TATA STEEL
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ENVIRONMENTAL PERFORMANCE AT A GLANCE

TATA

Table 1 GHG Emissions – Tata Steel Group[1] ⏩ Good-is: ⬇ ⏩ UoM: Million tCO_2e

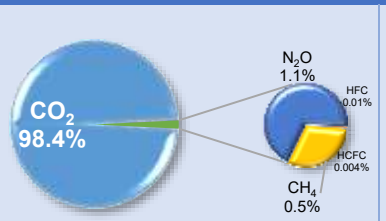
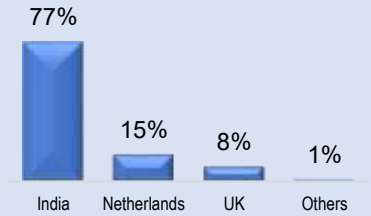
Boundary	FY20	FY21	FY22	FY23	FY23 Scope 1 by GHGs	FY23 Scope 1 by region
Tata Steel Group	85.3	83.4	94.2	93.9		
Geography-wise breakup						
• India	61.3	57.7	66.5	69.5		
○ Tata Steel Limited	42.6	41.5	60.5	62.1		
○ Rest of India	18.7	16.2	6.0	7.4		
• Europe incl.UK & North America	22.5	24.5	26.4	23.4		
• Southeast Asia (excl. India)	1.4	1.2	1.2	1.0		

Table 2 Key indicators of Steelmaking sites of Tata Steel Group

Key Performance Indicator	Good-is	UoM	FY20	FY21	FY22	FY23	CDP Ref.	GRI Indicator
CO_2 Emission Intensity[1]	⬇	tCO_2/tcs	2.18	2.20	2.19	2.21	C-ST6.14	305-4
Energy Intensity	⬇	GJ/tcs	23.7	24.4	23.0	22.9	C-ST6.14	302-3
Crude Steel production	⬆	Million tonnes	29.8	27.8	30.6	30.1		

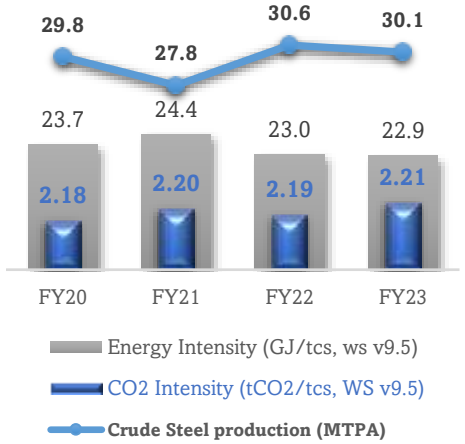


Table 3 GHG Emissions of Tata Steel Group (with Location-based Scope 2) ⏩ Good-is: ⬇ ⏩ UoM: Million tCO_2e

Boundary & Scope	FY20	FY21	FY22	FY23	Reference
Total	**85.3**	**83.4**	**94.2**	**93.9**	
Scope-1	69.1	66.0	75.7	75.3	GRI 305-1, CDP C6.1
Scope-2[ii]	5.5	4.8	5.0	5.2	GRI 305-2, CDP C6.3
Scope-3	10.6	12.6	13.5	13.4	GRI 305-3, CDP C6.5

Table 4 GHG Emissions of Tata Steel Limited[2] ⏩ Good-is: ⬇ ⏩ UoM: Million tCO_2e

Scopes	FY20	FY21	FY22	FY23	Methodology	CDP Ref.	GRI Ref.	DJSI Ref.
Scope-1	33.8	32.5	49.2	49.5	GHG Protocol	C7.3a	305-1	2.2.1
Scope-2 Location based	4.3	3.9	5.4	5.8	GHG Protocol	C7.6a	305-2	2.2.2
Scope-2 Market based	4.5	3.2	5.1	5.4	GHG Protocol	C7.6a	305-2	2.2.2
Scope-3	4.6	5.2	5.9	6.8	GHG Protocol	-	305-3	2.2.3

[1] Methodological note: CO_2 emission intensity for steelmaking sites (7 integrated and 3 scrap-EAF plants) are assessed, analysed and reviewed as per worldsteel CO_2 Data Collection User Guide, Version 9.5 (excel template V24) and includes credits due to slag sold for cement-making plants. Equity-based consolidation applied in table – 1, 3 and 5. Operational control approach adopted for Tata Steel Limited (as reported in table 2, 4, 6 and 7)

[2] Reporting coverage exceeds 99.6% turnover of Tata Steel Limited (TSL) in FY23. Agrico division is yet to be included. Agrico division operates on an outsourced model and contributed < 0.4% turnover. Reporting boundary included raw material locations – collieries, iron ore mines & beneficiation plants, reject based power plant; integrated steel plants at Jamshedpur, Kalinganagar & Meramandali; 1 non-recovery type coke making; 7 profit centres – Tubes Division, Wires Division, TGS, Bearings Division, Industrial By-products Management Division and Ferro Alloy & Mineral Division (consisting of Manganese Mines, Ferro Alloy plants producing FeCr, FeMn, SiMn); addl. downstream sites: Cold Rolling Mills (Tarapur, Bara at Jamshedpur, Sahibabad and Khopoli), Tubes (Sahibabad and Hosur); Physical Distribution & Satellite Units and other Steel Processing Centres; upstream, midstream & downstream assets including those operated by business partners & associates.

Table 5 Scope-3 GHG Emissions of Tata Steel Group ⏩ Good-is: ⬇ ⏩ UoM: Million tCO_2e

Categories	FY20	FY21	FY22	FY23	Comment	CDP Ref.
Purchased goods and services	2.1	2.9	4.9	4.6		C6.5
Downstream transportation and distribution	1.7	1.8	1.8	2.0		
Use of sold products	1.5	1.5	1.7	1.6	Excluding coal by-products sold to 3rd party	
End of life treatment of sold products	2.0	1.4	1.2	1.4	Estimated based on downstream emission	
Upstream transportation and distribution	1.6	1.8	1.5	1.2		
Capital goods	1.0	1.0	1.0	1.2	Quantis Scope 3 Evaluator tool (spend-based)	
Processing of sold products	0.4	1.9	0.9	1.1	Processing through Steel Processing Centers	
Fuel-and-energy-related activities (not included in Scope 1 or 2)	0.1	0.1	0.2	0.2	Oil and gas usage in Europe & UK only	
Waste generated in operations	0.03	0.06	0.09	0.06		
Employee commuting	0.02	0.04	0.05	0.05	Quantis Scope 3 Evaluator tool (employee-based)	
Upstream leased assets	*0.05*[3]	*0.05*[4]	0.05	0.03		
Business travel	0.01	0.002	0.004	0.01		
Downstream leased assets	0.005	0.003	0.001	0.003		
Franchises	*0.002*[4]	*0.002*[4]	0.002	0.002	based on estimates done in FY22 (TSL)	
Investments	0	0	0	0	already included in mainstream emissions	
Others (Upstream)	*0.01*[4]	*0.01*[4]	0.01	0.01		
Others (Downstream)	*0.005*[4]	*0.005*[4]	0.005	0.01		

Table 6 Scope-3 GHG Emissions of Tata Steel Limited ⏩ Good-is: ⬇ ⏩ UoM: Million tCO_2e

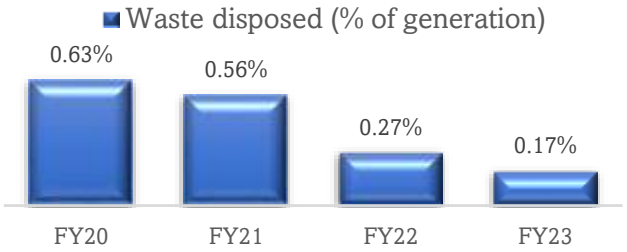
Categories	FY21	FY22	FY23	Comment	DJSI Ref.
Downstream transportation and distribution	1.2	1.4	1.7		2.2.3
Purchased goods and services	1.2	1.3	1.4	includes upsteam emissions w.r.t. Oil & Gas usage	
End-of-life treatment of sold products	0.9	1.0	1.1	[4]	
Use of sold products	N.A.[5]	0.8	0.8	[6]	
Upstream transportation and distribution	0.8	0.6	0.7		
Capital goods	0.4	0.5	0.7	Quantis Scope 3 Evaluator tool (spend-based)	
Processing of sold products	0.4	0.2	0.3	Processing through Steel Processing Centers	
Upstream leased assets	*0.1*[4]	0.1	0.03		
Waste generated in operations	0.04	0.02	0.02		

[3] *based on FY22 assessment results.*
[4] estimated emissions to return > 80% end-of-life steel, produced during the reporting year, from customer premises to respective steel plants for recycling at the end of lifetime in future
[5] yet to be assessed.
[6] emissions due to combustion of coal byproducts (e.g. rejects, middling) sold to 3rd party yet to be included

Categories	FY21	FY22	FY23	Comment	DJSI Ref.
Employee commuting	0.01	0.02	0.02	Quantis Scope 3 Evaluator tool (employee-based)	2.2.3
Business travel	0.002	0.003	0.01	information captured on travel requisition portal	
Downstream leased assets	*0.001*[4]	0.001	0.003		
Franchises	*0.002*[4]	0.002	0.002	based on estimates done in FY22	
Investments	0	0	0	key subsidiaries & JV companies are reported as Tata Steel Group	
Others (Upstream)	*0.01*[4]	0.01	0.01		
Others (Downstream)	*0.01*[4]	0.01	0.01		
Fuel-and-energy-related activities (not included in Scope 1 or 2)	N.A. [6]	N.A.[6]	N.A. [6]	*Upstream emissions of Oil & gas reported under purchased goods & services – pending correction incl.T&D losses*	

Table 7 Waste disposal at Tata Steel Limited

Key Performance Indicator	Good-is	UoM	FY20	FY21	FY22	FY23	DJSI Ref.
Total waste recycled / reused	⬆	Million tonnes	7.91	9.65	14.70	15.77	2.4.1
Total waste disposed	⬇	Kilo tonnes	50.3	54.1	39.3	27.51	2.4.1
• Total waste to landfill	⬇	Kilo tonnes	47.40	50.70	35.35	24.97	2.4.1
• Total waste incinerated	⬇	Kilo tonnes	2.92	3.40	4.0	2.54	2.4.1



Climate Change and Greenhouse Gas Emissions (FY23) related disclosure[7] for ResponsibleSteel Certified sites & sites seeking certification

Parameter	Disclosure	Explanation[8]
ResponsibleSteel Site Certification status	3 sites at Jamshedpur, Jharkhand, India are certified (combined) and 2 sites in Odisha, India are seeking certification(*)	
Boundary:		
Site	Steel Works at Jamshedpur, Kalinganagar*, Meramandali*; Cold Rolling Mill and Tubes Works in Jamshedpur	
Location & State; COUNTRY	Jamshedpur in Jharkhand, Kalinganagar & Meramandali in Odisha; INDIA	
Product(s)	Semi-finished and finished Steel products incl. Steel Pipes and Tubes	
8.5.1		
a) GHG emissions for materials imported	2 Mn tCO_2e	Default upstream emission factors as per following references have been used in absence of primary data to estimate GHG Emissions w.r.t. materials imported to the site(s) from outside the boundary(ies). (a) worldsteel's CO_2 Data Collection User Guide associated with extraction, handling, processing, and production and (b) GHG Protocol Tool[9] for transportation of major materials and energy resources. Inclusion: (a) Coke, Pellet, graphite electrodes, Cold Iron, alloys, industrial gases (e.g., O_2, N_2, Ar), calcined fluxes (e.g. burnt lime or dolomite), petro-fuels i.e., materials & energy listed in the World Steel Association User guide.

[7] Under clause 8.5.1 of V1.1 standard for relevant sites, in fulfilment of requirements of 8.4.1 and 8.4.2.
[8] Responsible Criteria: Principle 8. Climate Change and Greenhouse Gas Emissions, ResponsibleSteel Standard, Version 1.1, 23 June 2021
[9] GHG Emissions from Transport or Mobile Sources (https://ghgprotocol.org/sites/default/files/2023-03/Transport_Tool_v2_6.xlsx)

Parameter	Disclosure	Explanation[8]
		(b) Iron ore, Coking coal, Blast Furnace injection coal, Metallurgical Coke, Ferro-alloys, Fluxes for transportation of raw materials.
b) GHG emissions for heat and steam imported to the site(s) from outside the site boundary;	6 $ktCO_2e$	Steam imported at Kalinganagar from CPP1, IEL (using default emission factor of steam of worldsteel); really, negligible emission (on market-based Scope 2) as steam is raised using by-product gases of the steel works and relevant combustion emissions are already part of direct emissions of Kalinganagar.
c) GHG emissions associated with the use of electricity imported to the site(s)	4.8 Mn tCO_2e	Location based emissions using FY22 Indian grid emission factor @ 0.8 tCO_2/MWh. Similarly, market-based emissions would be lower at Jamshedpur & Kalinganagar as in case of steam above.
d) Arrangements to offset the GHG emissions of the site(s)	Nil	Not applicable, as yet
e) GHG emissions: 'credit emissions' for the site(s)	Nil	While this is applicable in estimation CO_2 intensity using worldsteel user guide (e.g. exported quantum of coproducts including slag, steam etc.), this is not applicable in the reported GHG emissions.
f) GHG emissions of the site(s)		
• Scope 1	47.1 Mn tCO_2e	GHG Protocol (includes CH4, N_2O, HFC and HCFC)
• Scope 2	4.8 Mn tCO_2e	GHG Protocol (Location-based emissions using latest CEA data of Indian grid emission factor @ 0.815 tCO_2/MWh, FY22)
g) Emissions intensity of the crude steel produced		
• CO_2 intensity	2.38 tCO_2/tcs	worldsteel user guide v9.5 - for 3 steelmaking sites; and progress against interim targets: 1) 2 tCO_2/tcs by FY25: intensity reduced by 23.6% till FY23 over FY05 baseline. 2) 1.8 tCO_2/tcs by FY30: intensity reduced by 1.5% till FY23 over FY20 baseline.
• GHG intensity	2.74 tCO_2e/tcs	2 sites don't produce crude steel - cold rolling & tube-making sites. Therefore, S1&2LB emissions (GHG Protocol), from all 5 sites are divided by crude steel production of 3 steelmaking sites in boundary.
h) The basis for the GHG emissions intensity measurement of the site(s), including:		
• The international or regional standard(s) used;	GHG Protocol for absolute GHG Emissions. CO_2 emission intensity (steelmaking sites): worldsteel CO_2 data collection user guide.	
• An explanation of variations in figures reported using different measurement standards if more than one standard has been used by the site and different figures have been reported for different purposes:	Sector specific standard is useful for comparison across steelmaking companies/ sites, whereas GHG Protocol provides a better measure to capture gross emissions.	
• An explanation of whether the reported figure for emissions intensity includes or excludes GHG emissions associated with raw materials imported to the site(s) from outside the site boundary;	CO_2 emission intensity includes: a) upstream emissions are based on materials & energy listed in the World Steel Association User guide: Coke, Pellet, carbon electrodes, Cold Iron, metallic alloys, industrial gases (e.g. O_2, N_2, Ar), calcined fluxes (e.g. Burnt lime or dolomite), petro-fuels under scope 3; b) emissions credit for sale of co-products e.g., Cold Iron, DRI, Blast Furnace Slag to cement making, BOF Slag to cement-making etc. under scope 3; c) emissions credit for export of by-product gases to external users including power plants under scope 2; and d) negative emissions for exported coal tar, cold iron, DRI under scope 1. All above are aligned with worldsteel CO_2 Data Collection User Guide. GHG emission intensity includes: a) negative emissions for exported coal tar, cold iron, DRI under scope 1 (using straight carbon balance)	
• An explanation for the combination of GHG emissions measurements and CO_2 emissions measurements, where applicable.	As per worldsteel standard for main inventory of emissions and additional 15 categories of GHG Protocol's Scope 3 standard. Being primary a steelmaker, worldsteel CO2 data collection user guide is a relevant for reporting and comparing performance within the steel sector. While GHG intensity is reported here, it includes activities other than integrated steel plants and hence, often do not provide strategic insight into carbon effiency of business. GHG emissions based on GHG protocol is preferred mode for reporting absolute emissions of enterprise of sub-set thereof.	

[i] Tata Steel's FY22 disclosure included key subsidiaries [viz. steel business Tata Steel Europe (TSE), Tata Steel Long Products Ltd (TSLPL), NatSteel Holdings Pte Ltd (NSH) and Tata Steel (Thailand) PCL (TSTh); power businesses - Angul Energy Ltd, Bhubaneshwar Power Private Limited; Tata Metaliks Ltd, The Tinplate Company of India Ltd (TCIL), Tata Steel Downstream Products Ltd, The Indian Steel & Wire Products Ltd, Tata Pigments Ltd, Tata Steel Minerals Canada Ltd, Tata Steel Mining Ltd, and Tata Steel Utilities and Infrastructure Services Ltd] and joint ventures (Tata BlueScope Steel Pvt. Ltd, Jamshedpur Continuous Annealing & Processing Company Private Ltd, JAMIPOL Ltd, Tata NYK Shipping Pte Ltd, Industrial Energy Ltd). During FY23, Tata Steel acquired M/s.Neelachal Ispat Nigam Limited (NINL, URL) and ferro-alloy businesses of M/s.Rohit Ferro Tech and M/s.Stork ferro and Mineral Industries (URL, URL2) - through step down subsidiaries. The full year performance of acquired assets is included in the FY23 disclosure. Company sold its stakes in NSH in FY22 except the Wire business in Thailand (URL). Key changes in boundary (from FY20 to FY23) are listed below:

1. Gomardih Dolomite Quarry ceased to be operating entity of Tata Steel Limited in FY21.
2. Two new chromite mines at Saruabil and Kamarda were acquired by M/s.Tata Steel Mining Limited in FY21.
3. Tata Steel Minerals Canada and Surahammars Bruks AB, Sweden were included in the emission inventory of Tata Steel Europe Limited since FY21.
4. Amalgamation of Bamnipal Steel Limited and Tata Steel BSL Limited into and with Tata Steel Limited in FY22 (url: https://www.tatasteel.com/investors/amalgamation/amalgamation-of-bamnipal-steel-limited-and-tata-steel-bsl-limited-into-and-with-tata-steel-limited/)
5. Tata Steel divests its stake in NatSteel Holdings Pte. Ltd. Singapore in FY22 (url: https://www.tatasteel.com/media/newsroom/press-releases/india/2021/tata-steel-divests-its-entire-stake-in-natsteel-holdings-pte-ltd-singapore/)
6. Scrap processing plant at Rohtak, Haryana under Steel Recycling Business was included in the inventory based on single assessment in FY22 after commissioning (url: https://www.tatasteel.com/media/newsroom/press-releases/india/2021/tata-steel-commissions-its-first-steel-recycling-plant-in-rohtak-haryana/)
7. Steel Processing Centers or External Processing Agents were included in emissions inventory of Tata Steel Limited since FY22.
8. Acquisition of Rohit Ferro-Tech Limited by Tata Steel Mining Limited, an unlisted wholly-owned subsidiary of Tata Steel Limited in FY23. https://www.tatasteel.com/media/15517/bsense.pdf
9. Tata Steel Limited acquired M/s.Neelachal Ispat Nigam Limited through its step-down subsidiary, Tata Steel Long Products Limited in FY23 (url: https://www.tatasteel.com/media/newsroom/press-releases/india/2022/tata-steel-limited-completes-acquisition-of-neelachal-ispat-nigam-limited/)
10. Tata Steel Limited ('TSL') has today, i.e. March 30, 2022 executed an Asset Transfer Agreement with Stork Ferro and Mineral Industries Private Limited ('SFML') for acquisition of itemized assets to produce ferro alloys in FY23 (url: https://www.tatasteel.com/media/15481/tata-steel-limited-stock-ferro.pdf)
11. Additional 13 downstream sites (steel processing centres, building systems, distribution, service centres etc.) in the mainland Europe and the UK, contributing 0.04% emissions, were included in emissions inventory of Tata Steel subsidiaries in FY23.

[ii] Tata Steel Limited's boundary in FY23 included 148 sites including 93 sites under company's direct ownership and control. The boundary includes

(a) 3 integrated steel plants with 20 MTPA crude steel production capacity at Jamshedpur, Kalinganagar and Meramandali in India;
(b) 24 upstream sites (4 Iron Ore Mines including Beneficiation Plants across Jharkhand & Odisha; 6 Coal Mines, 4 Coal Washeries & 1-reject based power plant spread across eastern Jharkhand; 1 cokemaking site at Haldia, West Bengal; 4 Ferro Alloys Plants at Bamnipal, Joda, Gopalpur and Balasore spread across Odisha; and 3 Manganese Mines also in Odisha).
(c) 19 downstream sites (4 cold rolling mills at Jamshedpur, Tarapur, Khopoli and Sahibabad; 3 Tubemaking plants at Jamshedpur, Sahibabad & Hosur; 4 Wire Plants at Tarapur & Pithampur; 1 Wire Rod Mill at Tarapur; 1 Bearing Plant at Kharagpur, 1 Fabrication & Assembly shop at Adityapur and 5 Physical Distribution & Satellite units)
(d) 43 other sites (includes Offices - Administrative setups, Marketing & Sales; Medical Services – Hospitals & Dispensaries; Guest Houses and Aviation)

34 steel processing centres, 21 hubs & stockyards (under Physical Distribution & Satellite units) and 1 steel recycling plant under Steel Recycling Business, operated by business partners of Tata Steel Limited are also covered.

Basis of reporting Scope-2 emissions: Electricity emissions (location-based) assessed using country wise grid emission factors; reference for Indian grid emission factor: https://cea.nic.in/cdm-co2-baseline-database/?lang=en (CDM – CO2 Baseline Database, V18.0)