



Indian Minerals Yearbook 2011 (Part- II)

50th Edition

COPPER

(ADVANCE RELEASE)

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

Indira Bhavan, Civil Lines,
NAGPUR – 440 102

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

October 2012

26 Copper

Copper 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 resources of copper ore. In addition to domestic production of ore and concentrates, India imports copper concentrates for its smelters. The domestic demand of copper and its alloys is met through domestic production, recycling of scrap and to some extent by imports.

HCL, a Public Sector undertaking, is the only integrated producer of primary refined copper in India that utilises both indigenous and imported concentrates as well as imported and indigenous scrap.

Production of primary copper based on indigenous ore is characterised by high energy consumption because of low-scale operation and minimal automation. The low-grade quality of Indian copper ores and nature of ore bodies (narrow width and flatter inclinations), do not make large-scale mechanisation in underground mines a viable proposition. Hindalco Industries Ltd (unit of Birla Copper) and Sterlite Industries (India) Ltd, the major copper producers in the Private Sector rely solely on imported copper concentrates. These companies own copper mines in other countries as well. Another Private Sector company, Jhagadia Copper Ltd, also produces copper based on secondary route.

A substantial quantity of copper metal is also produced through indigenous and imported scrap. 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.

The domestic production of copper ore as well as concentrates in 2010-11 increased by 11% and 10%, respectively, over the previous year. However, there was a decline of 20% in the production of copper (blister) and 7% in the production of continuous cast wire rods (CCWR). The production of copper cathodes decreased by 4% during the same period.

RESOURCES

The total resources of copper ore as on 1.4.2010 as per UNFC system are estimated at 1.56 billion tonnes. Of these, 394.37 million tonnes (25.30%) fall under 'reserves' proved (STD111 category) and probable (STD121 & STD122 categories) while the balance 1164 million tonnes (74.69%) are 'remaining resources' (under feasibility (STD211), pre-feasibility (STD221 & STD222), measured (STD331), indicated (STD332) and inferred (STD333 categories). Of the total ore resources, 2.64 million tonnes (0.16 %) comprise ore containing 1.85% Cu or more and 676.57 million tonnes (43.38%) of 1% to below 1.85% Cu grade. With regard to reserves, there were no reserve above 1.85% Cu grade; however, 381.69 million tonnes fall under 1% to below 1.85% Cu grade.

The total copper metal content in the resources is 12.29 million tonnes of which 4.77 million tonnes constitute reserves.

Largest resources of copper ore to a tune of 777.17 million tonnes (49.86%) are in the state of Rajasthan followed by Madhya Pradesh with 377.19 million tonnes (24.2%) and Jharkhand with 288.12 million tonnes (18.49%). Copper resources in Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Meghalaya, Odisha, Sikkim, Tamil Nadu, Uttarakhand and West Bengal accounted for about 8% of the total all India resources (Table-1).

EXPLORATION & DEVELOPMENT

GSI, MECL, DMG Rajasthan, Directorate of Geology, Odisha and HCL were engaged in the exploration of base metals in 2010-11. DMG Rajasthan carried out exploration in the districts of Ajmer, Bhilwara, Rajsamand, Sirohi, and Udaipur. MECL carried out exploration in Chittorgarh district of Rajasthan and HCL carried out exploration in Jhunjhunu district, Rajasthan. GSI carried out exploration in the states of Gujarat, Haryana, Maharashtra, Meghalaya, Rajasthan and Sikkim. Details of exploration activities conducted for copper in 2010-11 are given in Table-2.

**Table – 1 : Reserves/Resources of Copper as on 1.4.2010
(By Grades/States)**

(In '000 tonnes)

Grade/State	Reserves				Remaining resources				Total resources (A+B)			
	Proved		Probable		Measured		Indicated			Reconnaissance		
	STD111	STD121	STD122	STD122	STD331	STD332	STD333	STD334		Total (B)	Total (A+B)	
All India : Total												
Ore	133388	127100	133884	394372	15781	21323	12429	147989	224976	741588	1164086	1558458
Metal	1604.73	1508.36	1655.24	4768.33	213.01	223.01	23.45	1453.04	1686.84	3918.99	7518.34	12286.67
By Grades												
Ore with 1.85 % & above Cu	-	-	-	-	-	62	-	430	813	1336	-	2641
Ore with 1.00 % to below 1.85 % Cu	125287	127100	129311	381698	12406	19031	168	76053	46391	140398	-	294447
Ore with (+) 0.50% to below 1.00% Cu	557	-	31	588	-	2230	2008	23366	85012	504366	-	616982
Ore with (-) 0.50% Cu	7544	-	4542	12086	3375	-	10253	48140	92760	95488	-	250016
By States												
Andhra Pradesh												
Ore	-	-	-	-	686	666	105	-	5791	1000	-	8248
Metal	-	-	-	-	6.88	9.12	1.05	-	97.45	8.32	-	122.82
Gujarat												
Ore	-	4955	845	5800	-	-	-	129	-	7131	-	13060
Metal	-	80.75	13.78	94.53	-	-	-	0.69	-	113.38	-	208.60
Haryana												
Ore	-	-	-	-	-	2230	-	-	-	30678	-	32908
Metal	-	-	-	-	-	11.82	-	-	-	101.80	-	113.62
Jharkhand												
Ore	16540	49127	21151	86818	11720	17990	-	74857	64488	32252	-	201307
Metal	163.04	448.83	196.91	808.78	202.76	194.30	-	869.43	606.35	412.65	-	2285.49
Karnataka												
Ore	836	1301	373	2510	-	-	2008	1750	6833	20434	-	33535
Metal	8.78	17.56	4.31	30.65	-	-	11.24	22.00	65.77	99.61	-	198.62
Madhya Pradesh												
Ore	90909	71481	35929	198319	-	-	-	49650	33700	95519	-	178869
Metal	1218.18	957.84	467.08	2643.10	-	-	-	155.75	104.70	916.02	-	1176.47

(Contd.)

COPPER

Table - 6 : (Concl.)

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	-	-	-	-	-	-	-	-	9399	3811	-	13210	
Metal	-	-	-	-	-	-	-	-	89.65	43.05	-	132.70	
Meghalaya													
Ore	-	-	-	-	-	-	-	-	880	-	-	880	
Metal	-	-	-	-	-	-	-	-	9.00	-	-	9.00	
Nagaland													
Ore	-	-	-	-	-	-	-	-	-	2000	-	2000	
Metal	-	-	-	-	-	-	-	-	-	15.00	-	15.00	
Odisha													
Ore	-	-	-	-	-	-	-	1420	2536	2095	-	6051	
Metal	-	-	-	-	-	-	-	21.69	21.06	20.69	-	63.44	
Rajasthan													
Ore	25103	228	75585	100916	3375	-	10253	16513	100256	545858	-	676255	
Metal	214.73	3.29	973.16	1191.18	3.37	-	10.25	320.48	686.60	2179.09	-	3199.79	
Sikkim													
Ore	-	8	-	8	-	437	63	300	-	150	-	950	
Metal	-	0.09	-	0.09	-	7.77	0.91	8.47	-	4.23	-	21.38	
Tamil Nadu													
Ore	-	-	-	-	-	-	-	200	590	-	-	790	
Metal	-	-	-	-	-	-	-	1.08	2.73	-	-	3.81	
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.

COPPER

Table – 2 : Details of Exploration Activities for Copper, 2010-11

Agency/ State/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Gujarat							
Banaskantha	Amlimal area (South Delhi Fold Belt)	G-4 Stage (Reconnaissance Stage)	-	-	-	-	Indications of mineralisation in the form of malachite, azurite stains, specks and stringers of pyrite with occasional chalcopyrite in the cherty quartzite and amphibolite. Work is in progress
Haryana							
Mahendragarh	West of Bakrija	G-3 Stage (Prospecting Stage)	1	203.15	-	34	To assess the potential of copper mineralisation to the west of Bakrija. Analysis of core samples did not indicate any significant values of copper.
Maharashtra							
Chandrapur	Nai Dilli- Dighori and Lal Heti Dugula (Archaean gneissic terrain)	-	-	-	-	-	To establish the northern strike continuity of Thane-Vasana copper and associated basemetal mineralisation. Soil samples from Dugala area indicated presence of sulphide mineralisation. Geo-chem. sampling on 100 x 50 m grid was conducted.
Gadchiroli	Ghanpur Mudholi Block (West Bastar Craton)	G-3 (Prospecting Stage)	-	-	-	-	To establish the potential zone of copper mineralization. The target of spill over drilling achieved. Chemical analytical results are awaited.
Meghalaya							
East Garo Hills	Simsang Diwa village (Archaean geissic complex)	G-4 Stage (Reconnaissance Stage)	5	-	-	-	To assess base metal potential in the area. No significant sulphide mineralised zone could be delineated.
Rajasthan							
Alwar	Mundiyawas- Khera area (North Delhi Fold Belt).	Detailed	-	Scout drilling	-	-	To evaluate potential of copper and precious metal mineralisation. Sampling were carried out. The analytical results are awaited.
Bhilwara	Karoi Rajpura area, (Pur-Banera Belt.)	G-4 stage (Reconnaissance Stage)	-	-	-	-	Evidences of copper mineralisation in the form of malachite stains and as specks, pods, stringers and veins of chalcopyrite, bornite and covellite. A copper mineralised zone having a strike length of about 300 m and width varying from 80 m to 130 m with an average grade of 0.34% copper was delineated.

COPPER

Table - 2 (Contd.)

Agency/ State/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Rajasthan (Contd.)							
Bhilwara	Northern part of Salampura Block, (Pur-Banera Belt)	G-3 stage (Prospecting stage)	-	-	-	-	To assess the basemetal potential between Pur-Dariba copper prospect and Gurla basemetal prospect. Boreholes intersected 8 mineralised zone having about 5% to 6% total sulphides(V/E). Zone-II, IV,VI & VII are rich in sphalerite and galena with minor chalcopyrite. The other zones are rich in pyrite and pyrrhotite. Analytical results of core samples are awaited.
Bhilwara	Kamalpura and Devpura Blocks, (Pur-Banera belt)	G-4 stage (Reconnaissance Stage)	-	-	-	-	To identify the target areas for basemetal mineralisation.
Jaipur	Dholpura area (North Delhi Fold Belt)	G-4 stage 1:25000	-	-	-	-	To assess the extent and potential basemetal and associated gold mineralisation in the Rialo group of rocks. The channel/bedrock samples indicated Cu values from < 5 ppm to 686 ppm (max.). Only 3 samples from old workings with Malachite stains show 0.1% to 0.18% Cu. The Pb values range from <25 ppm to 100 ppm (max.) and Ag values are < 5 ppm.
Jaipur	Dhantali Block	G-3 stage (Prospecting Stage)	-	-	-	-	To evaluate the potential of basemetal and gold in North Delhi Fold Belt. The work was temporarily suspended due to environmental reasons.
Pali	Trans Aravalli area	G-4 stage (Reconnaissance Stage)	-	-	-	-	To assess the polymetallic mineral potential of the Dhani granite. Analytical results show Fe-35% and REE >2% for Dhani granite.
Sikar	West of Nanagwas area (North Delhi Fold Belt)	G-4 Stage (Reconnaissance Stage)	-	-	-	-	To delineate the zones of basemetal mineralisation and associated precious metals. Surface indications of sulphide mineralisation manifested by malachite stains and specks of unaltered bornite pyrite in amphibole marble and in thin quartz vein. The analytical results are awaited.

(Contd.)

COPPER

Table - 2 (Contd.)

Agency/ State/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Rajasthan(Contd.)							
Sikar	Dariba North Block (North Delhi Fold Belt)	G-4 stage (Reconnaissance Stage)	-	-	-	-	To delineate the zones of basemetal mineralisation and associated precious metals in Dariba-Baleshwar area. Surface indications of mineralisation are manifested by malachite stains and specks of unaltered sulphides in amphibole and dolomitic marble. The analytical results are awaited.
Tonk	Janula- Danota in Agucha- Malpura- Chaksu Belt.	G-4 stage (Reconnaissance Stage)	-	-	-	-	To evaluate the belt covered by airborne and geochemical anomalies by detailed geological mapping for base metal mineralisations.
Sikkim West District (Part)	Chakung- Jugdum area	G-4 stage (Reconnaissance Stage)	-	-	-	-	To assess the basemetal and gold potentiality of the area. Sulphide mineralisation in the area associated with Goraubathan formation where pyrite and chalcopyrite occur as fine dissemination within quartz vein. In Buxa formation mineralisation occurs in the form of malachite stains more profusely near the contact of Ranjit pebble bed. The work is in progress.
Dte. of Geology							
Odisha							
Mayurbhanj	North of Kesharpur	1:25000 1:2000	115 1	27 pits 79m ³ Trench	-	53 Geo- chemi- cal- 27	To trace possible extension of Singhbhum shear zone to delineate anomalous zone of copper mineralisation. The sheared hornblende-chlorite schist hosts copper mineralisation at the contact with granite & gneiss. Results of chemical analysis awaited.
DMG							
Rajasthan							
Ajmer	Around Village Kirap, Ratangarh Rajpura Teh. Beawar	1:50000 1:10000	100 10	-	-	29	Intermittently exposed gossan zone was located at the contact of impure limestone and quartzite in about 80m. Analysis of samples are awaited.
Rajsamand & Bhilwara	Khedala Barach Teh. Bhim N/V Thadiya Teh. Asind	1:2000	0.5	-	-	20	A ferruginous, brecciated gossan zone is extending for a strike length of 1150 m with width 30 m - 40 m NE of Thadiya village is indicative of base metal occurrence.

(Contd.)

COPPER

Table - 2 (Concl'd.)

Agency/ State/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Rajasthan (Contd.)							
Rajsamand & Bhilwara	N/V Sunarkui Modela, Chippla etc., Teh Bhim and Asind	-	-	1	72	10	Indication of basemetal mineralisation is along a thin ferruginous, sheared gossan zone within dolomite exposed for more than 1500 m. strike length N/V Sunarkui.
Sirohi	N/V Watera Teh. Pindwara	1:10000	10	-	-	20	Malachite staining in rocks for a length of 500 m. Gossan of 70x30 m dimension present. Pyrite, pyrrhotite and chalcopyrite seen in well cutting.
Udaipur	Kodarwalia, Kun, Punja ki Bhagal Teh Lasadia	-	-	1	90	47	In borehole stringers and specks of pyrite and chalcopyrite observed. Analysis awaited.
MECL							
Rajasthan							
Chittorgarh	Wari block	1:1000	1.50	23	3994	1077	Nine mineralised zones have been (Primary) deciphered in the block with total resources of 2.56 m x 1.09% Cu in (Comp.) 332 category. The ore also contains Ni-168 ppm (Av.) and Co-161 ppm (Av.).
HCL							
Rajasthan							
Jhunjhunu	Kolihan copper Deposit, Khetri Teh..Khetri (Khetri Copper Belt)	-	-	-	-	-	Reserves to a tune of 17.70 million tonnes with Cu-1.32% (Av.) estimated. (Measured 9.28 million tonnes with Cu-1.18%; Indicated 0.20 million tonnes with Cu-1.56%; and Inferred 0.64 million tonnes with Cu-1.44%.)
Jhunjhunu	Khetri mine Gothra, Teh. Khetri	-	-	2	267.40	225	Total reserves of 56.97 million tonnes of grade Cu-1.37% (Av.) were established. (Measured 6.47 million tonnes Cu-1.10%; Indicated 8.06 million tonnes Cu-1.46%; Inferred 42.44 million tonnes Cu-1.39%.)

PRODUCTION & PRICES

Copper Ore and Concentrates

The production of copper ore at 3.62 million tonnes in 2010-11 increased by 11% as compared to that in the previous year.

The metal content in the ore produced in 2010-11 works out to 35,477 tonnes as against 30,748 tonnes in 2009-10. During the year under review, 3.61 million tonnes of ore was treated for obtaining copper concentrates as against 3.29 million tonnes in 2009-10.

Production of copper concentrates at 136,856 tonnes in 2010-11 increased by about 10% as compared to that in the previous year. Madhya Pradesh was the leading producer of copper concentrates, accounting for about 58% of the production during 2010-11, followed by Rajasthan with 33% and Jharkhand with 9% production. The number of reporting mines was 4 in both the years (Tables - 3 to 7).

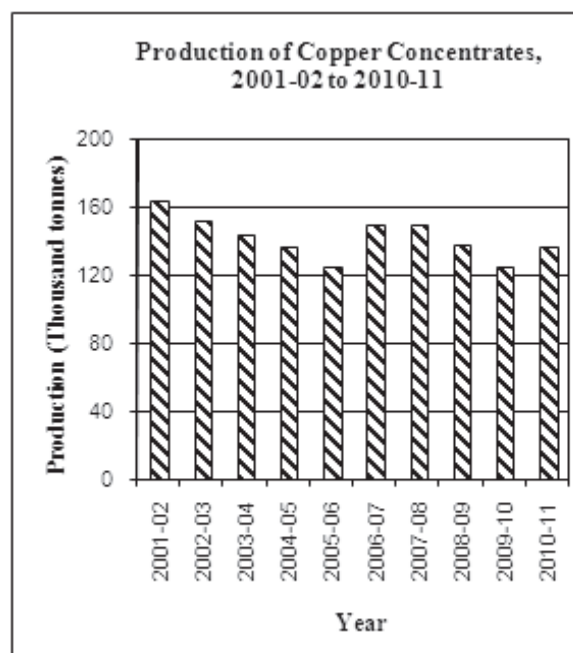
Grade Analysis

Copper content in the ore produced during 2010-11 was 0.98% Cu as against 0.94% in the previous year 2009-10. All India average metal content of ore treated in 2010-11 works out to 0.97% Cu as against 0.94% in the preceding year. The copper content in the ore treated varied from state to state. It was 0.93% Cu in Rajasthan, 1.00% Cu in Madhya Pradesh and 0.88% Cu in Jharkhand. The average metal content in the concentrate produced works out to 23.16% Cu in 2010-11 as against 22.87% Cu in the previous year. The grade of copper concentrate produced in Madhya Pradesh in 2010-11 was 25.91% Cu while that of Jharkhand was 25.02% Cu and Rajasthan 17.85 % Cu (Tables - 4 to 7).

The average daily employment of labour in copper mines in 2010-11 was 3,471 as against 2,611 in the preceding year.

Copper Metal

Hindustan Copper Ltd produces copper metal from the ore and concentrates produced from their captive mines and plants as well as from imported concentrates. Sterlite Industries (India) Ltd and Hindalco Industries Ltd produce copper



metal from imported copper concentrates. Copper metal producers are indicated in Table-8.

The production of copper blister decreased by 20% and copper continuous cast wire rods (CCWR) registered a decrease of 7% in 2010-11. Similarly in the production of copper cathodes a marginal decrease of 4% was recorded during the year, 2010-11. Production of copper electrolytic wire bars was not reported during last five years (Tables -9 to 12).

Prices of copper are furnished in the General Review on 'Prices'.

Table – 3 : Principal Producer of Copper Concentrates, 2010-11

Name and address of the producer	Location of mine	
	State	District
M/s Hindustan Copper Ltd, Tamra Bhavan, 1, Ashutosh Chowdhury Avenue, Post Box No. 10224, Kolkata – 700 019.	Madhya Pradesh	Balaghat
	Rajasthan	Jhunjhunu
	Jharkhand	Singhbhum (East)

COPPER

**Table – 4 : Production of Copper Ore, 2009-10 and 2010-11
(By States)**

(In tonnes)

State	2009-10			2010-11(P)		
	Ore produced	Cu%	Metal content	Ore produced	Cu%	Metal content
India	3271169	0.94	30748	3615038	0.98	35477
Jharkhand	387843	0.88	3413	396841	0.88	3488
Madhya Pradesh	1975938	0.95	18752	2246597	1.01	22617
Rajasthan	907388	0.95	8583	971600	0.96	9372

**Table – 5 : Copper Ore Treated, 2009-10 and 2010-11
(By States)**

(In tonnes)

State	2009-10			2010-11(P)		
	Ore treated	Cu%	Metal content	Ore treated	Cu%	Metal content
India	3289451	0.94	30970	3606873	0.97	35003
Jharkhand	382939	0.87	3332	391161	0.88	3437
Madhya Pradesh	1962745	0.95	18587	2249831	1.00	22572
Rajasthan	943767	0.96	9051	965881	0.93	8994

**Table – 6 : Production of Copper Concentrates 2008-09 to 2010-11
(By States)**

(Quantity in tonnes; value in ₹'000)

State	2008-09		2009-10		2010-11(P)	
	Quantity	Value	Quantity	Value	Quantity	Value
India	137514	4091113	124577	3809462	136856	5469271
Jharkhand	11415	338694	13080	402092	12904	428308
Madhya Pradesh	57575	1802506	64913	1926362	78779	2499132
Rajasthan	68524	1949913	46584	1481008	45173	2541831

**Table – 7 : Production of Copper Concentrates, 2009-10 and 2010-11
(By Sector/States/Districts)**

(Quantity in tonnes; value in ₹ '000)

State/District	No. of mines	2009-10			No. of mines	2010-11(P)		
		Quantity	Cu %	Value		Quantity	Cu %	Value
India/Public sector	4	124577	22.87	3809462	4	136856	23.16	5469217
Jharkhand/ Singhbhum (East)	1	13080	26.03	402092	1	12904	25.02	428308
Madhya Pradesh/ Balaghat	1	64913	26.35	1926362	1	78779	25.91	2499132
Rajasthan/ Jhunjhunu	2	46584	17.16	1481008	1	45173	17.85	2541831

COPPER

Table – 8 : Producers of Copper, 2010-11

Name and address of the producer	Location	
	State	District
M/s Hindustan Copper Ltd, Tamra Bhavan, 1, Ashutosh Chowdhury Avenue, Post Box No. 10224, Kolkata – 700 019.	Rajasthan	Jhunjhunu
	Maharashtra	Raigad
	Jharkhand	Singhbhum (East)
M/s Hindalco Industries Ltd, Century Bhawan, Dr. Annie Besant Road, Mumbai – 400 025, Maharashtra.	Gujarat	Bharuch
M/s Sterlite Industries (India) Ltd. Copper Division, 1/1/2, Chinchpada, Silvassa-396 830, Dadra & Nagar Haveli (U.T.)	Tamil Nadu Dadra & Nagar Haveli (U.T.)	Thoothukudi Chinchpada (Silvassa)
Jhagadia Copper Ltd,* 747, GIDC Industrial Estate, Post Box No. 14, P.O. Jhagadia – 393 110, Dist. Bharuch, Gujarat.	Gujarat	Bharuch

* Production of copper from secondary route.

Table – 9 : Production of Copper, 2008-09 to 2010-11

Year	Copper blister	Copper cathodes	Copper electrolytic wire bars	(In tonnes)
				Copper CCWR*
2008-09	29472	513640	-	314425
2009-10	17864	532865	-	312447
2010-11(P)	14245	512124	-	290734

* CCWR - Continuous Cast Wire Rods.

**Table – 10 : Production of Copper (Blister), 2009-10 and 2010-11
(By States/Plant)**

State	Plant	(Quantity in tonnes)			
		2009-10		2010-11	
		Quantity	Value	Quantity	Value
India		17864	-	14245	-
Jharkhand	Surda ICC	17864	-	14245	-

COPPER

**Table – 11 : Production of Copper (CCWR), 2009-10 and 2010-11
(By States/Plants)**

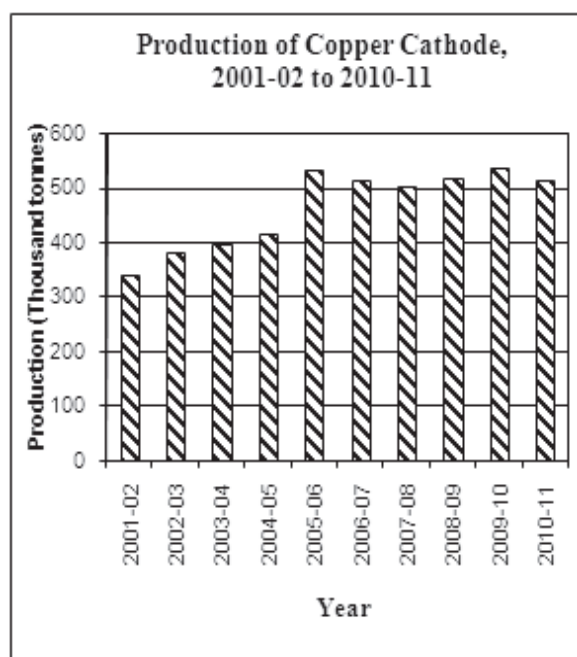
(Quantity in tonnes; value in ₹ '000)

State	Plant	2009-10		2010-11	
		Quantity	Value	Quantity	Value
India		312447	100987199	290734	113580892
Gujarat	Hindalco	129457	44413400	143529	57223062
Maharashtra	HCL Taloja	41999	14864500	13321	6310100
Tamil Nadu	Sterlite	140991	41709299	133884	50047730

**Table – 12 : Production of Copper (Cathodes), 2009-10 and 2010-11
(By States/Plants)**

(Quantity in tonnes; value in ₹ '000)

State	Plant	2009-10		2010-11	
		Quantity	Value	Quantity	Value
India		532865	158204331	512124	190516536
Gujarat		336854	100368562	335762	124964580
	Hindalco	333360	99533194	335762	124964580
	Jhagadia (SWIL)	3494	835368	-	-
Jharkhand	Surda ICC	15868	5035362	13653	5078385
Tamil Nadu	Sterlite	180143	52800407	162709	60473571



MINING & MILLING

HCL, a Public Sector Enterprise of Government of India has integrated operations encompassing mining, beneficiation, smelting, refining & casting of refined copper metal and also recovery of by-products. It operates the Indian Copper Complex (ICC) in Jharkhand, the Khetri Copper Complex (KCC) in Rajasthan, Malanjkhand Copper Project (MCP) at Malanjkhand in Balaghat district, Madhya Pradesh and Taloja Copper Project (TCP) in Maharashtra. Copper ore is being treated by froth flotation process to produce more than 16% copper in concentrate. The concentrate is then smelted by flash-smelting technique of Outokumpu of Finland at Khetri to produce 99.9% copper.

Hindustan Copper Ltd

Mining methods adopted in Khetri and Kolihan underground mines of HCL are sub-level open stoping and blasthole stoping. In sub-level open stoping, sub-levels are developed at vertical intervals of 18 to 20 m and a crown level is developed 9 m below upper main level. Width of the stope across the ore body is governed by its thickness. Stope drilling is done by 57 mm dia. BBC 120F drifter machine. A slot raise is prepared within the stope limit connecting crown level to extraction level. Slot raise is then widened to full width of the stope. Stope rings are blasted using the free face of the slot. When blasting of stope rings is completed, stope pillar rings are blasted. After completion of the stope and pillar rings, rib and crown pillars are blasted at a time. After recovery of rib pillar and crown pillar ore, the sill pillar is blasted from hanging wall to foot wall. HCL has also developed post-pillar method of mining for adoption in flatly dipping wide ore bodies. This has resulted in higher production rates compared to room and pillar stopes.

Another mining method is Blast hole stoping method, wherein, a drill level is prepared between two main levels leaving a crown pillar of 9 to 15 m. Slot raise, slot, stope and rib pillar are drilled by Cubex 165 mm dia. machine. Trough, sill and crown pillar drilling are done by BBC120F drifter machine. Sequence of blasting remains the same as in the sub-level open stoping method. The advantages of this method is excellent fragmentation and overall reduction in the cost of mining. Trackless mining development has helped in rapid development of mines enabling higher levels of production comparable to international standards.

HCL has a total of 3.8 million tpy ore capacity, that includes 1.4 million tpy at KCC, (includes production capacity of Khetri, Kolihan, and Banwas mines which is under development) 2.0 million tpy at MCP and 0.4 million tpy at ICC. The company operates concentrator plants in Khetri, Rajasthan with a capacity of 2.02 million tpy, Ghatsila, Jharkhand with 1.55 million tpy capacity and Malanjkhand, Madhya Pradesh with 2.0 million tpy capacity.

Khetri Copper Complex (KCC), Khetrinagar, Jhunjhunu District, Rajasthan

KCC has two projects under the complex at Khetri, Kolihan in Jhunjhunu district which presently are in operation. It operates two underground mines namely, Khetri and Kolihan with combined capacity of one million tpy. The proposed expansion of Khetri & Kolihan mines and development of Banwas deposit will increase ore production from 1.0 million tonne to 3.1 million tonnes per annum. Work for mine

construction & development on Banwas mine has started in May 2010. The work is expected to complete by 2014.

KCC has also a concentrator plant having a capacity of 2.02 million tonnes per year and a smelter with capacity of 31 thousand tonnes per year at Khetri in Jhunjhunu district, Rajasthan. It has facilities to recover gold, silver, nickel and sulphuric acid. KCC smelter has been shutdown due to economic consideration since December, 2008.

However, HCL is contemplating suspension of operation at Precious Metal Recovery (PMR) plant, as export of anode slimes containing gold and silver directly is found to be economically advantageous.

Indian Copper Complex (ICC), Ghatsila, East Singhbhum District, Jharkhand

All mines at Indian Copper Complex (ICC), Jharkhand were earlier closed on economic considerations. Out of the closed mines at ICC, company has since re-opened the mine at Surda in association with an Australian Mining Company, viz. M/s Monarch Gold Co. Ltd/IRL. The mine has started production of copper ore and its beneficiation into copper concentrate from January, 2008. The plan envisages increase in the depth of the mine and enhancement of production capacity from 0.4 million tonne per annum to 0.9 million tonne per annum. Company has also initiated action to reopen closed mines at Singhbhum Copper Belt of ICC namely, Rakha and Kendadih mines to produce 1.5 million tonnes and 0.21 million tonne of ore per annum respectively. It is proposed to develop an underground mine at Chapri-Sideshwar to produce 1.5 million tonnes of ore per annum at an estimated capital expenditure of Rs 468 crore. Detailed project report for development of Chapri-Sideshwar mine has been prepared and Board has approved the proposal.

Malanjkhand Copper Project (MCP), Malanjkhand, Balaghat District, Madhya Pradesh

MCP has the largest hard rock open-pit mechanised mine in the country at Malanjkhand, Balaghat district, Madhya Pradesh, having an annual capacity to produce 2 million tonnes ore with a matching concentrator plant. It is the single largest copper deposit in the country contributing 80% to the HCL's total copper ore production. Prominent deposits in MCP are Malanjkhand, Shitalpani, Gidhri Dhorli, Jatta and Garhi Dongri. The concentrates produced by this plant are sent to KCC and ICC for smelting. It is proposed to expand the production of Malanjkhand mine from 2 million tonne to 5 million tonne per annum by developing an underground mine below the existing open cast mine.

COPPER

Green Field Exploration

The Company has applied 20 fresh prospecting, mining and reconnaissance permit (RP) in the State of Rajasthan, Jharkhand and Madhya Pradesh. The status of the fresh lease applications is given below:

i) Prospecting Licence (PL) has been applied for the two areas at Baniwali-ki Dhani in Sikar district of Rajasthan for an area of 36.07 sq km and another for 8.65 sq km. Government of Rajasthan has granted an area of 36.07 sq km in favour of HCL. PLs yet to be executed.

ii) Mining Lease application has been submitted for Dhobani Pathargora Intervening Block and has already been scrutinised at the district level.

iii) RP in the district of Balaghat is in the process of finalisation by the Government of Madhya Pradesh.

iv) The other areas applied for Mining Lease are in the state of Jharkhand at Dhatkidli Trildih Block in the adjoining district of Saraikala and Nandup-Talsa Block.

In addition, M/s. Sterlite Industries has been making attempts to have copper exploration/mining activities started within the country; however, it has not yet been able to start any mining activity in India.

INDUSTRY

HCL, a public sector company, and now a Miniratna (Category 1) company, was the only producer of primary refined copper till 1997. The metal capacity of its two integrated smelters was around 51,500 tpy. However, the annual installed capacity of cathode production is 49,500 tonnes for cathode production. The other two producers of primary copper from imported concentrates are M/s Hindalco Industries Ltd and Sterlite Industries of Vedanta Group, having annual capacities of 500,000 tonnes and 400,000 tonnes of refined copper, respectively. Jhagadia Copper Ltd (formerly SWIL Ltd) with 50,000 tpy capacity of copper cathodes and additional capacity of 20 thousand tpy of copper anode is a producer of copper through secondary route. Besides, continuous cast wire rod plants are operated by HCL, Sterlite and Hindalco. In addition, M/s TDT presently Alchemist Metals Ltd, Rewari, Haryana and M/s Finolex also have continuous cast wire rod plants based on imported copper. Details regarding smelter capacity and production of copper cathode are given in Table - 13.

Table – 13 : Capacity and Production of Copper Smelters

(In '000 tonnes)

Smelter/Location	Annual Capacity	Production*	
		2009-10	2000-11(P)
TOTAL	1001.5	532.86	512.12
1. Hindustan Copper Ltd**	51.5	15.87	13.65
i) Khetri Copper Complex,** Dist. Jhunjhunu, Rajasthan.	31	Nil	Nil
ii) Indian Copper** Complex, Ghatsila, Dist. East Singhbhum, Jharkhand.	20.5	15.87	13.65
2. Sterlite Industries (India) Ltd, Thoothukudi, Tamil Nadu.	400	180.14	162.71
3. Hindalco Industries Ltd, Dahej, Dist. Bharuch, Gujarat.	500	333.36	335.76
4. Jhagadia Copper Ltd, (Formerly SWIL Ltd), Dist. Bharuch, Gujarat.	50	3.49	Nil

* Copper cathodes.

** Metal capacity. However, the cathode capacity of HCL is 49,500 tonnes; (KCC: 31000 tonnes and ICC : 18,500 tonnes).

Public Sector Plants

Hindustan Copper Ltd

i) Khetri Copper Complex (KCC)

This smelter with a capacity of 31,000 tpy is located at Khetri in Jhunjhunu district, Rajasthan. KCC smelter has been shutdown due to economic consideration since December, 2008. Khetri facility requires more than 3.3 million tonnes of ore for processing. As against this, in-house ore production at Khetri is about 1 million tonnes, for running the plant to full capacity, concentrate has to be transported partly from Malanjkhand and the balance from other geographies. Both the methods are not financially viable. Import of concentrate is not viable due to low Treatment charge/Refining charge (Tc/Rc) charges. The Company on a dynamic basis will take into account the Tc/Rc in the international market and captive production of ore at Khetri and availability of water before taking a final decision on its re-opening.

ii) Indian Copper Complex (ICC)

A 20,500-tpy of metal capacity (18,500 tonnes cathode capacity) smelter is located at Ghatsila, East Singhbhum district, Jharkhand. In addition, the Complex consists of 8,400-tpy wire bar casting plant, 54,000-tpy sulphuric acid plant and a brass rolling mill. There is also a precious metal recovery plant for recovery of gold, silver, selenium, tellurium, nickel sulphate, copper sulphate, etc. A pilot plant with a capacity to produce one tonne nickel cathodes per month was also set up at ICC. The plant is currently being scaled up to a production capacity of 5 tonnes per month of nickel cathodes.

iii) Talaja Copper Project(TCP)

The plant with a capacity of 60,000 tpy continuous cast wire rods (CCWR) is located at Talaja in Maharashtra was commissioned in December, 1989. The Wire rod unit produces continuous cast wire rod of size 8mm, 11mm, 12.5 mm, 16 mm and 19 mm, based on Southwire (SCR-2000) technology, USA. Excess plant capacity to the extent of about 40,000 tonnes is lying idle at TCP for want of input cathodes. In order to utilise its surplus capacity and thereby reduce its overall cost, TCP undertakes job work for tolling of cathodes for other organisations. Long term strategy for the plant should involve manufacturing of value added products and job order which would be key to its survival and viability.

Private Sector Plants

The status of private sector smelter plants is as follows:

i) Sterlite Industries (India) Ltd

The Sterlite Industries (India) Ltd having an installed smelter capacity of 400,000 tpy copper anodes is located at Thoothukudi in coastal Tamil Nadu. It is based on 'Isasmelt' technology using imported concentrates. A new cathode refinery of 205,000 tpy and 90,000 tpy rod plant have also been built at Thoothukudi for exports from nearby ports. The company has set up a copper refinery of 195,000 tpy copper cathodes capacity and 150,000 tpy rod mill at Chinchpada, Silvassa in the Union Territory of Dadra & Nagar Haveli. Anode from Thoothukudi are refined at Silvassa for domestic market. Besides copper, the company

also manufactures sulphuric acid, phosphoric acid, gold and silver as by-products.

ii) Hindalco Industries Ltd (Birla Copper)

The company's smelter located at Dahej, Bharuch district, Gujarat, has a capacity of 500,000 tpy. The smelter is based on Outokumpu technology. A part of cathodes production is used for producing continuous cast wire rods. In the process of extraction of copper metal, sulphuric acid, phosphoric acid, gold and silver are recovered as by-products. The entire requirement of copper concentrates was met through imports from Australia, Indonesia, Papua New Guinea, Chile, Argentina and Canada.

iii) Jhagadia Copper Ltd (formerly SWIL Ltd)

SWIL Ltd has been renamed Jhagadia Copper Ltd w.e.f. 5-1-2006 and its smelter has been installed at Jhagadia in Bharuch district of Gujarat. The plant has been set up in technical collaboration with Boliden Contech AB of Sweden. This scrap-based electrolytic smelter for production of cathodes has a capacity of 50,000 tonnes per year along with additional 20,000 tpy capacity for production of copper anodes. The plant has stopped production temporarily from August 2009.

iv) Metdist

This Company was in the process of setting up a smelter with a capacity of 150,000 tpy copper cathodes at Rampara-Rajula in Amreli district, Gujarat, in technological collaboration with Mitsubishi, Japan. The project has been withheld.

RECYCLING OF COPPER

The recycling of copper scrap is gaining importance worldwide simply because of the fact that the recovery of copper metal from scrap requires much less energy than the recovery from primary source and secondly it saves the natural resources. In India, maximum amount of scrap is recycled through direct melt route. While some of the industries do take adequate measures in scrap processing, some simply melt the scrap. Direct melting has serious environment implications. Also, the quality of metal produced in such melting shops can be inferior and may create safety hazards as well as inefficient use of electricity for the user industries. Overall, thus, India lacks

COPPER

organised set up for recycling including collection and processing of scrap.

As per ICSG (International Copper Study Group) the recovery of secondary copper in the entire world was 3.25 million tonnes in 2010 as compared to 2.84 million tonnes in the previous year.

As per Central Pollution Control Board as on 13.5.2010, there were 35 units operating in different states with a combined capacity of 2,42,321 tpy for handling different types of scrap and 132 units with combined capacity of 5,17,515 tpy which recover copper along with other metals. As per the estimates made in the recently published Market Survey on Copper by IBM, production of 1,06,573 tonnes of secondary copper, all in organised sector is estimated in the country.

CONSUMPTION & USES

The per capita consumption of copper in India is currently at 0.5 kg per annum as compared to China's per capita consumption of 4.6 kg per annum and to that of 10 kg of developed nations and 2.4 kg in the entire world. India's per capita consumption is likely to be moderate and has many strides to cover so as to match that of China. As per one forecast, the per capita consumption of copper in India will be 3 kg in 2025. 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 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, semiconductor 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 heat sinks help to remove heat from transistors and enable computer 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 an estimate by ICSG most cars contain an average of 20 kg copper and luxury &

hybrid vehicles contain about 45 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.

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. Plastics too is 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 690 million tonnes of copper content. Chile has the largest share, accounting for about 28% of world reserves, followed by Peru (13%), Australia (12%), Mexico & USA (5% each), China and Indonesia (4% each) (Table-14).

The world mine production of contained copper was 16.2 million tonnes in 2010, as against 15.9 million tonnes in 2009. Chile continued to be the largest producer of copper in 2010 with 33% share followed by Peru (8%), China & USA (7% each) and Indonesia (5%) (Table-15).

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 and Construction (7%), General Engineering goods (6%) and other industries including Process Industries (16%).

Although major commodity derivatives markets are located in the western region, global market takes cues and price direction from the trend in demand - supply from Asia.

COPPER

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

(In '000 tonnes of copper content)

Country	Reserves
World: Total (rounded)	690000
Australia	86000
Canada	7000
Chile	190000
China	30000
Congo (Kinshasa)	20000
Indonesia	28000
Kazakhstan	7000
Mexico	38000
Peru	90000
Poland	26000
Russia	30000
USA	35000
Zambia	20000
Other countries	80000

Source : Mineral Commodity Summaries, 2012.

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

(In '000 tonnes of metal content)

Country	2008	2009	2010
World: Total	15600	15900	16200
Australia	886	856	870
Canada	608	494	525
Chile	5328	5394	5419
China	1093	1062	1191
Indonesia	655	988	878
Kazakhstan	422	406	381
Mexico	246	241	270
Peru	1268	1276	1247
Poland	430	439	426
Russia	705	676	703
USA	1308	1204	1129
Zambia	600	698	819
Other countries	2051	2166	2342

Source: World Mineral Production, 2006-2010.

Australia

OZ Minerals Ltd (Melbourne, Australia) began production at its Prominent Hill Mine. It is expected to produce 110,000 tpy of copper in concentrate for at least 4 years.

Chile

Escondida is the world's largest copper mine. Codelco (Corporacion Nacional del cobre de Chile) regained its position as leading global mine producer of copper. Expansion of the Al Norte (Xstrata) and Codelco Norte Smelters was completed.

China

China is the largest consumer of copper in the world. In terms of production as well, it accounts about 22% of world's capacity which includes mine, refinery and smelting operations.

Expansion of the Guixi (Jiangxi Copper Corp.) Jinchuan (Jinchuan Nonferrous Metals Group) and Tongling II (Tongling Nonferrous Metal Corp.) smelters were completed. The greenfield Baiyin Electrolytic Refinery (Baiyin Nonferrous Metals) was constructed to match existing smelter capacity of 100,000 tpy. Its projected capacity of 300,000 tpy was expected to exceed the proposed expansion of Baiyin smelter to 200,000 tpy.

Congo (Kinshasa)

Capacity continued to increase at several mines that began production in 2007, including 15,000 tpy of additional concentrate production capacity at the Frontier Mine (First Quantum Minerals Ltd, Vancouver); 30,000 tpy of additional electrowon capacity at the Kamoto Mine (Katanga Mining Ltd, Baar, Switzerland); 60,000 tpy of additional electrowon capacity at the Luita Mine (Central African Mining and Exploration Co., London); and 16,000 tpy of additional electrowon capacity at the Ruashi II Mine (Metorex Ltd, Johannesburg, South Africa). The Tenke Fungurume Mine (57.75% owned by FCX), which along with Prominent Hill were the only significant greenfield start-ups in 2009, began production in March 2009 and was expected to reach full capacity of 115,000 tpy in 2010.

COPPER

USA

In the United States, mine and refinery production continued to decline in 2010 owing to mine cutbacks instituted at year end 2008 and lower ore grades. The White Pine electrolytic refinery in Michigan that treated imported anode closed in August. U.S. copper mine production was expected to rise by more than 100,000 tonnes in 2011 owing to expansion and restoration of cutbacks. Domestic consumption of refined copper rose by about 5% in 2010 but remained below the 2008 level.

Zambia

The Kansanshi Mine (First Quantum Minerals) increased concentrate and electrowon capacities by 15,000 tpy and 30,000 tpy, respectively; the Lumwana Mine (Equinox Minerals Ltd, Perth, Australia and Toronto) reached capacity of 170,000 tpy following a delayed start-up in 2008.

FOREIGN TRADE

Exports

The export of copper from India is in the forms of copper ore & concentrates, refined copper, copper & alloys, brass & bronzes, scrap, cement copper, mattes and powder & flakes.

Export of copper ores and concentrates decreased sharply to 8,187 tonnes in 2010-11 as against 40,422 tonnes in 2009-10. Exports were almost entirely to Belgium (98%). Export of refined copper increased sharply to 781,743 tonnes in 2010-11 from 199,842 tonnes registered in 2009-10. China was the largest importer of copper from India with a share of 75% followed by UAE (12%) Saudi Arabia and Thailand (4% each). (Tables-16 to 23).

Imports

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

During the year 2010-11, imports of copper ores and concentrates were slightly lower at 1,902,026 tonnes as compared to 2,187,460 tonnes in 2009-10. Chile with a share of 31% was

the leading supplier followed by Australia (24%), Indonesia (11%) and Iran & Brazil (9% each). Imports of refined copper decreased in 2010-11 at 8,055 tonnes as against 11,543 tonnes in 2009-10. Sri Lanka with 14% share was the major supplier. UK, Australia and Malaysia contributed 9% each followed by Ukraine (7%). (Tables - 24 to 33).

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

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	40422	286841	8187	370999
Belgium	39823	284473	8018	364008
China	-	-	112	4885
UAE	-	-	50	2024
Sri Lanka	-	-	7	72
U K	++	2	++	8
Netherlands	-	-	++	2
Other countries	599	2366	-	-

(U): Under reference

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

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	199842	58344444	781743	317110308
China	81423	24439613	586071	238687401
UAE	31001	8562253	95161	37050873
Saudi Arabia	30827	8338611	32065	13859617
Thailand	13374	4135693	29011	11237219
Singapore	13648	4094319	12394	5397780
Malaysia	10681	3105342	8069	3159209
Oman	2699	809073	6360	2407641
Chinese Taipei/ Taiwan	7645	2337032	4593	1761763
Egypt	494	154594	2880	1640452
Vietnam	2100	653975	883	381807
Other countries	5950	1713939	4256	1526546

(U): Under reference

COPPER

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

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	303749	85146161	973501	367165694
China	86235	25655923	587044	239206282
UAE	38151	10496958	100044	38956442
Saudi Arabia	44364	12332442	48594	20761184
Malaysia	14673	4327009	34806	14400368
Thailand	16066	4960879	35923	13672789
Singapore	17109	5099655	15806	6769989
Hong Kong	7269	1999219	88889	3443241
Sri Lanka	6693	1969967	8411	3217561
Belgium	416	111986	60514	3130820
USA	6960	1811266	8352	2753734
Other - countries	65813	16380857	65118	20853284

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

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	2250	530500	3169	1153590
Germany	568	158598	1920	684148
Korea, Rep. of	98	24880	577	229120
Spain	194	42624	240	81602
Japan	167	46123	160	71767
Philippines	81	16894	89	30063
Latvia	-	-	40	15234
China	759	144980	39	11038
Portugal	150	42383	21	6110
Mongolia	-	-	19	5505
Malaysia	-	-	17	4999
Other countries	233	54018	47	14004

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

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	274690	77997519	942931	357585954
China	84613	25308381	586651	239089589
Saudi Arabia	43133	11975879	47432	20378425
UAE	36054	9941965	98363	38386815
Singapore	16944	5054187	15669	6721269
Thailand	15649	4847354	35561	13572572
Malaysia	13900	4123724	33939	14158967
Chinese Taipei/ Taiwan	7729	2361791	4694	1798143
HongKong	6988	1922482	8577	3370675
SriLanka	6242	1874070	7922	3064379
Oman	5482	1607515	6822	2599995
Othercountries	37956	8980171	97301	14445125

(U): Under reference

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

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	26565	6571018	27158	8387685
Australia	1185	325773	1272	428044
Canada	2367	381343	1812	408001
Germany	1718	388201	1870	474534
Italy	643	168805	528	223470
Malaysia	773	203194	850	236404
Pakistan	771	201470	767	225643
Saudi Arabia	1202	352422	1138	379076
UAE	1908	518528	1656	564350
UK	1436	310507	1568	523502
USA	3818	991791	4306	1253316
Other countries	10744	2728984	11391	3671345

COPPER

Table – 22 : Exports of Brass & Bronze (Scrap) (By Countries)

Country	2009-10		2010-11	
	Qty (t)	Value (₹ '000)	Qty (t)	Value (₹ '000)
All Countries	225	44365	224	33494
Hong Kong	-	-	131	15822
Netherlands	-	-	25	6148
Saudi Arabia	14	456	24	3025
UAE	118	17156	9	2471
Belgium	2	1078	3	1071
USA	1	686	5	1070
Congo, People's Rep. of	-	-	2	979
China	-	-	22	745
Nigeria	-	-	2	532
Germany	84	22174	++	430
Other countries	6	2815	1	1201

Table – 23 : Exports of Copper (Cement Copper Precipitated) (By countries)

Country	2009-10		2010-11	
	Qty (t)	Value (₹ '000)	Qty (t)	Value (₹ '000)
All Countries	-	-	1	244
UAE	-	-	1	221
South Africa	-	-	++	22
Other countries	-	-	++	1

Table – 24 : Imports of Copper Ores & Concentrates (By Countries)

Country	2009-10		2010-11	
	Qty (t)	Value (₹ '000)	Qty (t)	Value (₹ '000)
All Countries	2187460	189675846	1902026	200234533
Chile	610144	44296728	598173	58573179
Australia	444228	40938529	448977	49366539
Indonesia	452962	50593706	209671	24924438
Brazil	135097	8924781	165370	17475191
Iran	166711	12722250	170811	17367656
Papua New Guinea	20865	1994888	52995	7262161
South Africa	84606	7079730	81304	7180174
Peru	61288	5009399	50669	5629680
Thailand	11056	769271	52051	4639570
Turkey	8650	616946	28691	2340556
Other countries	191853	16729618	43314	5475389

Table – 25 : Imports of Refined Copper (By Countries)

Country	2009-10		2010-11	
	Qty (t)	Value (₹ '000)	Qty (t)	Value (₹ '000)
All Countries	11543	3363394	8055	3029044
Sri Lanka	222	72378	1154	417642
UK	125	31611	741	315381
Australia	2440	711732	748	294024
Malaysia	320	99110	705	266205
Ukraine	707	237763	588	210153
Austria	449	142268	496	189254
Poland	75	18337	354	172250
Nigeria	371	104457	434	144716
Zambia	1370	378336	381	117352
Russia	509	130093	268	110176
Other countries	4955	1437309	2186	791891

Table – 26: Imports of Copper & Alloys (Including Brass & Bronze) : Total (By Countries)

Country	2009-10		2010-11	
	Qty (t)	Value (₹ '000)	Qty (t)	Value (₹ '000)
All Countries	205591	55366184	260108	85717042
UAE	23534	6331168	34663	11964422
China	15264	4677683	26645	8968545
Germany	16869	5309779	19274	6896949
Malaysia	12799	3875761	16588	6234667
Australia	12472	3545532	14401	5311554
UK	13107	2893711	15003	3837570
Russia	12296	3260592	10185	3730805
Korea, Rep. of	9400	3054776	9015	3385628
Saudi Arabia	6645	1480598	9986	2893325
USA	6160	1537774	8450	2661522
Other countries	77045	19398810	95898	29832055

COPPER

**Table –27 : Imports of Copper & Alloys
(By Countries)**

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	110169	34138378	140163	51176534
China	13355	4118809	22978	7805893
UAE	9837	3085575	16515	6079289
Australia	11681	3378800	13848	5149691
Malaysia	10393	3310816	12768	5135827
Russia	12136	32288848	9968	3651935
Korea, Rep. of	8896	2898590	8604	3266018
Germany	7224	2766561	6985	3191870
Thailand	3883	1274992	4281	1938612
Chile	743	215807	4069	1610922
Bhutan	5384	1133491	5610	1508543
Other countries	26637	8726089	34537	11837934

**Table – 28 : Imports of Copper (Scrap)
(By Countries)**

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	24214	6407313	39651	14423261
UAE	8063	2258013	11887	4443835
Saudi Arabia	2297	647994	5015	1797102
Germany	256	62529	2149	795111
Benin	157	29982	1784	668947
Kuwait	573	153711	1600	602069
UK	1607	482539	1593	573246
Bahrain	1100	3137661	1471	56948
France	265	65590	1340	547738
Malaysia	1056	284650	1471	490058
Romania	376	77822	1200	449045
Other countries	8464	2030817	10141	3486629

**Table – 29 : Imports of Copper & Alloys (Scrap)
(By Countries)**

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	27	3879	-	-
Egypt, A Rep.	27	3879	-	-

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

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	14626	4570432	16714	6022873
Germany	3913	1481697	3596	1510720
China	1854	554229	3302	1085744
Nepal	2179	569960	1682	620440
Japan	728	280360	849	396741
Malaysia	355	104635	1117	329020
USA	629	171054	935	324290
Chinese Taipei/Taiwan	1030	251511	1076	295736
Canada	546	196103	316	137676
Italy	155	74302	251	129622
UAE	434	85427	347	126308
Other countries	2803	801154	3243	1066576

COPPER

**Table – 31 : Imports of Brass & Bronze (Scrap)
(By Countries)**

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	56555	10246182	63580	14094374
UK	10564	2077139	11899	2572150
Germany	5476	998993	6544	1399249
UAE	5200	902154	5914	1314990
Saudi Arabia	3931	733154	4879	1072130
USA	3165	559575	3452	833606
Netherlands	2074	405972	2854	631304
Bangladesh	2702	499860	2211	565330
Denmark	1917	334682	1818	395015
Spain	1599	304563	1418	317836
Sweden	2043	337903	1362	300106
Other countries	17884	3092187	21229	4692658

**Table – 32 : Imports of Copper (Cement Copper Precipitated)
(By Countries)**

Country	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	2177	212716	147	21437
Congo, People's Rep. of	++	++	73	11681
Korea, Rep. of	++	++	26	5042
Unspecified	39	6459	48	4714
Other countries	2138	206257	-	-

**Table – 33 : Imports of Copper & Alloys
(Excluding Brass & Bronze and Scrap)
(By Items)**

Item	2009-10		2010-11	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Items	110169	34138378	140163	51176534
Blister & other unrefined copper	2252	490305	2034	768599
Copper & alloys: worked (bars, rods, plates, etc.)	35997	11782162	42580	16678942
Copper & alloys: worked, NES	3348	1464731	12054	3216671
Copper & alloys: unwrought	1394	388302	1791	695372
Copper matte	294	35721	30	12937
Copper powder & flakes	476	287805	697	425771
Copper refined: copper worked	53820	15997048	69630	25065630
Electroplated anode of nickel	443	142068	3310	1229305
Master alloys of copper	602	186842	82	54263
Refined copper	11543	3363394	8055	3029044

COPPER

FUTURE OUTLOOK

India's refined copper consumption has increased at 10% per annum over the last four years. The demand of copper by 2015-16 is estimated at 1,227 thousand tonnes at 8% GDP growth rate against a projected production of 1,347 thousand tonnes of refined copper during the same period.

As per the feedback from the end user industries, high growth in copper demand is likely to be from sectors like Electrical, Transport (auto and railways), Air conditioner and Refrigerator (ACR) Manufacturers and Consumer durable manufacturing sector and the newer potential end use sectors emerging including gas supply, plumbing tube, solar water heater and desalination.
