Environmental

CO_2 emissions (based on worldsteel user guide V9.5)

	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone - Jamshedpur, Kalinganagar, Meramandali							
Absolute emissions -Scope 1+1.1	MnT	30.5	31.7	31.1	29.4	46.2	46.3
Absolute emissions - Scope 2	MnT	1.2	1.2	1.1	1.0	1.7	1.7
Absolute emissions - Scope 3	MnT	-2.0	-1.8	-1.8	-2.0	-3.2	-3.0
Total absolute emissions (Scope 1+1.1+2 + 3)	MnT	29.7	31	30.4	28.3	44.7	45.0
CO_2 emissions intensity	tCO_2/tcs	2.37	2.35	2.31	2.32	2.43	2.38

Tata Steel Long Products Limited - Gamharia							
Absolute emissions - Scope 1	MnT	-	-	3.0	3.1	3.2	4.1
Absolute emissions - Scope 2	MnT	-	-	0.0	0.0	0.0	0.1
Absolute emissions - Scope 3	MnT	-	-	-0.3	-0.4	-0.3	-0.3
Total absolute emissions (Scope 1 +2 + 3)	MnT	-	-	2.7	2.8	3.0	3.6
CO_2 emissions intensity	tCO_2/tcs	-	-	4.52	4.29	4.39	3.86

Tata Steel UK							
Absolute emissions - Scope 1	MnT	7.0	6.4	7.1	6.5	6.9	5.7
Absolute emissions - Scope 2	MnT	0.5	0.4	0.4	0.3	0.4	0.2
Absolute emissions - Scope 3	MnT	0.6	0.5	0.5	0.5	0.4	0.1(#)
Total absolute emissions (Scope 1 +2 + 3)	MnT	8.1	7.4	8.0	7.3	7.7	6.0
CO_2 emissions intensity (Port Talbot)	tCO_2/tcs	2.18	2.21	2.22	2.14	2.16	2.05(#)

Tata Steel Netherlands							
Absolute emissions - Scope 1+1.1	MnT	13	12	12	11	12	10.9
Absolute emissions - Scope 2	MnT	(-0.15)	(-0.18)	(-0.13)	(-0.06)	(-0.1)	(-0.3)
Absolute emissions - Scope 3	MnT	0.08	0.15	0.16	0.17	0.27	0.3
Total absolute emissions (Scope 1+1.1+2 + 3)	MnT	13	12	12	11	12	10.9
CO_2 emissions intensity (Ijmuiden)	tCO_2/tcs	1.79	1.77	1.76	1.77	1.78	1.779 (#)

Tata Steel Thailand							
Absolute emissions - Scope 1	MnT	0.2	0.2	0.2	0.2	0.2	0.2
Absolute emissions - Scope 2	MnT	0.4	0.4	0.4	0.4	0.5	0.4
Absolute emissions - Scope 3	MnT	0.1	0.1	0.1	0.1	0.1	0.1
Total absolute emissions (Scope 1 +2 + 3)	MnT	0.7	0.7	0.7	0.7	0.8	0.7
CO_2 emissions intensity	tCO_2/tcs	0.62	0.64	0.67	0.64	0.61	0.59

Calculations of Scope 1, 2, 3 emissions are as per worldsteel methodology

GHG emissions (based on GHG Protocol)	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone							
Absolute emissions- Scope 1	MnT	-	-	-	32.5	49.7	49.6
Absolute emissions - Scope 2	MnT	-	-	-	3.9	5.1	5.6
Absolute emissions - Scope 3	MnT	-	-	-	5.2	6.4	5.7
Total absolute emissions (Scope 1 +2 + 3)	MnT	-	-	-	41.5	61.2	61.0
Tata Steel Long Products Limited							
Absolute emissions - Scope 1	MnT	-	-	-	3.9	4.1	$4.0^{(1)}$
Absolute emissions - Scope 2	MnT	-	-	-	0.0	0.0	0.1
Absolute emissions - Scope 3	MnT	-	-	-	0.6	0.6	0.9
Total absolute emissions (Scope 1 +2 + 3)	MnT	-	-	-	4.5	4.7	6.0
Tata Steel UK							
Absolute emissions - Scope 1	MnT	-	-	-	6.6	7.0	6.8
Absolute emissions - Scope 2	MnT	-	-	-	0.2	0.2	0.1
Absolute emissions - Scope 3	MnT	-	-	-	1.0	1.0	1.7
Total absolute emissions (Scope 1 +2 + 3)	MnT	-	-	-	7.7	8.3	7.9
Tata Steel Netherlands							
Absolute emissions - Scope 1	MnT	-	-	-	15.0	11.7	11.2
Absolute emissions - Scope 2	MnT	-	-	-	0.7	0.8	0.6
Absolute emissions - Scope 3	MnT	-	-	-	1.8	1.8	3.8
Total absolute emissions (Scope 1 +2 + 3)	MnT	-	-	-	13.6	14.2	15.6
Tata Steel Thailand							
Absolute emissions - Scope 1	MnT	-	-	-	0.2	0.2	0.2
Absolute emissions - Scope 2	MnT	-	-	-	0.4	0.5	0.5
Absolute emissions - Scope 3	MnT	-	-	-	0.2	0.2	0.2
Total absolute emissions (Scope 1 +2 + 3)	MnT	-	-	-	0.8	0.9	0.8
Tata Steel Consolidated (including other TSL entities.*)							
Absolute emissions - Scope 1	MnT	-	-	-	66.0	75.7	75.5
Absolute emissions - Scope 2	MnT	-	-	-	4.8	5.6	5.2
Absolute emissions - Scope 3	MnT	-	-	-	12.0	11.9	13.1
Total absolute emissions (Scope 1 +2 + 3)	MnT	-	-	-	82.8	93.2	93.8

(1) Revisited methodology allows credits due to export to various co products (byproducts lime) gases). No such credits are included in GHG Protocol estimation. Scope 1.1 emissions under worldsteel scope considered direct emissions under scope 1 for steelmaking sites.

Consolidated emissions of Tata Steel has been arrived at by using equity based approach

For TSL UK and TSM, Absolute Scope 1 emissions are 46.2 MmtCO2e, Absolute Scope 2 emissions are 4.4 MmtCO2e, Absolute Scope 3 emissions are 1.3 MmtCO2e

Air emissions	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone							
Stack dust emissions	Kilo tonnes	5.75	5.59	5.04	4.10	7.22	6.40
Dust emission intensity	kg/cs	0.46	0.42	0.38	0.34	0.59	0.54
SOx emissions	Kilo tonnes	12.50	7.57	6.57	7.83	30.40	27.0
SOx emission intensity	kg/cs	1.00	0.56	0.65	0.64	1.65	1.43
NOx emissions	Kilo tonnes	12.81	8.89	8.70	7.53	16.05	15.8
NOx emission intensity	kg/cs	1.03	0.67	0.66	0.62	0.87	0.83
Tata Steel Long Products Limited - Gamharia							
Dust emissions	Kilo tonnes	-	-	1.69	1.17	1.03	0.92
Dust emission intensity	kg/cs	-	-	2.86	1.81	1.50	1.30
SOx emissions	Kilo tonnes	-	-	5.11	4.00	6.01	6.4
SOx emission intensity	kg/cs	-	-	8.66	7.13	8.79	9.09
NOx emissions	Kilo tonnes	-	-	0.97	1.08	1.21	1.2
NOx emission intensity	kg/cs	-	-	1.64	1.67	1.77	1.72
Tata Steel UK (C*)							
Dust emissions	Kilo tonnes	2.05	1.96	1.94	2.23	1.96	0.82
Dust emission intensity	kg/cs	0.57	0.64	0.57	0.69	0.55	0.28
SOx emissions	Kilo tonnes	7.19	7.07	7.09	6.61	4.96	4.6
SOx emission intensity	kg/cs	2.02	2.29	2.10	2.04	1.40	1.56
NOx emissions	Kilo tonnes	4.97	3.84	4.83	5.14	5.05	4.3
NOx emission intensity	kg/cs	1.39	1.24	1.43	1.58	1.43	1.47
Tata Steel Netherlands(# CS^{Δ})							
Dust emissions	Kilo tonnes	1.91	1.80	1.88	1.80	1.57	1.12
Dust emission intensity	kg/cs	0.28	0.26	0.28	0.30	0.24	0.25
SOx emissions	Kilo tonnes	3.23	3.13	3.16	3.04	2.79	3.2
SOx emission intensity	kg/cs	0.47	0.46	0.48	0.50	0.42	0.52
NOx emissions	Kilo tonnes	5.78	5.73	6.03	5.13	5.35	5.0
NOx emission intensity	kg/cs	0.85	0.84	0.91	0.85	0.80	0.80

* Calendar year reporting (1 January - 31 December)

Water	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone							
Fresh water consumption	Million m^3	48.7	46.3	40.8	32.9	50	49.8
Specific fresh water consumption	m^3/tcs	0.90	3.50	3.10	2.7	2.71	2.62
Effluent discharge volume	Million m^3	11.5	10.3	9.5	8.3	9	8.1
Effluent discharge intensity	m^3/tcs	0.92	0.78	0.72	0.68	0.52	0.43
Tata Steel Long Products Limited - Gamharia							
Fresh water consumption	Million m^3	-	-	6.79	6.78	6.99	4.1
Specific fresh water consumption	m^3/tcs	-	-	7.71	7.53	6.25	5.81
Effluent discharge volume	Million m^3	-	-	Zero effluent discharge			
Effluent discharge intensity	m^3/tcs	-	-				
Tata Steel UK (C*)							
Fresh water consumption	Million m^3	17	19	22	23	28	31
Specific fresh water consumption	m^3/tcs	4.83	6.01	6.51	8.73	6.70	9.84
Effluent discharge volume	Million m^3	17	33	20	18	21	29.4
Effluent discharge intensity	m^3/tcs	4.71	10.79	5.76	5.40	6.02	10.02
Tata Steel Netherlands(# CS^{Δ})							
Fresh water consumption	Million m^3	34	34	33	32	33	32.5
Specific fresh water consumption	m^3/tcs	4.95	4.96	4.95	5.20	4.76	5.21
Effluent discharge volume[#]	Million m^3	179	182	194	185	204	212.0
Effluent discharge intensity	m^3/tcs	26.3	26.6	29.0	30.4	30.6	34.29
Tata Steel Thailand							
Fresh water consumption	Million m^3	-	1.85	1.95	1.72	1.73	1.4
Specific fresh water consumption	m^3/tcs	-	1.80	1.59	1.28	1.22	1.09
Effluent discharge volume	Million m^3	-	-	Zero process water discharge			
Effluent discharge intensity	m^3/tcs	-	-				

* Calendar year reporting (1 January - 31 December)

All figures for primary steelmaking, Ijmuiden production site

Δ Total Scope 1+2+3 based on methodology of worldsteel, including credits for slag delivery to cement industry, Primary Steelmaking, Ijmuiden production site

Sea water intake and return to sea - 161 million m3/year as for cooling Calculations of Scope 1, 2, 3 emissions are as per worldsteel V9.5 methodology

Waste	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone							
Solid waste generated	Kilo tonnes	-	-	9,967	9,427	15,041	15,123
Solid waste utilised	Kilo tonnes	-	-	8,967	8,417	14,815	15,559
Solid waste sent to landfill / incineration	Kilo tonnes	-	-	-	-	-	15
Solid waste utilisation	%	-	-	100	99.9	98.5	$102.^{9}$
Tata Steel Long Products Limited - Gamharia							
Solid waste generated	Kilo tonnes	-	-	-	947.2	1023.4	927
Solid waste utilised	Kilo tonnes	-	-	-	1,057.1	851.2	858
Solid waste utilisation	%	-	-	-	100	87	92.6
Tata Steel UK (C*)							
Solid waste generated	Kilo tonnes	-	-	230.8	186.3	111.4	51.8^{1}
Solid waste utilised	Kilo tonnes	-	-	221.2	112.7	84.8	38.8^{1}
Solid waste sent to landfill / incineration	Kilo tonnes	-	-	4.27	3.62	6.58	6
Solid waste utilisation	%	-	-	95.9	60.5	76.1	98.0
Tata Steel Netherlands(# CS^{Δ})							
Solid waste generated	Kilo tonnes	228	193	218	201	170	211
Solid waste utilised	Kilo tonnes	187	143	170	159	127	151
Solid waste sent to landfill	Kilo tonnes	35	48	42	36	38	52
Solid waste utilisation	%	82.0	76.1	78.3	79.1	74.7	71.6
Tata Steel Thailand							
Solid waste generated	Kilo tonnes	199.7	213.5	200.7	221.6	265.9	254
Solid waste utilised	Kilo tonnes	199.3	210.4	200.3	221.1	265.2	254
Solid waste sent to landfill / incineration	Kilo tonnes	0.35	0.35	0.36	0.46	0.69	0.4
Solid waste utilisation	%	99.9	99.7	99.8	99.8	99.7	99.8

* Calendar year reporting (1 January - 31 December)

Energy	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone							
Specific energy consumption	GJ/tcs	25.11	24.35	24.17	24.11	23.62	23.43
Tata Steel Long Products Limited - Gamharia							
Specific energy consumption	GJ/tcs	-	-	29.16	29.25	32.47	41.06
Tata Steel UK							
Specific energy consumption	GJ/tcs	23.60	24.20	23.00	22.80	23.10	23.34
Tata Steel Netherlands#							
Specific energy consumption	GJ/tcs	20.06	19.99	19.79	20.22	20.38	18.82
Tata Steel Thailand							
Specific energy consumption	GJ/tcs	9.50	9.90	10.00	9.86	9.30	5.06

Biodiversity							
	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone							
Total sites covered under Biodiversity Management Plans (BMPs)	%	-	-	-	52.3	61.9	14
Tata Steel Long Products Limited - Gamharia							
Total sites covered under Biodiversity Management Nos. Plans (BMPs)	Nos.	-	-	-	-	Initiated at 3 sites	3
Tata Steel UK							
Discrete sites under biodiversity management	Nos	-	-	-	-	7	7

Based on crude steel production volumes

EMS - Environment Management System@ primary steelmaking, IJmuiden production site

Management							
	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone							
Workforce (permanent+contract) working in EMS (ISO 14001) certified steel production facilities	%	-	-	100	100	100	100
Tata Steel Long Products Limited - Gamharia							
Workforce (permanent+contract) working in EMS (ISO 14001) certified steel production facilities	%	-	-	100	100	100	100
Tata Steel UK							
Workforce (permanent+contract) working in EMS (ISO 14001) certified steel production facilities	%	-	-	100	100	100	100
Tata Steel Netherlands							
Workforce (permanent+contract) working in EMS (ISO 14001) certified steel production facilities	%	-	-	100	100	100	100
Tata Steel Thailand							
Workforce (permanent+contract) working in EMS (ISO 14001) certified steel production facilities	%	-	-	100	100	100	100

Scrap recycling							
	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone							
Steel scrap recycled (internal & external)	Kilo tonnes	-	-	-	598	1,252	1,538
Steel scrap recycled (internal & external)	%	-	-	-	4.9	6.8	8
Tata Steel Long Products Limited - Gamharia							
Steel scrap recycled (internal & external)	Kilo tonnes	-	-	21.9	20.4	29.7	39
Steel scrap recycled (internal & external)	%	-	-	3.7	3.2	4.3	5.53
Tata Steel UK							
Steel scrap recycled (internal & external)	Kilo tonnes	559	531	497	554	596	472
Steel scrap recycled (internal & external)	%	16.0	17.1	14.7	16.9	17.5	16
Tata Steel Netherlands							
Steel scrap recycled (internal & external)	Kilo tonnes	1,095	1,140	1,150	1,019	1,137	1,082
Steel scrap recycled# (internal & external)	%	15.9	16.5	17.4	16.8	17.6	18
Tata Steel Thailand							
Steel scrap recycled (internal & external)	Thousand tonnes	1,138	1,087	-	-	1,257	
Steel scrap recycled# (internal & external)	%	99	99	100	99	99	

Spend on Climate Change and Environment							
	UOM	FY18	FY19	FY20	FY21	FY22	FY23
Tata Steel Standalone							
Spend on Climate Change and Environment (Capex)	₹ crore	544	286	283	139	554	1,437
Tata Steel Long Products Limited - Gamharia							
Spend on Climate Change and Environment (Capex)	₹ crore	-	-	-	7.9	8.7	29
Tata Steel Netherlands							
Spend on Climate Change and Environment (Capex)	Million Euros	6.9	16.9	48.3	51.0	33.5	117

Standalone figures of FY 2021-22 includes performance of the recently merged business of erstwhile TSBSL now renamed as Tata Steel Meramandali (TSM). We are horizontally deploying best practices of our Jamshedpur and Kalinganagar facilities at Meramandali and plan to improve its environmental performance to best possible level in due course of time.