



Indian Minerals Yearbook 2021

(Part- II : Metals & Alloys)

60th Edition

IRON, STEEL & SCRAP AND SLAG

(ADVANCE RELEASE)

**GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES**

Indira Bhavan, Civil Lines,
NAGPUR – 440 001

PHONE/FAX NO. (0712) 2565471
PBX : (0712) 2562649, 2560544, 2560648
E-MAIL : cme@ibm.gov.in
Website: www.ibm.gov.in

March, 2023

9 Iron, Steel & Scrap and Slag

Iron & steel is decidedly the vital component of a country's economy and is considered pivotal amongst the driving forces of modernisation. The level of per capita consumption of steel is treated as one of the important indicators of socio-economic development and living standards in any country. Steel continues to be the foremost of engineering materials, which is not only environment-friendly but also is recyclable.

The total finished steel (alloy/stainless+non-alloy) production in India has grown from a mere 1.1 million tonnes in 1951 to 96.204 million tonnes (Crude Steel Equivalent) in 2020-21. Out of this, 48.725 million tonnes was Non-Flat steel and the remaining 47.479 million tonnes was Flat steel. The contribution of non-alloy finished steel, alloy finished steel and stainless steel segment is 90.608 million tonnes, 3.326 million tonnes and 2.27 million tonnes respectively. The growth in the Steel Sector in the early decades after independence was mainly in the Public Sector units. However, following the adoption of new economic policy and subsequent deregulation and decontrol of Indian Iron & Steel Sector, the 1990s witnessed accelerated growth in the Private Sector, catapulting its share of finished steel production from 45% in 1992-93 to 86% (82.438 million tonnes) in 2020-21.

Steel exports from India began in 1964. Exports in the first five years were mainly as a result of low demand in the domestic Iron and Steel market. Exports subsequently declined due to revival of domestic demand. India once again started exporting steel in 1975 which subsequently registered a slump due to rising domestic demand. Post liberalisation, a rejuvenation in the Steel Sector resulted in large-scale exports of iron and steel. The total finished steel exports stood at 10.78 million tonnes in 2020-21, a growth of 29% over 2019-20 while imports stood at 4.75 million tonnes, a decrease by 29.81% in 2020-21 over 2019-20. Such trends implied that India emerged as a net exporter of total finished steel in 2020-21 in contrast to its status as net importer in 2019-20.

Liberalisation of the Indian Steel Sector

At the time of independence in 1947, India had

only three steel plants – the Tata Iron & Steel Company, the Indian Iron & Steel Company and Visveswaraya Iron & Steel Ltd and a few electric arc furnace-based plants. In the period till 1947, the viable steel producers in the country that operated with a capacity of about 1 million tonnes was wholly under the Private Sector. The provisions of the economic policy implemented during different phases of time engendered several marked changes in Indian Steel Industry. From the fledgling one million tonnes capacity status at the time of independence, India has now risen to be the 2nd largest crude steel producer in the world and the largest producer of Sponge Iron. From a negligible global presence, the Indian Steel Industry is now globally acknowledged for its product quality.

The rapid pace of growth of the Industry and the observed market trends called for certain guidelines and framework. Thus, the concept of the National Steel Policy was born with the aim to provide a roadmap of growth and development for the Indian Steel Industry. The National Steel Policy (NSP), 2005 was announced in November 2005 as a basic blueprint for the growth of a self-reliant and globally competitive Steel Sector. The long-term objective of the National Steel Policy 2005 was to ensure that India has a modern and efficient Steel Industry of world standards, catering to diversified steel demand. The focus of the policy was to attain levels of global competitiveness in terms of global benchmarks of efficiency and productivity. Then, after a detailed review in 2017, the Government released the National Steel Policy 2017, which laid down the broad roadmap for encouraging long-term growth for the Indian Steel Industry, both on demand and supply sides, by 2030-31, with a vision to create a technologically advanced and globally competitive Steel Industry that which would promote economic growth. At the same time, as a facilitator in the present-day de-regulated, liberalised economic/market scenario, the Government also announced a policy for providing preference to domestically manufactured Iron & Steel products in Government procurement. This policy seeks to accomplish the Hon'ble Prime Minister's vision of 'Make in India' with the objective of nation building and to encourage

domestic manufacturing and is applicable on all Government tenders where price bid is yet to be opened. To ensure quality scrap for the Steel Industry, the Govt. of India came out with a Steel Scrap Recycling Policy that aims to reduce imports, conserve resources and save energy.

STEEL POLICIES AND INITIATIVES OF THE GOVERNMENT TO BOOST THE STEEL SECTOR

National Steel Policy 2017

NSP 2017 aims to increase focus on expansion of Micro, Small and Medium Enterprise (MSME) Sector, improve raw material security, enhance R&D activities, reduce import dependency and cost of production, and thus develop a technologically advanced and globally competitive Steel Industry that which would promote economic growth eyeing self-sufficiency in production, developing globally economical steel manufacturing capabilities by facilitating investments and cost efficient productions with adequate availability of raw materials.

With focus on R&D through establishment like Steel Research Technology Mission of India (SRTMI), the technology would be of utmost focus over the next decade and MSME steel plants would be the key drivers to achieve the additional capacity required for India’s consumption led growth and improvement in the overall productivity and quality.

The principal objectives that the National Steel Policy 2017 aims to achieve are the following:

- a) Build a globally competitive industry.
- b) Increase per Capita Steel Consumption to 160 kg by 2030-31.
- c) To domestically meet entire demand of high grade automotive steel, electrical steel, special steels and alloys for strategic applications by 2030-31.
- d) Increase domestic availability of washed coking coal so as to reduce import dependence on coking coal from ~85% to ~65% by 2030-31.
- e) To have a wider presence globally in value added/ high grade steel.
- f) Encourage industry to be a world leader in

energy efficient steel production in an environmentally sustainable manner.

- g) Establish domestic industry as a cost-effective and quality steel producer.
- h) Attain global standards in Industrial Safety and Health.
- i) To substantially reduce the carbon foot-print of the Steel Industry.

Forecast of Iron & Steel Demand and Production (by 2030-31)

(All values in million tonnes unless stated)

Sl No.	Parameters	Projections 2030-31
(i)	Total crude steel capacity	300
(ii)	Total crude steel demand/production	255
(iii)	Total finished steel demand/production	230
(iv)	Sponge iron demand/production	80
(v)	Pig iron demand/ production	17
(vi)	Per Capita Finished Steel Consumption (in kg)	158

A resilient show by the domestic Steel Industry during 2021 ensured that India not only maintained its global ranks intact [as per rankings released by the World Steel Association (worldsteel)], but it also became the 2nd largest producer of crude steel and the largest sponge iron producer in the world but breaking past records: India emerged as the 2nd largest consumer of total finished steel in the world with its steel consumption edging past the historic 118 million tonnes mark in 2019.

Affecting millions across continents, COVID-19 adversely impacted the major markets around the world in the year of 2020-21. Besides the irreparable loss of human lives, the massive spread of COVID-19 went on to wreak havoc on the global economy through complete shutting down of all economic activities. The world grappled to control the calamitous spreading of the virus — the economic topsy-turvy caused has led to meltdowns that may take years to overcome.

The following is a status report on the performance of Indian Steel Industry during April-March 2020-21,

based on data published by Joint Plant Committee (JPC). It is to be noted that total finished steel includes both non-alloy and alloy (including stainless steel) and all comparisons are made with regard to same period of last year.

- Production of crude steel was at 103.54 million tonnes, a decline of 5.12 % . At 143.914 million tonnes, crude steel capacity indicated a utilisation of 72 % compared to 77% of last year.
- Hot metal production was 69.26 million tonnes, a decrease of 5.1%.
- Pig iron production was 4.88 million tonnes, down by 10 %.
- Sponge iron production was 34.38 million tonnes, up by 7.3%.
- Total finished steel equivalent production was 96.20 million tonnes, a decrease of 6.3 %.
- Export of total finished steel reached 10.78 million tonnes, an increase of 29 %.
- Import of total finished steel was 4.75 million tonnes, a decrease of 29.8 %.
- India was a net exporter of total finished steel.
- Consumption of total finished steel equivalent was 94.89 million tonnes, a decrease of 6.3 %.

The Secondary Steel Sector constitutes Electric Arc Furnace/Induction Furnace, pig iron/sponge iron units, re-rolling units, HR units, CR units, galvanised/colour coated units, tin plate units, wire-drawing units,

etc. for producing either semi-finished or finished steel.

The important iron & steel units in India are Steel Authority of India, Rashtriya Ispat Nigam, Tata Steel Group, AM/NS (erstwhile Essar Steel), JSW Steel and Jindal Steel & Power as well as large number of Mini Steel Plants based on Electric Furnaces & Energy Optimising Furnaces (EOF). Besides the steel producing units, there are a large number of Sponge Iron Plants, Mini Blast Furnace units, Hot & Cold Rolling Mills & Galvanising/Colour Coating units which are spread across the country.

The structure of the Indian Steel Industry in 2020-21 along with the production for 2019-20 to 2020-21 is furnished in Table-1. Production of iron & steel, crude steel, pig iron and finished steel (alloy + non-alloy) by SAIL, TSL Group , RINL, AM/NS (erstwhile Essar Steel), JSWL, JSPL and other producers along with production of crude steel from oxygen route, electric arc furnace route and induction furnace route during the year 2016-17 to 2020-21 reflected in Table-2 along with the production of sponge iron through gas-based & coal-based units during the year 2016-17 to 2020-21 is The production of iron & steel by Public and Private Sectors during 2015-16 to 2019-20 is furnished in Table-3. The details on plant-wise capacity and production of hot metal and crude/liquid steel are listed out in Table-4. Table-5 elucidates the production of crude/liquid steel by BOF and Electric route (EAF/IF) routes. Crude Steel Scenario Region / State -wise covering No. of Units, Annual Capacity and Production in respect of 2020-21 is shown in Table 6. Prices of steel are provided in Table-7.

Table – 1 : Structure of the Indian Steel Industry, 2019-20 & 2020-21**(Capacity/Production: In million tonnes)**

Sector	Total Annual Capacity	2019-20	2020-21	
		Production	Production	% Capacity Utilisation
Crude Steel	143.914	109.14	103.54	72 %
(A) Producer-wise				
SAIL, TSL GROUP, RINL, AM/NS, JSWL, JSPL	81.932	68.382	65.053	79 %
Other Producers	61.982	40.755	38.491	62 %
(B) Sector-wise				
Public Sector	25.932	20.905	19.575	75 %
Private Sector	117.982	88.232	84.032	71 %
Hot Metal	79.351[#]	73.011	69.266	93 %
Pig iron	NA	5.421	4.877	
Sponge Iron	48.079	37.102	34.376	71 %
Total Finished Steel (Non alloy + Alloy + stainless)	NA	102.621	96.204	
1) Finished Steel (Non-alloy)	NA	97.50	90.608	
A) Non-Flat Products	NA	49.625	45.157	
Bars & Rods		40.327	37.171	
Structural		7.485	6.494	
Rly Material		1.813	1.493	
B) Flat Products	NA	47.876	45.457	
PM Plates		4.681	4.246	
HR Coil/Strip		43.194	41.204	
2) Finished Steel (Alloy)	NA	2.841	3.326	
A) Non-Flat Products	NA	2.596	2.990	
B) Flat Products	NA	0.245	0.336	
3) Finished Steel (Stainless)	NA	2.280	2.269	
A) Non-Flat Products	NA	0.526	0.577	
B) Flat Products	NA		1.754	1.692

Source: Annual Statistics, 2020-21 of JPC;**Note :** Finished steel data are reported in terms of Crude Steel Equivalent. This change is due to change in reporting system of JPC as approved by Ministry of Steel and Industry Experts.**# :** Combine Capacity pig Iron & Hot metal ; Figures rounded off.

Table – 2 : Production of Iron and Steel, 2016-17 to 2020-21

(In '000 tonnes)

Item/producers	2016-17	2017-18	2018-19	2019-20	2020-21(P)
I. Pig Iron : Total	10342	5728	6414	5421	4877
SAIL,TSL GROUP , RINL, AM/NS, JSWL, JSPL	905	726	1663	1193	1413
Other Producers	9437	5002	4751	4227	3464
II. Sponge Iron : Total	28762	30511	34705	37102	34376
Gas based	4854	6458	6899	6564	6175
Coal based	23908	24053	27806	30539	28201
III. Crude Steel : Total	97936	103131	110921	109137	103545
Integrated steel Plants (SAIL, TSL GROUP, RINL, AM/NS, JSWL and JSPL)					
Oxygen Route	39603	41747	47412	46735	43947
EAF Units	15883	17639	21295	21647	21106
Other Producers					
Oxygen Route	2291	5645	2043	1838	1138
EAF Route	13187	8879	7181	6719	8301
IF Route	26972	29221	32990	32198	29052
IV. Total Finished Steel (Non alloy +Alloy + Stainless)	120140	126855	101287	102621	96204
SAIL,TSL GROUP , RINL, AM/NS, JSWL, JSPL	61927	69143	61283	61286	55322
Other Producers	58213	57712	40004	41336	40882

*Source: Annual Statistics, 2020-21 of Joint Plant Committee**Note :*

1. Finished steel data are reported in terms of Crude Steel Equivalent. This change is due to change in reporting system of JPC as approved by Ministry of Steel and Industry Experts; Figures rounded off.

2. TSL Group includes Bhushan Steel Limited, Tata Steel Long Products Limited & BMW - Gamharia (Jharkhand) along with TSL plants in Jamshedpur & Kalinganagar.

Table – 3 : Production of Iron and Steel, 2016-17 to 2020-21 (By Sectors)

(In '000 tonnes)

Item/producers	2016-17	2017-18	2018-19	2019-20	2020-21
I. Pig Iron : Total	10342	5728	6414	5421	4877
Public Sector (SAIL+RINL)	573	364	588	614	669
Private Sector (JSWL+JSPL+TSL Group)	9769	5364	5826	4807	4208
Other Blast Furnace /Corex Unit)					
II. Crude Steel /SEMIS: Total	97936	103131	110921	109137	103545
Public Sector	18456	19753	21496	20905	19515
Private Sector	79480	83378	89425	88232	84030
III. Finished Steel (Non-Alloy+Alloy+ Stainless): Total	120140	126855	101287	102621	96203
Public Sector (SAIL+RINL)	16571	17944	16933	16029	13783
Private Sector {TSL + AM/NS (ESL) +JSWL+JSPL+Other Producers}	103569	108911	84353	86593	82420

Source: Annual Statistics, 2020-21 of JPC;

Note : Finished steel data are reported in terms of Crude Steel Equivalent. This change is due to change in reporting system of JPC as approved by Ministry of Steel and Industry Experts; Figures rounded off

**Table – 4 : Capacity and Production of Hot Metal and Crude/Liquid Steel, 2019-20 and 2020-21
(By Principal Producers)**

(In '000 tonnes)

Unit	Annual installed capacity		Production			
	Hot metal	Crude/Liquid steel	Hot metal		Crude steel	
			2019-20	2020-21	2019-20	2020-21
Public Sector						
SAIL	17105	19632	17437	16581	16156	15213
Rashtriya Ispat Nigam Ltd (Andhra Pradesh)	6300	6300	5161	4681	4749	4302
Private Sector						
JSW Steel Ltd	16500	18000	15220	14389	16156	14780
TSL Group	17169	19400	19019	17775	18525	17204
AM/NS (Essar Steel Ltd)	3490	10000	3632	3331	7121	6696
Jindal Steel & Power Ltd	5325	8600	5262	5862	5861	6859
Others	13680	60367	7281	6647	40755	38491
Other BOF	-	4077	-	-	1838	1786
Other EAF	-	11794	-	-	6719	7653
IF Units	-	44496	-	-	32198	29052

*Source: Annual Statistics, 2020-21 of JPC***Table – 5 : Production of Crude/Liquid Steel, 2016-17 to 2020-21**

(By Route)

(In'000 tonnes)

Route/plant	2016-17	2017-18	2018-19	2019-20	2020-21
All Routes: (A+B) Total	97936	103131	110921	109137	103545
A. Oxygen Route : Total	41894	47392	49455	48573	45085
SAIL	14298	14829	16045	15946	15054
RINL	3962	4731	5233	4749	4302
Tata Steel Ltd	11688	12459	-	-	-
TSL Group	-	-	16038	16399	15811
JSW Steel Ltd	9655	9728	10096	9641	8780
Bhushan Steel Ltd	-	3167	-	-	-
Other Oxygen Route	2291	2478	2043	1838	1138
B. Electric Route: Total	56042	55739	61466	60564	58460
Electric Arc Furnace	29070	26518	28476	28366	29407
SAIL	196	193	218	210	158
TSL Group	-	-	2363	2126	1392
AM/NS (Essar Steel Ltd)	5391	6753	6813	7121	6696
JSW Steel Ltd	6851	6679	6647	6329	6080
Jindal Steel & Power Ltd	3445	4014	5254	5861	6859
Lloyds Steel Ltd	575	560	518	495	452
Jindal Stainless Ltd	1391	1497	1554	1418	1458
Bhushan Steel Ltd	5601	87	-	-	-
Bhushan Power & Steel Ltd	3324	2018	2778	2901	3754
Other Electric Arc Furnace	2296	4717	2331	1905	2638
Electric Induction Furnace	26972	29221	32990	32198	29052

*Source :- Annual statistics 2020-21 of JPC**Note:- TSL Group includes Bhushan Steel Ltd, Tata Steel Long Products, TSL Jamshedpur & TSL Kalinganagar, Figures rounded off*

Fig.1: Production of Crude Steel, 2013-14 to 2020-21

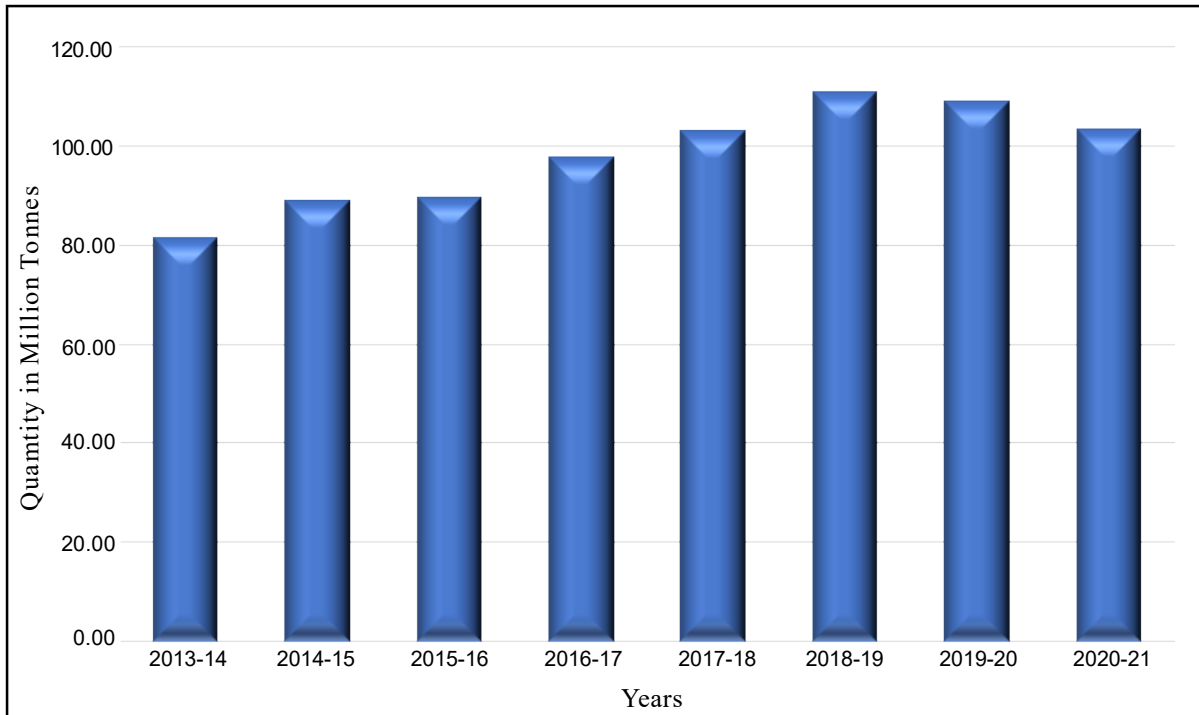


Fig.2: Production of Total Finished Steel, 2013-14 to 2020-21

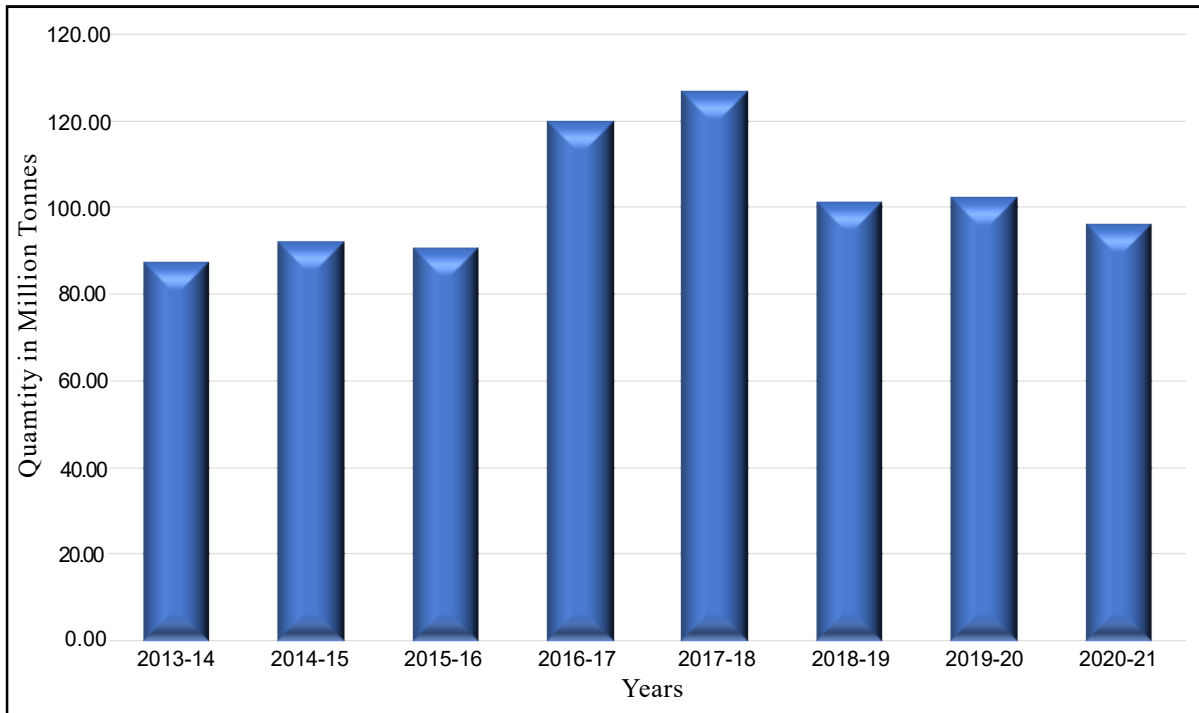


Table-6: Region / State-wise Crude Steel Scenario in respect of No. of Units, Annual Capacity and Production: 2020-21

State	No. of Units			Annual Capacity ('000 tonnes)			Annual Production ('000 tonnes)					
	BOF	EAF	IF	TOTAL	BOF	EAF	IF	TOTAL	BOF	EAF	IF	TOTAL
TOTAL	17	38	823	878	57295	40354	46266	143915	45085	29407	29052	103544
Eastern Region	9	12	133	154	32577	12463	11247	56287	26854	10655	7116	44625
Arunachal Pradesh	-	-	3	3	-	-	125	125	-	-	-	-
Assam	-	-	6	6	-	-	131	131	-	-	59	59
Bihar	-	-	13	13	-	-	830	830	-	-	465	465
Jharkhand	3	1	27	31	16477	1000	2011	19488	13603	648	1298	15549
Meghalaya	-	-	5	5	-	-	181	181	-	-	37	37
Odisha	4	7	42	53	11400	10882	3048	25330	9319	9774	2339	21432
Tripura	-	-	1	1	-	-	30	30	-	-	7	7
West Bengal	2	4	36	42	4700	581	4892	10173	3932	233	2911	7076
Western Region	1	17	220	238	6000	24102	15883	45985	4244	15600	10621	30465
Chhattisgarh	1	6	74	81	6000	6323	6868	19191	4244	3810	5129	13183
Dadra and Nagar haveli	-	-	10	10	-	-	168	168	-	-	145	145
Daman and Diu	-	-	3	3	-	-	46	46	-	-	40	40
Goa	-	-	10	10	-	-	405	405	-	-	400	400
Gujarat	-	2	69	71	-	10150	3538	13688	-	6718	1685	8403
Madhya Pradesh	-	-	9	9	-	-	457	457	-	-	369	369
Maharashtra	-	9	45	93	-	7630	4401	12031	-	5072	2853	7925

contd...

Table-6:(concl'd)

State	No.of Units												
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	TOTAL	
Delhi	0	0	2	2	0	0	16	16	0	0	0	10	10
Haryana	0	3	11	14	0	847	190	1037	0	607	123	730	730
Himachal Pradesh	0	0	25	25	0	0	1144	1144	0	0	766	766	766
Jammu & Kashmir*	0	0	8	8	0	0	189	189	0	0	118	118	118
Punjab	0	4	110	114	0	762	4302	5064	0	386	2531	2917	2917
Rajasthan	0	0	31	31	0	0	1005	1005	0	0	589	589	589
Uttar Pradesh	0	0	46	46	0	0	1617	1617	0	0	1005	1005	1005
Uttarakhand	0	0	39	39	0	0	1524	1524	0	0	950	950	950
Southern Region	7	2	198	207	18718	2180	9148	30046	15292	2159	5224	21368	21368
Andhra Pradesh	2	0	23	25	6600	0	2014	8614	5001	-	1333	5897	5897
Karnataka	4	1	20	24	11118	2000	2143	15261	9656	2059	806	11688	11688
Kerala	0	0	29	29	0	0	480	480	0	0	253	253	253
Puducherry(UT)	0	0	10	10	0	0	364	364	0	0	179	179	179
Tamil Nadu	1	1	98	91	1000	180	2542	3722	635	100	1461	2159	2159
Telangana	0	0	27	27	0	0	1605	1605	0	0	1192	1192	1192

* Jammu & Kashmir, vide enactment of Jammu & Kashmir Reorganisation Act, 2019, is a Union Territory

Fig.3: Crude Steel Working Capacity in Different States, 2020-21

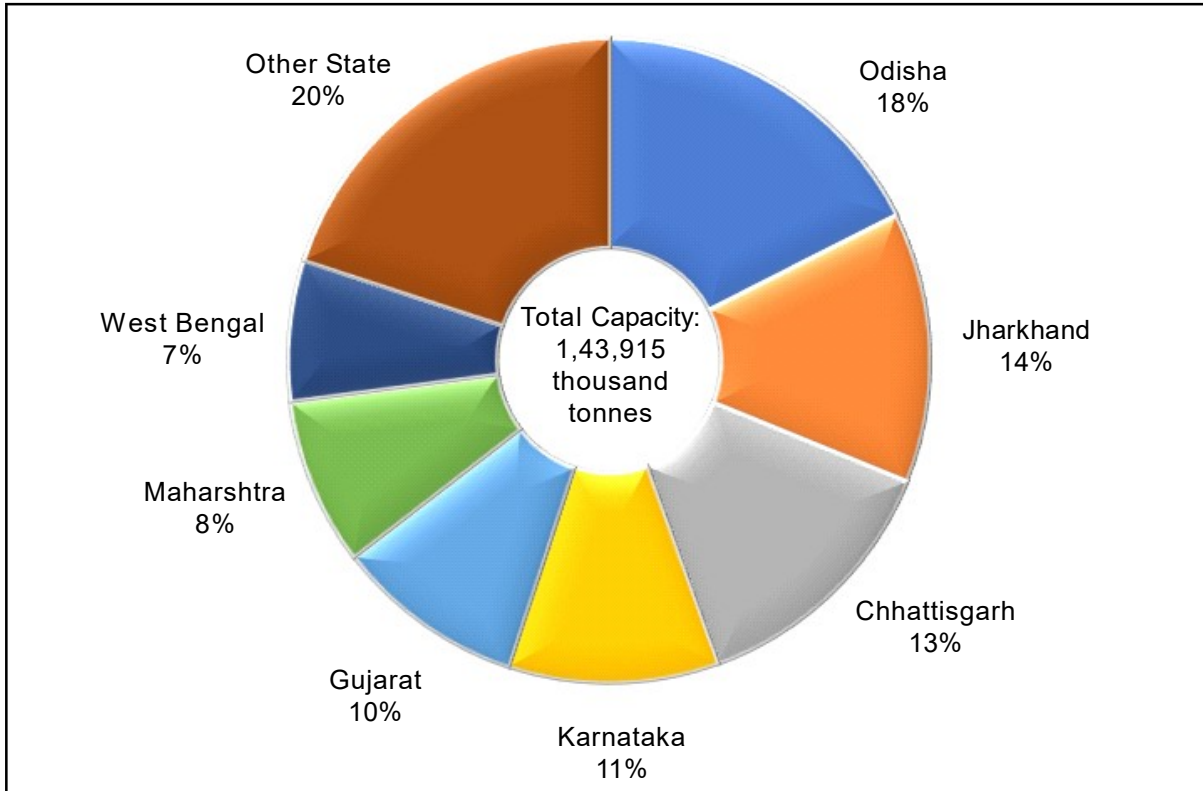
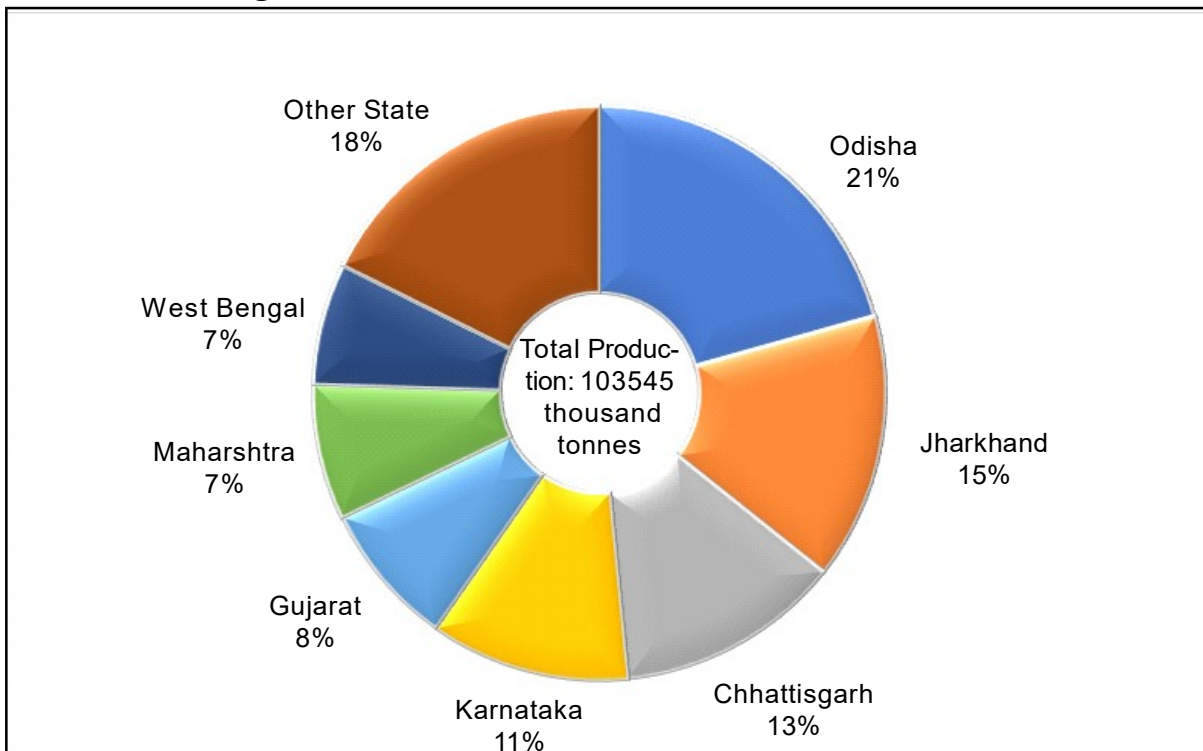


Fig.4: Crude Steel Production in Different States, 2020-21



**Table – 7: Prices of Steel, 2018-19 to March 2022
(Domestic Markets)**

(In ₹ per tonne)

Grade	Market	2018-19	2019-20	March 2022
TMT Bars (ISI, 8 mm)	Delhi	46180	45044	53075
MS Squares (8 mm)	“	45044	50525	60650
MS Angles (25 x 3 mm)	“	45135	50265	62250
Channels (75 x 40 mm)	“	44827	49560	62813
Joists (150 x 75 mm)	“	44546	51325	63875
Melting Scrap	“	26217	39775	50500
Induction Ingots	“	35698	33517	64700
TMT Bars (local 8 mm)	Mumbai	44998	43838	62550
MS Rounds (8 mm)	“	43658	42258	60650
MS Angles (40 x 6 mm)	“	46071	44619	62250
Joists (150 x 75 mm)	“	44538	42977	62813
Melting Scrap (Foundry G.)	“	-	-	55000
Melting Scrap (Steel G.)	“	-	-	49000
Melting Scrap (CRCA)	“	-	-	54000
Induction ingots	“	36119	33170	64700
Arc Ingots	“	36238	33835	64950
Concast Billet ingots	“	36529	34148	59800
TMT Bars (ISI, 8 mm)	Kolkata	46447	45398	63510
MS Squares (8 mm)	“	45726	44944	62110
MS Angles (25 x 3 mm)	“	45242	44773	62750
Channels (75 x 40 mm)	“	47124	44898	62100
Joists (150 x 75 mm)	“	44633	43079	61538
Induction Ingots	“	36190	33982	61900
Arc Ingots	“	36329	34257	64275
Concast Billet Ingots	“	36433	34444	58550
Induction ingots (round)	Gobind	35970	31693	58550
Blooms (SAIL, 150 mm)	“	36016	31660	59750
Old Ship Breaking Scrap	“	29510	29126	48425
Melting Scrap (rolling)	“	33271	28166	51075
MS Rounds (10 mm)	“	45075	43367	66775
MS Squares (8 mm)	“	47033	46018	69575
MS Angles (25 x 3 mm)	“	45313	44051	69475
MS Sponge Iron	“	26529	24566	39425
MS Flat (3 x 20 mm)	“	45300	43339	69075
Pig Iron (Foundry Grade) –A*	Mumbai	-	-	62500
Pig Iron (Foundry Grade) –B*	Punjab	-	-	62625
Pig Iron Steel Grade	“	-	-	60625

Source: Minerals & Metals Review - August 2022

A* : Low Sulphur/Phosphorus, i.e., 0.09% max. which is used in Critical automotive engine components & specialised casting.

B* : High Sulphur/Phosphorus, i.e., above 0.09% which is used in Non-critical castings.

1. Prices are inclusive of GST. 2. All rates are monthly averages and indicatives

3. Gobind = Mandi Gobindgarh in Punjab; FG stands for Foundry Grade & SG stands for Steel Grade

4. MMR Pig Iron & Scrap prices are Basic Rates (Additional 18% GST & Freight as applicable)

A. Crude Steel

At 103.545 million tonnes (mt) in 2020-21, India's crude steel production declined by 5.1% as compared to 109.14 million tonnes in 2019-20. Given the above production for 2020-21 and with capacity at 143.91 million tonnes, crude steel capacity utilisation stood at 72% during 2020-21 as compared to 77% of last year. The Crude Steel working Capacity and Capacity Utilisation during the last five years are furnished below in Table- 8

Table- 8: Production and Working Capacity Crude Steel (2016-17 to 2020-21)

(Quantity in million tonnes)

Year	Working capacity	Production	% Utilisation capacity
2016-17	128.277	97.936	76%
2017-18	137.975	103.131	75%
2018-19	142.236	110.921	78%
2019-20	142.299	109.137	77%
2020-21	143.914	103.545	72%

Figures rounded off.

With 81 % share, the Private Sector (84.032 million tonne, led the crude steel production in 2020-21. In fact, India's crude steel production has been consistently led by the Private Sector in the last five years ending 2020-21, with average share of the Sector standing at 81% during this period.

With a 63% share, SAIL, RINL, TSL Group, AM/NS (Essar Steel), JSWL, JSPL together produced 65.053 million tonnes of crude steel in 2020-21 while the rest 37% was the share of the other producers during this period. In fact, the trend of last five years ending 2020-21 indicate that India's crude steel production is driven by these six producers.

The following are the two primary routes of crude steel production:

- (i) BF/BOF route also called the Oxygen route.
- (ii) Electric route comprising of Electric Arc Furnace and Electric Induction Furnace.

Basic Oxygen Furnace (BOF)

Presently, there are around 17 Basic Oxygen Furnace units which are available in the Indian Iron & Steel Sector with a total capacity of 57.295 million

tonnes and produced 45.085 million tonnes of crude steel through BOF route in 2020-21 at 79 % of its capacity utilisation.

Electric Arc Furnace (including corex & MBF/EOF)

Crude steel produced in the Electric Arc Furnace (including corex & MBF/EOF) is mostly by recycling of steel scrap using Electric Arc Furnace (EAF). Electric Arc Furnace units, which are popularly known as mini steel plants, are significantly contributing to the production of steel in the country. Presently, in the Electric Arc Furnaces, there are 38 working units with total capacity of 40.354 million tonnes including the SAIL (ASP), AM/NS, JSWL (Dolvi, Vijaynagar) & JSPL and produced 29.407 million tonnes crude steel through EAF route in the year 2020-21 at 73 % of its capacity utilisation. The recent developments in EAF technology, viz, to increase oxygen consumption, to reduce power consumption and to reduce tap time have led to increase in metal production. The development of thin slab casting has made EAF route more productive. This route enables slab strips rolling at lesser cost, facilitating production of cheaper strips/sheets than those that can be achieved through BF/BOF route.

Induction Furnace (IF)

In case of the Induction Furnace (IF) segment, there are presently 823 IF working units with total capacity of 46.266 million tonnes which produced 29.052 million tonnes crude steel through IF route in 2020-21 at 63 % of its capacity utilisation. These units are better than their EAF counterparts mainly because of their low cost of production and other factors mainly related to local market supply-demand conditions. Over the time, the IF sector has witnessed considerable technological upgradation with better charge-mix of DRI and refining facilities.

An analysis of the production of crude steel through various process routes indicates that the above performance has been contributed largely by the strong trends in growth of the electric route of steel making, particularly the induction furnace route (encouraged by strong growth in sponge iron). This is reflected in Table- 9.

On further analysis of the relative shares of the various routes in total production of crude steel, electric furnace route is dominated by the Induction Furnace route, which has emerged as a key driver of crude steel production in the country (Table- 10).

B. Hot Metal

At 69.266 million tonnes in 2020-21, domestic hot metal production declined by 5.12% over 2019-20.

With 81% share, the Private Sector (84.032 million tonnes, led hot metal production in 2020-21.

In 2020-21, with a 90% share, SAIL, RINL, TSL Group, AM/NS (Essar Steel), JSWL and JSPL together produced 62.619 million tonnes, a decline of 4.8% as compared to that in 2019-20. Whereas the other producers produced 6.64 million tonnes which too showed a decline of 8.8% during the year 2020-21.

C. Total Finished Steel (Crude Steel Equivalent)

1. Trend in Production of Total Finished Steel

In the year 2020-21, the production of finished steel, measured in terms of crude steel equivalent, stood at 96.204 million tonnes. The figures of production of finished steel related to the year

2019-20 and 2020-21 are not comparable to other FYs, as they are reported in terms of Crude Steel Equivalent and this is different in concept from those reported for past FYs due to change in reporting system of JPC as approved by Ministry of Steel and Industry Experts.

With a 86% share, the Private Sector produced 82.420 million tonnes finished steel equivalent in 2020-21 while 14% (13.783 million tonnes) was the share of the Public Sector during this period. In fact, India's production of finished steel has been consistently led by the Private Sector in the last five years.

With a 58% share, SAIL, RINL, TSL Group, AM/NS (Essar Steel), JSWL, JSPL taken together produced 55.322 million tonnes of finished steel in 2020-21 while the rest 42% (40.882 million tonnes) was the share of the Other producers during this period. In fact, the trend of last five years ending 2020-21 indicates that India's production of total finished steel is driven by these six producers taken together.

Non-alloy Finished steel production during this period was 90.608 million tonnes, while 3.326 million tonnes and 2.269 million tonnes were those of alloy and stainless steel respectively.

Table-9 : Crude Steel Production — By Process
(million tonnes)

Process Route	2016-17	2017-18	2018-19	2019-20	2020-21
Oxygen	41.894	47.392	49.455	48.573	45.085
EAFF	29.070	26.518	28.476	28.366	29.407
IF	26.972	29.221	32.990	32.198	29.052
Total	97.936	103.131	110.921	109.137	103.545

Source : Performance Review Iron & Steel 2020-21, JPC

Table-10 : Process Route Share in total Production (%age)

Process Route	2016-17	2017-18	2018-19	2019-20	2020-21
Oxygen	43	46	44	45	44
EAFF	29	26	26	26	28
IF	28	28	30	29	28

Source : Performance Review Iron & Steel 2020-21, JPC

An analysis of the broad divisions in terms of the total production of finished steel reflects the following —

- Contribution of the Non-alloy Finished Steel Non-flat Segment stood at 45.16 million tonnes.
- While that of the Non-alloy Finished Steel flat Segment stood at 45.46 million tonnes.
- Contribution of the Alloy Steel Non-flat Segment stood at 2.99 million tonnes.
- While that of the Alloy Steel Flat Segment stood at 0.34 million tonnes.
- Contribution of the Stainless Steel Non-flat Segment stood at 0.58 million tonnes.
- While that of the Stainless Steel Flat Segment stood at 1.69 million tonnes.

Analysing by segments within this broad group, it can be noted that —

- In the Non-flat, Non-alloy Segment, production of bars & rods stood at 37.17 million tonnes while production of Structural and Rly. Materials 6.49 million tonnes and 1.49 million tonnes respectively.
- For the Flat Non-alloy Segment, the production of Plate Mill Plates stood at 4.25 million tonnes while production of HR Coil/Strip stood at 41.20 million tonnes.
- In the Non-flat, Alloy Steel Segments, the overall production of all items stood at 2.99 million tonnes.
- Flat alloy Steel production stood at 0.34 million tonnes.
- In the Non-flat, Stainless Steel Segment, the overall production of all items stood at 1.75 million tonnes.

- Flat Stainless Steel production stood at 1.69 million tonnes.

2. Trends in Consumption of Total Finished Steel

Finished Steel consumption stood at 94.891 million tonnes in 2020-21 as compared to 100.17 million tonnes during 2019-20, notching down a growth of 5.3 %. Data on overall consumption of total finished steel (non-alloy + alloy + stainless) during the last five years is provided in Table-11 and is illustrated in and these indicate a steady growth in domestic steel consumption during the said period. However, reflecting on the year-on-year (yoy) rate of growth it could be said that such a trend, impacted and shaped largely by macroeconomic factors and prevailing steel market conditions, has followed a zig-zag track, with growth rates peaking in 2019-20 (1.5%) but falling thereafter to a significantly low 5.3% in 2020-21 (Table-11).

Table-13 highlights the growth pattern yoy along with share of domestic total finished steel consumption, in terms of its two broad components – flat steel and non-flat/long steel – in 2019-20 and 2020-21. Both these components include non-alloy, alloy and stainless steel constituents as well.

Table-14 shows detailed consumption data for major categories of finished steel in 2020-21 over 2019-20 in terms of crude steel equivalent of finished steel as per the present reporting system. The data reveals that in the non-alloy, non-flat segment, the major contributor to consumption was bars & rods (39.67 million tonnes — up by 0.9 %) whereas for the flat segment, consumption was led by HRC (36.64 million tonnes, down by 9.4 %). Consumption of alloy and stainless steel recorded a decline by 3.9 % and 11.6 % respectively and non-alloy steel also decline by 5% during the year 2020-21.

**Table – 11 : Total Finished Steel Consumption (Non-alloy + alloy + stainless steel)
(Crude Steel Equivalent)
(2016-17 to 2020-21)**

Year	Total Finished Steel Consumption	(In '000 tonnes)
		% yoy change
2016-17	84042	3.1
2017-18	90708	7.9
2018-19	98708	8.8
2019-20	100171	1.5
2020-21	94891	-5.3

Table- 12 : Total Finished Steel Consumption - Non-alloy / alloy / stainless steel wise

ITEM	Crude Steel Equivalent (2019-20 to 2020-21)				(In '000 tonnes)
	2019-20		2020-21		% yoy Change
	Qty	% share	Qty	% share	
Total Finished Steel (Non alloy+ alloy + stainless)	100171	-	94891	-	5.3
Non-alloy Finished Steel	93477	93.3	88667	93.4	5.1
Alloy Finished Steel	3988	4	3833	4	-3.9
Stainless steel	2706	2.7	2392	2.6	-11.6

Table- 13 : Total Finished Steel Consumption— Non - flat/Flat wise

ITEM	Crude Steel Equivalent (2019-20 to 2020-21)				(In '000 tonnes)
	2019-20		2020-21		% yoy Change
	Qty	% share	Qty	% share	
Total Finished Steel (Non Flat+ Flat)	100171	-	94891	-	5.3
Non-Flat Finished Steel	51720	51.6	51354	54.1	0.7
Flat Finished Steel	48451	48.4	43537	45.9	-10.1

Source : Annual Statistics 2020-21; JPC

**Table– 14 : Detailed Consumption for Major Categories of Total Finished Steel in 2020-21 over 2019-20
(Crude Steel Equivalent)**

ITEM	(In '000 tonnes)		
	2019-20	2020-21	% yoy Change
Total Finished Steel (Non-alloy + Alloy + stainless)	100171	94891	-5.3
1. Finished Steel (Non-alloy)	93478	88667	-5.1
a) Non-Flat Products	48345	47789	-1.2
Bars & Rods	39329	39679	0.9
Structural	7167	6562	-8.4
Rly Material	1849	1548	-16.3
b) Flat Products	45133	40878	-9.4
PM Plates	4684	4242	-9.4
HR Coil/Strip	40449	36635	-9.4
2. Finished Steel (Alloy)	3988	3833	-3.9
a Non-flat Products	2960	3099	4.7
b) Flat Products	1028	734	-28.6
3. Finished Steel (Stainless)	2706	2392	-11.6
a) Non-flat Products	416	466	12
b) Flat Products	2290	1925	-15.9

Fig.5: Total Finished Steel Consumption, 2014-15 to 2020-21

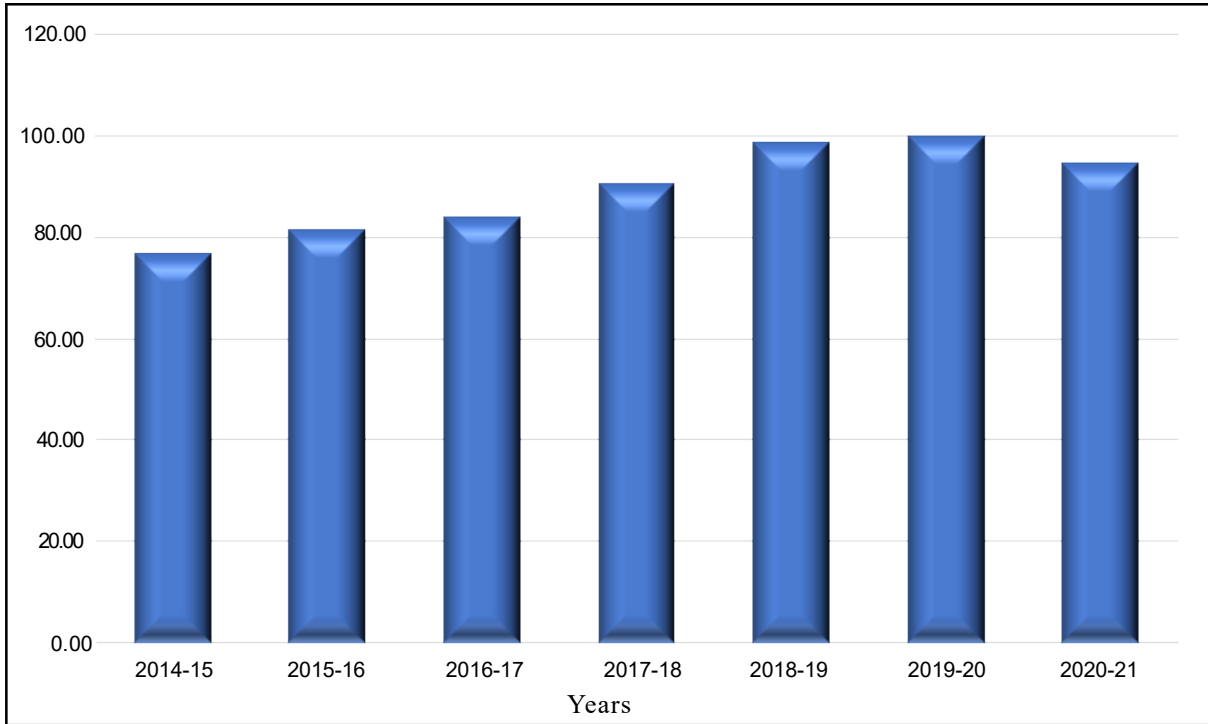
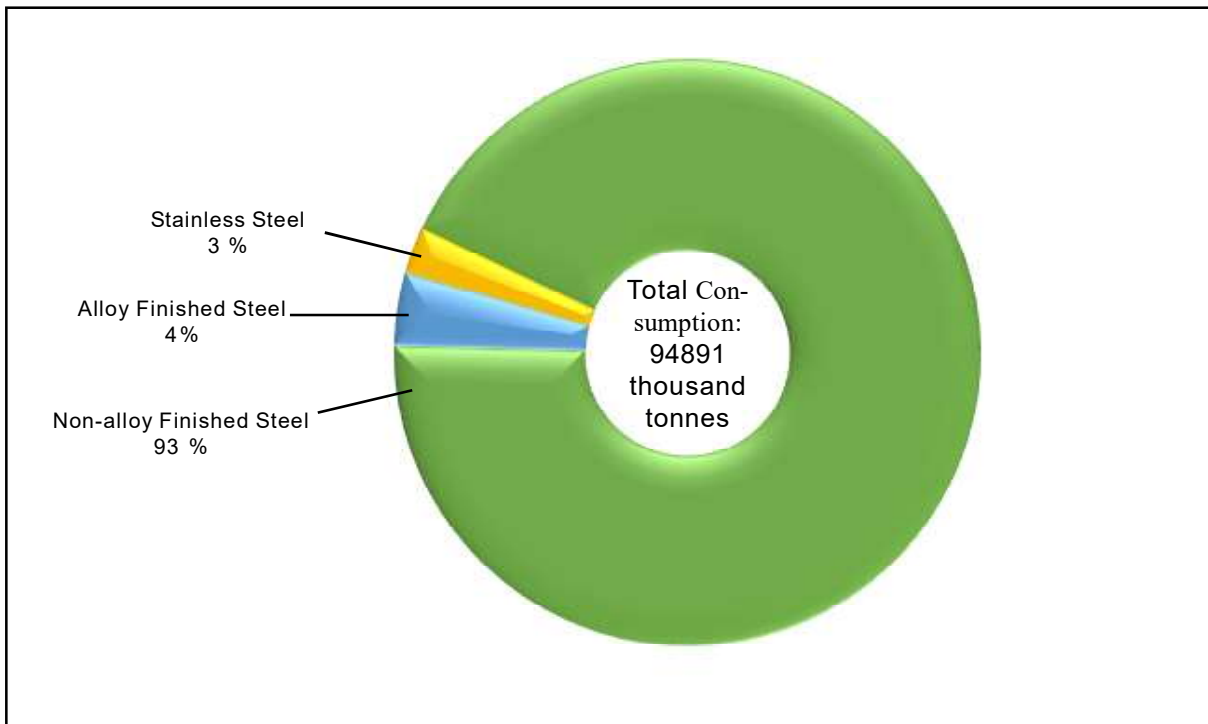


Fig.6: Total Finished Steel Consumption — Non-Alloy/Alloy/Stainless steel wise Crude Steel Equivalent 2020-21



D. Pig Iron

Pig iron is a product in solid (lumpy) form obtained upon solidification of Hot Metal in Pig Casting Machine. It is called Pig or Pig Iron because of its typical humpy shape. It is a basic input for making iron casting, which finds application in industrial and other sectors of economy. Pig iron is one of the basic raw materials required by the Foundry & Casting Industry for manufacturing various types of castings for the engineering section. In advanced countries pig iron is also used as a partial substitute of melting scrap in the charge mix of Electric Arc Furnaces. Pig Iron is mainly classified into two grades, 'Basic Grade' used for making steel and 'Foundry Grade' used for manufacturing iron castings. Domestic production of pig iron lags behind and is not in tandem with the demand. Efforts were, therefore, made to increase pig iron manufacturing facilities in the Secondary Sector. Production of pig iron in merchant units in the Secondary Sector got its first major boost in 1992. Thereafter, the growth of this Sector accelerated greatly as Foundry-grade pig iron fast became the preferred raw material for the quality conscious foundries.

The working capacity of hot metal & pig iron during 2020-21 was reported as 77.94 million tonnes. The location and capacity of principal pig iron/ hot metal as well as State-wise capacity and production of hot metal and pig iron units are furnished in Table- 15 & Table- 16 respectively. The domestic production of pig iron was at 4.88 million tonnes in 2020-21, a decline of 10 % as compared to the production of 5.421 million tonnes last year.

As a result of various policy initiatives taken by the Government, the Private Sector showed considerable interest in setting up new pig iron units, especially in the post-liberalised period. This has resulted in drastic change in the contribution of Private Sector producers. With 86 % share, the Private Sector (4.208 million tonnes, down by 12.4 % over 2019-20) led pig iron production in 2020-21, with the average share of the Sector at 91% in the last five years ending 2020-21. The share of Public Sector in 2020-21 was about 9 % (0.67 million tonnes, up by 9 % over previous year).

With a 71 % share, the Other Producers (3.464 million tonnes, down by 18% over 2019-20) led pig

iron production in 2020-21 while the rest 29 % was the share contributed by SAIL, RINL, TSL Group, AM/NS(Essar Steel), JSWL, JSPL taken together. In fact, the trend of last five years ending 2020-21 has been similar in this regard.

E. Sponge Iron

India is the largest producer of sponge iron in the world. Sponge iron means porous iron produced by direct reduction (DR) process which may be either gas-based or coal-based. This is a solid-state reaction process (i.e., solid-solid or solid-gas reaction) by which removable oxygen is removed from the iron ore, using coal or reformed natural gas as reductants, below the melting and fusion point of the lump ore or agglomerates of fine ore. The external shape of the ore remains unchanged. Due to removal of oxygen, there is about 27 to 30 per cent reduction in weight, a honey combed microstructure remains which Sponge Iron (means solid porous iron, lumps/ pellets, with many voids filled with air). It is also known as Direct Reduced Iron (DRI).

During early 1990s, Sponge Iron Industry was specially promoted to provide an alternative to steel melting scrap which was increasingly becoming scarce. The installed capacity of sponge iron has also increased over the years from 1.52 million tonnes in 1990-91 to 47.85 million tonnes in 2020-21. The total number of working units is 285 out of which 281 are coal-based units and 4 are gas-based units. The DRI operating capacity got increasingly built up during 2015-16 to 2020-21. At 34.376 million tonnes in 2020-21, India's sponge iron production declined by 7.3% over that of 2019-20.

Over the years, the coal-based route has emerged as a key contributor to overall production and its share increased from 63% in 2004-05 to about 82% (28.2 million tonnes, decline by 7.7%) of total sponge iron production in the country in 2020-21, with the average share of the Route at 81% in the last five years ending 2020-21. State-wise capacity and production of sponge iron are reflected in Table- 17.

Indian Iron & Steel Industry at a glance for all types of Industry covering the No. of working Units, Working Capacity and their Production is furnished in Table- 18.

Table – 15 : Location and Capacity of Principal Pig Iron Units

(In thousand tonnes)			
Sl.No.	Plants/unit	Location	Capacity
1.	Adhunik Metaliks Ltd, Odisha	Odisha	70
2.	Ankit Metal and Power Ltd	West Bengal	12
3.	Aparant Iron and Steel Pvt. Ltd	Goa	125
4.	Arcelor Mittal Nippon Steel India Ltd, Surat	Gujarat	3490
5.	Arjas Steel Pvt Ltd (Gerdau Steel)	Andhra Pradesh	300
6.	Atibir Industries Co. Ltd. (Unit Ii)	Jharkhand	600
7.	B R G Iron and Steel Co. Pvt. Ltd	Odisha	120
8.	Balmukund Sponge and Iron Pvt. Ltd	Jharkhand	40
9.	Bhushan Power and Steel Ltd, Odisha	Odisha	2500
10.	Electro Steels Ltd, Jharkhand	Jharkhand	1450
11.	Electrosteel Castings Limited, Khardah	West Bengal	250
12.	Electrotherm (India) Ltd	Gujarat	277
13.	Ispat Damodar Ltd	West Bengal	15
14.	J S W Steel Ltd, Salem (Siscol)	Tamil Nadu	1000
15.	J S W Steel Ltd, Vijaynagar	Karnataka	12000
16.	Jai Balaji Industries Ltd West Bengal Unit-3	West Bengal	429
17.	Jai Balaji Industries Ltd West Bengal Unit-4	West Bengal	81
18.	Jai Balaji Industries Ltd - I	West Bengal	30
19.	Jayaswals Neco Inds Ltd	Chhattisgarh	650
20.	Jindal Steel and Power Ltd, Chhattisgarh	Chhattisgarh	2125
21.	Jindal Steel and Power Ltd, Odisha	Odisha	3200
22.	Jsw Ispat Special Products Ltd, Raigarh	Chhattisgarh	613
23.	Jsw Steel Ltd, Dolvi	Maharashtra	3500
24.	K I C Metaliks Ltd	West Bengal	165
25.	Kalyani Steels Ltd	Karnataka	480
26.	Kirloskar Ferrous Inds Ltd	Karnataka	385
27.	Kohinoor Steels Ltd	Jharkhand	48
28.	Makers Casting India Pvt Ltd	Jharkhand	2
29.	Mideast Integrated Steels Ltd	Odisha	460
30.	Narsingh Ispat Ltd	Jharkhand	83
31.	Neelachal Ispat Nigam Ltd	Odisha	1099
32.	Neo Metaliks Ltd	West Bengal	188
33.	Niranjan Hi- Tech Ltd.	Jharkhand	15
34.	Rashmi Metaliks Limited	West Bengal	170
35.	SAIL–Bhilai Steel Plant	Chhattisgarh	3925
36.	SAIL–Bokaro Steel Plant	Jharkhand	4360
37.	SAIL– Durgapur Steel Plant	West Bengal	1802
38.	SAIL– IISCO Steel Plant	West Bengal	2500
39.	SAIL–Rourkela Steel Plant	Odisha	4400
40.	SAIL–Visveswaraya Iron And Steel Ltd, Bhadrabati	Karnataka	118
41.	Sathavahana Ispat Ltd	Andhra Pradesh	240
42.	Satyam Ferro Tech Ltd	Jharkhand	30
43.	Shyam SEL and Power Ltd, Jamuria	West Bengal	60
44.	SLR Metaliks Ltd	Karnataka	240
45.	Sree Metaliks Ltd	Odisha	36
46.	Sri Kalahasthi Pipes Limited (Lanco)	Andhra Pradesh	300
47.	Suraj Products Ltd	Odisha	24
48.	Swati Concast and Power Pvt Ltd	Jharkhand	43
49.	Tata Metaliks Ltd, West Bengal	West Bengal	600
50.	Tata Steel BSL Ltd, Odisha	Odisha	3919
51.	Tata Steel Long Products Limited	Jharkhand	650
52.	Tata Steel Ltd, Jamshedpur Works	Jharkhand	9600
53.	Tata Steel Ltd, Kalinganagar Works	Odisha	3000
54.	Uttam Galva Metallics Ltd	Maharashtra	600
55.	Vedanta Limited	Goa	625
56.	VISA Steel Ltd	Odisha	225
57.	VIZAG Steel Plant	Andhra Pradesh	6300

Source : JPC

**Table-16 : State-wise Capacity and Production of Hot metal and Pig Iron
(2019-20)**

(In '000' tonnes)

State	No.of working Units	Working Capacity	Annual Production	
			Hot metal	Pig Iron
Jharkhand	9	16828	15630	506
Odisha	12	19053	15915	497
West Bengal	13	6302	5209	1351
Chhattisgarh	4	7313	7487	586
Goa	1	625	593	593
Gujarat	2	3767	3178	11
Maharashtra	2	4100	3347	6
Andhra Pradesh	4	7140	5242	329
Karnataka	5	13223	11435	905
Tamil Nadu	1	1000	930	34
Total	53	779351	69266	4877

**Table-17: State-wise Capacity and Production of Sponge Iron
(2020-21)**

(In '000' tonnes)

State	No.of working Units	Working Capacity	Annual Production
Total	285	48079	34376
Western Region	89	21185	15074
Chhattisgarh	69	9474	7587
Goa	3	186	180
Gujarat	10	8115	5428
Maharashtra	7	3410	1879
Eastern Region	136	20224	14477
Jharkhand	24	3372	2399
Odisha	76	12826	8297
West Bengal	36	4026	3782
Northern Region	4	537	389
Uttar Pradesh	4	537	389
Southern Region	56	6133	4435
Andhra Pradesh	6	911	403
Karnataka	35	4267	3346
Tamil Nadu	6	528	336
Telangana	9	427	350

Source : Annual Statistics 2021; JPC

**Table- 18: INDIAN IRON & STEEL INDUSTRY AT A GLANCE
DURING 2020-21**

Sl. No.	Type of Industry	No. of Working Units	Working Capacity ('000 tonnes)	Production ('000 tonnes)
I	Pellets	38	82726	69626
II	Sponge Iron	285	48079	34376
III	Blast Furnace	53	79351	69266
	1 BOF	17	57295	45085
	2 Electric Arc Furnace	38	40354	29407
	3 Induction Furnace	823	46266	29052
IV	Crude Steel (1-3)	878	143914	103545
V	Finished Steel (Crude Steel Equivalent)			
	4 Re-rolling	1029	83792	51223
	5 HR Product	24	54900	44552
VI	Value - added steel	66	27030	15481
	6 CR Product	28	9576	6727
	7 GP/GC Sheets	16	2727	2064
	8 Colour Coated	5	849	481
	9 Tin plate	81	10100	3531
	10 Pipes	-	-	-

Source : Annual Statistics 2020-21; JPC

IRON & STEEL SCRAP

Iron & steel scrap is one of the essential requirements for manufacture of steel in Mini-steel Industry. It is also consumed by some major steel plants. Scrap, especially from the Ship Breaking Industry supplies substantial quantity of re-rollable steel as well as steel scrap for the Iron & Steel Industry and Secondary Sector, such as, Micro, Small & Medium Enterprises (MSME). Other form of scrap, i.e., end-of-life cycle scrap or obsolete scrap these get generated in large quantities and form substantial reserves of scrap that could be efficiently put to use. Iron scrap is available in the country in the form of pressed bundles, a mixture of used steel components (called as a commercial scrap), turnings & borings and heavy melting scrap. These are generated by industries of all sectors like automobiles, railways and engineering workshops.

The collection and processing of scrap in an organised manner is undertaken by a few units in the country. In the local market, scrap is supplied by dealers who in turn arrange to have scrap collected manually or through sub-dealers.

The consumption of scrap is mainly reported by Induction Furnace & Electric Arc Furnace units, Integrated Steel Plants and Alloy Steel & Foundry industries. Scraps are used in the Steel Sector after recycling. Recycling of one tonne of steel scrap saves about 1.1 tonnes of iron ore, 0.6 to 0.7 tonnes of coking coal and around 0.2 to 0.3 tonnes of fluxes. Besides, saving of energy by about 16 – 17%. It also reduces the water consumption and GHG emission by 40% and 58% respectively. Recycling scrap helps in conservation of energy as remelting of scrap requires much less energy than production of iron or steel from iron ore. Also, the consumption of iron

and scrap by remelting reduces the burden on landfill disposal facilities and prevents the accumulation of abandoned steel products in the environment. It increases the availability of semi-finished material, which otherwise would have to be produced using the ore. Thus, it helps in conservation of natural resources.

Ship Breaking

Ship breaking has been a major source of scrap generation. Ship breaking activities are carried out at various places on the Indian coast, the largest concentration being in the West coast. Private entrepreneurs handle the task of ship breaking in India. It is a labour-intensive job, and in India, it is a cost-efficient activity. Locations of present ship breaking activities are:

- (i) Alang and Sosiya yards in Bhavnagar district, Gujarat,
- (ii) Sachana district, Gujarat
- (iii) Mumbai and
- (iv) Kolkata

Alang & Sosiya yards account for 98% concentration of the Ship Breaking Industry in India. The yard has capacity to recycle about 450 ships per year generating re-rollable steel of > 4.5 million tonnes per annum. There are a total of 167 plots available for ship recycling spread over 10 km stretch along the coast of Alang.

The NGO Shipbreaking Platform is a global coalition of environmental, human and labour rights organisations working to promote safe and environmentally sound ship recycling practices. The coalition quickly evolved from being a European Platform to a global one, including NGOs based in the major shipbreaking countries, such as, India, Bangladesh, Pakistan and Turkey. It now has 18 member organisations and six partners in 12 countries. The Platform is recognised by United Nations agencies, the European Union and leading media outlets as the preeminent international civil society advocacy organisation on ship recycling.

Today, Alang possibly represents the single largest concentration of Ship-breaking Industry in the world. The average life of an ocean-going ship is about 25–30 years. About 40% of the ships

broken are dry cargo ships, while the remaining 60% of the ships broken are wet cargo, tanker – specialised ships etc. These recyclable steels mainly as steel scrap provide feed to Steel and Foundry Industry in India. The steel generated from ship recycling contributes to around 1% to 2% of the domestic steel demand.

The Government of India Ministry of Ports, Shipping and Waterways has notified recycling of Ships Act, 2019 to provide for the regulation of recycling of ships by setting certain international standards and laying down statutory mechanism for enforcement of such standards. The Government has also decided to accede to the Hong Kong International Convention for Safe and Environmentally Sound Recycling of Ships, 2009. Accordingly, India has acceded to Hong Kong International Convention for Safe and Environmentally Sound Recycling of Ships, 2009 on 28th November, 2019. This Act restricts and prohibits the use or installation of hazardous materials, which applies irrespective of whether a ship is meant for recycling or not. The Act imposes a statutory duty on ship recyclers to ensure safe and environmentally sound removal and management of hazardous waste from ship. Further, accession to Hong Kong Convention by India and enactment of Recycling of Ships Act, 2019 will raise the profile of Indian Ship Recycling Industry as being environment- friendly and safety conscious and would go a long way in consolidating India's position as market leader.

MSTC Ltd

(Formerly Metal Scrap Trade Corp. Ltd)

MSTC Limited was incorporated as “Metal Scrap Trade Corporation Limited”, under the provisions of the then Companies Act, 1956 on September 9, 1964 at Kolkata for regulating export of ferrous scrap from India. The status of the Company underwent a change in February 1974 when it was made a subsidiary of Steel Authority of India (SAIL). In the year 1982-83, the Corporation was converted into an independent PSU under administrative control of Ministry of Steel. It was the canalising agency for import of carbon steel melting scrap, sponge iron, hot briquetted iron and re-rollable scrap till February 1992.

Presently, the Company has diversified mainly into providing e-auction /e-procurement services. Under this segment, the Company undertakes disposal of ferrous and non-ferrous scrap arisings, surplus stores, condemned plants, minerals, Agri & forest produce etc. from Public Sector Undertakings and Government Departments including private companies. The Trading Division is engaged in import as well as domestic sourcing of bulk industrial raw material for actual users as well as traders. This Division looks after sourcing, purchase and sale of industrial raw materials like low ash metallurgical coke, HR coil, naphtha, crude oil, coking coal, steam coal, line pipes etc. on behalf of customers across steel, oil & gas, power sectors under Private and Public Sector. It also undertakes trading of items within the country in competition with any other private trader.

Ferro Scrap Nigam Ltd (FSNL)

FSNL is a wholly owned subsidiary of MSTC Ltd under the Ministry of Steel. The Company undertakes the recovery and processing of scrap from slag and refuse dumps in the nine steel plants at Bhilai, Bokaro, Burnpur, Durgapur, Rourkela, Visakhapatnam, Dolvi, Duburi and Haridwar and also at Rail Wheel factory Bengaluru. The scrap so recovered is returned to the steel plants for recycling disposal and the Company pays processing charges on the quantity recovered at varying rates depending on the category of scrap. Scrap is generated during iron & steel making and also in the rolling mills. In addition, the Company provides steel mill services, such as, scarfing of slabs, handling of BOF slag, etc.

SLAG — IRON & STEEL

Slag is a by-product generated during manufacturing of pig iron and steel. It is produced by action of various fluxes upon gangue materials within the iron ore during the process of pig iron making in blast furnace and steel manufacturing in steel melting shop. Primarily, slag consists of calcium, magnesium, manganese and aluminium silicates and oxides in various combinations. The cooling process of slag is responsible mainly for generating different types of slags required for various end-use consumers. Although the chemical composition of

slag may remain unchanged, physical properties vary widely with the changing process of cooling.

In an integrated steel plant, 2-4 tonnes of wastes (including solid, liquid and gas) are generated for every tonne of steel produced. The major wastes produced in integrated steel plants (ISP) include BF iron slag. Steel slag accounting for nearly more than half a tonne gets generated for each tonne of steel produced in ISPs. Among all the solid/liquid wastes, slags generated at iron making and steel making units are in such a large quantities that management of slag has become a critical component of steel production. Over the last few years, with better understanding of slags, its functions and improvements in process technologies have led to a significant reduction in the volume of slag generated. At the same time, the re-use of iron and steel has led to a significant reduction in the environmental impact of these by-products.

Production of Slag

The slag produced at blast furnace during pig iron manufacturing is called blast furnace slag. The slag produced at steel melting shop is known as steel slag. Slag output obtained during pig iron and steel production is variable and depends mainly on composition of raw materials and type of furnace. Typically, for ore feed containing 60 to 65% iron, blast furnace (BF) slag production ranges from about 300 to 540 kg per tonne of pig or crude iron produced, whereas in steel making 150 to 200 kg per tonne of slag is generated per tonne of liquid steel. Lower grade ores yield much higher slag fractions, sometimes as high as one tonne of slag per tonne of pig iron produced. Steel slag output is approximately 20–30% by mass of the crude steel output in the country.

Ferro Scrap Nigam Ltd (FSNL), a wholly owned subsidiary of MSTC Ltd renders its specialised services of scrap and slag management to plants at SAIL-Rourkela, Burnpur, Bhilai, Bokaro, Durgapur, Bhadravati, Salem, RINL-Visakhapatnam, NINL-Duburi, BHEL-Haridwar, RWF (Rail Wheel Factory) -Bengaluru, Air India-Mumbai and Essar- Hazira.

The information regarding plant-wise capacity of iron & steel slag in the country is reflected in Table- 19.

Table – 19 : Plant-wise Capacity of Iron and Steel Slag in the Country

Steel Plant	Capacity ('000 tpy)
Bhilai Steel Plant, Durg, Chhattisgarh	2675
Bokaro Steel Plant, Bokaro, Jharkhand	7884
Rourkela Steel Plant, Rourkela, Odisha	1570
Durgapur Steel Plant, Durgapur, West Bengal	566
IISCO Steel Plant, Burnpur, West Bengal	400
	kg/THM*
Visvesvaraya Iron & Steel Plant, Bhadravati, Karnataka	400
	kg/THM*
Rashtriya Ispat Nigam Ltd, Visakhapatnam, Andhra Pradesh	1440
IDCOL Kalinga Iron Works Ltd, Barbil, Odisha	53
JSW Steel Ltd, Ballari, Karnataka	NA
Tata Steel Ltd, Jamshedpur, Jharkhand	2100
Visa Steel Ltd, Kalinganagar, Odisha	175
Neelachal Ispat Nigam Ltd, Kalinganagar, Odisha	-

Blast Furnace Slag

In the blast furnace, the slag floating over molten pig iron (hot metal) is flushed out in slag pot and then sent to slag granulating plant or to cooling pits.

Depending upon the cooling process, three types of slags are generated, namely, air-cooled slag, granulated slag and expanded slag.

Air-cooled slag is produced by allowing the molten slag to cool under atmospheric conditions in a pit. Under slow cooling conditions, escaping gases leave behind porous and low-density aggregates with special physical properties, making it suitable for many applications. When formed under controlled cooling, the slag tends to be hard and dense, making it especially suitable for use in ready-mixed concrete, concrete products, road bases and similar applications in construction.

Granulated slag is produced by quenching the molten slag by means of high-pressure water jets. Quenching prevents crystallisation, thus resulting in granular, glassy aggregates. This slag is crushed, pulverised and screened for use in various applications, particularly in cement production

because of its pozzolanic characteristics.

Steel plants utilise cold slag for internal consumption and also for outside sale. The slag after cooling is crushed and used as road metal and railway ballast. Granulated slag produced in steel plants is also sold outside to cement plants. Slag application also reduces the overall cost of production of cement.

Expanded slag is formed through controlled cooling of molten slag in water or water with combination of steam and compressed air. Formation of steam and other gases enhances the porosity and vesicular nature of slag, resulting in light weight aggregate suitable for use in concrete. However, expanded slag is not produced at any domestic iron and steel plant.

Another product made from blast furnace slag is mineral wool/slag wool. Cooled slag for this purpose is melted and poured through an air stream or a jet of dried stream of other gases to produce a spray of molten droplets or the same is also formed by passing the melt through a perforated or fast-spinning disc. The droplets, elongate to long fibres, are collected mechanically and layered. The material has excellent thermal insulation properties.

The five different slags generated at various points of the steel-making process are described below:

HMT Slag: This slag is primarily generated after de-silicisation or de-phosphorisation treatment. It has high content of silica and lime. Sometimes it also contains BF slag.

HMDS Slag: This is the raked slag at the de-sulfurisation station. These slags are poorly mixed composites of spilled BF slag, spent and/or unreacted de-sulphurisation agents, lime fines and trapped droplet of hot metal and raked iron.

LD Slag: These slags are a well mixed aggregate of FeO, lime, silica and MgO generated at the LD converter. They are in the form of di-calcium and tri-calcium silicates. These slags also contain free lime and metal, which create problems due to expansion characteristics.

Steel Slag: These slags vary in composition with respect to the varied treatment. The common steel slags are fused calcium aluminates with less than

2% (FeO + MnO). These readily crumble to dust due to allotropic phase transformation at lower temperatures and are difficult to manage.

SGP Slag: LD slag is subjected to granulation through a quenching technology adopted at JSW, which houses the first of its kind in India. Due to sudden quenching of the molten slag, contraction of metal and slag occurs and results in good separation of metal and slag. Adequate granulation takes place and leads to good stability of the final slag. Process can be described as an accelerated ageing process that reduces the free lime content. As a result of rapid cooling, it generates more glassy structure than the BOF slag. Removal of free lime also confirms its volumetric stability.

Steel Slag

BOF slag, commonly known as steel slag, is another waste from Iron & Steel Industry. It has shown potential for use as a raw mix component up to 10% in the manufacture of cement clinker. Steel slag can also replace granulated blast furnace slag up to 10% in the manufacture of Portland Slag Cement. Steel slags are produced at steel melting shop during steel manufacturing. To produce steel, removal of excess silicon and carbon from iron is achieved through oxidation by adding limestone and coke. The steel slag contains higher amount of iron and its physical characteristics are similar to air-cooled iron slag. The LD slag is cooled, crushed and screened. The fines are utilised in sinter making and lumps are charged in the blast furnace.

The iron content is the major basic difference between BF slag and steel slag. In BF slag, FeO is around 0.70%, whereas in case of steel slag, the total iron content varies from 16 to 25%.

JSW Steel has set up a unique BOF slag granulation plant, producing slag with lower free lime content and is vigorously pursuing the matter with BIS. JSPL has set up a plant to produce around 4.0 lakh brick products/day by utilising fly ash and slag generated from integrated steel plant.

Uses of Slag

Slag, based on their types, has different uses. The air-cooled BF slag is crushed, screened and used mainly as road metal and bases, asphalt paving, track

ballast, landfills and concrete aggregate. The expanded or foamed slag binds well with cement and is used mainly as aggregate for light weight concrete. However, it is not produced by domestic steel plants. Granulated BF slag is used as a pozzolanic material for producing portland slag cement. It is also used for soil conditioning. BF slag is used in making mineral wool for insulation purposes.

Steel slag has found use as a barrier material remedy for waste sites where heavy metals tend to leach into the surrounding environment. Steel slag forces the heavy metals to drop out of solution in water run off because of its high oxide mineral content. Steel slag has been used successfully to treat acidic water discharges from abandoned mines.

Slags are useful alternative raw material for clinker production and such use can reduce a cement plant's fuel consumption and overall emission of carbon dioxide per tonne of cement. The granulated slag obtained from various steel plants is dried in slag dryer. The clinker is ground in ball mill with 40–50% dry slag and 6% gypsum. The resultant product is portland slag cement. Portland blast furnace slag cement contains up to 60% ground granulated slag from steel production processes.

Slag cement has low heat of hydration, low alkali aggregate reaction, high resistance to chlorides and sulphate and it can substitute the use of 43 and 53 grades of ordinary Portland Cement. For other consuming sectors like road making, landfilling and ballasting, the cooled slag is crushed by machines or broken manually by hammers into smaller pieces and supplied to the various end-use consumers. The utilisation of SMS (particularly LD) slag is limited due to its (i) Phosphorous content (ii) high free lime content and (iii) higher specific-weight.

Consumption of Slag

The Steel Industry in India is producing about 24 million tonnes of blast furnace slag and 12 million tonnes of steel slag annually. It is expected that the BF slag generation may reach around 45 to 50 million tonnes and BOF slag around 15–20 million tonnes per year by 2030. Besides, EAF and IF slag generation will also increase to more

than 10 million tonnes per year from the present level of around 5 million tonnes per year by 2030. The BF slag in India is used mainly in the cement manufacture and in other unorganised work, such as, landfills and railway ballast. A small quantity is also used by the Glass Industry for making slag wool fibres. Cement plants in the country producing slag cement require BF slag in granulated form.

TRADE POLICY

As per the notified Export-Import Policy incorporated under the Foreign Trade Policy (FTP) for 2015-20, the imports of primary forms of pig iron, spiegeleisen, sponge iron, ferroalloys, stainless steel, remelting scrap, as also the semi-finished products of iron, non-alloy steel or stainless steel (such as flat-rolled products, bars, rods, coils and wires), primary and semi-finished forms of other alloy-steels, etc. are unrestricted. Similarly, the exports are also allowed freely.

WORLD REVIEW

The world production of pig iron in 2020 was about 1,400 million tonnes which increased marginally by 2.6 % as against 1,382 million tonnes in 2019. China (63%), India (7%), Japan & Russia (4% each), Republic of Korea (3%) and Iran, Brazil & Germany (2 % each) , were the main producers of pig iron including sponge iron and direct reduced iron (DRI) (Table-20).

The world crude steel production in 2020 marginally increased by 0.1% to 1,857 million tonnes from 1,855 million tonnes in 2019. China was the top producer accounting for 57% of world's crude steel production, followed by India (5%), Japan , USA & Republic of Korea (4% each), and Germany, Turkey & Brazil (2% each) (Table-21).

Exports

In terms of value, exports of iron & steel (total) increased slightly by 20 % to ₹ 1,22,510 crore in the year 2020-21 from 1,01,996 crore in the previous year.

Iron & Steel exports in 2020-21 comprised mainly of Semi-finished Steel (including Steel Ingots) with ₹ 48,095 crore (39%) and Finished Steel Including Cold Rolled Sheet with ₹ 35,843 crore (29%). and Other Finished Steel, NES with ₹ 34,059 crore (28%). Other items together accounted for the remaining 4 % exports. In terms of value, exports of iron & steel in the year 2020-21 were mainly to USA (12%), Vietnam (10%), Nepal, UAE & Italy (6% each), Germany (4%) and Belgium & Bangladesh (3% each) (Tables- 22 to 32).

While in terms of quantity, the exports of Pig and Cast Iron including Spiegeleisen increased substantially by 155 % to 1,123 thousand tonnes in 2020-21 from 440 thousand tonnes in the previous year. Exports were mainly to China (57 %), USA (19 %), followed by Bangladesh & Oman (8% each) (Table-30 to 33)

However, in terms of quantity, the exports of slag (dross, etc.) in 2020-21 increased by 16 % to about 152 thousand tonnes from 132 thousand tonnes in the previous year. Exports were mainly to Philippines (58%), Malaysia (16%), Vietnam (15%) and Nepal (8 %) (Table-34).

Imports

Like exports in terms of value, imports of iron & steel (total) in 2020-21 decreased marginally by 18% to ₹ 82,638 crore from ₹ 1,01,387 crore in the previous year. Iron & steel imports in 2020-21 comprised mainly of finished Steel Including Cold Rolled Sheet with ₹ 28,136 crore (34%), Scrap with ₹ 21,340 crore (26%), Other Finished Steel, NES with ₹ 18,715 crore (23%) and Semi-finished Steel including Ingots with ₹ 9,734 crore (12%). Other items together accounted for the remaining 5% imports. In terms of value, the imports in 2020-21 were mainly from China (19%) followed by Republic of Korea (17%), Japan (8%), USA (5%) and UAE (4%) (Tables- 35 to 45) .

Similarly, in terms of quantity, the imports of Pig and Cast Iron (including Spiegeleisen) decreased

substantially by 23% to 37 thousand tonnes in 2020-21 from 48 thousand tonnes in the previous year. Imports were mainly from China (17%), South Africa (12%), Germany & Taiwan (10% each) and Thailand (8%) (Table-46).

In terms of quantity, the imports of slag increased by 31 % to 85 thousand tonnes in 2020-21 from 65 thousand tonnes in the previous year. Imports were mainly from Japan (63%) , Rep. of Korea (36%) and Bhutan (1%) (Table-47).

**Table – 20 : World Production of Pig Iron
(By Principal Countries)**

(In tonnes)			
Country	2018	2019	2020
World	1358000000	1382000000	1418000000
China	779876300	809365000	893100000
India*	106823000	111574000	101400000
Japan	77327888	74907006	61600469
Russia	51800000	51200000	52000000
Korea, Rep of	47124000	47521000	45359000
Iran	28100000	31000000	32700000
Brazil	32765000	30901000	29655000
Germany	27271000	25400000 ^e	23000000
Ukraine	20531200	20055900	20238000
USA	24058000	22301000 ^e	18300000
Other countries	162087325	157906862	140216553

Figures rounded off ;

Source: BGS, World Mineral Production, 2016-2020

* India's production of Pig Iron during 2018-19, 2019-20 and 2020-21 was 64,14,000 tonnes, 54,21,000 and 48,77,000 tonnes respectively.

Note: The data in this table include sponge iron and direct reduced iron (DRI), where these have been separately identified.

**Table – 21 : World Production of Steel Crude
(By Principal Countries)**

(In tonnes)			
Country	2018	2019	2020
World Total	1834000000	1855000000	1857000000
China	929038400	996342000	1064732000
India ^(d)	110920000	102058000	95122000
Japan	104318836	99284114	83186485
Russia	74144495	73740141	7460000
USA	86607400	87761000 ^e	72690000
Korea, Rep. of	72464000	71411000	67082000
Turkey	37311700	33700000	35763000
Germany	42435000	39667000	35658000
Brazil	35407000	32569000	31415000
Other countries	320940216	318575128	297117677

Figures rounded off;

Source: BGS, World Mineral Production, 2016-2020,

* India's production of crude steel during 2018-19, 2019-20 and 2020-21 was 1,10,921,000 tonnes, 1,09,137,000 and 1,03,545,000 tonnes, respectively.

(d) Years ended 31st March following that stated.

**Table – 22 : Exports of Iron & Steel (Total)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	**	1019955563	**	1225105321
USA	**	16236652	**	152007711
Vietnam	**	121911905	**	119370682
Nepal		78635322		77714158
UAE	**	77685549	**	76806887
Italy	**	63074307	**	75130322
Belgium	**	67564368	**	36799755
Germany	**	38867032	**	48319029
Bangladesh	**	36280244	**	32998105
UK	**	22677140	**	27071331
Canada	**	26560508	**	27046766
Other countries	**	470462536	**	524840575

*Figures rounded off***Table – 23 : Exports of Iron & Steel (Finished Steel Including CR Sheet)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	4631222	309262120	6108963	358432755
Nepal	1119805	33710113	1077289	36877715
China	160490	6686255	1206831	35099422
U S A	231106	31814834	129635	24633704
Belgium	248973	50518714	294746	22484302
Italy	217252	17019826	159829	15666462
U A E	253650	18890300	187626	14960010
Oman	61292	6203570	155069	14753277
Canada	166106	16277447	115643	12268008
Thailand	179137	6268369	289316	9391071
Indonesia	266523	12813664	226448	9358946
Other countries	1726888	139059028	2266531	162939838

Figures rounded off

**Table – 24 : Exports of Iron & Steel
(Steel wire)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	159597	23911264	169631	25750975
USA	19002	3757083	21538	4032087
Netherlands	16630	2719757	16695	2861241
Turkey	8419	1433262	10125	1672341
France	7500	1254420	8978	1650759
Russia	7684	1457079	7986	1551073
Germany	3951	809174	6419	1369530
Italy	4208	841871	5479	1089365
UAE	8506	919735	8516	986881
Nepal	15639	717916	16231	768269
UK	3721	634568	3792	715614
Other countries	64337	9366399	63872	9053815

*Figures rounded off***Table – 25 : Exports of Iron & Steel
(Other Finished Steel, NES)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	**	339926285	**	340587784
USA	**	80606408	**	85605428
Germany	**	23399614	**	20652426
UK	**	17271517	**	16687853
UAE	**	18881064	**	15912729
Saudi Arabia	**	7663138	**	9595069
Netherlands	**	9839791	**	9508219
Italy	**	9362606	**	9220254
Canada	**	8786260	**	8511984
Bangladesh	**	8896368	**	7434064
Australia	**	6903716	**	7362939
Other countries	**	148315803	**	150096819

*Figures rounded off***Table – 26 : Exports of Iron & Steel
(Semi-finished Steel Including Steel Ingot)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	7957507	320684584	12577510	480956813
China	203221	5964786	3973874	113751925
Vietnam	2356856	75596961	2244954	73639866
Italy	911046	35517209	1109787	49058758
UAE	742929	28015351	781766	31056671
Nepal	928223	32742555	762992	28207151
Belgium	250701	12220301	386942	20451813
Spain	179275	7433837	311947	13671849
Indonesia	78345	3016429	340693	12207779
Hong Kong	129007	4494438	331957	11557452
Thailand	129873	4600137	276828	10719669
Other countries	2048031	111082580	2055770	116627880

Figures rounded off

Table – 27 : Exports of Iron & Steel : Alloy Steel (Granules) (By Countries)

Country	2019-20 (R)		2020-21(P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	484	29004	422	29056
USA	48	7079	23	7579
UAE	126	5568	121	5349
Taiwan	75	2849	99	4152
Kenya	--	--	51	2667
Portugal	14	2287	14	2384
Bangladesh	23	1316	33	2359
Nigeria	57	2857	27	1641
Malaysia	--	--	27	1221
Saudi Arabia	120	5743	15	830
Nepal	10	539	11	693
Other countries	11	766	1	181

*Figures rounded off***Table – 28 : Exports of Iron & Steel: Alloy Steel (Powder) (By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	68	9067	4	1760
Turkey	1	969	1	839
Indonesia	1	262	2	544
Taiwan	--	--	1	163
China	11	1070	++	140
Austria	++	29	++	27
Germany	--	--	++	25
Czech Republic	++	2	++	22
Iran	10	3722	--	--
Sweden	19	1972	--	--
Tanzania	24	642	--	--
Other countries	2	399	--	--

*Figures rounded off***Table – 29 : Exports of Iron & Steel (Scrap) (By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	11876	688320	25613	649151
Bhutan	5663	139377	20609	244302
Sweden	2301	355841	1368	208921
UAE	60	22904	189	72586
Brazil	384	39738	413	42620
Malaysia	414	11820	987	22423
Singapore	575	19101	1217	14997
Thailand	57	3299	182	7965
France	21	8436	16	6133
Korea	335	4676	94	5807
Nepal	81	4510	114	5421
Other countries	1985	78618	424	17976

*Figures rounded off***Table–30 : Exports of Iron & Steel (Sponge iron) (By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	898475	17286760	524566	11248671
Bangladesh	433009	8494481	278459	5983287
Nepal	181061	3217577	161972	3556579
Bhutan	193604	3585642	68390	1268552
Malaysia	56498	1205773	4674	114303
Kenya	4353	89611	2271	67416
USA	482	75013	274	44545
Thailand	1020	20727	2002	41929
Madagascar	3144	69212	1761	41479
Sri Lanka	2855	58096	1376	33098
Sudan	15954	314529	1481	27430
Other countries	6495	156099	1906	70053

Figures rounded off

**Table – 31 : Exports of Iron & Steel
(Stainless Steel)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	8181	3679488	12889	3197360
France	174	812883	350	657506
Bangladesh	155	133341	4025	370124
Nigeria	704	205757	2239	344675
USA	1332	357089	1250	285639
UAE	715	241575	545	189237
Saudi Arabia	569	213211	289	115661
Russia	1	270	312	99950
Italy	417	162272	223	95339
Qatar	185	50569	222	80280
Malaysia	61	24431	108	76826
Other countries	3868	1478090	3326	882113

Figures rounded off

**Table–32 : Exports of Iron & Steel Material
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	84891	4478671	70062	4250996
UAE	11897	587418	11471	612288
Brazil	12743	635548	11306	535792
USA	12127	709804	6147	450033
Turkey	8969	459192	9020	414925
Belgium	3222	234084	3143	395078
Puerto Rico	4380	212365	6688	362413
Qatar	3580	143142	4118	174490
Bangladesh	296	15404	2990	150040
Trinidad	1879	89983	2515	136363
Slovenia	--	--	2221	114196
Other countries	25798	1391731	10443	905378

Figures rounded off

**Table – 33 : Exports of Pig & Cast Iron (Including Speigeliessen)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	440432	10737676	1123792	30155194
China	181910	3957345	637214	15383161
USA	1443	169468	215373	6803201
Bangladesh	180832	4257535	88895	2468097
Oman	14	2343	85799	1897118
Turkey	233	25364	36498	1322513
UAE	1174	55296	16498	641140
Nepal	10305	258802	13791	357175
Taiwan	1619	40127	7539	291501
Japan	7348	296504	5775	262072
Thailand	22850	580597	7451	229210
Other countries	32704	1094295	8959	500006

Figures rounded off

**Table – 34 : Exports of Slag (Dross etc. from Iron and Steel Exc. Granulated)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	131880	702416	152818	951045
Philippines	115500	638112	88000	655043
Vietnam	--	--	23600	153353
Malaysia	--	--	23858	81107
Nepal	14654	54536	12672	30075
Bhutan	1111	5481	1818	10712
China	--	--	1166	6747
South Africa	102	708	750	6129
Qatar	140	849	465	2941
Angola	347	2328	362	2750
Br Virgin Is	--	--	22	1609
Other countries	26	402	105	579

*Figures rounded off***Table - 35 : Imports of Iron & Steel (Total)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (**)	Value (₹'000)	Qty (**)	Value (₹'000)
All Countries	**	1013874204	**	826381853
China	**	180714157	**	153661953
Korea, Rep. of	**	180437240	**	140136092
Japan	**	94345436	**	67911395
USA	**	53373825	**	43110658
UAE	**	43942879	**	36377761
Germany	**	35006576	**	32042498
Singapore	**	33720103	**	27885974
Vietnam	**	23468621	**	26444970
Malaysia	**	25045558	**	24673252
UK	**	29015568	**	22291777
Other countries	**	314804241	**	251845523

Figures rounded off

**Table – 36 : Imports of Iron & Steel
(Finished Steel Including CR Sheet)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	4024286	358688033	3123084	281364644
China	1150799	93590513	908307	76871110
Korea, Rep. of	891675	69791425	722938	56701936
Japan	608521	53468349	485725	44102605
Belgium	147367	11054117	83643	9597484
Vietnam	70292	6089714	113528	9260800
Germany	61764	8654395	40058	8009947
Indonesia	284372	35301903	52344	6555312
Malaysia	60206	5490376	52982	6489554
USA	67338	7766618	54558	6017647
France	20954	4826890	69332	5514598
Other countries	660998	62653733	539669	52243651

Figures rounded off

**Table – 37 : Imports of Iron & Steel
(Steel Wire)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	185193	17301064	151105	15473255
China	62778	5454971	58769	5436942
Korea, Rep. of	25191	2257897	22503	2150814
Malaysia	33802	2493739	22717	1780729
Japan	6834	1886421	5316	1727262
Vietnam	8355	646043	8655	649393
Thailand	7568	576181	6459	539811
Germany	1076	565553	973	464100
France	2497	307319	3041	337048
Indonesia	4019	3992142	2998	311196
Italy	2874	353167	2507	305448
Other countries	30199	2367631	17167	1770512

Figures rounded off

**Table – 38 : Imports of Iron & Steel
(Other Finished Steel, NES)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (**)	Value (₹'000)	Qty (**)	Value (₹'000)
All Countries	**	202485997	**	187149323
China	**	62995142	**	60848505
Korea, Rep. of	**	17240483	**	15497795
Germany	**	15105225	**	14015783
Japan	**	13631680	**	13033669
USA	**	12114076	**	10867738
Thailand	**	7925917	**	8001613
Singapore	**	7175304	**	7585258
Italy	**	7745663	**	7273790
Vietnam	**	5212404	**	6720669
U K	**	5021329	**	4980939
Other countries	**	48318774	**	38323564

Figures rounded off

**Table – 39 : Imports of Iron & Steel
(Semi-finished Steel Including Steel Ingots)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	3008429	146062138	1848059	97340310
Korea, Rep. of	1687140	76803491	1179765	55092241
China	214067	11095010	114215	6814712
Japan	465235	20727127	89374	5702327
Belgium	21986	1178189	80463	5001515
France	13857	1359330	50000	3841671
Italy	41812	3412477	25706	2017162
Sweden	12297	2822220	7071	1852028
Ukraine	107096	3919953	44641	1645577
Singapore	129842	5174025	35331	1614181
Thailand	38341	1572976	31540	1582648
Other countries	276756	17997340	189953	12176248

Figures rounded off

**Table – 40 : Imports of Iron & Steel: Alloy Steel
(Granules)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	20530	1083770	17284	1015659
France	4927	265210	5870	317289
China	5359	245998	3044	168417
Germany	1400	94234	1414	110734
Thailand	1483	74508	1968	101633
Spain	1911	105858	1728	99971
Taiwan	682	44720	960	53109
Netherlands	220	14409	492	38994
South Africa	3082	146526	789	38600
Japan	36	15041	104	22244
USA	1	2575	220	19738
Other countries	1429	74691	695	44930

Figures rounded off

**Table-41: Imports of Iron & Steel: Alloy Steel
(Powder)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	3661	579712	2596	590464
UK	233	156206	233	146086
China	337	73529	600	102983
Japan	18	59672	67	90538
Germany	587	63044	747	87770
Netherlands	39	14990	58	45837
Canada	2133	109851	528	45771
USA	119	45003	95	35846
Sweden	106	11800	147	17250
Singapore	8	29873	3	6396
Belgium	26	12237	28	6119
Other countries	55	3507	90	5868

Figures rounded off

**Table-42 : Imports of Iron & Steel (Scrap)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	6776675	241791670	5393385	213404783
UAE	1039544	32190631	874594	29380968
USA	847122	31637831	621408	24833165
UK	776918	20853101	544678	14918210
Singapore	439295	15847842	377204	14622849
Malaysia	164640	9021681	186401	11925230
Netherlands	213093	11641595	110936	8339788
Canada	178286	8625581	180010	7329732
Australia	217643	6804969	241890	7235280
Thailand	87130	6447507	84608	7068178
Germany	141929	6877874	96537	6264725
Other countries	2671075	91843058	2075119	81486658

*Figures rounded off***Table-43 : Imports of Iron & Steel
(Sponge Iron)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	65244	1263296	68343	1315159
South Africa	18089	325247	30222	604310
Egypt	12458	185372	23281	350321
UAE	27208	634131	9509	245709
Bhutan	55	349	2723	53161
Iran	972	17015	1505	38991
Singapore	--	--	780	16346
Saudi Arabia	--	--	128	2660
Oman	--	--	77	1670
Bahrain	4492	58188	97	1355
Canada	--	--	21	466
Other countries	1970	42994	++	170

Figures rounded off

**Table – 44 : Imports of Iron & Steel
(Stainless Steel)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty	Value	Qty	Value
	(t)	(₹'000)	(t)	(₹'000)
All Countries	71949	13132633	39876	7480309
China	37367	4916346	15264	2313116
Vietnam	12642	2154381	11757	2241642
Italy	4440	717147	4123	1055086
Belgium	79	198553	342	414539
Singapore	925	128478	700	255655
Malaysia	696	81154	2087	203046
USA	1494	269203	934	173251
Japan	2486	1401791	628	136155
Germany	219	81187	150	109746
Netherlands	97	33962	506	99141
Other countries	11504	3150431	3385	478932

*Figures rounded off***Table-45: Imports of Iron & Steel Material
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty	Value	Qty	Value
	(t)	(₹'000)	(t)	(₹'000)
All Countries	527392	31485891	385727	21247947
Taiwan	126065	5238718	149993	6129693
Korea Rep.	192199	9128182	115886	5824150
Vietnam	95309	5777244	55950	3797203
Germany	26831	1768503	19262	1498319
China	27673	2318581	15967	1062758
Netherlands	17	6523	1453	693298
Singapore	5651	412454	4579	367983
Russia	6696	326804	7263	352938
Japan	2552	531901	1924	302698
France	7467	606577	2114	210221
Other countries	36932	5370404	11336	1008686

*Figures rounded off***Table-46 : Imports of Pig & Cast Iron
(Incl. Speigeliesen)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty	Value	Qty	Value
	(t)	(₹'000)	(t)	(₹'000)
All Countries	47749	3618533	36920	3368526
China	9827	748263	6399	679636
Germany	4394	458268	3777	347360
USA	1592	236180	1642	271021
Japan	278	174946	421	262244
UK	305	223456	529	197121
Italy	1629	210876	1236	184092
South Africa	7185	197976	4597	159502
Thailand	1806	109904	2884	158436
Taiwan	2365	96590	3577	153425
Belgium	940	132508	897	130412
Other countries	17428	1029566	10961	825277

Figures rounded off

**Table – 47 : Imports of Slag
(Dross etc. from Iron and Steel exc. Granulated)
(Steel Wire)
(By Countries)**

Country	2019-20 (R)		2020-21 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	64674	527863	84962	592855
Japan	30235	195155	53102	405024
Korea, Rep. of	33193	320320	30579	174241
Bhutan	1242	11917	996	12373
Spain	4	471	4	467
Nepal	--	--	281	461
Singapore	--	--	++	272
USA	--	--	++	17

Figures rounded off

FUTURE OUTLOOK

Steel is one of the most important products of the modern world and of strategic importance to any industrial nation from construction, industrial machinery to consumer products; steel finds its way into a wide variety of applications. The Indian Steel Industry has entered into a new development stage, post de-regulation, riding high on the resurgent economy and rising demand for steel. Besides being the 2nd largest global Crude Steel producer in 2020, India has also made a mark globally in the production of Sponge Iron/Direct Reduced Iron (DRI). The growth of coal-based sponge iron units in key mineral-rich pockets of the country resulted in rapid increase of domestic Sponge Iron production, enabling the country to achieve and maintain the number one position in the global market. With several expansion projects at different stages of implementation, the future of the Indian Steel Industry is optimistic. Steel consumption shows a strong correlation with GDP and is indicative of and environmentally sustainable economic development of any Nation. In India, in particular the Steel Industry can play an important role to make India one of the largest economies in the world.

The Government has released the National Steel Policy 2017, which has laid down the broad roadmap

for encouraging long-term growth for the Indian Steel Industry, both on demand and supply sides, by 2030-31. At the policy level, in addition to the NSP-2017, the policy for providing preference to domestically manufactured Iron & Steel products in Government procurement was unveiled, the object of which was to accomplish the Hon'ble Prime Minister's vision of 'Make in India' that aims at nation building and of that of encouraging domestic manufacturing.

Globally, India made noticeable strides — the country remained the second largest producer of crude steel, the 3rd largest consumer of total finished steel and the largest DRI producer during the year, as per ranking released by World Steel Association.

As per World Steel Association, construction is one of the most important steel-using industries, accounting for more than 50% of world steel demand. Buildings, from houses to car-parks to schools and skyscrapers, rely on steel for their strength. Steel is also used on roofs and as cladding for exterior walls. The world's population is expected to increase by 2 billion persons in the next 30 years, from 7.7 billion currently to 9.7 billion in 2050, according to United Nations report launched in 2019. Commensurately, the demand and consumption of Steel are expected to soar of multi-dimensional levels.