



# Indian Minerals Yearbook 2020 (Part- II : Metals & Alloys)

**59<sup>th</sup> Edition**

**IRON, STEEL & SCRAP AND SLAG**

**(ADVANCE RELEASE)**

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

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## 9 Iron, Steel & Scrap and Slag

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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 102.621 million tonnes (Crude Steel Equivalent) in 2019-20. Out of this 52.747 million tonnes was Non-Flat steel and the remaining 49.874 million tonnes was Flat steel. The contribution of non-alloy finished steel, alloy finished steel and stainless steel segment is 97.5 million tonnes, 2.841 million tonnes and 2.28 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 84 % (86.592 million tonnes) in 2019-20.

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 8.355 million tonnes in 2019-20, a growth of 31.4% over 2018-19 while imports stood at 6.768 million tonnes, a decrease by 13.6% in 2019-20 over 2018-19. Such trends implied that India emerged as a net exporter of total finished steel in 2019-20 in contrast to its net importer status of 2018-19.

### **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 2<sup>nd</sup> 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

### 1. 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 kgs 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 kgs)	158

### 2. Policy on Preference to Domestically Manufactured Iron & Steel Products (DMI&SP)

The Government had introduced DMI & SP Policy on 8<sup>th</sup> May, 2017 to provide preference to domestically produced iron & steel material in Government tenders. Further, the Policy was revised on 29<sup>th</sup> May, 2019 and on 31<sup>st</sup> December, 2020.

The salient features of the Policy are as following:

- This policy provides preference to Domestically Manufactured Iron and Steel Products (DMI & SP) in Government procurement.
- The policy covers a list of 49 manufactured products of iron & steel. The minimum domestic value addition of 20 -50 per cent is specified on these 49 products of iron & steel. The Policy also covers capital goods for manufacturing iron & steel products for which minimum domestic value addition of 50 per cent is specified.
- Each Ministry or Department of Government and all agencies/entities under their administrative

control is under the purview of the DMI & SP policy as notified by the Ministry of Steel. All Central Sector Schemes (CS)/Centrally Sponsored Schemes (CSS) for which procurement is made by States and Local Bodies, come within the purview of this Policy, if that project / scheme is fully / partly funded by Government of India.

- The policy is applicable to projects where the procurement value of iron & steel products is greater than Rs 5 lakh. The policy is also applicable for other procurements (non-project), where annual procurement value of iron and steel products for that Government organisation is greater than Rs 5 lakh. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this policy.

- The policy is applicable to purchase of iron and steel products by private agencies for fulfilling an EPC contract and/or any other requirement of Ministry or Department of Government or their PSUs and also to capital goods for manufacturing iron & steel products in compliance to prescribed quality standards, as applicable.

- No Global Tender Enquiry (GTE) shall be invited for tenders related to procurement of iron & steel products. No Global Tender Enquiry (GTE) shall be invited for tenders related to procurement of Capital Goods for manufacturing iron & steel products having estimated value up to Rs 200 crore except with the approval of competent authority as designated by Department of Expenditure.

- The policy has provisions for waivers to all such procurements, where specific grades of steel are not manufactured in the country, or the quantities as per the demand of the project cannot be met through domestic sources.

The policy is envisaged to promote growth and development of domestic Steel Industry in Government funded projects.

#### ***Impact of the DMI & SP Policy***

The increased domestic value addition is expected to contribute to the vibrant steel sector and the associated industries by generating employment and domestic market for their products.

This policy has provided and is further expected to provide significant savings to the Indian Economy and restrict the use of low quality and cheap

imported steel in Government funded projects, alongside developing domestic capability for import substitution.

DMI & SP Policy has so far resulted in steel import substitution to the tune of Rs 20,000 crore.

### **3. Steel Scrap Recycling Policy**

The Ministry of Steel issued the Steel Scrap Recycling Policy, which was notified on 7<sup>th</sup> November 2019. The Preamble of the policy stated that "Ministry of Steel's endeavor would be to develop a globally competitive Steel Industry by adopting state-of-the-art environment-friendly technologies. Ferrous scrap being is the primary raw material for EAF/IF based steel production, the policy therefore envisaged a framework to facilitate and promote establishment of metal scrapping centers in India. This is to ensure scientific processing & recycling of ferrous scrap generated from various sources and a variety of products. The policy framework also did provide standard guidelines for collection, dismantling and shredding activities in an organised, safe and environmentally sound manner".

The aim of the policy was to achieve the following objectives –

- (i) To promote circular economy in the Steel Sector
- (ii) To promote a formal and scientific collection, dismantling and processing activities for end of life products that are sources of recyclable (ferrous, non-ferrous and other non-metallic) scraps which will lead to resource conservation and energy savings and setting up of an environmentally sound management system for handling ferrous scrap.
- (iii) Processing and recycling of products in an organised, safe and environment-friendly manner.
- (iv) To evolve a responsive ecosystem by involving all stakeholders.
- (v) To produce high quality ferrous scrap for quality steel production thus minimising the dependency on imports.
- (vi) To decongest the Indian cities from ELVs and reuse of ferrous scrap.
- (vii) To create a mechanism for treating waste streams and residues produced from dismantling and shredding facilities in compliance to Hazardous & Other Wastes (Management & Transboundary

Movement) Rules, 2016 issued by MoEF & CC.

(viii) To promote 6Rs principles of Reduce, Reuse, Recycle, Recover, Redesign and Remanufacture through scientific handling, processing and disposal of all types of recyclable scraps including non-ferrous scraps, through authorised centers/ facilities.

#### 4. Recent Initiatives

##### **a) Ensuring Raw Materials Security for the Steel Sector**

Raw material is a critical enabler for ensuring sustained growth in Iron & Steel Industry. The Ministry has been working closely with the Ministry of Mines and the Ministry of Coal for ensuring raw material security for the Steel Sector.

**Iron Ore:** Consequent upon the decision of the Government to adopt auction regime for allocation of Non-Captive Mines/Merchant Mines post the expiry of leases of Non-Captive Mines/Merchant Mines after 31st March, 2020, SAIL was allowed to sell 25 per cent fresh fines and 70 MT dumps and tailings. In the light of these orders, SAIL has planned to sell 7.161 MT of iron ore fines in open markets in Financial Year (FY) 2020-21. Ministry of Steel has in consultation with the CPSEs worked out a strategy for ramping up production. NMDC is expected to expand its production from around 32 MT (in FY 2019-20) to 37 MT (in FY 2020-21) from its existing mines.

**Coal:** In order to increase the availability of domestic coal and its use in the Indian Steel Industry, NMDC has diversified its mining activities and has been allocated Rohne Coal mine for 'Sale of Coal'. RINL has also been allocated Rabodih OCP coal mine for 'Production of Iron & Steel'. Government is also looking to reduce the need for import of coking coal by setting up of coal washeries by BCCL/CCL and steel making CPSEs.

##### **b) Steel Import Monitoring System (SIMS) for Import Data Dissemination**

- In order to ensure that granular data like end-use, IS grade etc. regarding steel import is available in public domain, prior to the entry of such imports in India, a Steel Import Monitoring System (SIMS) in the lines of Steel Import Monitoring & Analysis (SIMA) in the US, has been made operational from 1<sup>st</sup> November, 2019.
- SIMS requires the importer to submit advance

information online for import wherein they get an automatic registration number for carrying out imports.

- SIMS has proved to be useful to Indian domestic Steel Industry by providing steel import data in advance containing information on exact grade of steel, end-use, adherence to Indian Standards, etc.
- SIMS data is making it possible for the Indian Steel Industry to respond to the market conditions in a more dynamic manner and is a step towards import substitution.

##### **(c) Enhancing the Scope of the Quality Control Orders on Steel**

Ministry of Steel gave major thrust to Steel Quality Control Order (SQCO) from 2015 onwards thereby banning substandard / defective steel products to ensure that only quality steel conforming to the relevant BIS standards is made available to the end users. During the last five years, 115 Indian Standards have been notified under the Quality Control Order covering carbon steel, alloy steel and stainless steel. This brings the total number of Indian Standards covered under the Quality Control Order to 145.

The Ministry, as a Policy, now covers raw material as well as goods and articles made up of steel, such as, stainless-steel pipes and tubes, laminations/ cores of transformers, products of tin plate & tin free steel etc. in the notification to prevent circumvention of the Steel Quality Control Order.

A dedicated portal has been developed to process the applications for seeking clarification / exemption as regards applicability of SQCO on a particular grade of steel in a time bound and transparent manner.

##### **d) Setting up of PDC for Attracting Investments**

The Government of India has set up an Empowered Group of Secretaries (EGoS) and Project Development Cells (PDCs) in Ministries/Departments for attracting investments and to handhold and further smoothen investment inflows. The Ministry of Steel PDC is working in tandem with other Ministries as well as State Departments to address concerns of investors as well as facilitate investment in the Steel Sector of the country.

### **e) Inclusion of 'Specialty Steel' under Production Linked Incentive (PLI) Scheme**

- Although India is a net exporter of finished steel in terms of quantity, it remains a net importer of 'specialty steel' owing to limited production capacity for steel grades, such as, high strength steel, electrogalvanized steel, heat-treated steel, asymmetrical rails, bearing steel, valve steel, tool & die steel, etc.

- In order to incentivise production of such 'specialty steel' grades, the Union Cabinet on November 11, 2020 has approved inclusion of 'Specialty Steel' under the Production Linked Incentive (PLI) Scheme with a 5-year financial outlay of Rs 6,322 crore to promote the manufacturing of 'Specialty Steel' within the country by attracting capital investment which would in turn not only generate employment but will enable promotion of technology up-gradation in the Steel Sector.

- This would help in improving availability of 'Specialty Steel' in the country by making the country Atmanirbhar in meeting the domestic demand.

- It is envisaged that the PLI scheme shall boost the production of identified specialty steel grades from the current 16 MTPA to over 37 MTPA in five years, while attracting investments of over Rs 35,000 crore.

- This would not only result in an overall contribution to achieving the \$5 trillion economy, but would directly boost employment in the country owing to the huge multiplier effect of steel.

### **f) Engagement with Various Stakeholders**

- The Indian Steel Sector is a diverse and vibrant ecosystem comprising a multitude of stakeholders across the value chain. Each stakeholder brings valuable inputs to the sector based on their rich experience.

- In order to leverage these experiences and ensure efficient operationalisation of the envisioned initiatives, the Ministry regularly facilitates interaction with the various stakeholders.

- Brainstorming sessions are organised as a collaborative platform to bring together all stakeholders of the Indian Steel Industry to address challenges, identify opportunities and arrive at tangible outcomes

to steer the Indian Steel Industry on the path of sustainable growth.

- The Ministry of Steel also holds talks with stakeholders including those from the Ministry/department of railways, defence, petroleum and natural gas, housing, civil aviation, road transport and highways, agriculture and rural development sectors to enhance the overall demand for steel in the country.

## **STRUCTURE AND ROLE OF INDIAN STEEL INDUSTRY**

Earlier, as per the Notifications released by Ministry of Steel dated 12.12.2013 and 24.04.2015, a steel plant had been classified on the basis of process route/technology adopted and on the basis of size/capacity. The classification was Primary steel producers, Integrated steel producers, Secondary steel producers and other steel producers. Subsequently, the guidelines for classification have been revised vide Notification dated 12.05.2016, and as per the latest classification, steel producers with their registered office addresses will be listed plant-wise & location-wise in accordance with the crude steel production capacity. The earlier classification along with process route adopted for iron/steel making as 'Integrated steel plants', 'Primary steel producers', 'Secondary steel producers', 'Main producers', 'Major producers' and 'Others' stands to be withdrawn as per the latest notification.

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.

The year 2019-20 once again reiterated that basic, fundamental concept the need to develop a strong domestic market and adopt measures to sharpen competitiveness in a global market, which time and again, will be wont to pass through upheavals and developments of unpredictable nature. On both counts, 2019-20 would easily pass off as the year which threw up challenges of mammoth nature before the domestic Steel Industry.

Economic growth touched a record low in 2019-20 with official estimates placed at 4.2%. Globally, it was no different as economic slowdown plagued most part of 2019 with major markets and manufacturing PMI dipping to record lows.

A resilient show by the domestic Steel Industry during 2019 ensured that India not only maintained its global ranks intact as per rankings released by the World Steel Association (worldsteel), it was the 2nd largest producer of crude steel and the largest sponge iron producer in the world but breaking past records, India emerged as the 2<sup>nd</sup> largest consumer of total finished steel in the world with its steel consumption edging past the historic 100 million tonne mark in 2019.

Affecting millions across continents, COVID-19 made its presence felt in all the major markets around the world in the last quarter of 2019-20. 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 as nations grappled to control the calamitous spreading of the virus, for which unfortunately no cure so far is available.

Steel Industry globally faced the brunt of the global pandemic as demand evaporated with shutdown and contraction of activities led to economic deceleration lines saw cutback/closures, infrastructure and logistics became increasingly inaccessible due to shutdowns which in turn went on to impact the entire supply chain from procurement of raw material to delivery of finished products and measures to contain the spread of the disease led to total disruption in normal working practice. Prices, be it of finished goods or of raw materials, plummeted in the face of the severe imbalance in supply-demand and global trade in steel, already impacted by the plethora of protectionist measures in place, was hit hard as transactions literally reached a pit.

The following is a status report on the performance of Indian Steel Industry during April-March 2019-20, 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 109.137 million tonnes, a decline of 1.6 % . At 142.299 million tonnes, crude steel capacity indicated a utilisation of 77 % compared to 78 % of last year.
- Hot metal production was 73.01 million tonnes, a decrease of 1.8 %.
- Pig iron production was 5.42 million tonnes, down

by 15.5 %.

- Sponge iron production was 37.1 million tonnes, up by 6.9 %.
- Total finished steel equivalent production was 102.621 million tonnes, an increase of 1.3 %.
- Export of total finished steel reached 8.36 million tonnes, an increase of 31.4%.
- Import of total finished steel was 6.77 million tonnes, a decrease of 13.6 %.
- India was a net exporter of total finished steel.
- Consumption of total finished steel equivalent was 100.171 million tonnes, an increase of 1.5%.

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 2019-20 along with the production for 2018-19 to 2019-20 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 2015-16 to 2019-20 reflected in Table-2 along with the production of sponge iron through gas-based & coal-based units during the year 2015-16 to 2019-20. 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 2019-20 is shown in Table 6. Prices of steel are provided in Table-7.

**Table – 1 : Structure of the Indian Steel Industry, 2018-19 & 2019-20****(Capacity/Production: In million tonnes)**

Sector	Total Annual Capacity	2018-19		2019-20	
		Production	Production	Production	% Capacity Utilisation
<b>Crude Steel</b>	<b>142.299</b>	<b>110.921</b>	<b>109.137</b>		77 %
<b>(A) Producer-wise</b>					
SAIL, TSL GROUP, RINL, AM/NS, JSWL, JSPL	81.932	68.707	68.382		83 %
Other Producers	60.367	42.214	40.755		68 %
<b>(B) Sector-wise</b>					
Public Sector	25.932	21.496	20.905		81 %
Private Sector	116.367	89.425	88.232		76 %
<b>Hot Metal</b>	<b>79.569<sup>#</sup></b>	<b>74.376</b>	<b>73.011</b>		<b>92 %</b>
<b>Pig iron</b>	<b>NA</b>	<b>6.414</b>	<b>5.421</b>		
<b>Sponge Iron</b>	<b>47.850</b>	<b>34.705</b>	<b>37.102</b>		<b>78 %</b>
<b>Total Finished Steel (Non alloy + Alloy + stainless)</b>	<b>NA</b>	<b>101.287</b>	<b>102.621</b>		
<b>1) Finished Steel (Non-alloy)</b>	<b>NA</b>	<b>94.844</b>	<b>97.500</b>		
<b>A) Non-Flat Products</b>	<b>NA</b>	<b>47.873</b>	<b>49.625</b>		
Bars & Rods		39.075	40.327		
Structural		7.323	7.485		
Rly Material		1.475	1.813		
<b>B) Flat Products</b>	<b>NA</b>	<b>46.971</b>	<b>47.876</b>		
PM Plates		4.796	4.681		
HR Coil/Strip		42.175	43.194		
<b>2) Finished Steel (Alloy)</b>	<b>NA</b>	<b>3.538</b>	<b>2.841</b>		
A) Non-Flat Products	NA	3.316	2.596		
B) Flat Products	NA	0.222	0.245		
<b>3) Finished Steel (Stainless)</b>	<b>NA</b>	<b>2.905</b>	<b>2.280</b>		
A) Non-Flat Products	NA	1.017	0.526		
B) Flat Products	NA	1.888	1.754		

*Source: Annual Statistics, 2019-20 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. # : Hot Metal/Pig Iron ; Figures rounded off.*



**Table – 2 : Production of Iron and Steel, 2015-16 to 2019-20**

(In '000 tonnes)

Item/producers	2015-16	2016-17	2017-18	2018-19	2019-20 (P)
<b>I. Pig Iron : Total</b>	<b>10240</b>	<b>10342</b>	<b>5728</b>	<b>6414</b>	<b>5421</b>
SAIL, TSL GROUP, RINL, AM/NS, JSWL, JSPL	1288	905	726	1663	1193
Other Producers	8952	9437	5002	4751	4227
<b>II. Sponge Iron : Total</b>	<b>22427</b>	<b>28762</b>	<b>30511</b>	<b>34705</b>	<b>37102</b>
Gas based	2440	4854	6458	6899	6564
Coal based	19987	23908	24053	27806	30539
<b>III. Crude Steel : Total</b>	<b>89790</b>	<b>97936</b>	<b>103131</b>	<b>110921</b>	<b>109137</b>
<b>Integrated steel Plants (SAIL, TSL GROUP, RINL, AM/NS, JSWL and JSPL)</b>					
Oxygen Route	36054	39603	41747	47412	46735
EAF Units	11367	15883	17639	21295	21647
<b>Other Producers</b>					
Oxygen Route	2221	2291	5645	2043	1838
EAF Route	13352	13187	8879	7181	6719
IF Route	26796	26972	29221	32990	32198
<b>IV. Total Finished Steel (Non alloy + Alloy + Stainless)</b>	<b>106603</b>	<b>120140</b>	<b>126855</b>	<b>101287</b>	<b>102621</b>
SAIL, TSL GROUP, RINL, AM/NS, JSWL, JSPL	52227	61927	69143	61283	61286
Other Producers	54376	58213	57712	40004	41336

**Source: Annual Statistics, 2019-20 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, 2015-16 to 2019-20  
(By Sectors)**

(In '000 tonnes)

Item/producers	2015-16	2016-17	2017-18	2018-19	2019-20
<b>I. Pig Iron : Total</b>	<b>10240</b>	<b>10342</b>	<b>5728</b>	<b>6414</b>	<b>5421</b>
Public Sector (SAIL+RINL)	732	573	364	588	614
Private Sector (JSWL+JSPL+TSL Group)	9508	9769	5364	5826	480
Other Blast Furnace /Corex Unit)					
<b>II. Crude Steel/SEMIS: Total</b>	<b>89790</b>	<b>97936</b>	<b>103131</b>	<b>110921</b>	<b>109137</b>
Public Sector	17920	18456	19753	21496	20905
Private Sector	71870	79480	83378	89425	88232
<b>III. Finished Steel ( Non-Alloy+Alloy+ Stainless ): Total</b>	<b>106603</b>	<b>120140</b>	<b>126855</b>	<b>101287</b>	<b>102621</b>
Public Sector (SAIL+RINL)	14333	16571	17944	16933	16029
Private Sector {TSL+AM/NS (ESL) +JSWL+JSPL+Other Producers}	92270	103569	108911	84353	86593

Source: Annual Statistics, 2019-20 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, 2018-19 and 2019-20  
(By Principal Producers)**

(In '000 tonnes)

Unit	Annual installed capacity		Production			
	Hot metal	Crude/Liquid steel	Hot metal		Crude steel	
			2018-19	2019-20	2018-19	2019-20
<b>Public Sector</b>						
SAIL	17105	19632	17512	17437	16263	16156
Rashtriya Ispat Nigam Ltd (Andhra Pradesh)	6300	6300	5770	5161	5233	4749
<b>Private Sector</b>						
JSW Steel Ltd	16500	18000	15477	15220	16743	16156
TSL Group	17169	19400	19046	19019	18401	18525
AM/NS (Essar Steel Ltd )	3490	10000	3257	3632	6813	7121
Jindal Steel & Power Ltd	5325	8600	5042	5262	5254	5861
Others	13680	60367	8273	7281	42215	40755
Other BOF	-	4077	-	-	2043	1838
Other EAF	-	11794	-	-	7182	6719
IF Units	-	44496	-	-	32990	32198

Source: JPC.

**Table – 5 : Production of Crude/Liquid Steel, 2015-16 to 2019-20**

(By Route)

(In'000 tonnes)

Route/plant	2015-16	2016-17	2017-18	2018-19	2019-20
<b>All Routes: (A+B) Total</b>	<b>89790</b>	<b>97936</b>	<b>103131</b>	<b>110921</b>	<b>109137</b>
<b>A. Oxygen Route : Total</b>	<b>38275</b>	<b>41894</b>	<b>47392</b>	<b>49455</b>	<b>48573</b>
SAIL	14068	14298	14829	16045	15946
RINL	3641	3962	4731	5233	4749
Tata Steel Ltd	9960	11688	12459	-	-
TSL Group	-	-	-	16038	16399
JSW Steel Ltd	8385	9655	9728	10096	9641
Bhushan Steel Ltd	-	-	3167	-	-
Other Oxygen Route	2221	2291	2478	2043	1838
<b>B. Electric Route: Total</b>	<b>51515</b>	<b>56042</b>	<b>55739</b>	<b>61466</b>	<b>60564</b>
<b>Electric Arc Furnace</b>	<b>24719</b>	<b>29070</b>	<b>26518</b>	<b>28476</b>	<b>28366</b>
SAIL	211	196	193	218	210
TSL Group	-	-	-	2363	2126
AM/NS (Essar Steel Ltd )	3685	5391	6753	6813	7121
JSW Steel Ltd	4294	6851	6679	6647	6329
Jindal Steel & Power Ltd	3177	3445	4014	5254	5861
Lloyds Steel Ltd	569	575	560	518	495
Jindal Stainless Ltd	1258	1391	1497	1554	1418
Bhushan Steel Ltd	3078	5601	87	-	-
Bhushan Power & Steel Ltd	1832	3324	2018	2778	2901
Other Electric Arc Furnace	6615	2296	4717	2331	1905
<b>Electric Induction Furnace</b>	<b>26796</b>	<b>26972</b>	<b>29221</b>	<b>32990</b>	<b>32198</b>

*Note:- TSL Group includes Bhushan Steel Ltd, Tata Steel Long Products, TSL Jamshedpur & TSL Kalinganagar; Source : JPC, Figures rounded off*

**Table-6: Region / State -wise Crude Steel Scenario in respect of No. of Units, Annual Capacity and Production: 2019-20**

State	No. of Units				Annual Capacity ('000 tonnes)				Annual Production ('000 tonnes)			
	BOF	EAF	IF	TOTAL	BOF	EAF	IF	TOTAL	BOF	EAF	IF	TOTAL
<b>TOTAL</b>	<b>17</b>	<b>39</b>	<b>858</b>	<b>914</b>	<b>57295</b>	<b>40509</b>	<b>44496</b>	<b>142300</b>	<b>48573</b>	<b>28367</b>	<b>32198</b>	<b>109137</b>
<b>Eastern Region</b>	<b>9</b>	<b>12</b>	<b>149</b>	<b>170</b>	<b>32577</b>	<b>12463</b>	<b>11242</b>	<b>56282</b>	<b>28784</b>	<b>9062</b>	<b>8120</b>	<b>45965</b>
Arunachal Pradesh	-	-	3	3	-	-	125	125	-	-	29	29
Assam	-	-	6	6	-	-	131	131	-	-	67	67
Bihar	-	-	15	15	-	-	803	803	-	-	540	540
Jharkhand	3	1	41	45	16477	1000	2230	19707	14792	617	1799	17209
Meghalaya	-	-	5	5	-	-	181	181	-	-	92	92
Odisha	4	7	42	53	11400	10882	3088	25370	9720	8131	2402	20253
Tripura	-	-	1	1	-	-	30	30	-	-	12	12
West Bengal	2	4	36	42	4700	581	4654	9934	4272	313	3179	7764
<b>Western Region</b>	<b>1</b>	<b>18</b>	<b>217</b>	<b>236</b>	<b>6000</b>	<b>24257</b>	<b>14619</b>	<b>44876</b>	<b>4497</b>	<b>15908</b>	<b>11262</b>	<b>31667</b>
Chhattisgarh	1	6	72	79	6000	6327	6458	18785	4497	3605	5432	13534
Dadra and Nagar haveli	-	-	19	19	-	-	296	296	-	-	285	285
Daman and Diu	-	-	3	3	-	-	46	46	-	-	46	46
Goa	-	-	12	12	-	-	481	481	-	-	423	423
Gujarat	-	3	56	59	-	10300	2454	12754	-	7198	1482	8680
Madhya Pradesh	-	-	9	9	-	-	553	553	-	-	438	438
Maharashtra	-	9	46	55	-	7630	4331	11961	-	5105	3155	8260

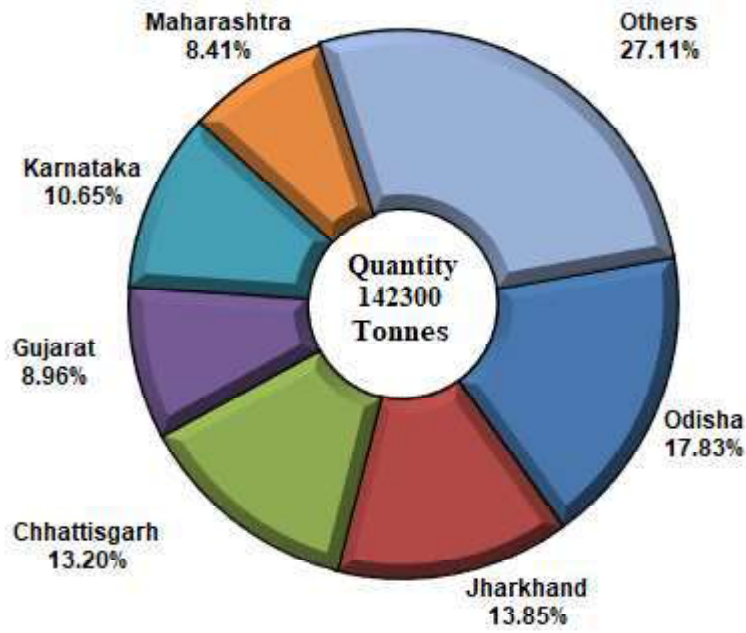
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Table-6:(concl'd)

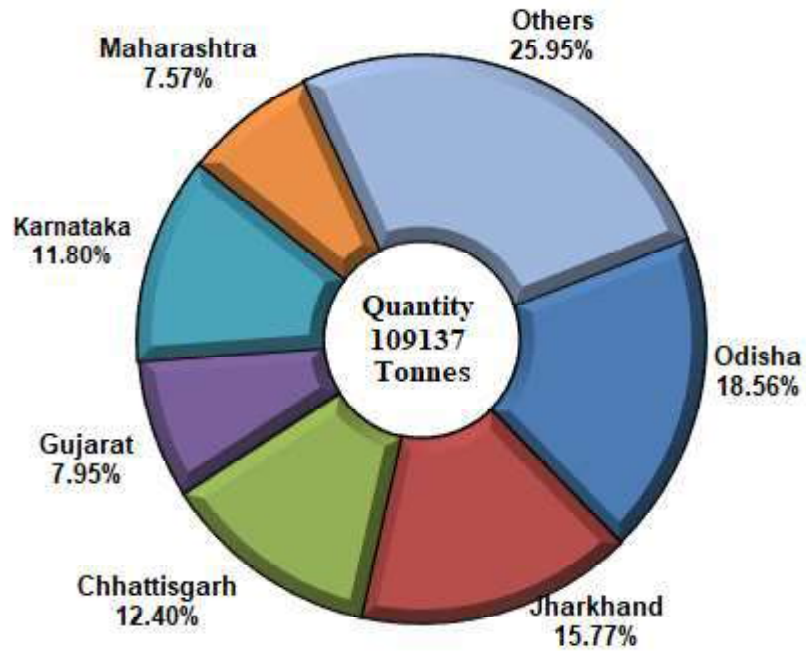
State	No.of Units			Annual Capacity('000 tonnes)			Annual Production ('000 tonnes)			
	BOF	EAF	IF TOTAL	BOF	EAF	IFTOTAL	BOF	EAF	IF TOTAL	
<b>Northern Region</b>	<b>0</b>	<b>7</b>	<b>281</b>	<b>0</b>	<b>1609</b>	<b>9964</b>	<b>0</b>	<b>856</b>	<b>7063</b>	<b>7919</b>
Delhi	0	0	2	0	0	16	0	0	12	12
Haryana	0	3	7	0	847	106	0	518	78	596
Himachal Pradesh	0	0	25	0	0	1139	0	0	864	864
Jammu & Kashmir*	0	0	8	0	0	189	0	0	114	114
Punjab	0	4	115	0	762	4162	0	338	2971	3310
Rajasthan	0	0	36	0	0	1176	0	0	749	749
Uttar Pradesh	0	0	46	0	0	1617	0	0	1198	1198
Uttarakhand	0	0	42	0	0	1559	0	0	1077	1077
<b>Southern Region</b>	<b>7</b>	<b>2</b>	<b>211</b>	<b>18718</b>	<b>2180</b>	<b>8671</b>	<b>15292</b>	<b>2541</b>	<b>5753</b>	<b>23586</b>
Andhra Pradesh	2	0	25	6600	0	1791	5001	0	1538	6539
Karnataka	4	1	24	11118	2000	2031	9656	2435	784	12875
Kerala	0	0	29	0	0	480	0	0	304	304
Puducherry(UT)	0	0	10	0	0	340	0	0	210	210
Tamil Nadu	1	1	97	1000	180	2586	635	106	1764	2505
Telangana	0	0	26	0	0	1443	0	0	1154	1154

\* Jammu &amp; Kashmir, vide enactment of jammu &amp; kashmir Reorganisation Act, 2019, is a Union Territory

**Crude Steel Working Production Capacity in Different States, 2019-20**



**Crude Steel Production in Different States, 2019-20**



**Table – 7: Prices of Steel, 2017-18 to 2019-20  
(Domestic Markets)**

(In ₹ per tonne)				
Grade	Market	2017-18	2018-19	2019-20
TMT Bars (ISI, 8 mm)	Delhi	40650	46180	45044
MS Squares (8 mm)	“	39828	44973	43208
MS Angles (25 x 3 mm)	“	40915	46379	45135
Channels (75 x 40 mm)	“	41078	46397	44827
Joists (150 x 75 mm)	“	40469	46267	44546
Melting Scrap	“	27936	30169	26217
Induction Ingots	“	33504	35698	33517
TMT Bars (local 8 mm)	Mumbai	39455	44998	43838
MS Rounds (8 mm)	“	37519	43658	42258
MS Angles (40 x 6 mm)	“	40425	46071	44619
Joists (150 x 75 mm)	“	39015	44538	42977
Melting Scrap (Foundry G.)	“	-	-	-
Melting Scrap (Steel G.)	“	-	-	-
Melting Scrap (CRCA)	“	-	-	-
Induction ingots	“	33691	36119	33170
Arc Ingots	“	33849	36238	33835
Concast Billet ingots	“	34061	36529	34148
TMT Bars (ISI, 8 mm)	Kolkata	38266	46447	45398
MS Squares (8 mm)	“	37235	45726	44944
MS Angles (25 x 3 mm)	“	38378	45242	44773
Channels (75 x 40 mm)	“	37966	47124	44898
Joists (150 x 75 mm)	“	33825	44633	43079
Induction Ingots	“	33841	36190	33982
Arc Ingots	“	34288	36329	34257
Concast Billet Ingots	“	34252	36433	34444
Induction ingots (round)	Gobind	33358	35970	31693
Blooms (SAIL, 150 mm)	“	33491	36016	31660
Old Ship Breaking Scrap	“	25551	29510	29126
Melting Scrap (rolling)	“	30970	33271	28166
MS Rounds (10 mm)	“	40052	45075	43367
MS Squares (8 mm)	“	40507	47033	46018
MS Angles (25 x 3 mm)	“	41125	45313	44051
MS Sponge Iron	“	23716	26529	24566
MS Flat (3 x 20 mm )	“	39843	45300	43339
Pig Iron (Foundry Grade) –A*	Mumbai	-	-	-
Pig Iron (Foundry Grade) –B*	Punjab	-	-	-
Pig Iron Steel Grade	“	-	-	-

**Source:** Minerals & Metals Review - August 2021

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

## A. Crude steel

At 109.137 million tonnes (mt) in 2019-20, India's crude steel production declined by 1.6% as compared to 110.921 million tonnes in 2018-19 and increased by 5% on a CAGR (Compound Annual Growth Rate) basis during the last five years ending 2019-20. This production was driven by capacity expansion, from 121.970 Million Tonnes Per Annum (MTPA) in 2015-16 to 142.299 MTPA in 2019-20, a CAGR growth of 3.93% during last five years ending 2019-20. Given the above production for 2019-20 and with capacity at 142.30 million tonnes, crude steel capacity utilisation stood at 77% during 2019-20 as compared to 78% 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 (2015-16 to 2019-20)**

(Quantity in million tonnes)

Year	Working capacity	Production	% Utilisation capacity
2015-16	121.970	89.790	74%
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%

Figures rounded off.

With 81% share, the Private Sector (88.232 million tonnes, down by 1.3%) led the crude steel production in 2019-20. In fact, India's crude steel production has been consistently led by the Private Sector in the last five years ending 2019-20, 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 68.382 million tonnes (down by 0.5%) of crude steel in 2019-20 while the rest 37% was the share of the other producers (down of 3.5%) during this period. In fact, the trend of last five years ending 2019-20 indicate that India's crude steel production is driven by these six producers together whose average share during this period stood at 58%.

The following are the two primarily 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 48.573 million tonnes of crude steel through BOF route in 2019-20 at 85% 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 39 working units with total capacity of 40.508 million tonnes including the SAIL (ASP), AM/NS, JSWL (Dolvi, Vijaynagar) & JSPL and produced 28.367 million tonnes crude steel through EAF route in the year 2019-20 at 70% 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 858 IF working units with total capacity of 44.496 million tonnes which produced 32.198 million tonnes crude steel through IF route in 2019-20 at 72% 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.



In 2019-20, about 55 % (60.564 million tonnes) crude steel is produced through the Electric Furnace route of which about 29 % (32.198 million tonnes) crude steel is produced through the Electric Induction Furnace (EIF) route and 26 % (28.366 million tonnes) crude steel from Electric Arc Furnace (EAF) route. About 45 % (48.573 million tonnes) crude steel is produced through the conventional integrated route of BF-BOF route.

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 the 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 73.011 million tonnes in 2019-20, domestic hot metal production declined by 1.8% over 2018-19 and grew by 5.6% on a CAGR basis during

the last five years ending 2019-20.

With 69% share, the Private sector (50.41 million tonnes, down by 2.0%) led hot metal production in 2019-20, with the average share of the Sector at 68% in the last five years ending 2019-20.

In 2019-20, with a 90 % share, SAIL, RINL, TSL Group, AM/NS (Essar Steel), JSWL and JSPL together produced 65.730 million tonnes, a decline of 0.6 % as compared to that in 2018-19. Whereas the other producers produced 7.281 million tonnes which too showed a decline of 13.6 % during the year 2019-20.

## C. Total Finished Steel (Crude Steel Equivalent)

### 1. Trends in Production of Total Finished Steel

In the year 2019-20, the production of finished steel, measured in terms of crude steel equivalent, stood at 102.621 million tonnes. The figures of production of finished steel related to the year 2018-19 and 2019-20 are not comparable to other FY's, as they are reported in terms of Crude Steel Equivalent and this is different in concept from those reported for past FY's due to change in reporting system of JPC as approved by Ministry of Steel and Industry Experts.

With a 84% share, the Private Sector produced 86.592 million tonnes finished steel equivalent in 2019-20 while 16 % (16.029 million tonnes) was the

**Table-9 : Crude Steel Production - by Process**  
(million tonnes)

Process Route	2015-16	2016-17	2017-18	2018-19	2019-20
Oxygen	38.276	41.894	47.392	49.455	48.573
EAF	24.719	29.070	26.518	28.476	28.366
IF	26.796	26.972	29.221	32.990	32.198
<b>Total</b>	<b>89.791</b>	<b>97.936</b>	<b>103.131</b>	<b>110.921</b>	<b>109.137</b>

*Source : Performance Review Iron & Steel 2019-20, JPC*

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

Process Route	2015-16	2016-17	2017-18	2018-19	2019-20
Oxygen	43	43	46	44	45
EAF	27	29	26	26	26
IF	30	28	28	30	29

*Source : Performance Review Iron & Steel 2019-20, JPC*

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 60% share, SAIL, RINL, TSL Group, AM/NS (Essar Steel), JSWL, JSPL taken together produced 61.286 million tonnes of finished steel in 2019-20 while the rest 40% (41.336 million tonnes) was the share of the Other producers during this period. In fact, the trend of last five years ending 2019-20 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 97.5 million tonnes, while 2.841 million tonnes and 2.280 million tonnes were those of alloy and stainless steel respectively.

An analyse 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 49.625 million tonnes.

- While that of the Non-alloy Finished Steel flat Segment stood at 47.876 million tonnes.

- Contribution of the Alloy Steel Non-flat Segment stood at 2.596 million tonnes.

- While that of the Alloy Steel Flat Segment stood at 0.245 million tonnes.

- Contribution of the Stainless Steel Non-flat Segment stood at 0.526 million tonnes.

- While that of the Stainless Steel Flat Segment stood at 1.754 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 40.327 million tonnes while production of Structural and Rly. Materials 7.485 million tonnes and 1.813 million tonnes respectively.

- For the Flat Non-alloy Segment, the production of Plate Mill Plates stood at 4.681 million tonnes while production of HR Coil/Strip stood at 43.194 million tonnes.

- In the Non-flat, Alloy Steel Segments, the overall production of all items stood at 2.596 million tonnes.

- Flat alloy Steel production stood at 0.245 million tonnes.

- In the Non-flat, Stainless Steel Segment, the overall production of all items stood at 0.526 million tonnes.

- Flat Stainless Steel production stood at 1.754 million tonnes.

Viewed from the Flat and Non-flat perspective it can be summarised that in the year 2019-20, out of 102.621 million tonnes Finished Steel production, Flat Steel is 49.874 million tonnes while Non-flat Steel stood at 52.747 million tonnes, establishing Non-flat Steel as the driver for growth in production of total Finished Steel during the year.

## **2. Import & Export of Total Finished Steel**

The analysis on the export and import of total finished steel both non-alloy and alloy (including stainless steel) as per data given by JPC in the Annual statistics 2019-20 is furnished below :-

- Total finished steel exports stood at 8.355 million tonnes in 2019-20, a growth of 31.4% over 2018-19 while imports stood at 6.768 million tonnes, a decrease by 13.6% in 2019-20 over 2018-19.

- Such trends implied that India emerged as a net exporter of total finished steel in 2019-20 in contrast to its net importer status of 2018-19.

- For the last five year period ending 2019-20, on a CAGR basis, exports grew by 19.6% while imports declined by 12.8%.

- Korean imports (2.687 million tonnes) had the largest share (40%) in major flat items, making it the largest import market for india during this period. China (1.2 million tonnes) was the 2<sup>nd</sup> largest import market, with its share in overall total being 18% in 2019-20.

- Import of total finished steel was valued at Rs44,683 crore in 2019-20.

- Vietnam (30% share) was the largest export

market for India during this period.

- Export of total finished steel was valued at Rs36,726 crore in 2019-20.

### 3. Trends in Consumption of Total Finished Steel

At 100.171 million tonnes, domestic finished steel consumption crossed the magical milestone of 100 million tonnes, making India share the same space with China as a distinct member of the exalted group of economies where steel consumption has risen above such a milestone mark. Such a feat elevated India to the status of the 2<sup>nd</sup> largest finished steel consumer in the world in 2019, with the USA at the 3<sup>rd</sup> largest spot. In terms of growth rate, 2019-20 however saw the pace of growth of domestic steel consumption falter significantly in the face of a demand slowdown emanating from the leading end-use consumer segments of steel in the country. The following is a detailed report on the trends of domestic consumption of total finished ( non-alloy + alloy + stainless steel) steel on the JPC database.

Finished Steel consumption stood at 100.171 million tonnes in 2019-20 as compared to 98.71 million tonnes during 2018-19, notching up a growth of 1.5%. 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 Graph-1 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 2018-19 (8.8%) but falling thereafter to a significantly low 1.5% in 2019-20, the lowest in this five-year period. In terms of CAGR, domestic steel consumption grew by 5.28% during the last five year period, ending 2019-20 (Table-11).

The relative situation of non-alloy, alloy and stainless steel consumption growth scenario during 2019-20 over 2018-19 indicates that volume-wise, domestic finished steel consumption continues to be driven by non-alloy steel consumption (93% share and recording 3% growth over 2018-19 as compared to the 13% decline in alloy and 11% decline in stainless steel over 2018-19) while the Alloy and Stainless Steel Sector remained a niche but emerging contributor. to overall steel consumption in the country. In 2019-20, the share of alloy was 4% while that of stainless

Steel was 3% (Table -12 & Graph -2).

Table-13 highlights the growth pattern yoy alongwith share of domestic total finished steel consumption, in terms of its two broad components – flat steel and non-flat/long steel – in 2018-19 and 2019-20. Both these components include non-alloy, alloy and stainless steel constituents as well.

Unlike the equal contribution of both the components in 2018-19, 2019-20 saw domestic steel consumption being led by non-flat steel (52% share) as compared to its flat counterpart. In 2019-20, the share of flat steel component consumption was 48% (Graph-3). The scenario was similar in terms of rate of growth: non-flat steel consumption grew by a modest 5% in 2019-20 over 2018-19, while that of flat steel actually declined (by 2%).

Table-14 shows detailed consumption data for major categories of finished steel in 2019-20 over 2018-19 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 (39.33 million tonnes ; up by 8.5%) whereas for the flat segment, consumption was led by HRC (40.45 mt, down by 3.1%). Consumption of alloy and stainless steel recorded a decline by 13% and 11% respectively while non-alloy steel grew by 3% during the year 2019-20.

In tune with the absolute levels reached and the prevailing economic/steel market conditions, India's per capita finished steel consumption was observed to have grown from 63.5 kg in 2015-16 to 74.7 kg in 2019-20 resulting in a CAGR growth of 5.4% in this five-year period. But compared to global average of 230.3 kg per capita finished steel consumption and 636 kg in case of china, India's per capita finished steel consumption (75.1 kg) is considerably low in the Calendar Year 2019 (based on data by the World Steel Association (Worldsteel) in their 'World Steel in Figures, 2021' publication). One of the main reasons for lower per capita consumption of steel in India as compared to developed countries, is that in India the use of steel in large-scale infrastructure activities and other end-use segments of steel like manufacturing, is comparatively much lower than that of the developed countries, which is also supported by their rapid economic growth/progress.

**Table – 11 : Total Finished Steel Consumption (Non-alloy + alloy + stainless steel )  
(Crude Steel Equivalent)  
(2015-16 to 2019-20)**

Year	Total Finished Steel Consumption		( In '000 tonnes)
			% yoy change
2015-16	81525		5.9
2016-17	84042		3.1
2017-18	90708		7.9
2018-19	98708		8.8
2019-20	100171		1.5



Source : Performance Review, Iron & Steel 2019-20; JPC

**Table- 12 : Total Finished Steel Consumption - Non-alloy / alloy / stainless steel wise  
Crude Steel Equivalent (2018-19 to 2019-20)  
( In '000 tonnes)**

ITEM	2018-19				2019-20		% yoy Change
	Qty		% share		Qty	% share	
	Qty	% share	Qty	% share			
<b>Total Finished Steel (Non alloy+ alloy + stainless)</b>	<b>98708</b>	<b>-</b>	<b>100171</b>	<b>-</b>	<b>1.5</b>		
Non-alloy Finished Steel	91075	92.3	93477	93.3	2.6		
Alloy Finished Steel	4598	4.6	3988	4	-13.3		
Stainless steel	3034	3.1	2706	2.7	-10.8		

**Table- 13 : Total Finished Steel Consumption— Non - flat/Flat wise  
Crude Steel Equivalent (2018-19 to 2019-20)  
(include non-alloy + alloy + stainless)  
( In '000 tonnes)**

ITEM	2018-19		2019-20		% yoy Change
	Qty		% share		
	Qty	% share	Qty	% share	
<b>Total Finished Steel (Non Flat+ Flat)</b>	<b>98708</b>	<b>-</b>	<b>100171</b>	<b>-</b>	<b>1.5</b>
Non-Flat Finished Steel	49271	49.9	51720	51.6	5
Flat Finished Steel	49437	50.1	48451	48.4	-2

Source : Annual Statistics 2019-20; JPC

**Table – 14 : Detailed Consumption for Major Categories of Total Finished Steel in 2019-20 over 2018-19  
(Crude Steel Equivalent)**

	( In '000 tonnes)		
ITEM	2018-19	2019-20	% yoy Change
<b>Total Finished Steel (Non-alloy + Alloy + stainless)</b>	<b>98708</b>	<b>100171</b>	<b>1.5</b>
<b>1. Finished Steel (Non-alloy)</b>	<b>91075</b>	<b>93478</b>	<b>2.6</b>
<b>a) Non-Flat Products</b>	<b>44726</b>	<b>48345</b>	<b>8.1</b>
Bars & Rods	36240	39329	8.5
Structural	7013	7167	2.2
Rly Material	1472	1849	25.6
<b>b) Flat Products</b>	<b>46349</b>	<b>45133</b>	<b>-2.6</b>
PM Plates	4606	4684	1.7
HR Coil/Strip	41744	40449	-3.1
<b>2. Finished Steel (Alloy)</b>	<b>4598</b>	<b>3988</b>	<b>-13.3</b>
a Non-flat Products	3670	2960	-19.3
b) Flat Products	928	1028	10.8
<b>3. Finished Steel (Stainless)</b>	<b>3034</b>	<b>2706</b>	<b>-10.8</b>
a) Non-flat Products	875	416	-52.5
b) Flat Products	2159	2290	6.1

#### **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 2019-20 was reported as 79.569 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 5.421 million tonnes in 2019-20, a decline of 15.5% as compared to the production of 6.414 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 89% share, the Private Sector (4.806 million tonnes, down by 17.5% over 2018-19) led pig iron production in 2019-20, with the average share of the Sector at 92% in the last five years ending 2019-20. The share of Public Sector in 2019-20 was about 11% (0.614 million tonnes, up by 4.42% over previous year).

With a 78% share, the Other Producers (4.227 million tonnes, down by 11% over 2018-19) led pig iron production in 2019-20 while the rest 22% was the share contributed by SAIL, RINL, TSL Group, AM/NS(Essar Steel), JSWL, JSPL taken together (1.193 million tonnes, down by 28.2% over 2018-19). In fact, the trend of last five years ending 2019-20 has been similar in this regard.

**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	12	16921	17240	710
Odisha	12	19053	15726	639
West Bengal	13	6302	5975	1583
Chhattisgarh	4	7313	7334	916
Goa	2	750	685	682
Gujarat	2	3767	3802	10
Maharashtra	2	4100	3532	119
Andhra Pradesh	4	7140	5758	161
Karnataka	5	13223	12000	559
Tamil Nadu	1	1000	959	42
<b>Total</b>	<b>57</b>	<b>79569</b>	<b>73011</b>	<b>5421</b>

**Table-17: State-wise Capacity and Production of Sponge Iron**  
(2019-20) (In '000' tonnes)

State	No.of working Units	Working Capacity	Annual Production
<b>Total</b>	<b>285</b>	<b>47850</b>	<b>37102</b>
<b>Western Region</b>	<b>84</b>	<b>20867</b>	<b>17148</b>
Chhattisgarh	67	9416	9077
Goa	3	186	198
Gujarat	7	7855	5614
Maharashtra	7	3410	2259
<b>Eastern Region</b>	<b>142</b>	<b>20358</b>	<b>14563</b>
Jharkhand	32	3795	2837
Odisha	74	12645	7883
West Bengal	36	3918	3844
<b>Northern Region</b>	<b>4</b>	<b>537</b>	<b>408</b>
Uttar Pradesh	4	537	408
<b>Southern Region</b>	<b>55</b>	<b>6088</b>	<b>4984</b>
Andhra Pradesh	6	911	571
Karnataka	34	4222	3681
Tamil Nadu	6	528	392
Telangana	9	427	339

Source : Annual Statistics 2020; JPC

## E. Sponge Iron

India is the largest producer of sponge iron in the world. Sponge iron is produced by direct reduction method which may be either gas-based or coal-based. 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 have suggested the name 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 production of sponge iron during the last five years is provided in Table-2. 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 2019-20. 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 build up during 2015 - 16 to 2019-20 is shown in Graph - 4. At 37.102 million tonnes in 2019-20, India's sponge iron production grew by 6.9% over that of 2018-19 and was also observed to have grown by 13.4% on a CAGR basis during the last five years ending 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% (30.54 million tonnes, up by 9.8%) of total sponge iron production in the country in 2019-20, with the average share of the Route at 83% in the last five years ending 2019-20. India has been the world's largest sponge iron producer every year since 2003. State-wise capacity and production of sponge iron is shown in Table- 17.

### Importance of Sponge Iron and HBI for Iron and Steel-making

Steel scrap is an important metallic feed material for electric steel making. In oxygen steelmaking, about 20 to 25 per cent of the charge is scrap which acts as coolant. The advent of continuous casting, which accounts 96.4 per cent of the world and 86.4 per cent of Indian crude steel output, has reduced the internal scrap generation in steel plants. The non-availability of consistent quality at a reasonable price necessitated the search for an alternative to scrap for use in steelmaking in Secondary Steel sectors. These problems have been overcome with the help of sponge iron /hot briquetted iron (HBI). Sponge iron /HBI is not only a substitute for steel scrap as a feed material in electric arc furnace (EAF) / induction melting furnace (IMF), but also a more suitable melting stock for the good quality steel production. It is evident that sponge iron/HBI influences the supply and demand balance for steel scrap because electric furnace operators regard it as a high-quality substitute for scrap. Sponge iron/HBI is now recognised as a high quality, cheaper and high purity charge material the world over. In comparison with scrap, the use of sponge iron/HBI offers consistency in composition and size, low residual elements and environment friendliness.



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- 18: INDIAN IRON & STEEL INDUSTRY AT A GLANCE  
DURING 2019-20

Sl. No.	Type of Industry	No. of Working Units	Working Capacity ('000 tonnes)	Production ('000 tonnes)
<b>I</b>	<b>Pellets</b>	39	81137	67991
<b>II</b>	<b>Sponge Iron</b>	285	47850	37102
<b>III</b>	<b>Blast Furnace</b>	57	79569	73011
1	BOF	17	57295	48573
2	Electric Arc Furnace	39	40508	28367
3	Induction Furnace	858	44496	32198
<b>IV</b>	<b>Crude Steel (1-3)</b>	<b>914</b>	<b>142299</b>	<b>109137</b>
<b>V</b>	<b>Finished Steel (Crude Steel Equivalent)</b>			
4	Re-rolling	1020	79595	55581
5	HR Product	23	54376	46179
<b>VI</b>	<b>Value Added Steel</b>			
6	CR Product	68	26354	17709
7	GP/GC Sheets	28	9613	7568
8	Colour Coated	17	2822	2260
9	Tinplate	4	839	369
10	Pipes	76	9430	4048

Source :- Annual Statistics, 2019-20

## MODERNISATION & EXPANSION

### Steel Authority of India Ltd (SAIL)

Steel Authority of India Limited (SAIL) is a company registered under the Companies Act, and is a 'Maharatna' Central Public Sector Enterprise (CPSE). It has five integrated steel plants at Bhilai (Chhattisgarh), Rourkela (Odisha), Durgapur (West Bengal), Bokaro (Jharkhand) and Burnpur (West Bengal). SAIL has three special and alloy steels plants viz. Alloy Steels Plant at Durgapur (West Bengal), Salem Steel Plant at Salem (Tamil Nadu) and Visvesvaraya Iron and Steel Plant at Bhadravati (Karnataka).

Steel Authority of India Ltd had undertaken Modernisation and Expansion of its Integrated Steel Plants at Bhilai, Bokaro, Rourkela, Durgapur and Burnpur and special steel plant at Salem to enhance the Crude Steel capacity from 12.8 million tonnes to 21.4 million tonnes per annum. The modernisation and expansion at Rourkela, Burnpur, Durgapur, Bokaro and Salem Steel Plants have been completed and various facilities are under operation, stabilisation and ramp up. At Bhilai Steel Plant, major facilities under modernisation and expansion have been completed and the integrated process route is in operation, stabilisation and ramp up.

### Rashtriya Ispat Nigam Ltd (RINL)

Rashtriya Ispat Nigam Limited (RINL), a Navratna CPSE, is the corporate entity of Visakhapatnam Steel Plant - the country's first shore-based integrated steel plant with current production capacity of 7.3 Mtpa Liquid steel at Visakhapatnam, Andhra Pradesh. The Company has one subsidiary, viz. Eastern Investment Limited (EIL) with 51% shareholding, which in turn is having two subsidiaries, viz. M/s Orissa Mineral Development Company Ltd (OMDC) and M/s Bisra Stone Lime Company Ltd (BSLC).

The Capacity Expansion and Modernisation Projects of RINL is as under :

- Coke Oven Battery-5, which is important for ramping up of production, was commissioned on 22/12/2020.
- Twin Ladle Heating Furnace (Twin LHF) was commissioned on 08.12.2020 to enhance the

production capabilities of SMS-2.

- Central Despatch Yard has been made ready for commercial operations after completion of Overhead Electrification (OHE) on 11.11.2020 and commercial notification from Railways on 24.11.2020.

### National Mineral Development Corporation (NMDC)

NMDC Limited is a "Navratna" Public Sector company under the Ministry of Steel, Government of India, primarily engaged in the business of exploring minerals and developing mines to produce raw materials for the industry. The Company has been undertaking expansion of activities towards steel making and producing other value-added products.

NMDC is setting up a 3.0 MTPA Greenfield Integrated Steel Plant at Nagarnar, Bastar district in Chhattisgarh State. Construction work for the project is in progress and about 97% of Civil work, 96% of Structural erection, 91% of equipment erection have been completed.

NMDC has taken up construction of Slurry Pipeline project which consists of 2.0 MTPA Pellet Plant at Nagarnar, 2.0 MTPA Ore Processing Plant at Bacheli and 130 km Slurry Pipeline from Bacheli to Nagarnar and its Auxiliary systems in the State of Chhattisgarh. Field works have commenced for the awarded works and NMDC is in the process of finalisation of agencies for balance packages.

NMDC has taken up installation of 12.0 MTPA Screening Plant-III at Kirandul Complex, Bailadila, Chhattisgarh. Field works have commenced for the awarded works and NMDC is in the process of finalisation of agencies for balance packages.

NMDC is also in the process of augmenting its production and evacuation capacity by installing the following additional infrastructure facilities:

- Construction of 5th screening line in the existing Screening Plant-II and upgradation of downstream conveyor at Kirandul Complex at Bailadila, Chhattisgarh, has been completed and Load trials are under progress.
- Construction of 5th Screening line in the existing Screening Plant and up-gradation of downhill conveyor system at Deposit-5, Bacheli Complex, Bailadila, Chhattisgarh are to be taken up. NMDC

has finalised the Agency for execution of the project and field works are in progress.

- Installation of 7.0 MTPA Screening and Beneficiation Plant-II at Donimalai Complex, Karnataka is to be taken up. NMDC is in the process of obtaining Statutory clearances for the project.

- Doubling of Kirandul–Kottavalasa Line between Kirandul and Jagdalpur (150 km approx.) through East Cost Railways on deposit work basis is to be commissioned. Doubling of 74.25 km has been completed and is in operation. Further, doubling of 11 km and 21.12 km was scheduled for completion during FY 2021 and by May, 2021 respectively. Completion of the balance 44 km (between Kirandul and Dantewada) is likely to be taken up in FY 2023.

### **Tata Steel Ltd (TSL)**

Tata Steel group is among the leading global steel companies with a crude steel capacity of 34 million tonne per annum. It is one of the world's most geographically-diversified steel producers, with operations and commercial presence across the world. The group recorded a consolidated turnover of Rs. 1,39,817 cr in the financial year ending March 31, 2020. In 2019, Tata Steel's Kalinganagar plant was recognized as Industry 4.0 Lighthouse by the World Economic Forum. Tata Steel Ltd has an existing capacity of 14 Million Tonnes. Together with Tata Steel BSL Ltd and Tata Steel Long Products Ltd, Tata Steel has a total production capacity of 20.6 million tonnes in India.

### **JSW Steel Ltd**

JSW Steel Ltd is one of the foremost integrated steel company in India with an installed capacity of 18 MTPA. JSW Steel's manufacturing facility at Vijayanagar, Karnataka is the largest single location steel-producing facility in India with a capacity of 12 MTPA. The Company has been at the forefront of state-of-the-art, cutting-edge technology, research and innovation while laying the foundation for long-term growth, strategic collaborations with global technology leaders to offer high-value special steel products for various applications across construction, automobile, appliances and other sectors.

### **Arcelor Mittal Nippon Steel, India (AM/NS India)**

AM/NS India, a joint venture between ArcelorMittal and Nippon Steel was established in December 2019 with a current annual capacity of 10 million tonnes.

AM/NS India is an integrated flat carbon steel manufacturer - from iron ore to ready-to-market products. The company's manufacturing facilities comprise iron making, steelmaking, and downstream facilities spread across India. AM/NS India offers more than 300 grades of steel, conforming to international quality standards and ascribing to being a trusted and reliable provider of steel to customers in India and beyond. The products are accredited by Indian and global industry bodies. The company also operates significant iron ore pelletisation facilities, with the current annual capacity of 20 million tonnes.

### **Jindal Steel and Power Ltd (JSPL)**

Jindal Steel and Power Limited is one of the leaders in the Indian steel industry with a significant global presence. It operates the largest coal-based sponge iron plant in the world and has substantial presence in domestic power, mining and infrastructure sectors. The Company's geographical footprints span across Asia, Africa, Australia and the Middle East. The Company's product portfolio spans across the steel value chain from widest flat products to a whole range of long products and rails. JSPL has Blast Furnace with a volume of 4554 m<sup>3</sup>, 2.75 MTPA New Electric Oxygen Furnace (NEOF), advanced Plate Mill capable of producing up to 5-meter-wide plates, 9 MTPA Pelletisation complex, Syngasbased DRI plant and Coal Gasification Plant for steel-making based on Swadeshi coal and 1.5 MTPA Rebar Mill.

### **Jindal Stainless Ltd (JSL)**

Jindal Stainless Limited (JSL) is India's largest manufacturer of stainless steel with a capacity of 1.1 million tonnes per annum. It is located in the eastern coast of India in the state of Odisha. The manufacturing complex comprises 2,50,000 tonnes per annum of Ferro Alloys facilities with world class technology and equipments. The complex, equipped with captive power generation facility (264 MW), is eventually scalable up to 3.2 million tonnes per annum of stainless-steel production. A rail-linked Inland Container Depot (ICD) is also operated at the Jajpur facility which has a capacity of handling 4,500 large containers for moving goods and raw materials.

### **Jindal Stainless (Hisar) Ltd**

Jindal Stainless (Hisar) Limited (JSHL) is a fully integrated stainless steel plant with a capacity of 0.8 mtpa. It is also the world's largest producer of stainless-steel strips for razor blades and India's largest producer of coin blanks, serving the needs of Indian and international mints. JSHL's state-of-the-art Specialty Product Division (SPD) caters to the high-end precision and specialty stainless steel requirements of reputed Indian and international customers. The product range includes stainless steel slabs and blooms, hot rolled coils, strips, plates, coin blanks, precision strips and cold rolled coils.

### **ESL Steel Ltd**

ESL Steel Ltd (formerly known as Electrosteel Steels Limited) an Integrated Steel Producer, was incorporated in 2006 as a Public Limited Company with operations in Bokaro, Jharkhand, India. In June 2018, Vedanta Limited acquired the management control of ESL through the Corporate Insolvency Resolution Process. The Company has a current annual capacity of 1.88 million tonnes per annum.

The facility primarily consists of Sinter Plants, Coke Oven, Blast Furnaces, Oxygen Plant, Basic Oxygen Furnaces, Billet Caster, Wire Rod Mill, Bar Mill, Ductile Iron Pipes Plant and a Power Plant. The Company's product range includes TMT Bars, Wire Rods, Ductile Iron Pipes, Pig Iron and Billets. ESL is the first major steel producer to brand its wire rods.

## **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. In 2018 and 2019, 1,418 vessels were dismantled out of which 453 beached ships were dismantled in India. About 987 of these ships were sold for dirty and dangerous breaking on the beaches of South Asia.

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 our ship recycling industry as being environment friendly and safety conscious and would go a long way in consolidating India's position as the 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. During the year 2019-20, the Company recovered scrap to the tune of 48.59 lakh tonnes.

### 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-siliconisation 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 2019 was about 1,382 million tonnes which increased



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

(In tonnes)			
Country	2017	2018	2019
<b>World</b>	<b>1268000000</b>	<b>1358000000</b>	<b>1382000000</b>
China	713619300	779876300	809365000
India*	96313000	106823000	111574000
Japan	78329729	77327888	74907006
Russia	52100000	51800000	51200000
Korea, Rep of	47100000	47124000	47521000
Iran	21694000	28100000	31000000
Brazil	32392000	32765000	30901000
Germany	27816000	27271000	25400000 <sup>e</sup>
USA	22395000	24058000	22247000 <sup>e</sup>
Other countries	175972485	182508525	177767904

Figures rounded off ; (e) : Estimated

Source: BGS, World Mineral Production, 2015-2019

\* India's production of Pig Iron during 2017-18, 2018-19 and 2019-20 was 57,28,000 tonnes, 64,14,000 and 54,21,000 tonnes respectively.

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

marginally by 2 % as against 1,358 million tonnes in 2018. China (59%), India (8%), Japan (5%), Russia (4%), Republic of Korea (3%) and Iran, Brazil, Germany & USA (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 2019 increased by 2% to 1,854 million tonnes from 1,814 million tonnes in 2018. China was the top producer accounting for 54% of world's crude steel production, followed by India (6%), Japan & USA (5% each), Russia & Republic of Korea (4% each), and Germany, Turkey & Brazil (2% each). (Table-21).

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

(In tonnes)			
Country	2017	2018	2019
<b>World Total</b>	<b>1730000000</b>	<b>1814000000</b>	<b>1854000000</b>
China	870740900	929038400	996342000
India <sup>(d)</sup>	102338000	110920000	103600000
Japan	104661087	104318836	99284114
USA	81612000	86607400	87943000 <sup>e</sup>
Russia	72968168	74144495	73740141
Korea, Rep. of	71080000	72464000	71411000
Germany	43297000	42435000	39667000
Turkey	37524000	37311700	33700000
Brazil	34778000	35407000	32569000
Other countries	310905718	321241916	315245074

Figures rounded off; e : estimated

Source: BGS, World Mineral Production, 2015-2019,

\* India's production of crude steel during 2017-18, 2018-19 and 2019-20 was 10,31,31,000 tonnes, 11,09,21,000 and 10,91,37,000 tonnes, respectively.

(d) Years ended 31<sup>st</sup> March following that stated.

## Exports

In terms of value, exports of iron & steel (total) decreased slightly by 0.27 % to ₹1,01,996 crore in the year 2019-20 from 1,02,276 crore in the previous year. Iron & Steel exports in 2019-20 comprised mainly of Other Finished Steel, NES with ₹ 33,993 crore (33%), Semi-finished Steel (including Steel Ingots) with ₹ 32,068 crore (31%) and Finished Steel Including Cold Rolled Sheet with ₹ 30,926 crore (30%). Other items together accounted for the remaining 6 % exports. In terms of value, exports of iron & steel in the year 2019-20 were mainly to USA (12%), Vietnam & Nepal (8% each), UAE (7%), Italy (6%), Belgium & Germany (4% each) and Bangladesh, UK & Canada (3% each) (Tables- 22 to 32).

While in terms of quantity, the exports of Pig and Cast Iron including Spiegeleisen increased substantially by 27% to 440 thousand tonnes in 2019-20 from 347 thousand tonnes in the previous year. Exports were mainly to Bangladesh & China (41% each) followed by Thailand (5 %) and Nepal, Saudi Arabia, Bhutan, Japan & Malaysia (2 % each) (Table-30 to 33 )

However, in terms of quantity, the exports of slag (dross, etc.) in 2019-20 decreased by 11 % to about 132 thousand tonnes from 149 thousand tonnes in the previous year. Exports were mainly to Philippines (88%) and Nepal (11%) (Table-34).

### Imports

Like exports in terms of value, imports of iron & steel (total) in 2019-20 decreased marginally by 12% to ₹1,01,387 crore from ₹1,14,788 crore in the previous year. Iron & steel imports in 2019-20 comprised mainly of finished Steel Including Cold Rolled Sheet with ₹ 35,869 crore (35%), Scrap with ₹ 24,179 crore (24%), Other Finished Steel, NES with ₹ 20,249 crore (20%) , and Semi-finished Steel including Ingots with ₹ 14,606 crore (14%). Other items together accounted for the remaining 7% imports. In terms of value, the imports in 2019-20 were mainly from China & Republic of Korea (18% each), Japan (9 %), USA & Indonesia (5% each), UAE (4%), Germany, Singapore & UK (3% each ), and Malaysia (2%) (Tables- 35 to 45) .

Similarly, in terms of quantity, the imports of Pig and Cast Iron (including Spiegeleisen) decreased substantially by 35% to 48 thousand tonnes in 2019-20 from 73 thousand tonnes in the previous year. Imports were mainly from China (21%), South Africa (15%), Germany (9%), Russia (7%), France (5%), Italy & USA (3% each) and Belgium (2%) (Table-46).

In terms of quantity, the imports of slag decreased by 53 % to 65 thousand tonnes in 2019-20 from 136 thousand tonnes in the previous year. Imports were mainly from Rep. of Korea (51%), Japan (47%) and Bhutan (2%) (Table-47).

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

	2018-19 (R)		2019-20(P)	
	Qty (**)	Value (₹'000)	Qty (**)	Value (₹'000)
<b>All Countries</b>	<b>**</b>	<b>1022758509</b>	<b>**</b>	<b>1019955643</b>
USA	**	130668959	**	121911914
Vietnam	**	35576543	**	78635320
Nepal	**	87745087	**	77685550
UAE	**	66396628	**	67564371
Italy	**	69623930	**	63074302
Belgium	**	49166143	**	38867040
Germany	**	40943191	**	36280244
Bangladesh	**	22850212	**	28104477
UK	**	28703189	**	26560509
Canada	**	19459947	**	26487001
Other countries**	**	471624680	**	454784916

*Figures rounded off*

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>4523368</b>	<b>326116006</b>	<b>4631379</b>	<b>309262157</b>
Nepal	1140049	40181240	1119810	33710117
USA	252491	36841362	231111	31814835
Belgium	358288	27109255	248974	20518717
UAE	226195	17545822	253654	18890305
Italy	192468	16497767	217253	17019822
Canada	85459	8403654	166103	16277444
Indonesia	206856	12917541	266528	12813665
Spain	121853	10747343	123589	10447456
Saudi Arabia	17389	4145462	97556	8620404
UK	90467	7060719	114274	7308367
Other countries	1831852	144665842	1792527	131841024

*Figures rounded off*

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>152597</b>	<b>25449317</b>	<b>159615</b>	<b>23911257</b>
USA	22596	4916455	19002	3757083
Netherlands	21733	3600484	16630	2719757
Russia	6676	1412720	7682	1457078
Turkey	7572	1338156	8419	1433261
France	2026	363704	7500	1254419
UAE	7461	700503	8506	919735
Italy	3656	751320	4207	841869
Germany	3862	845151	3953	809174
Bangladesh Pr	9645	666422	14104	805944
Korea, Rep. of	3384	753264	3354	733631
Other countries	63985	10101139	66257	9179305

*Figures rounded off*

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	**	<b>351532808</b>	**	<b>339926303</b>
USA	**	81202450	**	80606412
Germany	**	25609517	**	23399609
UAE	**	22924458	**	18881066
UK	**	18575853	**	17271516
Netherlands	**	10166011	**	9839791
Canada	**	9077816	**	8786255
Italy	**	8873095	**	9362605
Nepal	**	7223303	**	7237160
Saudi Arabia	**	7196841	**	7663138
France	**	6964907	**	6461257
Other countries	**	153718557	**	150417492

*Figures rounded off*

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>5979824</b>	<b>293653659</b>	<b>7957579</b>	<b>320684612</b>
Vietnam Soc Rep	<b>837121</b>	<b>31718647</b>	<b>2356857</b>	<b>75596958</b>
Italy	938912	41453916	911048	35517210
Nepal	930030	37486919	928220	32742552
UAE	580408	24834089	742931	28015348
Belgium	341092	17196766	250702	12220300
Sri Lanka	170180	6519563	302370	9835173
Malaysia	229764	10082489	249524	9101657
Taiwan	50496	2938570	237989	8514153
Germany	48783	9108323	43102	7848276
Spain	258724	12599921	179277	7433835
Other countries	**	99714456	**	93859149

*Figures rounded off*

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

Country	2018-19 (R)		2019-20(P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>312</b>	<b>21811</b>	<b>486</b>	<b>29001</b>
USA	61	12785	48	7079
Saudi Arabia	44	2151	121	5743
UAE	2	233	126	5567
Nigeria	28	1595	57	2857
Taiwan	-	-	75	2849
Portugal	-	-	14	2287
Bangladesh Pr	26	1691	23	1316
Nepal	116	939	11	539
Kuwait	20	1073	10	531
Qatar	1	24	1	79
Other countries	14	1321	1	153

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>128</b>	<b>36775</b>	<b>67</b>	<b>9067</b>
Iran	-	-	10	3722
Sweden	-	-	19	1972
China	92	9629	11	1070
Turkey	1	751	1	969
Tanzania	-	-	24	642
USA	-	-	++	265
Indonesia	++	123	1	262
Nepal	-	-	2	120
Austria	-	-	++	29
UK	34	25356	++	13
Other countries	1	915	++	3

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>8490</b>	<b>648537</b>	<b>11880</b>	<b>688323</b>
Sweden	2069	329860	2301	355841
Bhutan	1326	38828	5664	139378
Brazil	276	24444	384	39738
UAE	136	6457	59	22904
Singapore	656	14377	575	19101
Germany	253	36405	155	18395
USA	327	21635	731	14755
Malaysia	64	5334	414	11820
France	44	13523	21	8436
Tanzania	260	8406	287	8316
Other countries	3079	149268	1289	49638

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>686152</b>	<b>15725353</b>	<b>898476</b>	<b>17286760</b>
Bangladesh	406970	9541147	433009	8494481
Bhutan	107588	2305903	193604	3585642
Nepal	110678	2339719	181060	3217577
Malaysia	40181	936732	56498	1205773
Sudan	2545	59177	15954	314529
Kenya	7437	177751	4353	89611
USA	755	94015	482	75013
Madagascar	3943	94038	3144	69212
Sri Lanka	1543	35496	2855	58096
Ethiopia	999	24077	2160	50694
Other countries	3512	117298	5356	126133

*Figures rounded off*

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>12146</b>	<b>4356976</b>	<b>8181</b>	<b>3679492</b>
France	226	696396	174	812883
USA	2346	617261	1331	357090
UAE	648	195039	715	241576
Egypt	100	29049	446	224529
Saudi Arabia	562	231282	569	213211
Nigeria	510	243262	704	205757
Italy	747	265933	417	162272
Thailand	61	112985	43	138864
Bangladesh Pr	267	47765	155	133340
Kuwait	583	155482	204	66870
Other countries	6097	1762524	3423	1123102

Figures rounded off

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>88157</b>	<b>5217266</b>	<b>84899</b>	<b>4478669</b>
USA	12332	779544	12128	709805
Brazil	471	26587	12744	635548
UAE	3704	188877	11897	587417
Turkey	8658	465752	8969	459192
Belgium	5074	324287	3222	234084
Puerto Rico	3392	185068	4380	212365
Italy	34398	1781896	3950	170514
Sri Lanka	1930	122944	1930	158076
Qatar	1354	66532	3580	143142
Canada	1105	63685	2116	109481
Other countries	15740	1212094	19984	1059045

Figures rounded off

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>346760</b>	<b>10053240</b>	<b>440440</b>	<b>10737677</b>
Bangladesh	140296	3703675	180832	4257535
China	11984	124233	181910	3957345
Thailand	96262	2577678	22850	580598
Japan	18873	1020308	7349	296504
Nepal	6609	177600	10306	258802
Saudi Arabia	1512	52097	8303	237652
Malaysia	18074	459372	6910	199143
Bhutan	1974	60100	7466	191450
USA	1763	223655	1443	169469
Pakistan	9811	295326	3025	90395
Other countries	39602	1359195	10045	498784

Figures rounded off

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>148859</b>	<b>507380</b>	<b>131880</b>	<b>702418</b>
Philippines	38500	144283	115500	638112
Nepal	43722	126307	14654	54536
Bhutan	4529	21195	1111	5481
Angola	638	4568	347	2328
Qatar	593	3879	140	849
South Africa	-	-	102	708
Tanzania	-	-	25	374
Oman	-	-	1	19
Senegal	3	16	++	9
UK	-	-	++	1
Other countries	60874	207132	-	-

*Figures rounded off*

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (**)	Value (₹'000)	Qty (**)	Value (₹'000)
<b>All Countries</b>	<b>**</b>	<b>1147881239</b>	<b>**</b>	<b>1013874243</b>
China	**	207362514	**	180714156
Korea, Rep. of	**	207345635	**	180437238
Japan	**	112951674	**	94345438
USA	**	52541917	**	53373819
Indonesia	**	23016255	**	47835759
UAE	**	70424154	**	43942880
Germany	**	44579325	**	35006571
Singapore	**	39147751	**	33720103
UK	**	34796549	**	29015563
Malaysia	**	23885535	**	25045554
Other countries	**	331829930	**	290437163

*Figures rounded off*

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>4246628</b>	<b>377203641</b>	<b>4024327</b>	<b>358688025</b>
China	1205729	101167628	1150796	93590513
Korea, Rep. of	918541	73234874	891673	69791424
Japan	756543	65238876	608523	53468342
Indonesia	79335	10784255	284371	35301906
Belgium	127900	10111899	147367	11054117
Germany	75000	12425271	61764	8654391
Italy	47402	5742756	69108	7847297
USA	80401	9254405	67343	7766616
Vietnam	186725	13006157	70292	6089715
Malaysia	63211	6100709	60207	5490371
Other countries	705841	70136810	612884	59633333

Figures rounded off

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>267802</b>	<b>25937468</b>	<b>185204</b>	<b>17301074</b>
China	100126	8667378	62780	5454971
Malaysia	34761	2628228	33802	2493740
Korea, Rep. of	36697	3299266	25190	2257899
Japan	9618	2591839	6833	1886422
Nepal	22733	1476290	12246	687681
Vietnam	10407	816087	8355	646042
Thailand	15093	1124289	7568	576180
Germany	1701	849783	1076	565554
Indonesia	5558	563599	4020	392142
Italy	3153	874846	2874	353168
Other countries	27954	3045863	20459	1987273

Figures rounded off

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (**)	Value (₹'000)	Qty (**)	Value (₹'000)
<b>All Countries</b>	<b>**</b>	<b>226803143</b>	<b>**</b>	<b>202486027</b>
China	**	63612948	**	62995141
Korea, Rep. of	**	17887701	**	17240479
Germany	**	20338781	**	15105227
Japan	**	16403665	**	13631683
USA	**	12643771	**	12114075
Thailand	**	9090653	**	7925923
Malaysia	**	4534814	**	7903984
Italy	**	10083666	**	7745661
Singapore	**	8883055	**	7175303
Vietnam	**	3696625	**	5212405
Other countries	**	59627464	**	45436148

Figures rounded off

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>4130620</b>	<b>205456000</b>	<b>3008461</b>	<b>146062141</b>
Korea, Rep. of	1995588	97040567	1687139	76803493
Japan	474130	24098091	465238	20727132
China	431553	22059883	214065	11095011
Indonesia	150040	6812717	162022	7259929
Singapore	91910	4045671	129842	5174024
Ukraine	167972	6848104	107094	3919952
Italy	47842	3605787	41821	3412478
Sweden	13505	3428382	12299	2822222
UAE	209848	8138690	40877	1987047
Germany	15156	2060969	10886	1796550
Other countries	533077	27317139	137178	11064304

Figures rounded off

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>23478</b>	<b>1268099</b>	<b>20530</b>	<b>1083768</b>
France	6610	377777	4927	265210
China	8222	364754	5359	245998
South Africa	2475	121404	3082	146526
Spain	1404	81773	1911	105858
Germany	2268	158323	1400	94234
Thailand	149	12181	1483	74508
Taiwan	1065	61119	682	44720
Russia	48	2346	459	20772
UK	131	12364	352	19338
Korea, Rep. of	286	13600	381	19134
Other countries	821	62458	494	47471

Figures rounded off

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>4663</b>	<b>840713</b>	<b>3660</b>	<b>579710</b>
UK	334	247743	233	156206
Canada	2453	185877	2133	109851
China	313	66019	337	73529
Germany	1024	118419	587	63044
Japan	8	35208	18	59672
USA	408	131058	119	45003
Singapore	9	34651	8	29873
Netherlands	-	-	39	14990
Belgium	14	9164	26	12237
Sweden	70	8336	106	11800
Other countries	31	4238	55	3506

Figures rounded off



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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>6883783</b>	<b>256694753</b>	<b>6776686</b>	<b>241791677</b>
UAE	1252946	40293608	1039544	32190630
USA	717645	28342970	847122	31637831
UK	869574	25779560	776918	20853101
Singapore	538931	20596588	439295	15847842
Netherlands	209663	11922946	213093	11641595
South Africa	409174	10576666	419402	9539231
Malaysia	168163	9851637	164641	9021681
Canada	136731	7774453	178286	8625581
Belgium	162648	5321853	245153	7576138
Germany	129339	5677023	141929	6877873
Other countries	2288967	90557449	2311304	87980175

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>49064</b>	<b>1000243</b>	<b>65243</b>	<b>1263296</b>
UAE	26014	589952	27208	634131
South Africa	15182	249715	18089	325247
Egypt	4265	70467	12458	185372
Bahrain Is	2530	63920	4492	58188
Qatar	-	-	1769	39527
Iran	-	-	972	17015
Russia	-	-	106	2294
Libya	-	-	95	807
Bhutan	-	-	55	349
Denmark	-	-	++	197
Other countries	1073	26188	++	169

*Figures rounded off*

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>97280</b>	<b>15618954</b>	<b>71956</b>	<b>13132631</b>
China	44604	6749947	37367	4916345
Vietnam	17408	3118710	12643	2154381
Russia	6	16304	5350	1793562
Japan	3292	1301460	2486	1401790
Italy	4395	712725	4441	717147
UK	412	80375	896	355981
Spain	22	5698	774	330512
USA	1857	326709	1493	269203
Belgium	343	119141	80	198553
Brazil	12304	1240318	509	159561
Other countries	12637	1947566	5917	835595

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>639656</b>	<b>37058227</b>	<b>527398</b>	<b>31485894</b>
Korea, Rep. of	194437	9877500	192200	9128183
Vietnam	95959	5854324	95309	5777245
Taiwan	190374	8019105	126065	5238717
China	58370	4498865	27672	2318581
Mexico	-	-	15736	1997372
Germany	44374	2745681	26830	1768503
Spain	3	809	879	1203706
Belgium	10504	842802	8524	645863
France	10760	942112	7467	606578
Japan	7732	1774646	2552	531901
Other countries	27143	2502381	24162	2269243

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>73260</b>	<b>5175321</b>	<b>47748</b>	<b>3618538</b>
China	15174	912906	9827	748264
Germany	10684	1105065	4395	458267
USA	1557	226963	1591	236180
UK	361	230008	304	223456
Italy	1851	271733	1629	210876
South Africa	8270	304050	7186	197977
Russia	8778	350554	3221	181237
Japan	464	253533	278	174945
France	3497	244903	2152	150999
Belgium	477	68323	940	132508
Other countries	22149	1207283	16225	903827

*Figures rounded off*

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

Country	2018-19 (R)		2019-20 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>136421</b>	<b>1131820</b>	<b>64675</b>	<b>527863</b>
Korea, Rep. of	49812	367066	33193	320320
Japan	84143	749041	30235	195155
Bhutan	116	1145	1243	11917
Spain	-	-	4	471
Hong Kong	2350	14568	-	-

*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. Rapid rise in production has resulted in India becoming the 2nd largest producer of crude steel during 2018 and 2019, from its 3rd largest status in 2017. The country was also the largest producer of Sponge Iron or DRI in the world and the 2nd largest finished steel consumer in the world after China & USA in 2019, based on rankings released by the World Steel Association.

In a de-regulated, liberalised economic/market scenario like India the Government's role is that of a facilitator which lays down the policy guidelines and establishes the institutional mechanism/structure for creating conducive environment for improving efficiency and performance of the Steel Sector. In this role, 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 3<sup>rd</sup> largest consumer of total finished steel and the largest DRI producer during the year, as per ranking released by World Steel Association.

But despite all that, with economic growth at home, showed signs of weakening in 2018-19 due to demand crisis which reiterated that basic, fundamental concept - the need to develop a strong domestic market and adopt measures to sharpen competitiveness in a global market. The hangover of weakness was carried forward in 2019-20 when domestic demand further shifted into a slowdown mode following similar trends in leading end-use markets in particular and economy in general. The only and major silver lining that marked 2019-20 was India's finished steel consumption edged past the 100 million tonnes milestone mark for the first time in its long history of evolution.