

COPPER



Indian Minerals Yearbook 2022

(Part- II :Metals and Alloys)

61st Edition

COPPER

(ADVANCE RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

Indira Bhavan, Civil Lines,
NAGPUR – 440 001

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

April, 2024

5 Copper

Copper is a soft, malleable and ductile metal with very high thermal and electrical conductivity. Copper is one of the few metals that occurs in nature in directly usable metallic form (native metals) and is an important non-ferrous base metal having wide industrial applications, ranging from defence, space programme, railways, power cables, mint, telecommunication cables, etc. India is not self-sufficient in the production of copper ore. In addition to domestic production of ore and concentrates, India imports copper concentrates for its smelters. The domestic demand for copper and its alloys is met through domestic production, recycling of scrap and by imports.

Hindustan Copper Limited (HCL), a Public Sector Undertaking, is the only integrated Company in the country that is involved in mining & beneficiation of ore and is engaged in smelting, refining and casting of refined copper.

Hindalco Industries Ltd and Vedanta Limited are the major copper producers in the Private Sector that mainly rely on imported copper concentrates. These companies own copper mines in other countries.

RESERVES/ RESOURCES

The total reserves/resources of copper ore as on 1.4.2020 as per NMI database based on UNFC system are estimated at 1.66 billion tonnes. Of these, 163.89 million tonnes (9.87%) fall under 'Reserves category' while the balance 1.50 billion tonnes (90.13%) are placed under 'Remaining Resources' category. Gradewise there are no reserves with 1.85% or more copper grade. However, 163.89 million tonnes reserves fall under 1% to below 1.85% Cu grade. Of the total ore resources, 8.28 million tonnes (0.49%) comprise ore containing 1.85% Cu or more and 587 million tonnes (35.33%) resources fall under 1% to below 1.85% Cu grade.

The total metal content out of the total copper

resources is 12.20 million tonnes of which 2.16 million tonnes constitute reserves.

Largest reserves/resources of copper ore to the tune of 868 million tonnes (52.25%) are in the State of Rajasthan followed by Madhya Pradesh with 387 million tonnes (23.28%) and Jharkhand with 251 million tonnes (15.14%). Copper reserves/resources in Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Meghalaya, Nagaland, Odisha, Sikkim, Tamil Nadu, Telangana, Uttarakhand and West Bengal accounted for the remaining 9.33% of the total All India resources (Table-1).

EXPLORATION & DEVELOPMENT

The exploration and development details, if any, are covered in the Review on "Exploration & Development" under "General Reviews".

PRODUCTION & PRICES

Copper Ore and Concentrates

The production of copper ore at 3.56 million tonnes in 2021-22 increased by 9% as compared to that in the previous year.

The metal content in the ore produced in 2021-22 works out to 27,622 tonnes as against 25,623 tonnes in previous year. During the year under review, 3.60 million tonnes of ore was treated for obtaining copper concentrates as against 3.44 million tonnes in previous year.

Production of copper concentrates at 1,14,421 tonnes in 2021-22 increased by about 5% as compared to that in the previous year. Madhya Pradesh was the leading producer of copper concentrates, accounting for about 57% of the production during 2021-22, followed by Rajasthan (43%). The number of reporting mines was 5 in both the years, i.e., 2020-21 and 2021-22 (Tables-2 to 6).

COPPER

Table - 1: Reserves/Resources of Copper as on 1.4.2020 (P)
(By Grades/States)

(In '000 tonnes)

Grade/State	Reserves				Remaining Resources						Total Resources (A+B)		
	Proved STD111	Probable STD121	Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334		Total (B)	
					STD221	STD222							
All India: Total													
Ore	128267	20045	15580	163891	83102	111376	41368	135884	340902	778987	5360	1496979	1660870
Metal	1664.12	313.64	183.81	2161.57	873.59	428.09	246.48	1655.35	2748.95	4051.37	31.69	10035.52	12197.09
By Grades													
Ore with 1.85% & Above Cu	-	-	-	-	-	62	-	2520	2645	2186	870	8283	8283
Ore With 1.00 % to below 1.85 % Cu	128267	20045	15580	163891	69113	7372	14977	86623	112772	132046	-	422903	586795
Ore with (+) 0.50% to below 1.00% Cu	-	-	-	-	3070	103942	11596	46741	94495	534442	3620	797906	797906
Ore with (-) 0.50% Cu	-	-	-	-	10919	-	14795	-	130990	110312	870	267886	267886
Metal	1664.12	313.64	183.81	2161.57	873.59	428.09	246.48	1655.35	2748.95	4051.37	31.69	10035.52	12197.09
By States													
Andhra Pradesh													
Ore	-	-	-	-	686	-	105	-	5791	1000	-	7582	7582
Metal	-	-	-	-	6.88	-	1.05	-	97.45	8.32	-	113.7	113.7
Arunachal Pradesh													
Ore	-	-	-	-	-	-	-	-	-	-	10	10	10
Metal	-	-	-	-	-	-	-	-	-	-	0.02	0.02	0.02
Gujarat													
Ore	-	-	-	-	2013	2371	969	129	-	7131	-	12613	12613
Metal	-	-	-	-	31.2	35.8	19.67	0.69	-	113.38	-	200.74	200.74
Haryana													
Ore	-	-	-	-	-	2230	-	-	20900	30686	-	53816	53816
Metal	-	-	-	-	-	11.82	-	-	73.19	94	-	179.01	179.01
Jharkhand													
Ore	6150	-	3000	9150	10445	2804	3988	87330	99890	37855	-	242313	251463
Metal	72.08	-	35.37	107.45	115.59	29.98	45.9	1002.92	1023.12	454.7	-	2672.21	2779.66
Karnataka													
Ore	-	-	-	-	867	1301	3114	1750	6833	27634	-	41499	41499
Metal	-	-	-	-	-	-	15.28	22	65.77	142.81	-	245.86	245.86
Madhya Pradesh													
Ore	107773	-	12580	120353	55777	100411	8824	23062	300	77938	-	266312	386665
Metal	1422.6	-	148.44	1571.04	686.05	321.31	27.35	207.45	9.78	843.88	-	2095.82	3666.86

(Contd)

COPPER

Table - 1: (Concl'd)

Grade/State	Reserves				Remaining Resources						Total Resources (A+B)		
	Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	Total (B)
		STD121	STD122			STD221	STD222						
Maharashtra													
Ore	-	-	-	-	-	-	5831	11774	150	17755	17755	17755	
Metal	-	-	-	-	-	-	58.36	99.18	0.54	158.08	158.08	158.08	
Meghalaya													
Ore	-	-	-	-	-	-	880	-	-	-	-	880	
Metal	-	-	-	-	-	-	9	-	-	-	-	9.00	
Nagaland													
Ore	-	-	-	-	-	-	-	2000	-	2000	-	2000	
Metal	-	-	-	-	-	-	-	15.00	-	15.00	-	15.00	
Odisha													
Ore	-	-	-	-	-	-	2306	8345	-	11991	-	11991	
Metal	-	-	-	-	-	-	20.63	56.26	-	97.03	-	97.03	
Rajasthan													
Ore	14344	20045	-	34388	13314	1148	24304	18603	197078	573814	5200	833461	
Metal	169.44	313.64	-	483.08	33.87	12.2	136.32	338.66	1385.88	2214.46	31.13	4152.52	
Sikkim													
Ore	-	-	-	-	-	445	63	300	-	150	-	958	
Metal	-	-	-	-	-	7.86	0.91	8.47	-	4.23	-	21.47	
Tamil Nadu													
Ore	-	-	-	-	-	-	-	200	590	-	-	790	
Metal	-	-	-	-	-	-	-	1.08	2.73	-	-	3.81	
Telangana													
Ore	-	-	-	-	-	666	-	-	-	-	-	666	
Metal	-	-	-	-	-	9.12	-	-	-	-	-	9.12	
Uttarakhand													
Ore	-	-	-	-	-	-	-	3170	390	660	-	4220	
Metal	-	-	-	-	-	-	-	53.45	1.44	5.15	-	60.04	
West Bengal													
Ore	-	-	-	-	-	-	-	-	113	-	-	113	
Metal	-	-	-	-	-	-	-	-	2.09	-	-	2.09	

Figures rounded off

Grade Analysis

During the year 2021-22, the average copper content in the ore produced was 0.77% Cu as against 0.78% in the previous year. All India average metal content of ore treated during the year 2021-22 works out to 0.77% Cu which is same as previous year. The copper content in the ore treated varies from State to State. The average metal content in the concentrate produced works out to 23.13% Cu in 2021-22 as against 23.12% Cu in the previous year.

The average daily employment of labour in copper mines in 2021-22 was 2,931 as against 2,829 in the preceding year.

Table – 2: Principal Producer of Copper Concentrates, 2021-22

Name and address of the producer	Location of mine	
	State	District
Hindustan Copper Ltd, Tamra Bhavan, 1, Ashutosh Choudhury Avenue, Kolkata – 700 019.	Madhya Pradesh	Balaghat
	Rajasthan	Jhunjhunu

Copper Metal

Hindustan Copper Ltd produces copper metal from the ore produced at their captive mines. Vedanta Limited (formerly known as Sterlite Industries (India) Ltd) and Hindalco Industries Ltd produce copper metal from imported copper concentrates (Table-7).

The production of copper blister was reported as nil in 2021-22 while copper continuous cast wire rods registered an increase of 3% in 2021-22 as compared to the previous year. The production of copper cathodes increased by 33%. Production of copper electrolytic wire bars was not reported for more than eight years (Tables-8 to 11). Prices of copper are furnished in the General Review on 'Prices'.

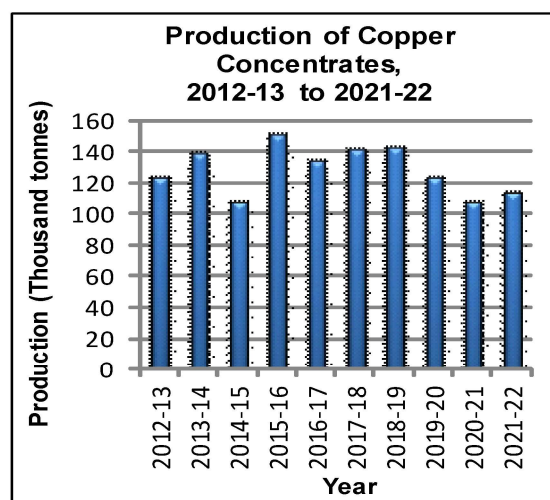


Table – 3: Production of Copper Ore, 2020-21 and 2021-22 (By States)

State	2020-21			2021-22 (P)		
	Ore produced	Cu%	Metal content	Ore produced	Cu%	Metal content
India	3272915	0.78	25623	3569632	0.77	27622
Jharkhand	41772	0.65	272	25834	0.81	209
Madhya Pradesh	2239152	0.76	17114	2442459	0.74	18105
Rajasthan	991991	0.83	8238	1101339	0.85	9308

(P): Provisional

COPPER

**Table – 4: Copper Ore Treated, 2020-21 and 2021-22
(By States)**

(In tonnes)

State	2020-21			2021-22 (P)		
	Ore treated	Cu%	Metal content	Ore treated	Cu%	Metal content
India	3439102	0.77	26552	3604690	0.77	27709
Jharkhand	47277	0.65	307	-	-	-
Madhya Pradesh	2384025	0.75	17880	2486190	0.73	18261
Rajasthan	1007800	0.83	8365	1118500	0.84	9448

(P): Provisional

**Table – 5: Production of Copper Concentrates, 2019-20 to 2021-22
(By States)**

(Quantity in tonnes; Value in ₹'000)

State	2019-20		2020-21		2021-22 (P)	
	Quantity	Value	Quantity	Value	Quantity	Value
India	124586	8448405	108718	8533354	114421	10951112
Jharkhand	7660	604135	1208	23707	-	-
Madhya Pradesh	65094	4750125	64920	5137695	65022	5487137
Rajasthan	51832	3094145	42590	3371952	49399	5463975

(P): Provisional

**Table – 6: Production of Copper Concentrates, 2020-21 and 2021-22
(By Sector/States/Districts)**

(Quantity in tonnes; Value in ₹'000)

State/District	2020-21			2021-22 (P)		
	No. of mines	Quantity	Value	No. of mines	Quantity	Value
India	5	108718	8533354	5	114421	10951112
Public Sector	5	108718	8533354	5	114421	10951112
Jharkhand	2	1208	23707	2	-	-
Singhbhum (East)	2	1208	23707	2	-	-
Madhya Pradesh	1	64920	5137695	1	65022	5487137
Balaghat	1	64920	5137695	1	65022	5487137
Rajasthan	2	42590	3371952	2	49399	5463975
Jhunjhunu	2	42590	3371952	2	49399	5463975

(P): Provisional

COPPER

Table – 7: Producers of Copper Metal, 2021-22

Name and address of the producer	Location of the plant	
	State	District
Hindustan Copper Ltd, Tamra Bhavan, 1, Ashutosh Chowdhury Avenue, Post Box No.10224, Kolkata-700 019, West Bengal.	Jharkhand	Singhbhum (East)
	Maharashtra	Raigad
Hindalco Industries Ltd., Century Bhawan, Dr. Annie Besant Road, Mumbai –400 030, Maharashtra.	Gujarat	Bharuch
Vedanta Ltd., Sesa Ghor, 20 EDC Complex, Patto, Panaji - 403 001, Goa.	Tamil Nadu	Thoothukudi
	Dadra & Nagar Haveli	Chinchpada (Silvassa)

Table – 8: Production of Copper Metal, 2019-20 to 2021-22

(In tonnes)

Year	Copper blister	Copper cathodes	Copper Electrolytic Wirebars	Copper CCWR
2019-20	3997	408003	-	349475
2020-21	0	363609	-	341563
2021-22 (P)	0	483994	-	351464

(P): Provisional

**Table – 9: Production of Copper (Blister), 2020-21 and 2021-22
(By State/Plant)**

(Quantity in tonnes; Value in ₹'000)

State	Plant	2020-21		2021-22 (P)	
		Quantity	Value	Quantity	Value
India		0	N.A.	0	N.A.
Jharkhand	Surda ICC	0	N.A.	0	N.A.

(P): Provisional

**Table – 10: Production of Copper (CCWR), 2020-21 and 2021-22
(By States/Plants)**

(Quantity in tonnes; Value in ₹'000)

State	Plant	2020-21		2021-22 (P)	
		Quantity	Value	Quantity	Value
India		341563	188445400	351464	261303186
Gujarat	Hindalco	219171	122004100	225017	168737600
Maharashtra	HCL Talaja	0	0	0	0
Tamil Nadu	Vedanta Ltd	0	0	0	0
Dadra & Nagar Haveli	Vedanta Ltd	122392	66441300	126447	92565586

(P): Provisional

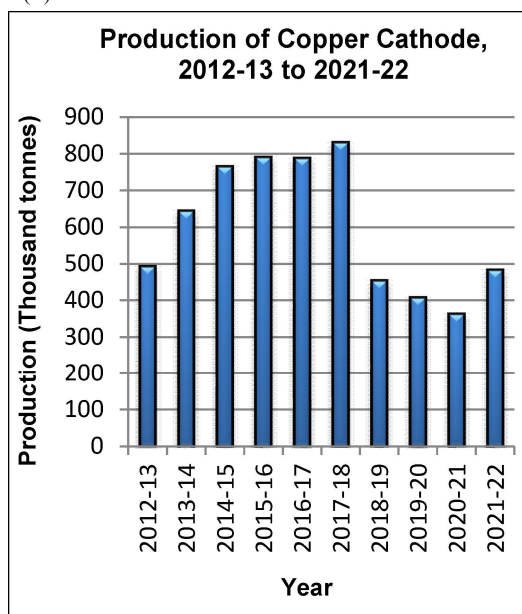
COPPER

Table – 11: Production of Copper (Cathodes), 2020-21 and 2021-22 (By States/Plants)

(Quantity in tonnes; Value in ₹'000)

State	Plant	2020-21		2021-22 (P)	
		Quantity	Value	Quantity	Value
India		363609	190616200	483994	363507671
Gujarat	Hindalco	262174	136047000	358889	27263400
Jharkhand	Surda ICC	-	-	-	-
Tamil Nadu	Vedanta Ltd	-	-	-	-
Dadra & Nagar Haveli	Vedanta Ltd	101435	54569200	125105	90875271

(P): Provisional



MINING & MILLING

HCL's mines and plants are spread across five operating units- the Indian Copper Complex (ICC) at Ghatsila in Jharkhand, the Khetri Copper Complex (KCC) at Khetrinagar in Rajasthan, Malanjkhand Copper Project (MCP) at Malanjkhand in Madhya Pradesh, Taloja Copper Project (TCP) at Taloja in Maharashtra and Gujarat Copper Project (GCP) at Jhagadia in Gujarat. HCL operates four underground mines and one opencast mine, with a combined ore production capacity of about 3.5 million tonnes per year.

Hindustan Copper Ltd

Hindustan Copper Limited, established in 1967 is a Central Public Sector undertaking under the administrative control of Ministry of Mines, Government of India. The registered office of the Company is situated in Kolkata. The principal activities of the company are exploration, exploitation, mining of copper and copper ore including beneficiation of minerals, smelting and refining. The Company has copper mines & concentrator plants at Malanjkhand Copper Project (MCP) in Madhya Pradesh, Khetri Copper Complex (KCC) in Rajasthan and Indian Copper Complex (ICC), Ghatsila in Jharkhand. The Company has facilities of Smelter & Refinery plant at ICC and Gujarat Copper Project (GCP), Gujarat for production of copper cathode and thereafter conversion of cathode to Copper wire rod at Taloja Copper Project, Taloja (TCP), Maharashtra. The Company is primarily engaged in the business of mining and processing of copper ore, which has been grouped as a single segment in accordance with the 'Ind AS 108 - Operating Segments'. The Company is listed with BSE Ltd and National Stock Exchange of India Ltd.

HCL during FY 2020-21 had envisaged to enhance the ore production capacity from the current level of 4.24 million tonnes per annum (MTPA) to 12.20 MTPA by FY 2028-29. Status of different mine expansion projects is as under:

1. Malanjkhand Mine (Madhya Pradesh)

The proposed expansion of MCP will augment the ore production capacity from 2.5 MTPA to 5.0 MTPA by developing an underground mine below the existing open cast mine. The earlier awarded

COPPER

contract for development of underground mine at MCP had ended on 28.12.2021. To complete the residual work of underground mine construction, a consultancy contract was entrusted on M/s MECON, a reputed CPSE Consultancy Organization, for estimation of value of residual work, preparation of NIT document and evaluation of tenders which have been divided in multiple parts (Mine Excavation at North Side, Mine Excavation at South Side, Shaft Furnishing, Men & Material Hoisting system, Crushing & Pumping system, Power system, Main Mechanical Ventilator) to complete the work in an efficient manner. Out of the above multiple parts, the contracts for completion of mine development work at North & South side have been awarded and started in FY 2022-23. For production of copper ore from underground mine at MCP, a contract for Development, Production Drilling and Ore Production had been awarded to M/s SMS Ltd led consortium in July, 2019. M/s SMS Ltd has started production of copper ore from stope since July, 2022 and majorly completed the mobilisation of production equipment at the site. Further, the Company has also awarded contract for construction of 3.00 MTPA Paste Fill Plant for back-filling the voids of Underground mine at MCP to the EPC contractor, M/s Shapoorji Pallonji and Company Private Ltd and the construction work has already commenced at the site.

2. Khetri & Kolihan Mine (Rajasthan)

The proposed expansion of mines at Western Sector would increase ore production capacity from existing 1.0 MTPA to 3.0 MTPA. Mine-wise status is as under:

a) Kolihan Mine: Shaft sinking and creation of ore handling facilities below 0 mRL (meter Reduced Level) has been undertaken to augment the production capacity to 1.5 MTPA for which EC is already in place. The study report of Geophysical Exploration work, taken up in FY 2021-22, has shown possible extension of ore body upto -300mRL and the validation drilling is being carried out to confirm the prediction as well as for assessment of grade of ore as per standard practice. Based on outcome of

the above, further activities like G2 level Exploration and Mine Planning will be taken up.

b) Khetri mine: Execution of the earlier awarded contract to augment ore production capacity at the mine from 0.5 MTPA to 1.5 MTPA through deepening of existing shafts and other related activities, could not be completed due to extremely bad ground / fault zone encountered and as a result, the contract had to be terminated. To sustain the ore production from mine, another contract has been awarded for conversion of track mining to trackless mining at 0mRL and below for which contract has been awarded and the work has already been commenced. For the Banwas deposit of Khetri Mine, the Company had during FY 2016-17 appointed contractual agency for ore production. The contractual agency has produced 3,75,689 tonnes of ore in FY 2022-23 and the target production is envisaged to be achieved by FY 2023-24.

3. Surda Mine (Jharkhand)

The plan envisages sinking of shaft, deepening of various winzes to increase production capacity from 0.4 MTPA to 0.9 MTPA in Surda mine. The validity of Surda Mining Lease has been extended till 31.3.2040 by the Government of Jharkhand. EC was granted by the Ministry of Environment, Forest and Climate Change (MoEF&CC), Delhi for 0.9 MTPA ore production over 323.16 ha on 30.5.2022. Subsequently, during execution of Mining Lease deed, it was intimated by DMG, Ranchi on 29.8.2022 to submit amended EC over 388.68 ha. Accordingly, the EC amendment application was made and MoEF&CC, Delhi recommended the amendment subject to grant of Forest Clearance (FC) over balance 65.52 ha forest area within the mining lease.

The present status of forest clearance of Surda Mining Lease is that PCCF (Nodal), Forest Department, Government of Jharkhand has recommended the proposal for Stage-I forest clearance to the State Government of Jharkhand which is pending since 13.4.2023.

4. Re-opening of Closed Mines at Indian Copper Complex (ICC) Ghatsila (Jharkhand)

COPPER

The Company has initiated action to re-open the closed mines, development of new underground mine at Singhbhum Copper Belt of ICC namely, Kendadih and Rakha mines. Mine-wise status is given below:

a) Kendadih Mine: Kendadih mine was reopened in December, 2017 with commissioning of winders after completion of dewatering of the mine. Production contract has been awarded on 6.7.2021. Development activities and ore production were started, but the performance of the contract was not at all satisfactory as a result the said contract has been terminated on 25.05.2023.

b) Rakha Mine: Rakha Mining Lease has expired on 28.8.2021 and Application for extension of lease for further period of 20 years beyond 28.8.2021 was submitted to the office of DC, Government of Jharkhand on 30.4.2020. In response to the application for extension of Rakha Mining Lease, Govt. of Jharkhand has intimated that it is under process/consideration as per Statute.

Simultaneously, for engagement of MDO (Mine Developer cum Operator) for re-opening and expansion of Rakha Copper Mine, development of a new underground mine at Chapri Block to produce 3 MTPA of ore and erection & commissioning of a matching capacity new Concentrator Plant at ICC, the Company has appointed Transaction Advisor for preparation of tender document and Mine Service Agreement (MSA). For selection of MDO, tendering action has been taken and web hosted in the platform of M/s MSTC. Pre-bid meeting has been conducted on 15.2.2023 wherein four prospective bidders participated. Tendering action is in process.

HCL hold around two-fifths of the copper ore reserves and resources in India with an average grade 1.32%. As on 1.4.2022, HCL has reserves (proved & probable) of about 2.73 million tonnes in terms of copper metal and total reserves and resource of 6.18 million tonnes in terms of copper metal (i. e., 631.85 million tonnes of ore with average grade of 0.99% based on UNFC system). HCL is the only vertically integrated

copper producer in the country which produces refined copper from its own mined ore.

SMELTING

Hindustan Copper Limited (HCL) was the sole producer of refined copper till 1995 and the focus was on vertical integration so that the entire quantity of ore produced in its mines was converted into copper cathode and ultimately, wire rod. After liberalisation of the economy, the copper segment of industry has transformed significantly. Currently, three major players dominate the Indian Copper Industry. Hindustan Copper Limited (HCL) in Public Sector combined with M/s Hindalco Industries Ltd and M/s Sterlite of Private Sector, have current total installed refined copper capacity of about 10.28 lakh tonnes. Details regarding capacity of copper smelter are reflected in Table-12.

Table – 12 : Capacity of Copper Smelters

(Quantity in '000 tonnes)		
Company/Location	Type of Copper Producer	Annual Capacity
TOTAL		1028.5
1. Hindustan Copper Ltd, Ghatsila, Jharkhand & Jhagadia, Gujarat	CPSE (integrated producer)	68.5
2. Hindalco Industries Ltd, Dahej, Distt. Bharuch, Gujarat.	Private (Port based custom smelter)	500
3. Sterlite Industries Tuticorin, TamilNadu & Silvasa, Daman and Diu.	Private (Port based custom smelter)	460

HCL has two primary smelting & refining plants at KCC and ICC. However, due to economic considerations the Company suspended KCC's smelting and refinery operation from December 2008. HCL has one secondary copper smelter in Bharuch district, Gujarat. HCL also has one continuous casting plant of copper wire rod, namely, Taloja Copper Project (TCP) with 60,000 tonnes per annum capacity at Taloja, Maharashtra.

Hindalco at Dahej in Gujarat and Sterlite Industries in Thoothukudi (plant at Tuticorin in Tamil

COPPER

Nadu (which is closed since May 2018) have set up port-based smelting and refining plants which depend on imported copper concentrates either from their own mines abroad or other overseas sources. Besides, there are a few small companies which produce Electrowon copper but their capacities are very low and production is inconsistent.

RECYCLING OF COPPER

Copper scrap is traded in the form of new scrap generated from copper smelters, copper workings as well as old scrap recovered from electrical motors, electronic equipment, cables, wires, utensils, etc.

Copper is one of the most recycled metals of all the metals. The recycling of copper scrap is gaining importance worldwide simply because of the fact that recovery of copper metal from scrap requires much less energy than its recovery made from primary source. Besides, it enables conservation of natural resources.

In Indian condition, however, collection of scrap is in the Unorganised Sector and there is paucity of factual data in this regard. Still, as per the licences granted by Central Pollution Control Board as on 13.05.2010, there were 35 units operating in different States with a combined capacity of 2.42 lakh per annum for handling different types of scrap.

In addition, there are 132 units with combined capacity of 5.17 lakh tonnes per annum which recover copper along with other metals. As per the estimates made in the Market Survey on Copper published by IBM, production of 1.07 lakh tonnes per annum of secondary copper was reported and all of which have been from the Organised Sector in the country.

USES

Electrical/Electronic Industry is by far the largest consumer of copper, where it is used in the form of cables, winding wires as it is the best non-precious metal conductor of electricity as it encounters much less resistance and is safe for electrical distribution

system from high voltage transmission cables to micro-circuits. Copper also has relatively high creep strength as compared to other commonly used materials. In Electronic Industry, semi-conductor manufacturers have launched a revolutionary 'copper chip'. By using copper for circuitry in silicon chips, microprocessors are able to operate at higher speeds using less energy. Copper heatsinks help remove heat from transistors and enable computer speeds using less energy, and processors operate at peak efficiency. Copper is used in Construction Industry as plumbing, taps, valves and fittings components.

In Transportation Industry, copper is used in various components. According to ICSG the world Copper Factbook 2023 most cars contain an average of 23 kg copper and luxury & hybrid vehicles contain about 40 kg copper. Copper is extensively used in industrial machinery and equipment. It is used in a number of consumer products, such as, coinage, utensils, fixtures, etc. Large quantities of copper are consumed in making copper-based alloys, such as, brass and bronze.

CONSUMPTION

As per the estimate of ICSG, the share of Electrical and Telecommunication Industry in total consumption is 56%, followed by Transport (8%), Consumer Durables (7%), Building & Construction (7%), General Engineering goods (6%) and other industries including Process Industries (16%). The apparent availability of copper for internal consumption in various industries has been computed on the basis of production of refined copper (cathodes) and from the imports and exports data of copper (refined). Copper is also traded in the form of alloys but has not been considered for arriving at apparent availability of copper. During 2021-22, the imports of refined copper were more than the exports. The apparent availability of refined copper increased from 4,30,288 tonnes in 2020-21 to 5,14,545 tonnes in 2021-22 (Table-13).

COPPER

Table – 13: Apparent Availability of Copper for Domestic Consumption (Based on Production of Refined Copper, Imports and Exports)

Item	(Quantity in tonnes)	
	2020-21	2021-22 (P)
I) Total Production* (Cathodes)	363609	483994
II) Total Imports (copper refined)	155038	138531
III) Total Exports (copper refined)	88359	107980
IV) Apparent Availability	430288	514545

* Primary

SUBSTITUTES

Copper is vulnerable for substitution on grounds of price, technical superiority or weight. Aluminium is used as substitute for copper in various products, such as, electrical power cables, electrical equipment, automobile radiators and cooling/refrigeration tubing. Optical fibre has substituted copper in some telecommunication applications and plastics are used as substitute for copper in water pipe, plumbing, fixtures and many structural applications.

WORLD REVIEW

The world reserves of copper metal are assessed at 890 million tonnes of copper content. Chile has the largest share, accounting for about 21% of world reserves, followed by Australia (11%), Peru (9%), Russia (7%), Mexico (6%), USA (5%), Congo (Kinshasa), Poland, China & Indonesia (3% each), Kazakhstan & Zambia (2% each) and Canada (1%). Remaining about 24% was contributed by other countries (Table-14).

The world mine production of copper remains almost same at 21.4 million tonnes of metal content in 2021 as compared to previous year. Chile continued to be the largest single producer of copper in 2021 with 26% share followed by Peru (11%), China & Dem. Rep. of Congo (8% each) and USA (6%) (Table-15).

As per BGS world refined copper production was 24.80 million tonnes in the year 2021 which showed a slight decrease of 0.40% from 24.90 million tonnes in

the previous year. China was the largest producer of refined copper with 10.49 million tonnes in the year 2021 (42% of world production) followed by Chile 2.27 million tonnes (9%), Japan 1.52 million tonnes (6%), Dem. Rep. of Congo 1.30 million tonnes (5%) and Russia & USA (4% each), etc.

In 2022, China accounted for almost 50% of world copper smelter production, followed by Japan (7.4%), Chile (5.2%) and Russia (4.6%). China was also the largest consumer of refined copper in 2022 with apparent usage of around 14.7 million tonnes as per International copper Study Group (ICSG).

Australia

Mineral copper production in Australia increased by 7% to 9,20,000 tonnes in 2018 from 8,56,000 tonnes in 2017. Newerest Mining Ltd increased copper production at the Cadia Valley Mine by 19,100 tonnes (34%) from that in 2017, when an earthquake disrupted operations for several months. The Capricorn copper project (owned by EMR Capital Pty Ltd) commenced production in late 2017 and was ramping up to an annual capacity of 30,000 tonnes (Department of Industry, Innovation, and Science, 2018).

Production statistics at the mine level were not available for two of the leading copper operations in Australia- the Mount Isa and Olympic Dam complexes. Glencore plc produced 1,52,000 tonnes of refined metal at Mount Isa, a decrease of 8% from 1,65,000 tonnes in 2017. At Olympic Dam, BHP Group produced 1,47,000 tonnes of electrolytic and electrowon copper cathode in 2018, an increase of 4% from 1,42,000 tonnes.

Canada

In 2018, production decreased at nearly all copper mines in Canada, and total mine output fell by 9% to 5,43,000 tonnes of copper from 5,95,000 tonnes in 2017. The largest decline in production took place at the Sudbury complex (owned by Vale S.A.), where output decreased by 26,000 tonnes; at the Voisey's Bay Mine (Vale), by 7,800 tonnes; and at the Gibraltar Mine, by 7,260 tonnes. Vale attributed the decrease at the Sudbury complex and the Voisey's Bay Mine to a strategic decision to deprioritise its nickel operations, resulting in lower production of copper by-product.

COPPER

Chile

In 2018, 7 of the leading 20 copper mines in the world were located in Chile, the first-ranked global producer of mined copper since 1982. Mined copper production in Chile increased by 6% to 5.83 million tonnes from 5.50 million tonnes in 2017. At the Escondida Mine production rose by 34% to 1.21 million tonnes from 9,03,000 tonnes in 2017. At the Collahuasi Mine production was 5,59,000 tonnes in 2018, up by 7% from 5,24,000 tonnes because of higher ore grades and improved copper recovery rates following planned maintenance and the installation of 24 new flotation cells in the first half of the year. Owing to higher ore grades, output rose by 20% at the Los Bronces Mine.

In 2018, the state-owned Corporation Nacional del Cobre de Chile (Codelco) operated 7 mines in the country, 3 of which were ranked among the 20 leading global copper mines. An overall decrease of 3% in mined copper production at Codelco's operations, to 1.68 million tonnes compared with 1.73 million tonnes in 2017, partially offset the increases at other major copper mines in Chile. The company attributed the decline to lower copper ore grades.

China

Beijing Antaika Information Co., Ltd estimated that refined copper capacity in China increased by about 1.2 million tonnes in 2018 to 12.2 million tonnes. New capacity came online at a minimum of seven refineries in the country, either through the opening of new facilities or upgrades at existing facilities. Most notably, Chinalco Southeast Copper Co., Ltd. finished construction of a new refinery with an annual cathode production capacity of 4,00,000 tonnes, and Guangxi Nanguo Copper Co. completed a 3,00,000 tonnes per year expansion.

Congo (Kinshasa)

Owing primarily to the restart of ore processing operations at the Kamoto complex, output of mined copper in Congo (Kinshasa) increased by 13% to 1.23 million tonnes in 2018 from 1.09 million tonnes in 2017, and refined copper production rose by 15% to 9,53,000 tonnes from 830,000 tonnes. From

**Table – 14: World Reserves of Copper
(By Principal Countries)**

(Quantity in '000 tonnes of copper content)	
Country	Reserves
World: Total (rounded off)	890000
Australia	97000
Canada	7600
China	27000
Chile	190000
Congo (Kinshasa)	31000
Germany	–
Indonesia	24000
Japan	–
Kazakhstan	20,000
Korea	–
Mexico	53000
Peru	81000
Poland	30000
Russia	62000
USA	44000
Zambia	19000
Other countries	200000

Source: USGS, Mineral Commodity Summaries, 2023, (a): For Australia, Joint Ore Reserves Committee Compliant reserves were about 23 million tonnes.

**Table – 15: World Mine Production of Copper
(By Principal Countries)**

(In tonnes of metal content)			
Country	2019	2020	2021
World Total (rounded off)	20700000	21000000	21400000
Chile	5787400	5733100	5624900
Peru	2455440	2150126	2299277
Congo, Dem. Rep. of	1420386	1601208	1797836
China	1683700	1723100	1750000
USA	1260000	1200000	1230000
Russia	812400	924100	900000
Zambia	789942	868671	800696
Australia	925157	879522	813145
Indonesia	351000	507000	775000
Mexico	713704	800316	734100
Other countries	4500871	4612857	4675046

Source: BGS, World Mineral Production, 2017-21.

COPPER

September 2015 until November 2017, ore processing at Kamoto was suspended while Katanga Mining completed the first phase of capacity expansion project. Cathode production resumed in December 2017, and the final components of the second phase of expansion were completed and began ramping up in the fourth quarter of 2018. Output of SX–EW cathode increased by 1,50,000 tonnes in 2018 and was expected to increase by roughly 1,35,000 tonnes in 2019.

Indonesia

In December 2018, Freeport reached an agreement with the Government of Indonesia for an extension of the mining licence at the Grasberg Mine (third-ranked) through 2031, which had been set to expire in 2021. The licence would be valid through 2041 once the Company constructed a new smelter in Indonesia and fulfilled other fiscal obligations. As part of the agreement, Freeport divested a portion of its 90.64% ownership in the mine to PT Inalum, an Indonesian state-owned firm, and held a 48.76% stake following the transaction. The Company's license to export copper concentrates would require approval by the Government of Indonesia every 6 months, depending on smelter construction progress. Production of mined copper at Grasberg increased by 18% to 5,26,000 tonnes in 2018 from 4,46,000 tonnes in 2017, when operations were affected by multiple disruptions related to restrictions on copper concentrate exports. Freeport expected production from the underground portion of the mine to commence in the first half of 2019 and anticipated that mine output would be lower than that in 2018 during the transition from open pit to underground operations in 2019 and 2020.

Panama

A partial strike at the Cobre Panama project began on March 9 and ended on March 26. First Quantum had previously anticipated that the mine (the

only copper operation in Panama and the only major worldwide copper project expected to initiate production in 2018) would begin ramping up in the fourth quarter of the year. The project was nearing completion at year-end 2018, with first production expected in early 2019. First Quantum projected that Cobre Panama would produce 3,00,000 tonnes per year of copper in concentrates by 2021.

Peru

In 2018, 4 of the leading 20 copper mines in the world were located in Peru, and mine production of copper was essentially unchanged at 2.44 million tonnes. At the Antamina Mine, copper output rose by 6% (23,600 tonnes) to 4,46,000 tonnes because of increased copper ore grades compared with those in 2017. Higher production at Antamina was offset by reduced output from other leading copper mines in Peru. Owing to lower copper recovery rates, production at the Cerro Verde Mine.

Russia

Refined copper production rose by 8% in 2018 to an estimated 1.03 million tonnes from 9,56,000 tonnes in 2017. PJSCMMC Norilsk Nickel, which owned multiple refineries that accounted for roughly 40% of the refined copper capacity in Russia, reported refined output of 4,26,000 tonnes from its Russian operations, an increase of 47,300 tonnes (13%) from that in 2017.

Zambia

In 2018, output of mined copper increased by 60,000 tonnes (8%) to 8,54,000 tonnes from 7,94,000 tonnes in 2017. Production at some of the leading copper mines in Zambia was as follows: the Kansanshi Mine, Sentinel Mine and Lumwana Mine. The combined output of these three operations was equivalent to 68% of the country's total mined copper in 2018 and rose by 19,200 tonnes compared with production in 2017.

FOREIGN TRADE

Exports

The exports of copper from India are in various forms, such as, copper ores & concentrates, refined copper, copper & alloys, alloys of copper, blister & other unrefined copper, copper alloys, brass & bronze, scrap, cement copper, mattes and powder & flakes.

Exports of copper ores & concentrates decreased considerably by 58% to 34,827 tonnes during 2021-22 from 82,463 tonnes in 2020-21. The export were mainly to Philippines (64%) followed by China (28%) and Malaysia (8%). Exports of refined copper increased substantially by 22% to 1,07,980 tonnes in 2021-22 from 88,359 tonnes in 2020-21. Exports of refined copper were mainly to China (89%), Singapore (6%) and Republic of Korea (3%). The total exports of copper & alloys (including brass & bronze) were at 2,46,963 tonnes in 2021-22 as against 2,09,332 tonnes in 2020-21. Export of copper (scrap) were at 18,244 tonnes in 2021-22 as against 7,290 tonnes in 2020-21 (Tables-16 to 32).

Imports

The imports of copper in the country are in the form of copper ore & concentrates, refined copper, copper & alloys, brass & bronze, scrap, cement copper, mattes, blister, worked (bars, rods & plates), copper powder & flakes, etc.

During the year 2021-22, imports of copper ores & concentrates increased drastically by 145% to 10,18,934 tonnes as compared to 4,15,136 tonnes in 2020-21. Chile with a share of 37% was the leading supplier followed by Indonesia (20%), Peru (12%), Australia (11%), Panama Republic (9%), Saudi Arabia (4%) and Canada & Brazil (3% each). While imports of refined copper decreased by 11% to 1,38,531 tonnes in 2021-22 from 1,55,038 tonnes in 2020-21. Japan was the leading supplier of refined copper with share of 86% followed by Tanzania (7%) and UAE (3%). Out of the total imports in 2021-22, copper & alloys comprised 5,53,443 tonnes and copper (scrap) 1,16,755 tonnes (Tables - 33 to 42).

**Table – 16: Exports of Copper Ores & Conc.
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty	Value	Qty	Value
	(t)	(₹'000)	(t)	(₹'000)
All Countries	82463	7689376	34827	3964549
Philippines	--	--	22202	2521496
China	81060	7590259	9815	995831
Malaysia	--	--	2810	447213
Canada	++	++	++	9
Korea, Rep. of	1403	99117	--	--

Figures rounded off

COPPER

**Table – 17: Exports of Refined Copper
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	88359	43312924	107980	75635022
China	87429	42824386	96377	67360076
Singapore	-	-	6987	5070168
Korea, Rep. of	-	-	2993	2087244
Thailand	45	21291	499	382736
Bangladesh	509	281143	499	355267
U A E	++	66	482	351579
Saudi Arabia	++	542	125	8363
Sri Lanka	++	84	8	6677
UK	++	734	++	2790
Belgium	++	59	4	2120
Other countries	376	184619	6	8002

Figures rounded off

**Table – 18: Exports of Copper & Alloys
(Including Brass & Bronze) : Total
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	209332	102064524	246963	171342596
China	138740	57637004	145530	90126841
USA	14536	12160651	20238	21452759
Qatar	2690	1459572	9037	6661402
Singapore	200	147977	7238	5338856
UAE	4664	2680903	6225	4607590
Korea, Rep. of	9679	2185298	12819	4362692
Germany	1885	1608456	3094	3195374
Saudi Arabia	3301	2232114	4170	3185402
UK	2081	1887684	2052	2541122
Canada	1185	988420	1852	1799101
Other countries	30371	19076445	34708	28071457

Figures rounded off

**Table – 19: Exports of Copper (Scrap)
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	7290	2977834	18244	8312550
China	2252	1172553	13286	5444991
Japan	634	246012	1019	621948
UAE	88	34568	868	569862
Korea, Rep. of	2953	938544	1349	565890
Malaysia	432	223770	643	453625
Spain	555	217431	254	156168
Germany	95	40957	245	142864
Nepal	1	680	152	100944
Australia	--	--	114	71676
Belgium	29	8500	99	56190
Other countries	251	94819	215	128392

Figures rounded off

COPPER

**Table – 20: Exports of Copper & Alloys
(By Countries)**

Country	2020-2021 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	139540	67619065	169736	120781592
China	100047	44731757	105534	72301396
USA	7848	6306411	9127	10082665
Qatar	2501	1309383	8967	6571359
Singapore	89	64000	7101	5196242
Korea, Rep. of	6401	1128242	10933	3527307
UAE	2787	1546711	3367	2592036
Saudi Arabia	1221	817185	2192	1644492
Germany	780	632438	1479	1555948
Thailand	1445	791623	2219	1555179
UK	945	820074	1081	1216120
Other countries	15476	9471241	17736	14538848

*Figures rounded off***Table – 21: Exports of Brass & Bronze
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	61018	30956169	56963	41245793
China	36171	11652944	26188	12141377
USA	6685	5853235	11110	11369460
Saudi Arabia	2080	1414865	1978	1540880
UAE	1739	1087478	1962	1435409
Germany	933	904192	1219	1432080
Indonesia	1316	914448	1894	1349824
UK	1136	1067610	970	1324518
Canada	516	473011	824	855645
Mexico	467	354316	996	772973
Italy	528	417890	536	581198
Other countries	9447	6816180	9286	8442429

*Figures rounded off***Table – 22: Exports of Brass & Bronze (Scrap)
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	1484	511456	2020	1002659
Korea, Rep. of	294	98250	507	239937
China	270	79750	522	239077
Spain	189	69627	245	142419
Belgium	-	-	222	142216
Malaysia	504	180003	150	73708
Germany	77	30869	151	64482
Hong Kong	83	32957	95	37709
Turkey	-	-	48	24276
Nepal	1	380	27	11999
Japan	6	2921	20	11431
Other countries	60	16699	33	15405

*Figures rounded off***Table – 23: Exports of Copper & Alloys:
Worked (Bar, Rod, Plates, etc)
(By Countries)**

Country	2020-21(R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	8547	5638560	13132	11454522
USA	1541	1286505	2780	2722357
UAE	1549	859494	1792	1373748
Canada	445	314201	753	670805
Saudi Arabia	213	131814	821	653580
Germany	71	58619	500	493042
Egypt	116	71374	596	490385
Korea, Rep. of	685	385456	703	469447
Thailand	373	216899	552	388171
Oman	353	213009	426	381872
Nepal	211	120316	329	275196
Other countries	2990	1980873	3880	3535919

Figures rounded off

COPPER

**Table – 24: Exports of Copper Mattes
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	16307	1572663	9961	1230271
Korea, Rep. of	5341	574265	7099	873651
China	10721	986780	2680	347980
Thailand	244	11281	182	8523
Nepal	++	14	++	68
Bangladesh	--	--	++	41
Vietnam	--	--	++	4
Germany	++	8	++	2
USA	--	-	++	1
Canada	--	-	++	1
Reunion	--	-	++	++
Other countries	1	315	++	++

Figures rounded off

**Table – 25: Exports of Copper & Alloys:
Worked, Nes (By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	14934	11103826	15749	15962044
USA	6176	4943763	6145	7164224
Germany	461	455155	741	909735
UK	659	623998	719	903957
Saudi Arabia	938	637328	1071	817682
Thailand	771	534777	977	767655
UAE	712	432449	725	576050
Colombia	328	185839	525	330759
Australia	314	223086	232	262655
Italy	195	147233	274	258704
Slovenia	25	24508	267	238785
Other countries	4355	2895690	4073	3731838

Figures rounded off

**Table – 26: Exports of Copper Powder & Flakes
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	353	211413	244	227005
Brazil	290	195963	205	192680
Indonesia	--	--	23	18430
Thailand	10	6154	8	6747
U S A	++	444	4	3902
Malaysia	++	298	2	1464
China	++	50	2	1455
Japan	++	427	++	623
Mexico	--	--	++	405
Netherlands	++	83	++	235
Kenya	++	7	++	149
Other countries	53	7987	++	915

Figures rounded off

**Table – 27: Exports of Blister & Other
Unrefined Copper
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	1027	491605	5169	3608670
China	1027	491605	5169	3608670

Figures rounded off

COPPER

**Table – 28 : Exports of Brass & Bronze :
Bronze Powder
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	1	351	81	13361
USA	-	-	80	12788
Nepal	-	-	1	321
Korea, Rep. of	-	-	++	111
Bangladesh	1	220	++	73
Australia	-	-	++	68
Brazil	-	-	++	++
Austria	++	131	-	-

Figures rounded off

**Table – 29: Exports of Copper Alloys:
Unwrought Excl. Brass & Bronze
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	937	391076	1798	1184227
China	608	239809	796	552615
Germany	1	988	222	134400
Spain	24	10458	223	122469
Belgium	--	--	155	100291
Sri Lanka	114	58548	141	97732
Korea, Rep. of	--	--	100	58963
Taiwan	75	31144	75	44944
Italy	26	10797	28	23125
Netherlands	1	852	27	22230
Malaysia	42	18095	19	12795
Other countries	46	20385	12	14663

Figures rounded off

**Table – 30 : Exports of Brass & Bronze Unwrought
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	36524	11593935	26635	12263801
China	35669	11237540	25581	11605007
Taiwan	275	93528	293	137991
Belgium	25	11797	156	125204
USA	82	38153	134	92143
Netherlands	21	7874	99	65760
Thailand	177	64265	104	57949
Malaysia	9	3804	63	35988
Germany	++	429	37	33314
Nepal	87	32014	60	32655
UAE	24	13864	42	23648
Other countries	155	90667	66	54142

Figures rounded off

COPPER

**Table – 31: Exports of Copper
(Cement Copper Precipitated)
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	4	1066	501	25047
China	-	-	501	24882
Nigeria	++	50	++	159
Senegal	--	--	++	6
UAE	--	--	++	++
Korea, Rep. of	4	948	--	--
South Africa	++	39	--	--
Kazakistan	++	17	--	--
Australia	++	12	--	--

Figures rounded off

**Table – 32 : Exports of Copper & Alloys
(Excluding Brass & Bronze and Scrap)
(By Items)**

Item	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All items	139540	67619065	169736	120781592
Blister & Other Unrefined Copper	1027	491605	5169	3608670
Copper & Alloys :Workerd (Bars, Rods, Plates, etc.)	8547	5638560	13132	11454522
Copper & Alloys :Worked, Nes	14934	11103826	15749	15962044
Copper Alloys: Unwrought Excl. Brass & Bronze	937	391076	1798	1184227
Copper Mattes	16307	1572663	9961	1230271
Copper Powder & Flakes	353	211413	244	227005
Copper Refined Copper Worked	8687	4705513	14936	10928585
Electroplated Anode of Nickel	64	31638	14	13359
Master Alloys of Copper	325	159847	753	537887
Refined Copper	88359	43312924	107980	75635022

Figures rounded off

COPPER

**Table – 33: Imports of Copper Ores & Concentrates
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	415136	59071579	1018934	223814328
Chile	245238	29065049	375188	67704766
Indonesia	119609	21391418	205140	46083939
Australia	-	-	111474	41880647
Peru	-	-	120062	25675980
Panama Republic	-	-	91636	17694145
Canada	20386	2969661	30902	9029113
Saudi Arabia	10046	1667131	44551	7472539
Brazil	-	-	30532	6698492
Thailand	-	-	9424	1570009
Congo	--	-	25	2771
Other countries	19857	3978320	++	1927

*Figures rounded off***Table – 34: Imports of Refined Copper
(By Countries)**

Country	2020-21 (R)		2021-22(P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	155038	78258449	138531	89656181
Japan	127811	64345604	119775	77685170
Tanzania	4736	2451911	9437	6941877
UAE	15051	7771508	4443	1653538
Thailand	1471	700847	1401	976238
South Africa	1147	603482	937	680877
Malaysia	968	439346	831	531060
Austria	174	90478	585	433076
China	41	23676	325	161515
Germany	381	198253	218	159094
Italy	51	23111	177	138006
Other countries	3207	1610233	402	295730

Figures rounded off

COPPER

**Table – 35: Imports of Copper & Alloys
(Including Brass & Bronze) : Total
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	744819	341717156	823597	526294673
Japan	143670	73323543	143168	88832936
Tanzania	58541	30001251	109468	80444953
South Africa	71269	37370877	70512	49947173
UAE	66135	32035807	54511	34262391
Vietnam	36163	20580074	38875	30027109
Germany	34242	11519130	36275	28844276
Thailand	31124	16491527	37109	27775840
Malaysia	26219	13755862	36709	27251204
China	25903	12376742	37603	26674647
Mozambique	13788	6363551	24385	16590163
Other countries	237765	87898792	234982	115643981

Figures rounded off

**Table – 36: Imports of Copper & Alloys
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	496358	261483027	553443	392177470
Japan	140585	71641305	138963	85728235
Tanzania	58289	29931494	109085	80225352
South Africa	70647	37179074	70354	49889614
Vietnam	36077	20525043	38536	29766283
Thailand	29056	15512568	35385	26663619
Malaysia	20433	11444563	34236	26032953
UAE	51803	26747022	34640	23656691
China	22019	10023048	33266	23339229
Mozambique	13646	6308248	24233	16508584
Korea, Rep. of	6017	3086070	8994	6141032
Other countries	47786	29084592	25751	24225878

Figures rounded off

COPPER

**Table – 37 : Imports of Copper (Scrap)
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	90604	28462247	116755	53221910
USA	12540	3452407	24463	9237981
UAE	7388	3194766	11665	7066839
Saudi Arabia	12315	5966405	10874	6972837
Kuwait	6191	2755410	12047	6872186
UK	12402	2329223	12195	4138951
Netherlands	4306	1001698	5770	2052799
Australia	5706	1498850	5287	1862221
Canada	1976	715362	3262	1680028
Germany	8419	1476016	3864	1206824
Kenya	1061	490351	1592	1009048
Other countries	18300	5581759	25736	11122196

*Figures rounded off***Table – 38 : Imports of Brass & Bronze
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	19468	11486251	20218	15778525
China	3847	2339606	4066	3217927
Japan	1650	1232034	3508	2791802
Korea, Rep. of	3693	1828557	3228	2094690
Germany	1290	1083767	1828	1867477
Thailand	1547	759946	1288	890524
Malaysia	3173	1265470	1782	843599
USA	520	432978	613	721401
Indonesia	242	130029	758	524131
Belgium	266	211971	361	397215
Taiwan	442	243415	507	340775
Other countries	2798	1958478	2279	2088984

Figures rounded off

COPPER

**Table – 39 : Imports of Brass & Bronze (Scrap)
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	138389	40285631	133181	65116768
Germany	21183	6114950	27531	21806908
UK	12427	3667903	18673	7683915
Saudi Arabia	12329	3670926	10657	4499365
USA	20949	6210740	10411	4151725
UAE	6920	2080389	8148	3479722
Netherlands	8779	2540524	5991	2503463
Belgium	4889	1382706	5664	2309572
Sweden	4866	1296978	3639	1478787
Switzerland	2265	681336	3378	1425476
Denmark	3516	985599	3459	1415889
Other countries	40266	11653580	35630	14361946

Figures rounded off

**Table – 40 : Imports of Copper (Cement Copper Precipitated)
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	39	5489	281	8758
Australia	39	5471	39	6734
Belgium	-	-	242	2008
China	++	18	++	16
Germany	++	++	-	-

Figures rounded off

**Table – 41 : Imports of Copper & Alloys
(Excluding Brass & Bronze and Scrap)
(By Items)**

Item	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All items	496358	261483027	553443	392177470
Blister & Other Unrefined Copper	77702	39937454	103456	75547984
Copper & Alloys :Workered (Bars, Rods, Plates, etc.)	83438	44695904	95258	70745986
Copper & Alloys :Worked, Nes	6334	6448830	8175	10441584
Copper Alloys: Unwrought Excl.				
Brass & Bronze	993	587326	748	735160
Copper Mattes	3	1159	0	2090
Copper Powder & Flakes	702	563996	928	961700
Copper Refined Copper Worked	93319	50376605	109628	75271271
Electroplated Anode of Nickel	78724	40534144	96488	68600951
Master Alloys of Copper	105	79160	231	214563
Refined Copper	155038	78258449	138531	89656181

Figures rounded off

COPPER

**Table – 42 : Imports of Copper & Alloys : Worked (Bars, Rods, Plates, etc.)
(By Countries)**

Country	2020-21 (R)		2021-22 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	83438	44695904	95258	70745986
Vietnam	35758	20342324	38466	29624570
China	19324	7628556	29732	19109926
Malaysia	11231	6363215	10017	7610444
Thailand	4773	2485366	5839	4519092
Germany	2142	1541451	2010	2092922
Korea, Rep. of	2743	1307888	2528	1574130
Taiwan	2035	751076	2004	1216893
Japan	702	688367	1017	1195602
Hong Kong	1616	921410	1403	1049708
USA	379	642923	359	790683
Other countries	2735	2023328	1883	1962016

Figures rounded off

FUTURE OUTLOOK

HCL during FY 2020-21 had envisaged to enhance the ore production capacity from the current level of 4.24 million tonnes per annum (MTPA) to 12.20 MTPA by FY 2028-29 in its mines, namely, Malanjkhand, Khetri, Kolihan, etc. to increase production. Apart from this the Company has initiated action to re-open the closed mines, development of new underground mine at Singhbhum Copper Belt of ICC, namely, Kendadih and Rakha mines.

The corrosion-resistant properties of copper and copper alloys (such as brass, bronze and copper-nickel) make them especially suitable for use in marine and other demanding environments. Vessels, tanks and piping exposed to seawater, propellers, oil platforms and coastal power stations, all depend on copper's corrosion resistance for protection. Copper demand in India is expected to grow at 6–7% due to increased thrust of Government of India towards "Make in India" and "Smart City" programmes and increased investments in railways, power, defence and infrastructure sectors would drive the demand for copper in the country. Demand is expected to show significant growth considering the initiatives, such as, development of industrial corridors, smart city project, housing for all Indians, National Highway development project, Rail project, defence production policy to encourage indigenous manufacturing, India energy plan 2022–100 GW solar, 32 GW wind, 260 GW thermal & nuclear, 62 GW hydro etc. that are vigorously pursued by the Government. In addition to this, there is plan for green energy corridor for transmission of renewable energy. The per capita copper consumption in India is expected

to increase. The per capita copper consumption of China is 6 kg and world average is 3.2 kg. As per ICSG press release, World refined copper production is forecast to rise by about 3.8% in 2023 and 4.6% in 2024 & World apparent refined copper usage is expected to increase by about 2% in 2023 and 2.7% in 2024.

Based on parameters, such as, resource/reserve position in the country, production, import dependency, use for future technology/ clean energy, etc., copper has been identified as a critical mineral in India. The Central Government is working towards creating a sustainable scrap recycling ecosystem. In this regard, ministry has issued a National non-ferrous metal scrap recycling framework, 2020, including copper, in a bid to cut down the scrap imports. In 2022, ICSG estimated that 32% of global copper use would come from recycled copper. Refined copper usage (usage by semis plants or the first users of copper) in 2022 reached 26.1 million tonnes. China was also the largest consumer of refined copper in 2022 with apparent usage of around 14.7 million tonnes.

The market for Electric Vehicles (EVs) and renewable energies are expected to witness growth in coming years as Government incentives continue around the world. Copper is essential to EV technology and its supporting infrastructure. The evolving market will have a substantial impact on copper demand. The increase in the electric vehicles in the market will significantly impact the demand for copper. The projected demand for copper due to electric vehicles is expected to increase by 1.7 million tonnes by 2027. A new generation of high performance copper alloy wire is attracting attention of the Electronic Industry.