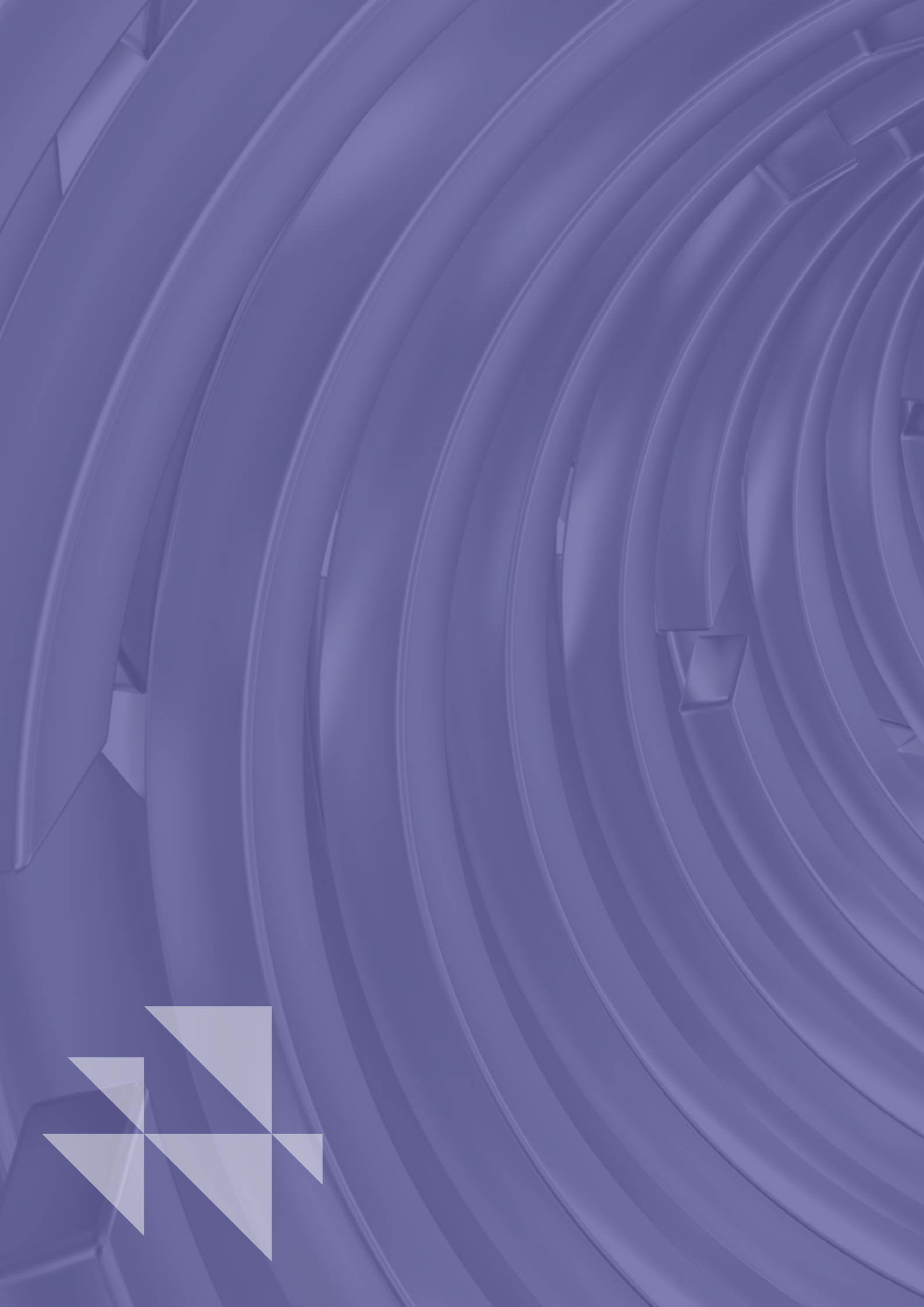
Informing Policy with Disclosure

Insights from CDP data for Steel Companies



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Preface

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The steel industry is responsible for 2% of the country's GDP, and about 7% of its greenhouse gas emissions. Steel production currently accounts for around 242 Mt of carbon dioxide (CO_2) emissions annually and this is expected to double by 2030 (and triple by 2050), with increased production for meeting domestic and global demands.

While the government of India's National Policy for steel has projections of double steel production by 2030, production processes are still coal intensive with most steel still made using coal to reduce iron ore. This process emits roughly two tonnes of CO_2 for every tonne of steel produced. The evaluated exposure to climate-related risks and opportunities over a range of time horizons allows for the assessment of an internal strategy for the transition to a net-zero carbon economy.

Steel companies disclosing to CDP India (2022 data) have reported climate-related issues such as water scarcity, changes in precipitation patterns, enhanced emissions-reporting obligations, and increased cost of raw materials all of which could cost them approx. 194.4 INR billion. However, the cost of action for private players to decarbonise is 21% (161.3 INR billion) lower than the cost of inaction. This provides adequate reasoning for prompt action to leverage a transition to clean production and energy in operations.

This report generated from CDP disclosures from April 2022 to July 2022 attempts to look at the trends of steel companies based on voluntary information provided. It looks at climate change risk and opportunities identified by these companies, cost of response to risk and action, emissions, and energy profiles. The report also gives a brief overview of the global scenario with insights into disclosure of global steel companies to enable a comparative idea.

We hope that the report will provide useful insights on opportunities on steel sector decarbonization and generate discourse on the policy push required.

Prarthana Borah,
Director, CDP India

List of abbreviations

AISC	Asian Iron & Steel Council
CBAM	Carbon Border Adjustment Mechanism
CPCB	Central Pollution Control Board
CREP	Charter on Corporate Responsibility for Environment Protection
CISA	China Iron and Steel Association
CEM	Clean Energy Ministerial
GHG	Greenhouse Gas
ISSDA	Indian Stainless Steel Development Association
ISA	Indian Steel Association
IDDI	Industrial Deep Decarbonisation Initiative
JISF	Japan Iron and Steel Federation
KOSA	Korea Iron and Steel Association
LT-LEDS	Long Term- Low Carbon Development Strategy
NAPCC	National Action Plan for Climate Change
NMEEE	National Mission for Enhanced Energy Efficiency
NSP	National Steel Policy
NDC	Nationally Determined Contributions
PAT	Perform Achieve & Trade
VSA	Vietnam Steel Association
WSA	World Steel association

Background

The steel sector has been the cornerstone of the India's economic development, and although acting as a necessary engine for economic growth, the steel sector is highly energy- and resource-intensive. Owing to which, currently the steel industry is one of the biggest emitters of carbon dioxide and is a "hard to abate" sector in terms of reducing greenhouse gas (GHG) emissions. It is not surprising therefore that steel, not just in India, but across the globe, is at the centre of the discussion on the decarbonization challenge.

Steelmaking processes

Crude steel is produced via two dominant routes, a primary and secondary route. Of the two the **oxygen route dominates the global production:**

- **OXYGEN ROUTE** – this route is commonly referred to as the BF-BOF route (Blast Furnace – Basic Oxygen Furnace). The BF produces iron from the raw material iron ore which goes into the blast furnace together with coke (made from coking coal). Coal is used to create the high temperature required to melt iron ore. Hereafter, the liquid iron goes into the BOF where oxygen is blown onto the liquid form after which steel is produced. (While India is self-reliant when it comes to iron ore and coal, coking coal on the other hand is mainly imported. In FY22 57 million tonnes of coking coal was imported.)

- **ELECTRIC ROUTE** – this route is commonly referred to as the Direct Reduced Iron -Electric Arc Furnace (DRI-EAF) route. Here steel scrap or sponge iron (known as direct reduced iron) are mostly used as a raw material in the furnace. Instead of coal, the heat produced to melt the steel scrap or sponge iron is generated by electric power. While the BF-BOF route can also use steel scrap, it can only do so up to a certain amount; electric furnaces on the other hand can function entirely using steel scrap.

Steel sector - highlights from India

India is currently the world's second largest steel producer, having produced 114.2 million tonnes (MT) of steel in 2022 from January to November[1]. According to various literature, this steel production in India is set to increase significantly over the next few decades driven by domestic and global demand. Consequently, the emissions from steel production would rise and are expected to double by 2030 and triple by 2050[2].

The steel industry in India is responsible for 2% of the country's GDP[3], and about 7% of its greenhouse gas emissions[4]. Also, it has a high carbon footprint and contribute roughly 30% of India's industrial energy consumption. This is attributable to the fact that coal provides around 85% of the energy used for iron and steel, and the sector makes relatively little use of recycled **scrap[5]. This means that India's steel industry is more emissions-intensive than its counterparts in other countries.**

In a welcome move, during COP 26 at Glasgow, India committed to become **net-zero by 2070**. Since approximately 7% of greenhouse gas (GHG) emissions come from the steel industry, **the steel sector will have to play a significant role in achieving this commitment[6].**

As an established fact, India needs to grow and develop, and this must happen at a time when the world is running out of carbon budget to stay below the 1.5°C temperature rise. Hence, this growth must be low in carbon, and it must be as green as it can be. Simultaneously, the steel industry is also expected to continue growing in the coming decade, driven by factors such as infrastructure development, urbanization, and rising demand for steel in the construction, automotive, and manufacturing sectors.

Whilst development needs to be prioritized, the significant negative environmental impacts from iron and steel production cannot be ignored. **One of the major challenges that the Indian steel sector faces is its heavy reliance on coal throughout various steel making processes and it is also plagued by obsolete and inefficient technology.** Hence, one needs to think strategically to develop and adopt energy efficient and latest technological innovations that substantiate cuts in CO_2 emissions which are essential to get on track with the net-zero target.

1 November 2022 crude steel production - worldsteel.org
2 Coal: Carbon emissions by India's steel sector to triple by 2050, Energy News, ET EnergyWorld (indiatimes.com)
3 The Indian steel industry: Growth, challenges and digital disruption (pwc.in)
4 steel industry: How India can decarbonise the steel industry - The Economic Times (indiatimes.com)
5 India_Energy_Outlook_2021- IEA
6 steel industry: How is India planning to decarbonise the steel industry - The Economic Times (indiatimes.com)

India is also one of the most vulnerable countries when it comes to the impacts of climate change, with higher average temperatures impacting water scarcity, desertification, the propagation of disease and heat-related illnesses (IPCC 2018). Therefore, prompt action needs to be taken to mitigate future emission increases.

As India looks towards both increases in steel demand and a national target of net-zero emissions by 2070, steel decarbonization is an imperative and a crucial pathway for the industry. The existing policy and economic tools will have to be ambitious enough to facilitate a seamless transition to green technologies to produce net-zero steel quickly enough to meet the country's overall goals.

However, in the Indian steel industry low carbon development is a big challenge as opposed to developed economies. The Government, through various schemes and regulations, is facilitating reduction in energy consumption and emission of environment pollution in steel plants. Some of the steps /initiatives being taken through various forums and mechanisms are discussed holistically in this report.

Building a case for steel companies to act through data

Transparency around environmental impact is essential for businesses to measure their greenhouse gas emissions, and eventually reducing them. According to the report "The Closing Window[7]", the international community is falling far short of the Paris agreement goals, with no credible pathway to 1.5°C. **India stands far below the world average at 2.4 tCO_2e per capita emissions and yet India is counted as the third largest emitter of carbon dioxide by volume, after US and China.**

7 https://www.unep.org/resources/emissions-gap-report-2022

In a data-driven world, it has become common to say that “what gets measured, gets managed”, implying that the process of seeking measured data triggers management of data. Corporate disclosure of comparable and consistent environmental information is the foundation for transformative action. It can help accurately account for both risks and impacts of economic activities and in so doing, support the green transition. Such information helps stakeholders including investors, large buyers, policy actors, civil society and consumers make smarter decisions and increase their expectations of companies with respect to their environmental performance. This in turn compels companies to act.

By taking action to reduce its carbon emissions, the steel sector in India can enhance its reputation and credibility with stakeholders such as customers, investors, and policymakers.

This can help the industry attract investment, access new markets, and build trust with its stakeholders, going ahead. The following sections lays down a clear picture and insights from data of steel companies disclosing to CDP both worldwide and India.

It is worth noting that listed entities already preparing and disclosing sustainability reports based on internationally accepted reporting frameworks (such as GRI, SASB, TCFD or Integrated Reporting) may cross-reference the disclosures made under such framework to the disclosures sought under the BRSR by Indian Regulator, SEBI.

Global steel industry - companies disclosing to CDP worldwide

Emissions profile

115 steel companies report to CDP worldwide.

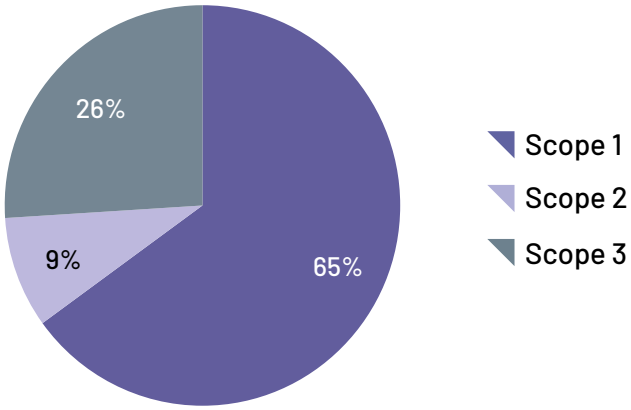
As per CDP 2022 global data, these 115 Steel companies[8] reported a total carbon equivalent emission of about **1300 million tonnes CO_2e.** Looking at the emissions across three scopes, **Scope 1 emissions holds the largest share (844 $MtCO_2$) followed by Scope 3 emissions (335 $MtCO_2$) and Scope 2 emissions (121 MtCo2)[9] of all the reporting companies' data.** More companies disclosing automatically leads to more GHG emissions data. However, it is interesting to note that worldwide Scope 3 emissions (indirect emissions) are greater than scope 2 emissions (direct emission). **This is reflective of the fact that worldwide companies are increasingly engaging with their value chains partners and monitoring their respective emissions.** They often represent the majority of an organization's total greenhouse gas (GHG) emissions. While Scope 1 and 2 are mandatory to report, scope 3 is voluntary and the hardest to monitor.

Purchased goods and services and use of sold products hold the maximum share of the scope 3 emissions worldwide followed by **downstream and upstream transportation and distribution. Purchased goods and services category** includes all upstream (i.e., cradle-to-gate) emissions from the production of products purchased or acquired by the reporting company in the reporting year. Products include both goods (tangible products) and services (intangible products). **Use of sold products** includes emissions from the use of goods and services sold by the reporting company in the reporting year.

8 This is inclusive of Indian companies reporting to CDP India
9 Scope 2 emissions: Market + location based

A reporting company's scope 3 emissions from use of sold products include the scope 1 and scope 2 emissions of end users. End users include both consumers and business customers that use final products. **Scope 3 emissions can be upstream or downstream, depending on where they originate along the value chain. Upstream emissions come from the goods and services that a company acquires, whereas downstream emissions come from the goods and services that a company sells.**

Gross emissions - global steel companies



Financial risks and opportunities – global data (snapshot)

- Globally, 115 steel companies reporting to CDP worldwide have reported climate related risks of **4,413 INR billion** while the cost of response to risk is **32,056 INR billion**.

- **Primary Risk drivers in global market-** Physical risks by way of changing precipitation patterns, temperature variations, current and emerging regulations such as carbon pricing mechanisms, changing mandates and regulation of existing products and services, changing customer behaviors, increased cost of raw materials and legal litigation risks.

- The total cost of opportunity reported by steel companies is **3,548 INR billion**.

- Identified Opportunities in global market—Resource efficiency, alignment with science based targets, carbon market engagement, decarbonising value chain, Improved ratings by sustainability/ESG indexes, Increased sales of liability and other insurance to cover climate-related risks, Access to new investors, improved climate and ESG reporting are some of the many opportunities that have been identified in global steel market.

- The cost to realize opportunity in terms of **strategies** and **costs** that a company will undertake with respect to efficient production, enhanced production as a result of increase in demand of products, deploying efficient mode of transportation, interventions to reduce carbon footprints, roadmap to increase renewable energy portfolio, adaptation plan to build resilience among others, stands at around half the above cost i.e., at **1,728 INR billion**.

- These opportunities are mapped against **SDG Goal 7**: Affordable and clean energy, **SDG Goal 12**: Responsible consumption and production and **SDG Goal 13**: Climate action.

The subsequent section elaborates on a deeper sectoral analysis of the **Indian steel companies** reporting and disclosing through CDP.

Indian steel industry - CDP India journey

Climate change risk identified by the steel sector

"JSW Steel, Mahindra Sanyo Specials, Tata Metaliks Ltd and TATA Steel have been consistent reporters of CDP's disclosure platform. JSW steel has also been highlighted this year for its environment leadership with a score of "A"."

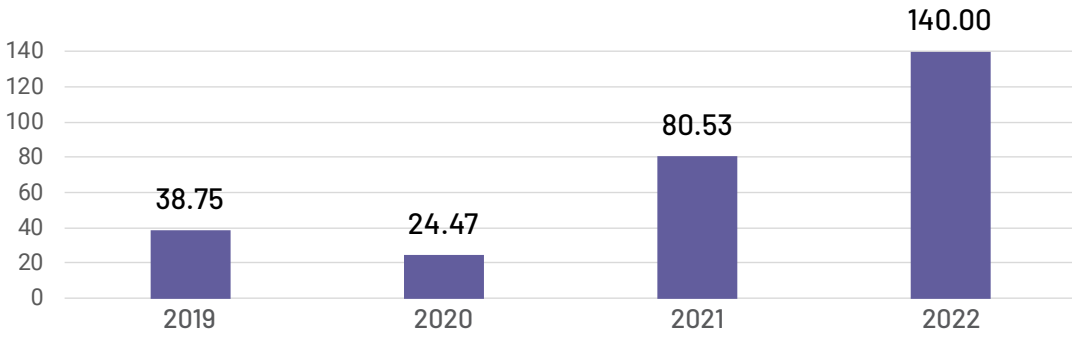
Risks emanating from climate change manifest in myriad ways and can affect a businesses' value chain, cause physical damage, or pose a threat to its reputation. These can have profound latent impacts on an organization. Climate change has already prompted substantial transitional adjustments to the global economy. Businesses are taking cognizance of the fact that impacts of climate change are far-reaching, both in depth and magnitude.

However, it is known that climate change impacts and risks are becoming increasingly complex with each passing day having serious repercussions to people and planet. The financial impacts of climate-related risks and also opportunities on a company are not always direct and obvious; therefore, the process of identifying material issues and establishing the risk cause-impact relationship to assesses financial impacts is a challenging process.

CDP's framework therefore places immense emphasis on assessing and reporting on the actual and potential impacts of climate related risks and opportunities. Companies reporting to CDP will be ahead of their peers in considering material risk and shall be ahead for attractive investment propositions than those which do not disclose.

A future oriented identification, assessment & response mechanism to climate related impacts is crucial to ensure an organization's competitiveness and long-term value creation. The evaluated exposure to climate-related risks and also opportunities over a range of time horizons allows for the assessment of an internal strategy for net-zero transition. The trend graph of climate change risks being reported by steel companies over last four years is depicted on the next page:

Climate change financial risks identified by steel sector in INR billion (average)



As is depicted in the graph above, our analysis shows that the risks identified by the steel companies disclosing through CDP have magnified over the time on an average ranging from 38.75 INR billion in 2019 to currently standing at 140 INR billion. **This is also reflective of the fact that the Indian companies are being increasingly aware of the risks being posed by climate change on their governance structure and hence are internalizing these risks in their strategy build up, going forward.**

Water scarcity, carbon pricing mechanism, heavy and changing patterns of precipitation, enhanced emissions reporting regulations, and increased cost of raw materials, are the primary climate risk drivers as identified by reporting companies. Extreme weather events negatively impact the operations of the company and lead to operational shutdowns resulting in production loss as well as damage to assets and facilities. Water is a key resource required in steel production process, particularly for cooling. Changing climatic patterns, increasing temperature and erratic rainfall will negatively impact availability of water in medium to long-term.

Indian steel companies responding to CDP have also raised concerns of **maximum relevance** of risk from emerging regulation such as **"Carbon pricing mechanism"** which have a binding impact on direct operations of the company leading to increased indirect operating costs. They have identified EU's Carbon Border Adjustment tax (CBAM) and the future carbon market that India plans to lay down to pose regulatory risks to these companies. Carbon markets have been successful in reducing green house gas emissions by setting a limit on emissions and enabling their trading. Trading enables entities that can reduce emissions at lower cost to be paid to do so by higher-cost emitters, thus lowering the economic cost of reducing emissions.

The Government of India is expected to roll out the carbon market in phased approach which is expected to overcome the barriers and encourage voluntary entities to participate in meeting India's NDC commitments, which would primarily involve increasing demand first, increasing supply in the market in the second phase and then progress towards a Cap & Trade system in its final phase around FY30 (as envisaged by Bureau of Energy Efficiency, under Ministry of Power, Government of India). Based on these developments it is expected India will have a carbon market mechanism in medium term (by 2030) timelines. Hence, it is quite evident from the trend and perception that the corporate agencies expect a stringent regulatory approach towards climate change affairs in times ahead. In the National context, evolving role of BRSR would be crucial and more so will be the alignment of CDP with ISSB. *This alignment will be critical in boosting corporate action and accountability, providing financial markets, governments and regulators with clear, comparable data to inform their decision making.*

Policy push

Charter on Corporate Responsibility for Environment Protection (CREP)

This is an initiative of Ministry of Environment & Forests/ Central Pollution Control Board (CPCB) in association with Ministry of Steel and the main/ major steel plants to reduce environment pollution, water consumption, energy consumption, solid waste & hazardous waste management etc as per mutually agreed targets through various measures including waste minimization, in-plant process control & adoption of clean technologies. A National Task Force (NTF) has been formed for implementation of CREP recommendations. Ministry of Steel facilitates compliance of CREP action points in association with the steel plants. National Task Force (NTF) has recently been reconstituted.

National Action Plan on Climate Change (NAPCC)

National Action Plan for Climate Change (NAPCC) was launched in 2008 to address the Challenge at national level. NAPCC outlines eight National Missions, one of them being the **National Mission for Enhanced Energy Efficiency (NMEEE)**. Perform Achieve & Trade (PAT) is the flagship scheme under NMEEE. PAT is a market based mechanism through certifications of energy savings which could be traded. PAT has become effective from April 2012. **The PAT Scheme has so far covered 163 numbers of Iron & Steel Units in India.** The threshold limit of energy consumption of 20,000 tonnes of oil equivalent (toe) per year has been marked as the cut-off limit criterion for any unit in the iron & steel sector to be identified as designated consumer. The methodology of setting targets for designated consumers is based on reduction of specific energy consumption (SEC) on a gate to-gate (GtG) basis. **The steel sector has been able to achieve the total targeted energy savings from PAT Cycles PAT-I, PAT-II & PAT-III for the period from 2012-20 to the tune of 5.5 MTOE (Million Tonne of Oil Equivalent) and corresponding CO_2 reduction of 20 $MtCO_2e$.**

https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1794782

Policy push - national steel policy

India's National Steel Policy (NSP) 2017 came into effect on the May 8 2017, replacing the 2005 NSP. With the new NSP the Government of India has placed the steel sector at the heart of its growth narrative. It prioritises the strategic importance of a thriving domestic steel industry which it equates to the country's economic growth pushed by the infrastructure and construction sectors. Citing explicit examples of East Asian countries like Japan, South Korea and China, the steel industry in the NSP is seen as a crucial link in the narrative of becoming a "developed nation". Clear emphasis is placed on creating a "globally competitive industry" with high quality steel. Apart from the abundant reserves of iron ore and non-coking coal, India's competitive advantage is steered by the "growing domestic demand, a strong MSME sector and a young workforce with competitive labour costs". Focus is directed towards providing self-sufficiency in steel production.

Key features in the 2017 policy:

- Explicit aspiration to increase the crude steel capacity to 300 million tonnes (MT) by 2030-31. This stands against the production of crude steel of 133.596 MT in FY22.

- Expectation to increase the consumption of steel from 61 to 160 kgs per capita (with a world average of 208 kg) by 2030-31.

- Initiatives such as 'Make in India' are expected to surge the domestic demand with sector-wise leads as the construction and infrastructure industry, followed by the automobile, shipbuilding, and power sectors.

- To achieve the goal of doubling India's steel capacity additional financing is required. The policy document refers to capital investment of Rs. 10 lakh crores by 2030-31, which accordingly would create employment opportunities of approximately 36 lakhs by 2030-31 compared to the present 25 lakhs.

- The policy projects the BF-BOF route to dominate, contributing to about 60 - 65% of the crude steel production and 35 – 40% of the production to be via the EAF & IF route in 2030-31. **It has to be noted here that the BF-BOF route is much more difficult to decarbonize as compared to the DRI-EAF route where renewable sources can be used to generate electricity.**

The NSP refers to COP21 and the promise to reduce the emission intensity of the GDP by 33-35% by 2030. Ministry of Steel submitted the Intended Nationally Determined Contributions (INDC) for **reducing GHG emissions** in iron & steel sector which inter-alia projects:

- CO_2 emission of 2.2 – 2.4 tonnes per tonne of crude steel in BF-BOF route and

- 2.6 – 2.7 tonnes per tonne of crude steel in DRI-EAF route by the terminal year of 2030.

Interestingly, the policy also explicitly recognizes and addresses the environmental concerns of the **coal-based route** – which according to the policy will be the dominant route. It states: **"Capacity additions through coal-based routes will have far reaching implications for India in terms of environmental degradation. Hence, necessary efforts will be made to have a judicious mix of production routes to reduce the carbon footprint of steel sector in line with the INDC targets".** Out of the nine objectives of the policy, two explicitly incorporate the aim to move towards a sustainable way of producing steel:

- "Encourage industry to be a world leader in energy efficient steel production in an environmentally sustainable manner" (objective 6).

- "Substantially reduce the carbon foot-print of the steel industry" (objective 9).

While the overall objective of the policy is to give a clear impetus for the domestic steel sector to grow, environmental considerations have also been incorporated in the NSP.

NATIONAL_STEEL_POLICY_2017.pdf

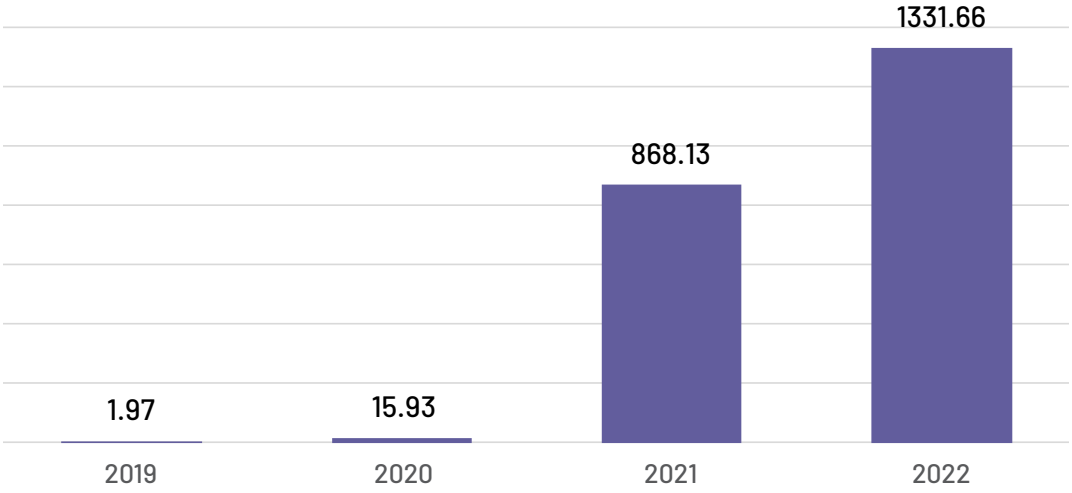
Climate change opportunity identified by steel sector

Steel industry in India is picking up pace by realizing that apart from negative consequences that climate change is posing to this sector, there is also an ample scope of **realizing opportunities** from climate change as the world transitions to a low carbon scenario.

Our analysis has shown that the climate change opportunities identified by the companies have magnified ten-fold. The total identified opportunities in 2022 have been estimated at 1331.6 INR billion and have only increased over four years span and that too in a dramatic manner as is shown in graph below.

Companies have consistently reported on the details of opportunities with the potential to have a substantive financial or strategic impact on their businesses.

Climate Change Financial Opportunity identified by steel sector (in INR billion)



When considering where in the value chain opportunities occur, it is "direct operations" that dominates the data. The most common type of opportunity for direct operations is from **energy source opportunity**, which accounts for substantial part of all opportunities followed by **resource efficiency and access to new markets** among others.

Types of opportunities: development and expansion of low emission goods and services, use of lower-emission sources of energy such as green hydrogen in the longer run, use of more efficient production and distribution processes, use of new technologies, access to new market, use of more efficient modes of transportation, and strategic advantage of multinational presence including EU market are few types of opportunities that have helped companies target their net-zero plan. Investing & purchasing green power or opting for own renewable energy generation is also something which is being explored by the companies.

One steel company reporting to CDP has already invested in fuel substitution to natural gas for all re-heating furnaces and operation on natural gas has started in remaining companies as well. **Fuel substitution from furnace oil to natural gas will help to reduce cost of operation as well as reduction in GHG emission (scope-1).**

Carbon Border Adjusted Mechanism (carbon tax) CBAM- identified by corporates as a potential risk as well as an opportunity.[10]

The European Commission has announced that it will introduce the EU Carbon Border Adjustment Mechanism as part of its European Green Deal programme of environmental measures. As part of this mechanism, European Commission aims to levy a border tax on import of carbon intensive products (such as steel) from other countries to avoid risk of carbon leakage. This would result in similar carbon costs imposed on both domestic producers and importers of steel in the EU. At the same time, the free allocations received by the steel industry in EU would be phased out. CBAM introduction and phase out of allowances are both expected to be done over a 10-year period between 2026 – 2035. These legislative changes would result in pass through of carbon cost into the final steel price in EU and level the playing field between importers of steel in EU (who paid no CO_2 cost pre CBAM) and domestic producers in EU (who had to pay increasing amount of such costs). It is expected that the pass through of carbon cost would be based on the carbon content of the marginal producer based on emission intensity. The legislation takes that to be bottom 10% of EU producers.

Tata Steel Nederland (TSN), has identified CBAM as an emerging opportunity. TSN claims to have best in class emission intensity in amongst the top EU producers based on emission intensity. It is therefore expected that upon introduction of CBAM, the pass through of CO_2 cost into the final prices would off-set part of the carbon costs that TSN would have had to bear in absence of CBAM. Furthermore, as TSN's carbon emission intensity is lower than the industry peers, CBAM would enable TSN to pass on a greater proportion of its carbon costs to the customers, resulting in increased profitability. **It should be noted that TSN is looking to transition from coal-based steelmaking to hydrogen-based steel making.** This would result into an even greater improvement in TSN's profitability on account of CBAM. However, as this is expected in the period beyond 2030.

On the other hand, given that **JSW Steel** exports 20% of total steel exports to Europe, implementation of the carbon border adjustment mechanism will negatively impact its revenue and reduce profit margins for them.

10 Source: CDP's reported data

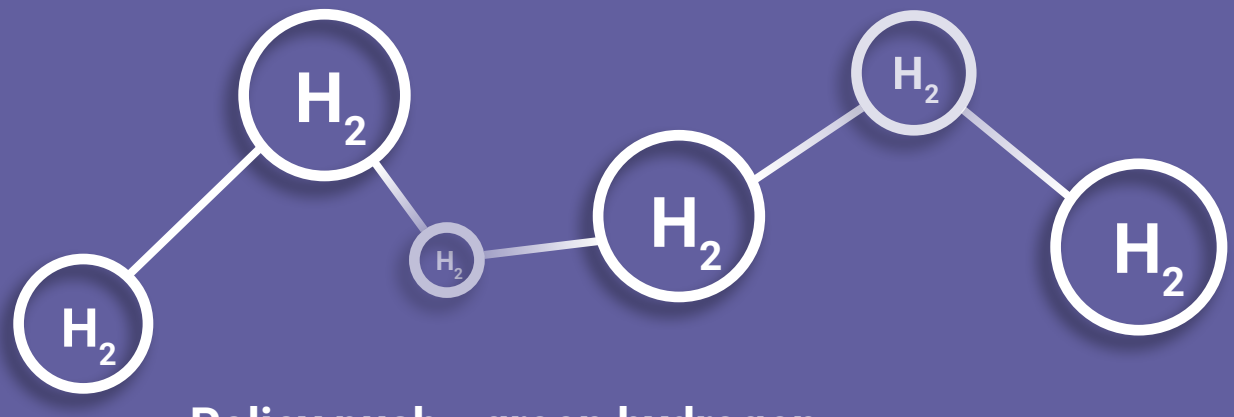
PAT scheme - a case for both financial risk and opportunity

PAT Scheme or the Perform, Achieve and Trade Scheme was launched by the Bureau of Energy Efficiency (BEE) in July 2012. PAT scheme is a cyclic scheme where certain notified energy intensive units having threshold energy consumption are given Specific Energy Consumption (SEC) reduction targets.[11] The PAT scheme is a market-based mechanism wherein energy saving certificates are given as incentives to industries that overachieve their targets. These certificates can be traded in an energy exchange (Indian Energy Exchange or Power Exchange India). The certificates can be bought by other Designated Consumers (DCs) that have not achieved their prescribed targets under the scheme. Units that are unable to achieve the targets either by their own actions or by buying the energy saving certificates are liable to pay the prescribed penalty. BEE has rolled out six PAT cycles till March 31 2020, with a total of 1073 DCs covering 13 sectors. It is projected that total energy savings of about 26 MTOE translating into avoiding of about 70 million tonnes of CO_2 will be achieved by March 2023.

One of the reporting steel companies has raised concern regarding financial risk emanating from PAT scheme since one of their plants falls under its purview. Under the PAT scheme a company is required to set a mandatory target which is supposed to have significant financial implications on the company's balance sheet. Huge investment will be required in Energy conservation projects to achieve these targets. Financial implication will also further, translate into enhanced cost of purchase of energy saving certificate, if an organization is unable to achieve the PAT targets. Also on the brighter side, in case of over achievement of PAT target, the possibility of generating revenue through selling Energy Saving Certificate is likely **to create an opportunity for the company.**

PAT scheme to be superseded by Carbon Trading Market: India is set to launch its Carbon trading framework which would be administered by the Bureau of Energy Efficiency (BEE). It is expected that in 2023, the framework will be rolled out and market for voluntary carbon trading too will open during the year. The compliance market will take time about two to three years because targets and timelines need to be given to the industries. The current PAT scheme would be transitioned into the compliance market. Power exchanges which enable the trading of the energy saving certificates (ESCerts) converted from the excess energy savings, are likely to be the trading platform for carbon credits too, under the carbon market framework. The draft blueprint of the national carbon market was released for stakeholder consultations in 2021 which proposed to initiate the development of a voluntary carbon market in India to overcome the barriers of 'ESCerts' market and to encourage voluntary entities to participate in meeting Nationally Determined Contributions commitments of India.

11 Brief Note on PAT Scheme.pdf (beeindia.gov.in)



Policy push - green hydrogen - sunrise sector: a case for opportunity for steel industry

The primary pathway for halving emissions by 2030 and reaching net-zero by 2050 must come from scaling renewable energy capacity, electrification, and energy-efficiency measures. However, for areas where direct electrification and/or energy efficiency are not viable, competitive or more efficient, hydrogen - whose production, transport and use is fully aligned with a 1.5°C pathway (on a lifecycle CO_2e basis) and provides concrete emissions reductions overtime in accordance with this pathway - can play a role, especially in the harder-to-abate sectors in certain geographies like India.

The steel sector has been made an important stakeholder in the **National Green Hydrogen Energy Mission** to facilitate deployment of green hydrogen in the iron & steel making process. Under this initiative it has been proposed to set up two Pilot Plants under the Public & Private Partnership to explore the feasibility of using green H2 in Direct Reduced Iron (DRI) production by partly replacing natural gas with hydrogen in gas based DRI plants. Based on the success of the pilot projects, the gas based DRI units shall be encouraged for large scale adoption of the process. **The success of using green hydrogen in steel making process will go a long way in helping India decarbonise this hard to abate sector.** Nonetheless, improvements in cost and performance of hydrogen-related technologies along with the entire value chain would be needed and would help unfold a green hydrogen revolution.

https://pib.gov.in/PressReleasePage.aspx?PRID=1888547

Cost of response to risk and cost of action

A robust climate-related risk assessment process helps identify the likelihood and magnitude of present and future climate-related impacts not only on environment but also the impact on business performance of an organization. It is believed that **the climate change risks lead to primary potential financial impacts such as decreased revenue due to reduced production capacity, increased indirect operating cost and direct costs too. The maximum financial impact reported by steel sector to CDP this year stands at approx. 194.4 INR billion.** This financial impact has only increased over a four-year time span.

Surprisingly the cost of action for private players to de-carbonise is **163.3 INR billion** which is lower than the cost of inaction. **This provides adequate reasoning for prompt action to leverage a transition to clean production and energy in the operations.**

It is worth noting that companies are investing in GHG & Energy reduction intervention, Natural Gas Injection at Blast Furnace & alternate source of energy in place of coal for power generation & RE power consumption, Investment in energy conservation measures for dealing with rising risks. Such a robust climate-related risk assessment process in place would help companies identify the likelihood and magnitude of present and future climate-related impacts not only on the environment but also on business performance.

Policy push - steel scrap recycling policy

In 2019, the government notified the Steel Scrap Recycling Policy with an aim to increase scrap as raw materials for finished steel products which is a step in right direction. It will evolve a responsive ecosystem to produce high quality ferrous scrap for quality steel production minimizing the dependency on imports. It envisages a framework to facilitate and promote establishment of metal scrapping centers in India that will boost steel production. It also aims to decongest the Indian cities from reuse of ferrous scrap, besides creating a mechanism for treating waste streams and residues produced from dismantling and shredding facilities. The scrapping policy ensures that quality scrap is made available for the steel industry.

Scrap is an important input for the electric furnaces. If quality scrap is provided as the charge to the electric furnaces, then the furnaces can produce high grade steel. High grade steel scrap shall not have the impurities if processing is done with the scrap processing centers and by shredders etc.- It will minimize the cost of production. The policy aims to establish an Environmentally Sound Management System for ferrous scrap, which will inspire ferrous scrap processing and recycling through organised and scientific metal scrapping centres across India, reducing reliance on scrap imports and making India self-sufficient in scrap availability. This will also help the steel industry to be more resource-efficient.

Steel Scrap Recycling Policy 06.11.2019.pdf

Suggestion for policy push on steel scrap recycling policy

Making the scrap recycling policy more effective and action oriented is the need of the hour. As of now the onus is on the businesses to establish scrap collection centres. Hence, it would be a step in right direction if the government place a more active role in **building the infrastructure and market conditions with leading steel companies by incentivising development of scrap collection centers.** What is felt is that as of now scrap recycling is an unorganised sector that includes scrap collectors, dismantlers, segregators, scrap processing units, and recyclers. There is untapped potential to increase domestic availability of scrap in sectors including shipping, light and heavy engineering.

Policy push - Long Term - Low Carbon Development Strategy (LT-LEDS) and its implication for steel industry

India has been at the forefront in taking action for combating climate change while meeting its development and growth aspirations. India's vision of a climate resilient world is widely known. With the right spirit and perspective, we can build international cooperation to successfully tackle the challenge of climate change. In this spirit, India has submitted its long-term LEDSs which articulates India's strategy and action plan in the short and long term for achieving its NDCs goals by 2030 and target of net-zero emissions by 2070. The transition to a low carbon pathway will entail several costs pertaining to the development of new technologies, new infrastructure, and other transition costs in which climate finance by developed countries in the form of grants and concessional loans as per the principles of UNFCCC will play a major role.

The LT-LEDS also talks in length about the steel sector and explores the options for low-carbon growth of steel sector. For the steel sector adoption of best available technology to increase energy efficiency and increase utilization of scrap are important strategies for reducing emissions.

The strategy recognises that hydrogen has a key role to play in the long term, but capex requirements are high and would need to reduce substantially to enable increased scale of hydrogen use for steel production. Electrification of the secondary steel industry (SSI) sector through renewable energy could have significant impact on overall emissions from the steel sector and the potential for this will be explored.

Green procurement policies could help to establish a pull for green steel thus enhancing efforts for achieving sustainability in this sector. The largest investments in hard to abate sectors are required in iron and steel, mainly due to a transition to green steel. As an area of implementation, green hydrogen utilization in the steel industry can be a prospect, including ammonia for iron and steel production. As has been discussed holistically that the current technology mix dominated by the Blast Furnace-Basic Oxygen Furnace route, which uses coke, coal, and oxygen to produce steel is a major hurdle. Through adoption of several energy efficiency measures and low carbon processes, an integrated steel plant can save emissions substantially. These, however, are being acquired through international commercial collaboration or require further technology transfer.

India LT-LEDS (unfccc.int)

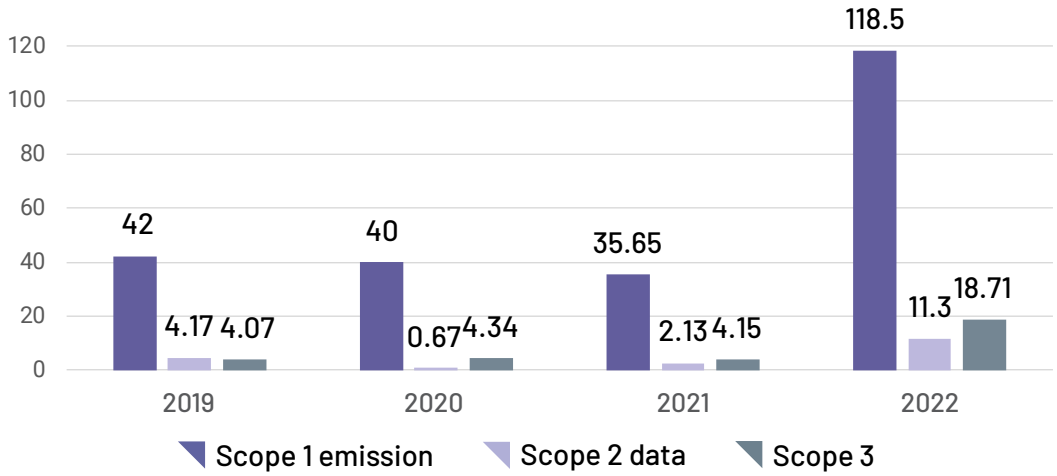
Critical Observation: The sectors identified by LTS do not go beyond current policies and general future direction. Based on its LTS, India plans to continue to develop coal in the long-term. Overall, the level of information provided is limited with no emissions pathway to demonstrate how India will reach net-zero by 2070. It remains unclear as to whether India's net-zero by 2070 target covers all greenhouse gas emissions, or just CO_2.

CO_2 emission profile of the steel sector

Reporting emissions is best practice and a pre-requisite to understanding and reducing negative environmental impacts. The demand for corporate transparency has led to an increasing number of companies measuring their GHG emissions generated by their activities, and encouragingly steel sector is not behind. As discussed previously, **the steel industry measures not only their own operations but also of their value chain partners falling under Scope 3 emissions**. Hence, the analysis spans to cover all the three emissions category such as direct (scope 1), indirect (scope 2) and value chain emissions (scope 3).

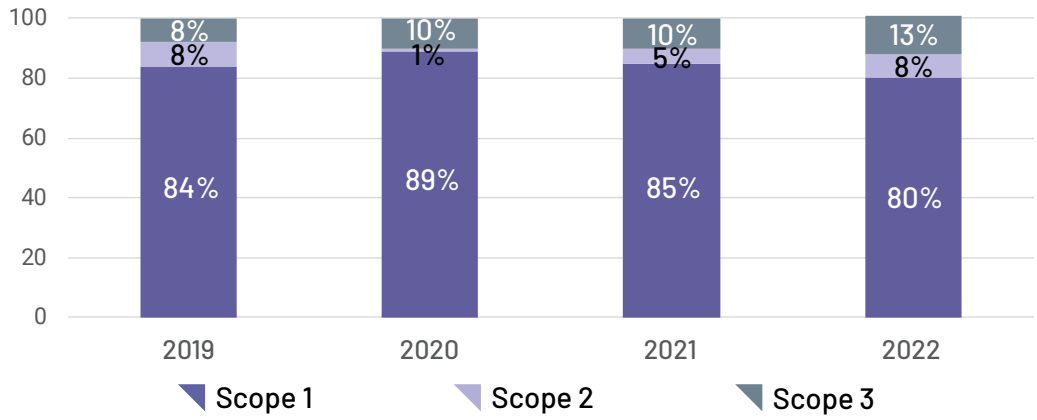
In 2022, CDP India responding steel companies reported a total carbon equivalent emission of about **148.51 $MtCO_2$**. There has been a significant jump across the three categories of scopes as is depicted in the graph below.

Gross Emissions reported in $MtCO_2e$



If we look at the emissions across the three scopes (i.e., Scope 1, Scope 2, and Scope 3), the lion's share of emissions is attributed to direct sources (Scope 1). **This is due to the use of fuels (coal majorly) in the direct operations**. Interestingly, the share of Scope 3 emissions amongst the CDP India disclosing companies have increased from 8% in 2019 to 13% in 2022. **This is a positive signal that businesses are now realising the importance of value chain emissions and starting to report on the same.** Purchased goods and services, Downstream transportation and distribution, Upstream transportation and distribution and Use of sold products form the most emissions under Scope 3 category.

% of total emissions



Policy push - key highlights of the progress achieved by the steel industry in India in reducing GHG emisssions - Biennial Update Report (BUR-3)

As per the NDCs (2015) of the steel sector submitted to MoEF&CC, average CO_2 emission intensity of the Indian steel industry was projected to reduce from 3.1 T/tcs in 2005 to 2.64 T/tcs by 2020 and 2.4 T/tcs by 2030 (i.e. approx. 1% per year). The steel industry has taken initiatives like implementation of latest state-of-the-art clean technologies, raw material quality improvement, improving fuel efficiency, creation of carbon sink, among others.

Some of the Best Available Technologies (BAT) adopted by the Indian steel industry for improving energy efficiency & mitigation of GHG emission are given below:

- Coke Dry Quenching (CDQ) - Power generation from the waste heat from CDQ
- Sinter Plant Heat Recovery (Power generation from Sinter Cooler Waste Heat)
- Bell Less Top Equipment (BLT) in Blast Furnace
- Top Pressure Recovery Turbine (TRT) in Blast Furnace

- Pulverized Coal Injection (PCI) system in Blast Furnace
- Hot stove waste heat recovery in Blast Furnace
- Dry type Gas Cleaning Plant (GCP) in Blast Furnace
- Cast House/ Stock House Dedusting system
- Converter Gas Recovery in BOF
- Energy Monitoring & Management System
- Secondary Fume Extraction System in Steel Melting Shop
- Regenerative Burners in Re-heating Furnaces of Rolling Mills
- Hot charging process of continuously cast products at higher temperature directly to Rolling Mills
- Direct Rolling Process eliminating the need for Re-heating furnaces
- Energy efficient technology for Hot Strip Mill: Flexible Thin Slab casting & Rolling
- Near Net Shape casting: Bloom cum Beam Blank caster, Bloom cum Round caster etc.
- Adoption of Variable Voltage Variable Frequency (VVVF) Drives for high capacity electric motors

These initiatives have resulted in considerable reduction in the Specific CO_2 Emission (in terms of tonnes per tonne of crude steel). Specific CO_2 emission has reduced from around 3.1 T/tcs in 2005 to around 2.5 T/tcs in 2020. (reduction from 2.65 T/tcs in 2015 to 2.5 T/tcs in 2020).

Energy & Environment Management in Steel Sector | Ministry of Steel | GoI

Energy profile of the steel sector

Energy related activities represent the most significant GHG emitting activity sources. **Tracking GHG emissions together with energy consumption is of vital importance to understand the GHG emission profile of companies.** The evolving nature of the energy transition means it is important that companies are transparent about their energy profile.

As we are aware that traditional steel production uses large amounts of fossil fuel energy to generate the temperatures needed, however, the industry is working hard to find alternative ways of powering this process. This section of the CDP analysis also maps the SDG Goal 7: Affordable and clean energy, Goal 12: Responsible consumption and production and Goal 13: Climate action.

Steel sector companies reporting to CDP have disclosed that they spend on an average 10% of their operational spending on energy. Majority of companies (90-100%) have reported spending on Consumption of fuel (excluding feedstocks), Consumption of purchased or acquired electricity, Generation of electricity, heat, steam, or cooling are the major energy-related activities of their organisation.

Sourcing methods of energy- There exists a linking thread between energy and emission profile of the companies. **Imported grid electricity is the main source of Scope 2 emissions.** The best way to start reducing the Scope 2 emissions is to engage in the purchase of renewable energy. Renewable energy can be accounted for as zero carbon in Scope 2 reporting. Hence, Companies reporting on their Scope 2 emissions have also mentioned their **sourcing methods of energy.** These are Unbundled energy attribute certificates (EACs) purchase, Purchase from an on-site installation owned by a third party, standard product offering by an energy supplier (electricity from grid) and Direct procurement from an off-site grid-connected generator by way of Power purchase agreement (PPA).

It is interesting to note that renewable energy holds a share of 25% in the Total Gross generation (MWh) of electricity, steam and heat that is generated and consumed by the steel companies.

Opportunities: Steel companies have also mentioned that use of lower-emission sources of energy is a potential opportunity which results in Reduced indirect (operating) and direct costs and increased revenues through access to new and emerging markets. In some cases, it is observed that the supplier supplies cleaner coal which results into reduced emission & reduction in conversion cost from coal to coke. As has been mentioned previously, the steel companies are exploring the option of investing & purchasing **green power or opting for own renewable energy generation.**

1.5°C

Policy push- India's updated Nationally Determined Contributions (NDC)

NDC means national plans and pledges made by a country to meet the goal of maintaining global temperature increases to well below 2 degree Celsius above pre-industrial levels, while aiming for 1.5 degree Celsius to avoid the worst impact of climate change. At COP 26, India announced its updated NDCs:

- Get its non-fossil energy capacity to 500 gigawatts by 2030
- Meet 50% of its energy requirements till 2030 with renewable energy
- Reduce its projected carbon emission by one billion tonnes by 2030
- Reduce the carbon intensity of its economy by 45 per cent by 2030
- Achieve net-zero by 2070

The first and the second commitment of the Panchamrit have the intention to increase the non-fossil energy to 500 GW by 2030, but also at the same time to ensure that 50 per cent of the energy requirement comes from renewable energy. This shows the clear intention to shift to renewable energy in the long run and not meeting the new target of 500 GW non-fossil energy by other means, e.g. nuclear power. Currently the fossil energy dominates the market and renewable energy has so far only a share of 25-24% in the total installed generation capacity in the country. The previous commitment of India was to create a renewable energy capacity of 450 GW by 2030.

The third and the fourth commitment are regarding the carbon emission of India. India intends to reduce total of 1 billion tons of the total projected carbon emissions by 2030 and reduce the carbon

intensity of the economy by less than 45% until 2030. Currently India is the 3rd highest emitter of carbon in the world, however, per capita carbon emission is much lower than in other industrial countries. India is now at 4th global position for overall installed renewable energy capacity while the renewable energy installed capacity increased 286% in last 7.5 years.

These ambitious commitments are likely to transform the Indian economy in an unprecedented way. The idea of net-zero will reflect in businesses and with that they will play a key role in achieving the commitments. A lot of companies in India have already declared their intention to become net-zero. the same sentiment is also being observed in the steel sector companies. Further, investors prefer transparency about environmental footprints and will examine the current as well as future carbon footprints of their partners. Therefore, companies should now jump on the train of a Net-Zero India and restructure their businesses accordingly.

Towards a race to net zero, it is worth noting the companies are setting their science-based targets not just worldwide but also in India. Currently there are 64 companies globally and six Indian companies committed to SBTs from Metal & mining sector that includes Steel (4) along with Aluminium & Iron. By setting and achieving emission reduction targets validated by the SBTi, the steel industry in India can demonstrate its commitment to reducing its carbon footprint and contributing to the global effort to combat climate change. This can also enhance the industry's reputation and credibility with stakeholders such as customers, investors, and policymakers.

https://pib.gov.in/PressReleasePage.aspx?PRID=1847813

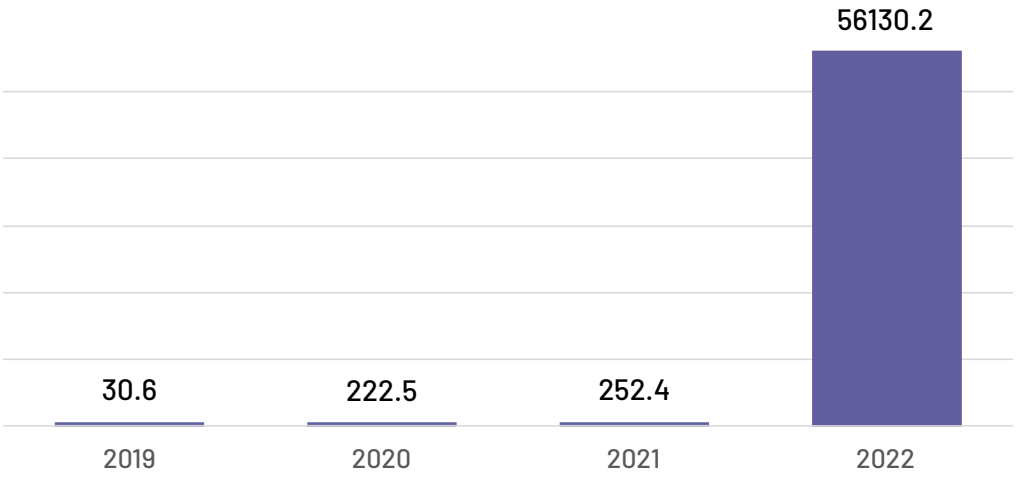
Water risk and opportunity identified by the steel sector

A water risk assessment provides a framework to gauge water related risk exposure of the companies. Two out of four steel companies responding to CDP India have undertaken a water related risk assessment. Both companies have recognised the inherent water-related risks with the potential to have a substantive financial or strategic impact on their business both in direct operations and the value chain operations. **This shows a robust approach to risk management in identifying and prioritizing water risks at a granular level.**

The possibility of a substantive financial or strategic impact is quite high. Responding companies attributes around 76% of their company wide facilities exposed to water risks with a potential to have financial or strategic impact from water related risks in both the direct operations and rest of the value chain.

Primary risk drivers: Changing precipitation patterns and types (rain, hail, snow/ice) and Higher water prices (regulatory barriers) have been identified as the primary risk driver. The companies have reported that these identified risks lead to potential impact such as damage to their business strategy such as company brand damage and increased operating and production costs, reduced revenues from lower sales/outputs.

Water related average risk in INR million

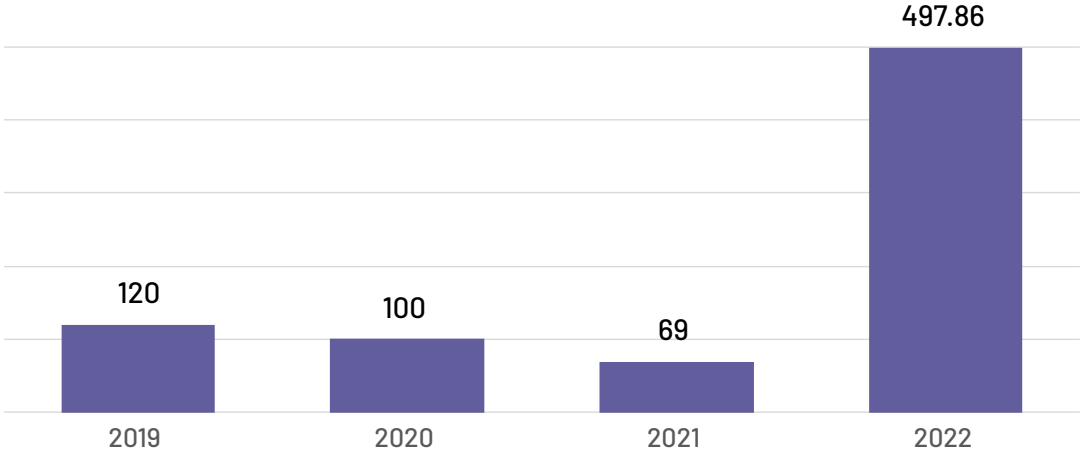


As is depicted in the graph, water related risk has risen drastically since companies are taking reporting seriously and thus measuring and managing the risks as a next step. In terms of financial impact, the overall risk reported by water responding companies in 2022 is 56,130 INR million while the cost of response to risk stands at around 8,096 INR million. **The cost of inaction is seven times more than the cost of addressing the risks indicating a prompt action to leverage long-term water resilience.**

Steel companies are increasingly trying to promote investment in infrastructure and technologies for water saving, re-use and recycling among suppliers and improve alignment of their public policy influencing activity with their water stewardship commitments. There is an increasing awareness and requirement to switch to **low water requirement** technologies like renewable energy such as solar or wind power plants for the supply of electricity and not solely depend upon water as a source of electricity generation. **This will not only mitigate water risks but also supply clean energy.**

Opportunities: Companies have reported opportunities of around 498 INR million in 2022 up from 120 INR million in 2019. The primary water-related opportunities identified by steel companies include: Water recovery from sewage management; Surface run-off recovery; and Recycling of other industries effluent for plant application. These could have substantive financial or strategic impact on business.

Water related average opportunity in INR million



Global Presence

Indian steel associations and their voice in the global space

Indian Steel Association (ISA): ISA is an active member of the World Steel association (WSA) and works with sister organizations in Asia such as China Iron and Steel Association (CISA), Korea Iron and Steel Association (KOSA), the Vietnam Steel Association (VSA), The Asian Iron & Steel Council (AISC) and The Japan Iron and Steel Federation (JISF). ISA also reaches out to key players in world trade.

KOSA and ISA have signed a memorandum of understanding and promised cooperation in trade and technology exchange for a reduction in regulations on steel products exported from South Korea to India. KOSA and ISA have also discussed future collaborations on technological cooperation. Wherever possible and relevant, ISA reaches out to key players in world trade. For example, it holds networking meetings with bodies like the Port of Antwerp, Belgium, to discuss topics of mutual interest and facilitate future action.

Indian Stainless Steel Development Association (ISSDA): ISSF is the apex body for coordinating world-wide market development activities and other interests of Stainless-Steel industry and SSDA's around the world. The technical strength of ISSDA is derived from its close association with the Nickel Institute which is the International Stainless-Steel Forum and close collaboration with more than 20 national stainless steel development associations (SSDAs) around the world.
Some of the other steel related Indian associations include:

- Stainless Steel Pipe & Tube Manufacturer Association (SSPTMA)
- Metals and Stainless Steel Merchants Association (MASSMA)
- Process Plant & Machinery Association of India (PPMAI)

India and international collaboration to reduce carbon emissions

Globally, India has taken important steps to strengthen collaboration in order to increase funding for Research, Design, Development, Demonstration (RDD&D), create markets and improve affordability of low-carbon industrial products. Most notably, at COP26 in 2021, India endorsed the Breakthrough Agenda[12] – a commitment for countries to work together to accelerate the development and deployment of the clean technologies and sustainable solutions in key sectors like **steel and hydrogen**. Under G20 presidency this year which is being led by India, discussions are being held on creation of circular economies in various sectors including steel.

India and the United Kingdom have launched a new workstream to promote industrial energy efficiency under Clean Energy Ministerial's (CEM)[13] Industrial Deep Decarbonization Initiative (IDDI[14]), coordinated by UNIDO (United Nations Development Industrial organisation). It is the largest and most diverse coalition of governments and the private sector to create a thriving market for net-zero carbon industrial products in the next three years. The commitment hinges on effective deployment of low carbon technologies in Energy Intensive Sectors like **Iron & Steel**, Cement and Petrochemicals. In collaboration with national governments, IDDI works to standardize carbon assessments, establish ambitious public and private sector procurement targets, incentivize investment into low-carbon product development and design industry guidelines.

12 The Breakthrough Agenda - UN Climate Change Conference (COP26) at the SEC – Glasgow 2021 (ukcop26.org)
13 The CEM is a partnership of the world's leading economies working together to accelerate the deployment of clean energy technologies. It supports a broad range of clean energy policy and technology activities that together improve energy efficiency, expand clean energy supply, support energy systems transformation, and enhance human capacity.
14 Industrial Deep Decarbonisation Initiative | UNIDO

Road Ahead

Finding commercially viable low carbon solutions

Net-zero carbon trajectory requires alternate production processes which entails decarbonizing energy inputs, increasing energy efficiency, reducing emissions from industries, materail circularity. Finding commercially viable low carbon solution is the need of the hour. Most of the innovative technological and operational solutions required to reduce emissions from hard to abate sectors such as steel are currently either commercially unviable or remain underutilized.

Sound Government policies and private sector support will therefore give an impetus and necessary push to place steel sector on long-term decarbonization pathways.

LT-LEDS recognises some of the technology options to transition to net-zero and to reduce the carbon footprint of existing technologies. These include[15]:

- Cooling tower energy consumption optimization;
- Chiller plant energy consumption optimization;
- Coke Oven Gas (COG) Consumption reduction by installing tail gas cleaning system;
- By-product fuel gas optimization in a steel industry;
- Integrating cutting-edge technologies like additive manufacturing and Artificial Intelligence, to make products and production smarter and more sustainable.

The use of electric arc furnaces or direct reduction of iron with renewably produced hydrogen instead of coking coal is best case for steel making. Material circularity can also help to reduce the demand for brand new industrial products and, in turn, make decarbonizing the production process less of a challenge. Hydrogen's value proposition is most compelling when it comes to slashing down carbon footprints of the energy sector and industries such as steel, which can be used a potential feedstock for producing several types of synthetic fuels. India's distinct advantage in low-cost renewable energy generation makes GH2 the most competitive form of hydrogen in the long run.

The Government of India has provided the right impetus to the sector by announcing a Production linked incentive (PLI) for green hydrogen. This hopefully will help green hydrogen to put India on a decarbonisation trajectory well ahead of its global peers.

It has been observed that over the years the Indian steel industry has reduced its energy consumption and carbon emissions substantially with the widespread adoption of Best Available Technologies in the modernisation & expansions projects. As discussed in previous sections, the average CO_2 emission intensity of the Indian steel industry has reduced from around 3.1 Tonne/tonne of crude steel (T/tcs) in 2005 to around 2.6 T/tcs by 2020[16]. **However much remains to be done.**

15 India LT-LEDS (unfccc.int)
16 https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1794782

Conclusion

This decade is a decade of action and if we want to meet Paris agreement targets, we will have to take bold steps towards net-zero carbon emissions collectively and collaboratively. Nonetheless, it is possible to bend the CO_2 curve even for a sector like iron and steel. Countries like India can develop on one hand while drastically reducing its carbon emission profile on the other. However, there exists a stronger need and push from policymakers by way of government policies to provide clarity of direction for a decisive move to greener steel production.

India is at a cusp of breakthrough green industrialization. What is needed is the revamping of the production and consumption profile of steel sector since low carbon steel production will likely become the norm in many parts of the world. Getting ahead of the curve can help the industry guarantee long-term markets and avoid stranded asset risks. To seize this opportunity will require robust, forward-looking policies and business strategies.

As has been discussed in this report, the Government of India, through various schemes and regulations, is facilitating reduction in energy consumption and emission of environment pollution in steel plants. The government's Green Hydrogen Mission for promoting the utilisation of green hydrogen in the country is an ideal step in the right direction. Since, the Steel sector is a big stakeholder in it, the focus should build up around using green hydrogen increasingly to produce steel to reduce emissions. An implementation and investment plan in the context of green hydrogen projects would be appropriate. This is imperative for positioning India as a hub for producing high quality clean steel.

In the latest Long Term Low Carbon Development Strategy (LT-LEDS) report[17], India has explained the possibilities of exploring options for low carbon growth of hard to abate sectors such as steel. **These options also broadly resonates with the CDP India's approach to drive decarbonisation of this sector in its entirety.** Electrification of the secondary steel industry (SSI) sector through renewable energy could have significant impact on overall emissions from the steel sector. Green procurement policies could help to establish a pull for green steel thus enhancing efforts for achieving sustainability in this sector.

Also, what is essential is that companies from across the steel supply chain (both directly and indirectly involved in steel production and consumption) work in collaboration with ministries, to tackle issues such as efficient technology, energy efficiency, green procurement, green finance, resource efficiency, scrappage and recycling.

17 India LT-LEDS (unfccc.int)

As the government makes commitments to transitioning to green steel, Indian Steel companies are looking at innovative ways to support this commitment. Tata Steel, for example, has become the first Indian company to have a steel-producing site certified by Responsible Steel[18]. Responsible Steel is a global standard certification programme for independently verified certification of low-emission steel. JSW Steel has committed to cutting emissions by almost 40% by 2030[19]. Steel buyers too have the race for green steel by pushing for clean production, with Ford becoming the first customer for Tata Steel Netherlands[20]. There is however a long way to go for India.

Based on risk and opportunity assessment driven by disclosures, it is expected that steel companies will develop a mix of **innovative technology and business solutions** to drive the country's climate goals. Decarbonization should be a good business mantra for Indian steel in addition to reducing emissions. Fuelled by a steady rise in emissions reduction initiatives adopted by steel companies, India would gradually be positioned on the global stage as an enabler of the low-carbon transition. **Businesses and companies can certainly help in driving India's ambitious plan of net-zero by 2070**.

In context of the global landscape of 1.5-aligned NDCs and timeframes, the critical role of near-term, ambitious policies and regulations that are science- and evidence-based, and driven by real economy insights /data are of immense significance that drive the climate action on a larger scale.

18 https://www.tataworld.com/news/openinside/tata-steels-jamshedpur-steel-plant-becomes-indias-first-to-achieve-responsiblesteel
19 https://www.argusmedia.com/en/news/2247147-indias-jsw-steel-sets-2030-carbon-emissions-target
20 https://www.inceptivemind.com/tata-steel-netherlands-supply-ford-green-steel/27997/#:~:text=The%20deliveries%20are%20expected%20to%20start%20as%20soon,Steel%20plans%20to%20produce%20via%20the%20hydrogen%20route.

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