transition risk (cont.)

Description

Cost of carbon compliance:
(a) Impact on operational costs from direct carbon pricing
(b) Impact of carbon border taxes
(c) Use of more expensive but greener energy

Impact

Operating cost

Mitigation

Tata Steel Limited

1. Develop short-, medium- and long-term decarbonisation plans in line with the anticipated market and policy landscape
2. Align long-term capital expenditure plans with the Company's carbon emission target
3. Pursue deep decarbonisation through (a) Carbon Capture, Storage & Usage and (b) Carbon direct avoidance

Tata Steel Nederland BV

1. Close monitoring of required production volumes and taking further actions where appropriate to achieve threshold volumes
2. Decarbonise steelmaking operations in line with the EU's short-term and long-term targets by transitioning to green hydrogen-based steelmaking

Tata Steel UK Limited

1. Pursue asset reconfiguration to achieve a financially sustainable and low-carbon future

Opportunities for the business related to Climate Change

New products and increased revenue

The increasing demand for lightweight and carbon-efficient steel products in the mobility space creates potential for high-strength steel grades, opening new market opportunities for steel manufacturers. The incentivising green steel premia available to early movers is also attractive. Tata Steel looks to capitalise on the opportunity and increase its product portfolio's share of advanced high-strength steel grades and green steel.

Green infrastructure

Steel is essential to green electricity generation, storage, and transmission. It is used in wind turbines, transmission and distribution infrastructure, hydropower, nuclear power plants, battery manufacturing, and transportation of green fuel (e.g. green hydrogen pipelines). Tata Steel is conscious of the global transition to green energy and is constantly building a product portfolio to support the demand from the green industrial revolution.

Cost reduction and optimisation opportunities

Tata Steel consistently invests in renewable energy infrastructure to replace fossil fuel-derived energy. With the carbon-related regulatory framework maturing across Europe, decarbonising its value chain will also reduce the Company's compliance cost associated with emissions trading schemes. Tata Steel is also working on a sustainable finance framework that would reduce the cost of financing.

D. Metrics and targets

The long-term decarbonisation roadmap is based not only on compliance with national targets in local geographies but also on the Company's commitment to Net Zero by 2045.

Reporting methodology

Tata Steel reports its emissions per the GHG (Greenhouse Gas) Protocol, a sector-agnostic emission reporting methodology that helps investors make capital allocation decisions across sectors. It has been prepared by the World Resources Institute and the World Business Council for Sustainable Development and is the world's most widely used greenhouse gas accounting standard for companies. The use of the GHG Protocol has also been recommended by the standards issued by the International Sustainability Standards Boards (ISSB) under the IFRS Foundation, the Science Based Target Initiative (SBTi), and the CDP (formerly Carbon Disclosure Protocol).

Tata Steel also reports its emission intensity based on the World Steel Association (WSA) guidelines. These guidelines were initially derived from the GHG Protocol methodology and have been explicitly designed for and widely adopted by the steel sector. The guidelines provide for site-wise emission reporting by steel companies based on standard definitions and agreed-upon boundaries. The data collection programme enables individual steel plants to compare themselves against the sector's average and best performance and identify the scope for improvement.

Tata Steel has adopted a standard and consistent set of emission metrics and targets across its global operations.

KPI

- Total emission, Scope 1, 2 and 3, as per the Greenhouse Gas Protocol
- Emission intensity per tonne of crude steel, as per the WSA methodology.

Target

- Net Zero by 2045

Disclosure

The World Steel Association has recognised Tata Steel as a 2024 Steel Sustainability Champion for the seventh consecutive year. It was a founder participant in WSA's Climate Action programme and has been recognised as an accredited Climate Action member ever since. It has developed sector-leading expertise in life cycle assessment. This tool enables it to understand the CO_2 impacts of products holistically, taking account of emissions from raw material extraction through production and use of finished products, such as buildings to the end of life. It is the first steel company globally to become an operator of its own Environmental Product Declaration (EPD) programme, through which it produces EPDs that are shared with customers to enable them to understand the carbon and other environmental impacts associated with Tata Steel products.

ResponsibleSteel™ is the steel industry's first global multi-stakeholder standard and certification initiative. It works with steel producers, consumers, and intermediaries to build a sustainable steel industry by addressing pressing challenges, including climate change, diversity, human rights, and more.

Tata Steel continues to lead the way in sustainable steel production as its Kalinganagar and Meramandali plants received the prestigious ResponsibleSteel™ Certification in FY2023-24. It marks a significant milestone in the Company's sustainability journey, following Jamshedpur's historic achievement as the first Indian steel plant to receive the certification in 2022. In India, Tata Steel now has more than 90% of its steel production from ResponsibleSteel™ certified sites.

Tata Steel has a long, unbroken record of annual disclosure to CDP. Its most recent disclosure in 2023 secured a rating of A-, placing it very close to the top within steel sector listings. Tata Steel's performance on its key performance indicators has been disclosed in the Business Responsibility and Sustainability Report and the ESG Factsheet, included in the Company's Integrated Report for FY2023-24.