

# Handbook of NON-FERROUS METALS

**.Aluminium**  
**.Copper**  
**.Lead & Zinc**



Mineral Economics Division  
**Indian Bureau of Mines**  
Ministry of Steel & Mines  
Nagpur  
November 1998

भारत सरकार  
GOVERNMENT OF INDIA  
इस्पात और खान मंत्रालय  
MINISTRY OF STEEL & MINES  
भारतीय खान ब्यूरो  
INDIAN BUREAU OF MINES



**Handbook of Non-ferrous Metals**  
**(Aluminium, Copper, Lead & Zinc)**

**November, 1998**

*Issued by*

CONTROLLER GENERAL  
INDIAN BUREAU OF MINES, NAGPUR

PRINTED AT INDIAN BUREAU OF MINES PRESS, NAGPUR - 440 001

PUBLISHED BY THE CONTROLLER OF PUBLICATIONS, DELHI- 110 054

GOVERNMENT OF INDIA  
MINISTRY OF STEEL AND MINES  
INDIAN BUREAU OF MINES

A.N. BOSE  
Controller General

B. GEORGE  
Chief Mining Geologist  
(Retired on 31.1.1998)

Dr. K.K. CHATTERJEE  
Chief Mineral Economist

A.J. REDDY  
Mineral Economist

D.K. SILEKAR  
Deputy Mineral Economist

P.M. MOHURLE  
S.K. SHAMI  
Assistant Mineral Economists

S.Z. HASNAIN  
P. GURUVAIAH  
Senior Technical Assistants

## Preface

The Hand book of non-ferrous metals covers four important metals viz. Aluminium, Copper, Lead and Zinc. The first edition of the Handbook of non-ferrous metals was published in 1990. As these metals are vital for the industrial and economic development of the country, it was decided by the Government to bring out an updated edition of this Handbook.

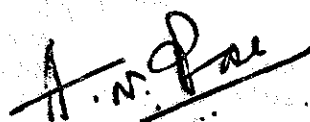
These metals play an important role in various industrial end-use applications including making of alloys. They are mostly used in the manufacture of cable and winding wires, electricals, cable sheathing, storage & dry batteries, galvanising, air crafts, kitchenware, chemicals, paints, etc. Fortunately, the country has abundant reserves of bauxite and adequate reserves of zinc. So far as the reserves position of copper and lead are concerned, the country is deficient. With the result, the domestic copper, lead and zinc based industries have not been able to get the required quantities of supplies of these metals and therefore left with no other alternative but to meet its requirements through imports. As per the new national mineral policy, copper, lead and zinc which were hitherto reserved for public sector exploitation have been thrown open to the private sector both domestic and foreign to augment the supply position of these metals in the country. Further economic liberalisation and delicensing of the non-ferrous metallurgy may encourage foreign investors in setting up of joint ventures projects for non-ferrous metals in the country. A comprehensive compilation of information under different relevant economic parameters was therefore considered to be of relevance to the policy makers, the industries and the prospective entrepreneurs.

This report consists of 13 chapters and some annexures covering 4 metals throwing the light on various aspects like resources, supply, imports, sales and stocks, apparent consumption, raw materials and specific consumption rate, energy and capacity generation, employment, financial structure, domestic and world prices, worlds statistics, excise and customs duties, plan statistics, etc.

The methodology adopted for this study basically consisted of desk survey, documentation of information and data from the reports/records of the departments, foreign bulletins and replies received to our questionnaire sent to different companies. The co-operation extended by various governmental organisations like Geological Survey of India, Directorate General of Commercial Intelligence and Statistics, Mineral Exploration Corporation Limited, Mineral & Metal Trading Corporation Limited, Public and Private Sector Industries like Bharat Aluminium Company Limited, National Aluminium Company Limited, Hindustan Alumin-

ium Company Limited, Indian Aluminium Company Limited, Madras Aluminium Company Limited, Hindustan Copper Limited, Indian Lead Limited, Hindustan Zinc Limited, Binani Zinc Limited, Sikkim Mining Corporation Limited and Hutti Gold Mines Limited in furnishing the valuable information for preparation of this handbook is thankfully acknowledged. The Bureau also thankfully acknowledges the valuable information received from sources like the world metal statistics, London and the Minerals and Metals Review, Mumbai.

It is hoped that this report will be useful to minerals & metals producers, consumers, traders, policy makers, exploration agencies, R & D institutions and others who are concerned with the developments in the non-ferrous metal sector.



(A.N. Bose)  
Controller General  
Indian Bureau of Mines

Nagpur

Date : 3-11-58

# Contents

OMIS & O&E 8.1.8

	Page
Scope, Coverage and Sources of Information	(xiii)
Abbreviations	(xiv)
<b>SECTION</b>	
1.0 SELECTED ECONOMIC INDICATORS	1
2.0 NON-FERROUS METALS - TRENDS AND HIGHLIGHTS	
Aluminium	4
Copper	7
Lead	10
Zinc	13
Value of metal production	16
3.0 RESERVES	
3.0 Glossary of terms	18
3.1 Bauxite	20
3.2 Copper	28
3.3 Lead-zinc	33
4.0 SUPPLY	
4.1.1 ALUMINIUM	
4.1.1.1 Bharat Aluminium Company Ltd.	38
4.1.1.2 National Aluminium Company Ltd.	40
4.1.1.3 Hindustan Aluminium Corporation Ltd.	42
4.1.1.4 Indian Aluminium Company Ltd.	46
4.1.1.5 Madras Aluminium Company Ltd.	48
4.1.2 COPPER	
4.1.2.1 Hindustan Copper Ltd.	50
4.1.2.2 Hutti Gold Mines Co.Ltd. (Chitradurga Copper Project/ Ingaldhal Cooper Mine)	52
4.1.2.3 Hutti Gold Mines Co.Ltd. (Kalyadi Copper Unit)	53
4.1.3 LEAD	
4.1.3.1 Indian Lead Ltd.	54
4.1.4 ZINC	
4.1.4.1 Binani Industries Ltd.	55

4.1.5	LEAD & ZINC	
4.1.5.1	Hindustan Zinc Ltd.	56
4.1.6	COPPER, LEAD & ZINC	
4.1.6.1	Sikkim Mining Corporation	58
4.1.7	LEAD AND TIN	
4.1.7.1	Hamco Mining & Smelting Ltd.	60
4.2	IMPORTS	
4.2.1	Minerals & Metals Trading Corpn., Ltd	61
4.3	SALES & STOCKS	
4.3.1	ALUMINIUM	
4.3.1.1	Bharat Aluminium Company Ltd.	63
4.3.1.2	National Aluminium Company Ltd.	65
4.3.1.3	Hindustan Aluminium Co.Ltd.	67
4.3.1.4	Indian Aluminium Company Ltd.	69
4.3.1.5	Madras Aluminium Company Ltd.	71
4.3.2	COPPER	
4.3.2.1	Hindustan Copper Ltd.	73
4.3.2.2	Hutti Gold Mines Co.Ltd. (Chitradurga Copper Project)	74
4.3.2.3	Hutti Gold Mines Co.Ltd. (Kalyadi Copper Unit)	75
4.3.3	LEAD	
4.3.3.1	Indian Lead Ltd.	76
4.3.4	ZINC	
4.3.4.1	Binani Zinc Ltd.	77
4.3.5	LEAD & ZINC	
4.3.5.1	Hindustan Zinc Ltd.	78
4.3.6	COPPER, LEAD & ZINC	
4.3.6.1	Sikkim Mining Corpn., Ltd	79
5.0	APPARENT CONSUMPTION	80

## 6.0 RAW MATERIALS AND SPECIFIC CONSUMPTION

6.1	ALUMINIUM		
6.1.1	Bharat Aluminium Company Ltd.		85
6.1.2	National Aluminium Company Ltd.		87
6.1.3	Hindustan Aluminium Corpn., Ltd		89
6.1.4	Indian Aluminium Company Ltd.		91
6.1.5	Madras Aluminium Company Ltd.		93
6.2	COPPER		
6.2.1	Hindustan Copper Ltd.		95
6.2.2	Hutti Gold Mines Co.Ltd. (Chitradurga Copper Unit/ Ingaldhal Copper Mine)		97
6.2.3	Hutti Gold Mines Co.Ltd. (Kalyadi Copper Unit)		98
6.3	LEAD & ZINC		
6.3.1	Hindustan Zinc Ltd.		99
6.4	COPPER, LEAD & ZINC		
6.4.1	Sikkim Mining Corpn.Ltd.		103

## 7.0 ENERGY-CAPACITY AND GENERATION

7.1	ALUMINIUM		
7.1.1	Bharat Aluminium Company Ltd.		104
7.1.2	National Aluminium Company Ltd.		105
7.1.3	Hindustan Aluminium Corpn., Ltd.		106
7.2	COPPER		
7.2.1	Hindustan Copper Ltd.		107
7.3	ZINC		
7.3.1	Binani Industries Ltd.,		108
7.4	LEAD & ZINC		
7.4.1	Hindustan Zinc Ltd.		109

## 8.0 EMPLOYMENT

8.1	ALUMINIUM		
8.1.1	Bharat Aluminium Company Ltd.		111
8.1.2	National Aluminium Company Ltd.		112
8.1.3	Hindustan Aluminium Corpn., Ltd.		113
8.1.4	Indian Aluminium Company Ltd.		114
8.1.5	Madras Aluminium Company Ltd.		115



<b>8.2</b>	<b>COPPER</b>		
8.2.1	Hindustan Copper Ltd.		116
8.2.2	Hutti Gold Mine Co.Ltd. (Chitradurga Unit/ Ingaldhal Copper Mine)		117
8.2.3	Hutti Gold Mine Co.Ltd. (Kalyadi Unit)		118
<b>8.3</b>	<b>LEAD</b>		
8.3.1	Indian Lead Ltd.		119
<b>8.4</b>	<b>ZINC</b>		
8.4.1	Hindustan Zinc Ltd.		120
8.4.2	Binani Industries Ltd.		121
<b>8.5</b>	<b>COPPER-LEAD-ZINC</b>		
8.5.1	Sikkim Mining Corporation		122
<b>9.0 FINANCIAL STRUCTURE</b>			
<b>9.1</b>	<b>ALUMINIUM</b>		
9.1.1	Bharat Aluminium Company Ltd.		123
9.1.2	National Aluminium Company Ltd		124
9.1.3	Hindustan Aluminium Corpn., Ltd.		125
9.1.4	Indian Aluminium Company Ltd.		126
9.1.5	Madras Aluminium Company Ltd.		127
<b>9.2</b>	<b>COPPER</b>		
9.2.1	Hindustan Copper Ltd.		128
9.2.2	Hutti Gold Mine Co.Ltd. (Kalyadi Copper Mine)		129
9.2.3	Hutti Gold Mine Co.Ltd. (Chitradurga Copper Unit Ingaldhal Copper Mine)		130
<b>9.3</b>	<b>LEAD</b>		
9.3.1	Indian Lead Ltd.		131
<b>9.4</b>	<b>ZINC</b>		
9.4.1	Binani Industries Ltd.		132
<b>9.5</b>	<b>LEAD AND ZINC</b>		
9.5.1	Hindustan Zinc Ltd.		133
<b>9.6</b>	<b>COPPER, LEAD &amp; ZINC</b>		
9.6.1	Sikkim Mining Corporation		134

## 10.0 PRICES

10.1	DOMESTIC PRICES	
10.1.1	Aluminium	
10.1.1.1	Domestic Prices	135
10.1.1.2	Domestic Av.Prices	139
10.1.2	Copper	
10.1.2.1	Domestic Prices	140
10.1.2.2	Domestic Av.Prices	144
10.1.3	Lead	
10.1.3.1	Domestic Prices	145
10.1.3.2	Domestic Av.Prices	149
10.1.4	Zinc	
10.1.4.1	Domestic Prices	150
10.1.4.2	Domestic Av.Prices	154
10.2	WORLD PRICES	
10.2.1	LME Prices	
10.2.1.1	Aluminium	155
10.2.1.2	Copper	150
10.2.1.3	Lead	157
10.2.1.4	Zinc	158
10.2.2	U.S.Producer Prices	
10.2.2.1	Aluminium	159
10.2.2.2	Copper	160
10.2.2.3	Lead	161
10.2.2.4	Zinc	162
10.3	TREND IN DOMESTIC AND WORLD PRICES	
10.3.1	Aluminium	163
10.3.2	Copper	164
10.3.3	Lead	165
10.3.4	Zinc	166

## 11.0 WORLD STATISTICS

11.R	RESERVES	
11.R-1	Bauxite	167
11.R-2	Copper content	167
11.R-3	Lead content	170
11.R-4	Zinc content	170

(1st)

11.1	PRODUCTION		
	11.1.1	Aluminium	173
	11.1.2	Copper	175
	11.1.3	Lead	177
	11.1.4	Zinc	179
11.2	CONSUMPTION		181
11.3	STOCKS		
	11.3.1	Aluminium	183
	11.3.2	Copper	184
	11.3.3	Lead	185
	11.3.4	Zinc	186
11.4	TRADE		
	11.4.1	Aluminium	187
	11.4.2	Copper(Unrefined/Refined)	188
	11.4.3	Lead(Refined)	190
	11.4.4	Zinc(Slab)	191
12.0. EXCISE AND CUSTOMS DUTY			
12.1	Excise duty paid		192
12.2	Customs duty paid		194
12.3	Central excise and customs revenue collection of Indian Union.		197
13.0 PLAN STATISTICS			
13.1	ALUMINIUM		
	13.1.1	Bharat Aluminium Company Ltd.	201
	13.1.2	National Aluminium Company Ltd.	203
13.2	COPPER		
	13.2.1	Hindustan Copper Ltd.	207
13.3	ZINC		
	13.3.1	Hindustan Zinc Ltd.	212
13.4	COPPER, LEAD & ZINC		
	13.4.1	Sikkim Mining Corporation Ltd.	215

## Annexure

	Page
<b><u>EXPLORATION AND DEVELOPMENT</u></b>	
<b>BAUXITE</b>	
1.1.1	Bharat Aluminium Company Ltd. 219
1.1.2	National Aluminium Company Ltd. 221
1.1.3	Hindustan Aluminium Corpn. Ltd. 224
<b>COPPER</b>	
1.2.1	Mineral Exploration Corporation Ltd. 225
1.2.2	Geological Survey of India 230
1.2.3	HCL, Khetri Copper Complex 244
1.2.4	HCL, Malanjkhand Copper Project 248
1.2.5	HCL, Indian Copper Complex 249
1.2.6	Hutti Gold Mine Co.Ltd. (Chitradurga Unit/ Ingaldhal Copper Mine) 252
1.2.7	Hutti Gold Mine Co.Ltd. (Kalyadi Unit) 255
<b>LEAD &amp; ZINC</b>	
1.3.1	Mineral Exploration Corporation Ltd. 257
1.3.2	Geological Survey of India 263
1.3.3	Hindustan Zinc Ltd. 270
<b>COPPER, LEAD &amp; ZINC</b>	
1.4.1	Geological Survey of India 286
1.4.2	Sikkim Mining Corporation Ltd. 303
<b>BASEMETALS</b>	
1.5.1	Geological Survey of India 305

## Graphs

	Page
<b>Trends in capacity and production</b>	
Aluminium	6
Copper	9
Lead	12
Zinc	15
Value of metal production	17
<b>Recoverable Reserves</b>	
Bauxite ( All India)	25
Bauxite Grade wise ( All India)	26
Bauxite State wise ( All India)	27
Copper ( All India)	31
Copper State wise	32
Lead & Zinc ( All India)	36
Lead & Zinc state wise ( All India)	37
<b>Imports of Non Ferrous Metals by MMTC</b>	62
<b>Apparent Consumption of Non Ferrous Metals</b>	
Aluminium	81
Copper	82
Lead	83
Zinc	84
<b>World Reserves</b>	
Bauxite	168
Copper	169
Lead	171
Zinc	172
<b>World Production</b>	
Aluminium	174
Copper	176
Lead	178
Slab zinc	180
<b>World Consumption of Non Ferrous Metals</b>	182
<b>Excise duty paid on Non ferrous metals.</b>	196
<b>Central Excise Revenue collection of Indian Union.</b>	199
<b>Custom Revenue collection of Indian Union.</b>	200

## SCOPE, COVERAGE AND SOURCES OF INFORMATION

**Scope :** The Handbook presents comprehensive time series data on various aspects of aluminium, copper, lead and zinc metals industries. The relevant world data in respect of these metals have also been presented in the Handbook.

**Coverage :** The Handbook covers data on exploration and development, reserves, installed capacity, production, imports, sales and stocks, apparent consumption, consumption of principal raw material inputs and specific consumption rates of the principal inputs, energy generation and consumption, total manpower employment in different operations, financial structure of companies engaged in the production of these metals, excise duty collection on the production of the metals, custom duty collections from imports of the metals, domestic and international metal prices, world statistics relating to production, stocks, consumption and trade and relevant plan statistics concerning to targets and achievements for different operations, etc.

**Sources :** The data in respect of aluminium, copper, lead and zinc metals industries included in this Handbook are based on the replies received by the Indian Bureau of Mines, from the companies in the public and private sectors engaged in these industries, in response to the questionnaires issued to them. Data on certain aspects have been collected from different sources indicated below :

Selected economic indicators	"Economic Survey 1995-96" Published by Government of India, Ministry of Finance, Economics Division
Reserves	National Mineral Inventory prepared by Indian Bureau of Mines
Domestic Metal prices	"Minerals and Metals Review" published by Asian Industry and Information Services Private Limited, Mumbai.
Central Excise and Customs Revenue collections	"Statistics of the Customs and Excise Collection of the Indian Union" published by the Directorate General of Commercial Intelligence and Statistics, Calcutta.
International metal prices and World Statistics (production) consumption, stocks and trade)	"World Metal Statistics" published by the World Bureau of Metal Statistics, London.

### ABBREVIATIONS

Al	:	Aluminium
BALCO	:	Bharat Aluminium Company Limited.
BZL	:	Binani Zinc Limited
C.G.	:	Commercial Grade (Aluminium)
COMEX	:	Commodity Exchange Inc., New York.
C.P.Coke	:	Calcined Petroleum Coke
C.T.Pitch	:	Coal Tar Pitch
Cu	:	Copper
DGCI&S	:	Directorate general of commercial intelligence and statistics
E.C.	:	Electrical Conductor Grade(A1)
F.O.B.	:	Free on Board
G.O.B.	:	Good Ordinary Brand (Zinc)
GSI	:	Geological survey of India
HCL	:	Hindustan Copper Limited
Hect.	:	Hectare
H.G.	:	High Grade
ICC	:	Indian Copper Complex
ILL	:	India Lead Ltd.
HINDALCO	:	Hindustan Aluminium Corpn.Limited.
HZL	:	Hindustan Zinc Limited
INDALCO	:	Indian Aluminium Company Limited
KCL	:	Khetri Copper Complex (of HCL)
Kl	:	Kilolitre
K/T	:	Kilogram per tonne
Kwh	:	Kilowatt hour
Kwh/t	:	Kilowatt hour per tonne
lb	:	Pound
L/T	:	Litre per tonne
LME	:	London Metal Exchange
m	:	Metre
m <sup>3</sup>	:	Cubic metre
MALCO	:	Madras Aluminium Company Limited
Max.	:	Maximum
MCP	:	Malankhand Copper Project(of HCL)
MECL	:	Mineral Exploration Corporation Ltd
Min	:	Minimum
MMR	:	Mineral and Metal Review
MMTC	:	Mineral & Metals Trading Corporation of India Ltd.
MU	:	Mega Units
MW	:	Mega watts
NALCO	:	National Aluminium Company Limited.
Pb	:	Lead
RL	:	Reduced Level
Rs.	:	Rupees ( Indian )
Sq. Km.	:	Square Kilometre
T	:	Tonne ( Metric ton)
TMC	:	Total Metal Content
WMS	:	World Metals Statistics
U.S.	:	United States of America
Zn	:	Zinc
%	:	per cent
N.A.	:	Not available
-	:	Nil
--	:	Not applicable
e	:	Estimated

# 1. Selected Economic Indicators

Table : 1.0 SELECTED ECONOMIC INDICATORS  
OF THE INDIAN ECONOMY

Indicator	Unit/ Base	1986-87	1987-88	1988-89
Geographical Area	Million Sq. km.	3.29	3.29	3.29
Population	Million	779.0	795.1	811.3
<b>Gross National Product at factor cost</b>				
At current price	Rs. million	2,582,250	2,922,320	3,482,100
At 1980-81 prices	Rs. million	1,615,350	1,681,210	1,852,260
<b>Net National Product at factor cost</b>				
At current prices	Rs. million	2,264,020	2,568,910	3,092,890
At 1980-81 prices	Rs. million	1,442,420	1,497,870	1,657,500
<b>Per Capita Net National Product</b>				
At current prices	Rupees	2,962.4	3,285.4	3,842.1
At 1980-81 prices	Rupees	1,870.8	1,900.9	2,059.0
<b>Foreign Trade</b>				
Imports	Rs. million	200,960	222,440	282,350
Exports	Rs. million	124,520	156,740	202,320
Balance of trade	Rs. million	(-)76,440	(-)65,700	(-)80,030
<b>Index of Industrial Production</b> (Base : 1980-81=100)				
Employment <sup>1/</sup>	Weight 100	155.1	166.4	180.93
Public Sector Industry	Thousand	17,683	18,025	18,321
Private Sector Industry <sup>2/</sup>	Thousand	7,374	7,364	7,392
<b>Energy Generated</b>				
a) Utilities				
(Total)	Billion Kwh	187.7	202.1	221.4
Hydel	Billion Kwh	53.8	47.5	57.9
Thermal	Billion Kwh	128.9	149.6	157.7
Nuclear	Billion Kwh	5.0	5.0	5.8
b) Non-utilities				
	Billion Kwh	13.6	16.9	19.9
Grand Total	Billion Kwh	201.3	219.0	241.3



Indicator	Unit/ Base	1989-90	1990-91	1991-92	1992-93
Geographical Area	Million Sq. km.	3.29	3.29	3.29	3.29
Population	Million	827.4	846.3	862.5	878.6
<b>Gross National Product at factor cost</b>					
At current price	Rs. million	4,029,310	4,702,520	5,419,530	6,302,000
At 1980-81 prices	Rs. million	1,980,820	2,085,040	2,097,940	2,249,000
<b>Net National Product at factor cost</b>					
At current prices	Rs. million	3,572,850	4,180,570	4,790,010	6,184,000
At 1980-81 prices	Rs. million	1,773,150	1,864,690	1,864,180	2,201,000
<b>Per Capita Net National Product</b>					
At current prices	Rupees	4,346.5	4,982.8	5,595.8	6,233.6
At 1980-81 prices	Rupees	2,157.1	2,222.5	2,177.8	2,225.8
<b>Foreign Trade</b>					
Imports	Rs. million	353,280	431,980	478,510	633,750
Exports	Rs. million	276,580	325,530	440,410	536,880
Balance of trade	Rs. million	(-)76,700	(-)106,540	(-)38,100	96,870
<b>Index of Industrial Production</b>					
(Base : 1980-81=100)	Weight 100	196.4	212.6	213.9	218.9
<b>Employment<sup>1/</sup></b>					
<b>Public Sector</b>					
Industry	Thousand	18,444	18,772	19,057	19,210
<b>Private Sector</b>					
Industry <sup>2/</sup>	Thousand	7,453	7,582	7,677	7,846
<b>Energy Generated</b>					
<b>a) Utilities</b>					
(Total)	Billion Kwh	245.4	264.3	287.0	301.1
Hydel	Billion Kwh	62.1	71.7	72.8	69.8
Thermal	Billion Kwh	178.7	186.5	208.7	224.5
Nuclear	Billion Kwh	4.6	6.1	5.5	6.8
<b>b) Non-utilities</b>					
Grand Total	Billion Kwh	268.4	289.4	315.6	331.3

Indicator	Unit/ Base	1993-94(P)	1994-95(P)	1995-96(P)
Geographical Area	Million Sq. km.	3.29	3.29	3.29
Population	Million	894.6	-	-
<b>Gross National Product at factor cost</b>				
At current prices	Rs. million	7,231,000	8,541,000	N.A.
At 1980-81 prices	Rs. million	2,361,000	2,510,000	2,667,000
<b>Net National Product at factor cost</b>				
At current prices	Rs. million	7,085,000	8,395,000	N.A.
At 1980-81 prices	Rs. million	2,301,000	2,456,000	2,633,000
<b>Per Capita Net National Product</b>				
At current prices	Rupees	6,928.8	N.A.	N.A.
At 1980-81 prices	Rupees	2,282.3	N.A.	N.A.
<b>Foreign Trade</b>				
Imports	Rs. million	731,010	899,710**	1,216,470
Exports	Rs. million	697,510	826,740**	1,064,650
Balance of trade	Rs. million	33,500	72,970**	151,820
<b>Index of Industrial Production</b> (Base : 1980-81=100) Weight 100				
		227.8	253.5	279.8*
<b>Employment<sup>1/</sup></b>				
<b>Public Sector</b>				
Industry	Thousand	N.A.	N.A.	N.A.
<b>Private Sector</b>				
Industry <sup>2/</sup>	Thousand	N.A.	N.A.	N.A.
<b>Energy Generated</b>				
<b>a) Utilities</b>				
(Total)	Billion Kwh	323.5	N.A.	N.A.
Hydel	Billion Kwh	70.4	N.A.	N.A.
Thermal	Billion Kwh	247.7	N.A.	N.A.
Nuclear	Billion Kwh	5.4	N.A.	N.A.
<b>b) Non-utilities</b>				
	Billion Kwh	32.1	N.A.	N.A.
Grand Total	Billion Kwh	355.6	N.A.	N.A.

1 : Data relate to calendar year 1986, 1987, etc.

2 : Data relate to non-agricultural establishments in the private sector employing 10 and more persons. p

provisional, \* : Data relate to Apr.-Feb. 1995-96, \*\* : Data relate to Apr.-Dec. 1994-95

Source : Economic Survey 1995-96

## 2. Non-Ferrous Metals - Trends and Highlights

### ALUMINIUM Trends and Highlights

#### Capacity and Production

The installed capacity for alumina in the country increased from 660,000 tonnes in 1986-87 to 1,160,000 tonnes in 1987-88 to 1,560,000 tonnes in 1988-89 and further to 1,687,000 tonnes in 1995-96, an increase of 156% over the 1986-87 level. The increase in capacity was mainly due to setting up of NALCO's alumina plant in 1987-88 with a capacity of 400,000 tonnes and its expansion to 800,000 tonnes in 1988-89.

Production of hydrated alumina increased from 609,221 tonnes in 1986-87 to 1,679,618 tonnes in 1995-96 and that of calcined alumina from 569,196 tonnes in 1986-87 to 1,025,115 tonnes in 1995-96, an increase of 176% and 80% respectively over the 1986-87 level. Production of hydrated alumina in 1995-96 was 988,085 tonnes in public sector and 691,533 tonnes in private sector. Production of calcined alumina in 1995-96 was 983,790 tonnes and 41,325 tonnes in public and private sectors respectively.

The installed capacity for aluminium metal in the country increased from 362,000 tonnes in 1986-87 to 472,660 tonnes in 1987-88 and further increased to 645,000 tonnes in 1995-96 an increase of 78% over the 1986-87 level. The increase in capacity in 1987-88 and 1995-96 was due to setting up of aluminium smelters of NALCO in public sector and HINDALCO in private sector with the capacity of 110,000 & 60,000 tonnes per annum respectively. Of the total capacity of aluminium metal production of 645,000 tonnes, 318,000 tonnes is in public sector and 327,000 tonnes in the private sector.

Production of aluminium metal was 262,991 tonnes in 1986-87 which increased to 397,334 tonnes in 1988-89 and further increased to 465,640 tonnes in 1995-96, an increase of 77% over the 1986-87 level. Public and private sector contributed to a production of 236,158 tonnes and 229,482 tonnes respectively during 1995-96.

#### Consumption

Apparent consumption of aluminium (based on sales of indigenous and imported metal) in 1986-87 was 336,987 tonnes as against which the apparent consumption in 1994-95 was 496,443 tonnes, representing an increase of about 48% over 1986-87 level.

#### Ore Reserves

The recoverable reserves of bauxite in the country are placed at 2,525 million tonnes. The proved, probable and possible reserves are 668 million tonnes, 550 million tonnes and 1,307 million tonnes of all grades, respectively. The reserves are mainly located in Andhra Pradesh, Bihar, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamilnadu and Uttar Pradesh.

TABLE : 2.1 NON-FERROUS METALS : ALUMINIUM

	Units	1986-87	1987-88	1988-89	1989-90	1990-91
Capacity	Tonnes	362,000	472,660	499,000	525,856	576,250
Production	Tonnes	262,991	280,688	397,334	427,110	449,955
Sales1/	Tonnes	336,987	358,827	407,069	553,886	664,161
Imports2/	Tonnes	68,678	57,254	-		
Manpower employed	Number	24,958	27,178	27,887	20,635	28,613
Energy generated (By captive source)	Million Kwh.	2,495.07	4,428.43	6,420.76	5275	6975
Excise duty paid	Rupees Million	1,280.79	1,564.42	2,067.61	4387.10	5127.31
Customs duty paid	Rupees Million	405.00	340.30	9.903/		

	Units	1991-92	1992-93	1993-94	1994-95	1995-96
Capacity	Tonnes	584,500	585,000	585,000	585,000	645,000
Production	Tonnes	515,870	450,057	429,098	404,824	468,640
Sales1/	Tonnes	733,020	157,613	100,643	256,217	91,517
Imports2/	Tonnes	(+)+3/	(+)+3/			
Manpower employed	Number	29,551	16,256	15,996	15,929	14,551
Energy generated (By captive source)	Million Kwh.	8,504	4,573.7	4,702.40	4,987.30	5,219.40
Excise duty paid	Rupees Million	5941.18	4998.77	4201.73	4378.99	3923.84
Customs duty paid	Rupees	-	-	-	-	-

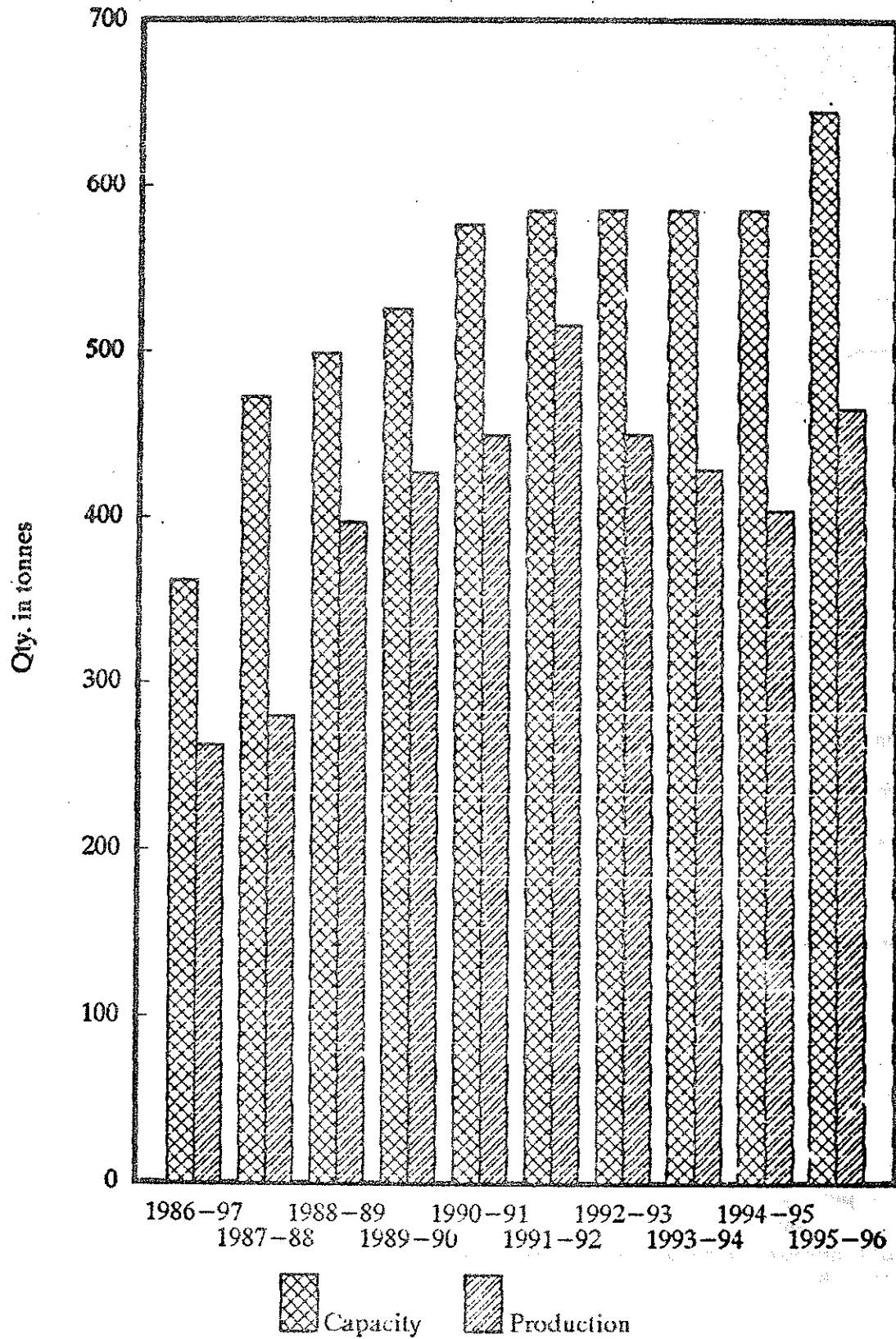
1/ : Producers and MMTC

2/ : MMTC arrival

3/ : For MMTC only.

MMTC's arrival data exclude imports by actual users and imports made against Rep. licences other than those surrendered to MMTC.

Capacity and Production of Non-ferrous Metal  
( Aluminium )



COPPER  
Trends and Highlights

Capacity and Production

The installed mine production capacity of copper ore increased marginally from 5.52 million tonnes in 1986-87 to 5.53 million tonnes in 1995-96.

Production of copper ore in 1986-87 by HCL was 4.5 million tonnes with an average copper content of 1.284 %. Production of ore increased to 5.2 million tonnes in 1990-91 with an average copper content of 1.142 % and decreased gradually to 4.7 million tonnes in 1995-96 with an average copper content of 1.036%. Production of copper concentrates by HCL increased from 228,325 tonnes (equal to 49,735 tonnes of copper metal content) in 1986-87 to 255,647 tonnes (equal to 53,801 tonnes of copper metal content) in 1989-90 and decreased to 230,299 tonnes in 1995-96 (equal to 46,207 tonnes of copper metal content).

The installed capacity of HCL for electrolytic copper cathode was 42,000 tonnes in 1986-87 which increased to 47,000 tonnes in 1989-90 and marginally increased to 47,500 tonnes in 1995-96. Out of the total capacity of 47,500 tonnes, the capacity of Khetri (KCC) and Maubhandar (ICC) refineries was 31,000 tonnes and 16,500 tonnes, respectively.

Production of copper cathode increased from 34,393 tonnes in 1986-87 to 41,179 tonnes in 1989-90 and further increased to 45,500 tonnes in 1991-92, an increase of 32% over the 1986-87 level and then decreased to 41,200 tonnes in 1995-96. The increase in production of copper cathode in 1988-89 was mainly due to increased production at Khetri refinery of Hindustan Copper Limited.

Consumption

Apparent consumption of copper metal (based on sales of indigenous and imported metal) in 1986-87 was 105,223 tonnes as against which the apparent consumption in 1995-96 was 208,179 tonnes.

Major Inputs and Specific Consumption Rates

The consumption of electrical energy increased from 357 million kwh in 1986-87 to 359 million kwh in 1995-96.

Ore Reserves

The recoverable reserves of copper ore in the country are placed at 4.4 million tonnes of contained copper metal. The proved, probable and possible reserves are 1.7 million tonnes, 1.6 million tonnes and 1.1 million tonnes of contained copper metal, respectively. The reserves are mainly located in Bihar, Madhya Pradesh and Rajasthan.

TABLE : 2.2 NON-FERROUS METALS : COPPER

	Units	1986-87	1987-88	1988-89	1989-90	1990-91
Capacity	Tonnes	42,000	42,000	42,000	47,000	47,000
Production	Tonnes	34,393	30,958	39,596	41,179	40,598
Sales <sup>1/</sup>	Tonnes	105,223	117,806	111,405	111,113	110,292
Imports <sup>2/</sup>	Tonnes	48,347	88,083	60,474	61,905	35,791
Manpower employment	Numbers	26,626	25,964	25,676	24,871	24,782
Energy generated (By captive source)	Million Kwh.	77.3	70.6	45.4	45.3	45.6
Energy consumption <sup>3/</sup>	Million Kwh	357.015	360.302	382.708	396.0	398.5
Excise duty paid	Rs. million	164.7	126.9	234.7	253.7	320.4
Customs duty paid <sup>4/</sup>	Rs. million	914.4	2,423.8	1,776.1	-	848.5

	Units	1991-92	1992-93	1993-94	1994-95	1995-96
Capacity	Tonnes	47,000	47,500	47,500	47,500	47,500
Production	Tonnes	45,495	45,275	39,002	46,136	41,183
Sales <sup>1/</sup>	Tonnes	59,499	N.A.	N.A.	N.A.	N.A.
Imports <sup>2/</sup>	Tonnes	3,800	7,000	16,000	22,000	N.A.
Manpower employment	Numbers	24,447	26,739	26,736	26,729	26,726
Energy generated (By captive source)	Million Kwh.	50.3	47.96	58.7	45.1	47.1
Energy consumption <sup>3/</sup>	Million Kwh	412.4	374.9	342.8	360.8	359.39
Excise duty paid	Rs. million	353.4	9.85	7.99	11.52	N.A.
Customs duty paid <sup>4/</sup>	Rs. million	-	6.12 <sup>5/</sup>	3.58 <sup>5/</sup>	6.83 <sup>5/</sup>	N.A.

1 : Includes sales of wire-bar, cathodes and wire rods etc. by MMTC and HCL.

2 : MMTC arrival.

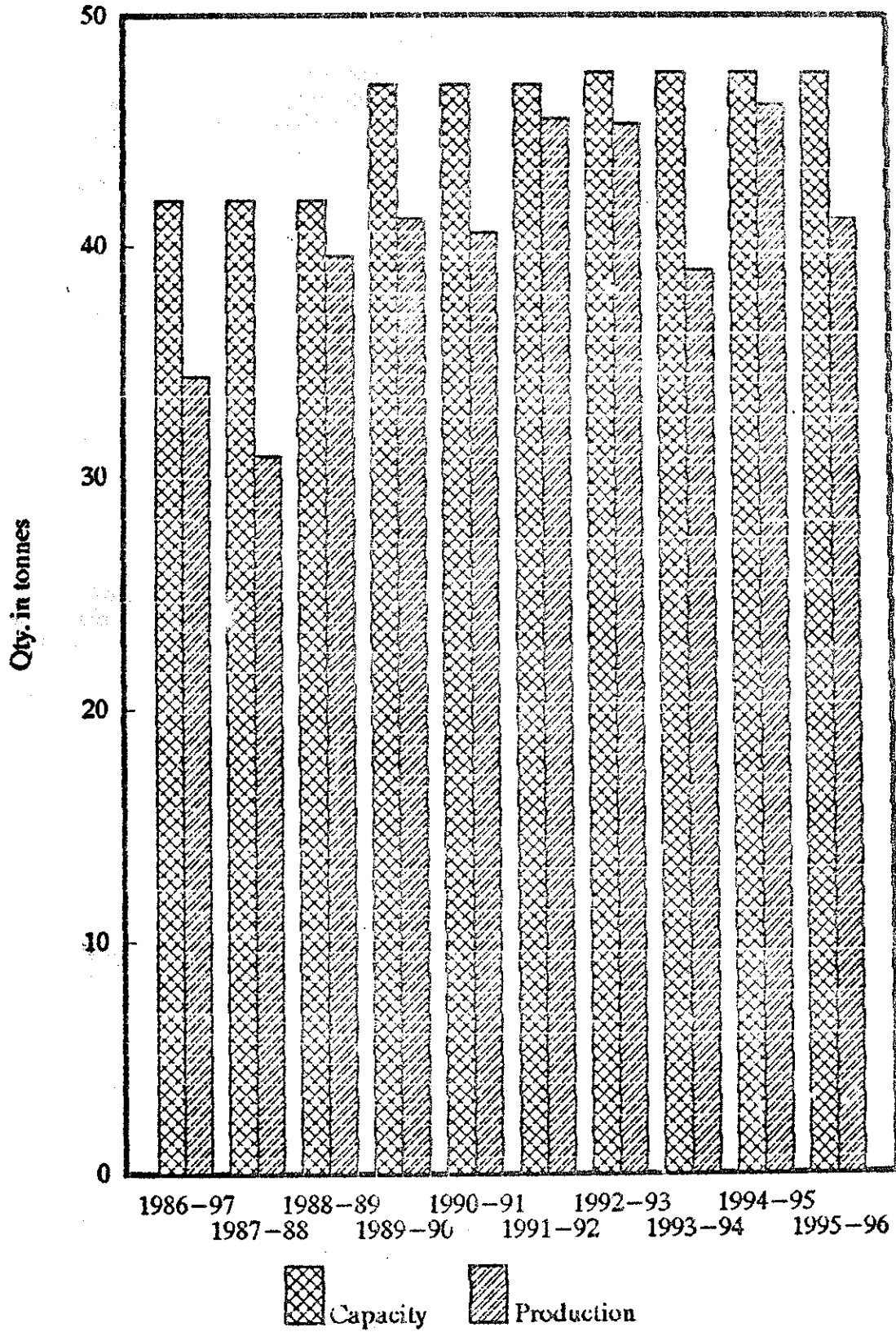
3 : Pertains to all project of HCL.

4 : Customs duty paid by MMTC

5 : Customs duty paid by HCL

MMTC's arrival data exclude imports by actual users and imports made against Rep. licences other than those surrendered to MMTC.

Capacity and Production of Non-ferrous Metal  
(Copper)





LEAD  
Trends and Highlights

Capacity and Production

The installed capacity of primary lead production in the country was 30,000 tonnes in 1986-87 comprising of 8,000 and 22,000 tonnes at Tundoo (Bihar) and Vizag (Andhra Pradesh) smelters of Hindustan Zinc Ltd., respectively. This capacity increased to 65,000 tonnes in 1991-92 as a result of commissioning of Chanderiya smelter to 33,000 tonnes. The present capacity of secondary lead remained constant at 24,000 tonnes till 1993-94 and then decreased to 22,000 tonnes in 1994-95.

Production of primary and secondary lead increased from 28,000 tonnes in 1986-87 to 48,300 tonnes in 1992-93 and declined marginally to 43,600 tonnes in 1995-96.

Consumption

The apparent consumption of lead (based on sales of indigenous and imported metal) increased from 59,065 tonnes in 1986-87 to 96,796 tonnes in 1995-96.

Major Inputs and Specific Consumption Rates

Consumption of indigenous lead concentrates of HZL increased from 44,000 tonnes in 1986-87 to 51,000 tonnes in 1995-96. However, small quantity of imported concentrates were consumed for meeting the domestic demand.

Energy consumption for the Tundoo lead smelter, Sargipalli and Agni-gundla Mine Projects of Hindustan Zinc Limited was 15.83 million kwh in 1986-87 as against 16.15 million kwh in 1995-96. The energy consumption of Hindustan Zinc Ltd. for common facilities of lead and zinc metal production are covered under the zinc industry.

Ore Reserves

The recoverable reserves of contained lead metal in the country are placed at 2.3 million tonnes. The proved, probable and possible reserves are 0.9 million tonnes, 0.6 million tonnes and 0.8 million tonnes contained lead metal respectively. Rajasthan accounts for bulk of these reserves.

TABLE : 2.3 NON-FERROUS METALS : LEAD

Units		1986-87	1987-88	1988-89	1989-90	1990-91
Capacity	Tonnes	54,000	54,000	54,000	54,000	54,000
Production	Tonnes	28,000	31,000	29,000	36,457	39,759
Sales	Tonnes	59,065	57,764	55,860	32,237	35,734
Imports <sup>1/</sup>	Tonnes	35,655	23,872	21,494	27,000	13,000
Energy generated <sup>3/</sup> (captive source)	Million Kwh.	1.52 <sup>2/</sup>	1.39 <sup>2/</sup>	1.08 <sup>2/</sup>	-	-
Energy Consumption <sup>3/</sup>	Million Kwh.	15.83	16.41	16.57	16.25	17.51
Excise duty paid	Rupees Million	0.44	25.21	21.25	24.45	55.73
Customs duty paid	Rupees Million	283.96	267.40	356.07	45.41	42.21

Units		1991-92	1992-93	1993-94	1994-95	1995-96
Capacity	Tonnes	89,000	89,000	89,000	87,000	87,000
Production	Tonnes	44,243	48,262	36,410	48,282	43,596
Sales	Tonnes	43,336	39,348	47,433	45,223	40,531
Imports <sup>1/</sup>	Tonnes	13,000	4,000	3,000	3,000	N.A.
Energy generated <sup>3/</sup> (captive source)	Million Kwh.	0.276	0.480	0.597	0.656	0.347
Energy Consumption <sup>3/</sup>	Million Kwh.	19.73	18.28	16.97	16.10	16.15
Excise duty paid	Rupees Million	72.10	22.58 <sup>4/</sup>	33.08 <sup>4/</sup>	55.90 <sup>4/</sup>	61.93 <sup>4/</sup>
Customs duty paid	Rupees Million	98.61	56.57 <sup>6/</sup>	31.73 <sup>6/</sup>	45.57 <sup>6/</sup>	44.91 <sup>6/</sup>

1 : MMTC arrival

2 : Relate to Tundoo smelter and Sargipalli Mine Project only.

3 : Relate to Tundoo Smelter Mine Project &amp; Agnigundala Mine Project only.

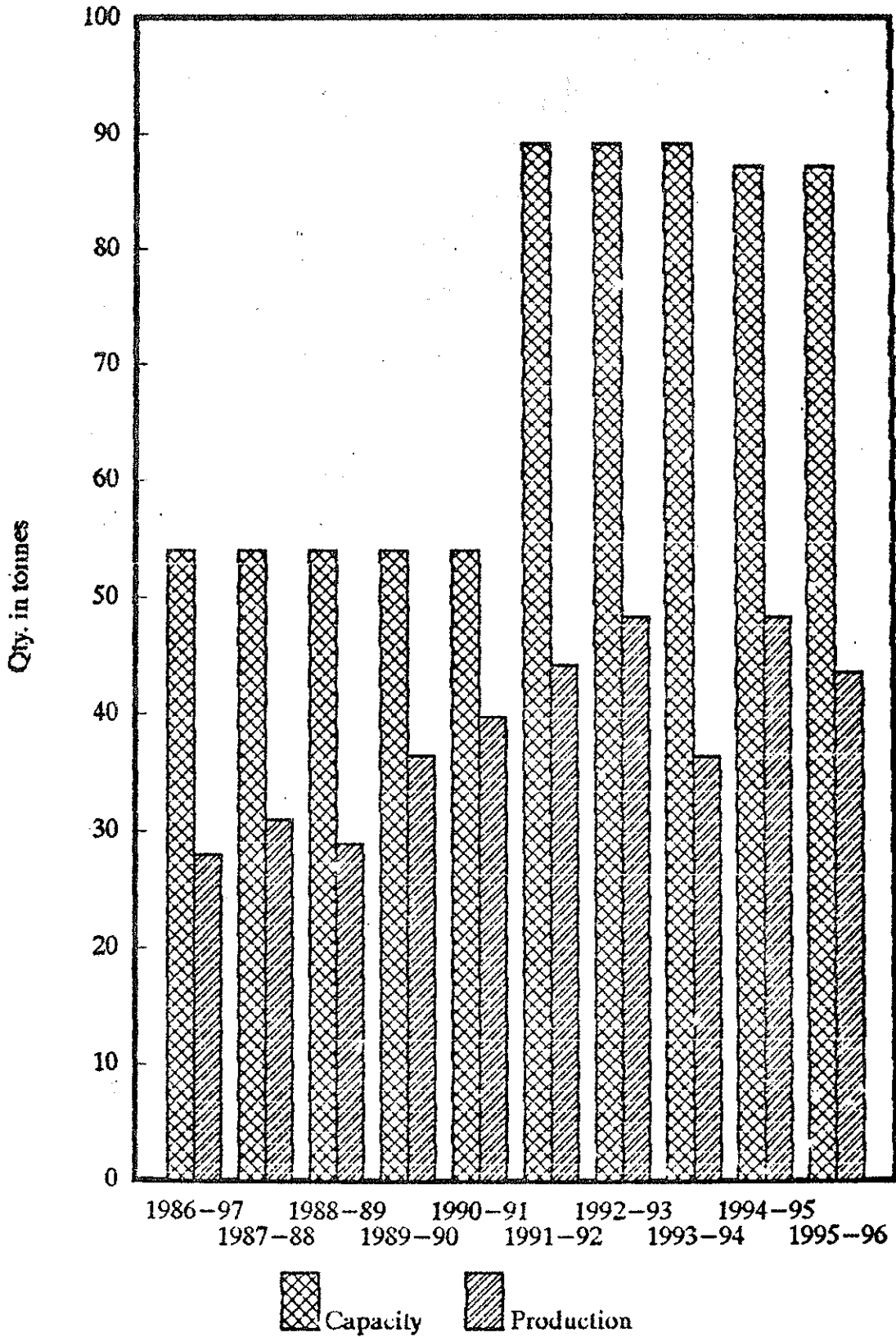
4 : Excludes duty on lead in respect of HZL.

5 : Customs duty paid by MMTC and Indian Lead Ltd.

6 : Does not include customs duty paid by MMTC.

MMTC' data exclude imports by actual users and imports made against Rep. licences other than those surrendered to MMTC.

Capacity and Production of Non-ferrous Metal  
(Lead)



ZINC  
Trends and Highlights

Capacity and Production

The installed capacity of mine production of lead-zinc ore by Hindustan Zinc Ltd. was 2.3 million tonnes in 1986-87 and increased to 6.8 million tonnes in 1989-90 and further to 3.6 million tonnes in 1995-96. Production of ore was 1.5 million tonnes in 1986-87 which increased to 2.4 million tonnes in 1995-96.

Production of zinc concentrates by HZL increased to 277,000 tonnes in 1995-96 from 91,000 tonnes in 1986-87.

The total installed capacity of zinc metal in the country was 93,000 tonnes in 1986-87 in which 79,000 tonnes was with Hindustan Zinc Ltd. and 14,000 tonnes was with Binani Zinc Ltd. and increased to 179,000 tonnes in 1995-96 (HZL-149,000 tonnes and BZL -30,000 tonnes).

Production of zinc metal increased from 76,000 tonnes in 1986-87 to 141,000 tonnes in 1995-96. Production in public and private sector in 1995-96 was 115,000 tonnes and 26,000 tonnes, respectively.

Consumption

The apparent consumption of zinc (based on sales of indigenous and imported metal) increased from 130,000 tonnes in 1986-87 to the highest level of 190,000 tonnes in 1995-96.

Major Inputs and Specific Consumption Rates

The electrical energy consumption by Hindustan Zinc Limited for zinc metal production was 505 million kwh in 1986-87 and 598 million kwh in 1995-96.

Ore Reserves

The recoverable reserves of contained zinc metal in the country are placed at 10.0 million tonnes. The proved, probable and possible reserves are 4.7 million tonnes, 2.5 million tonnes and 2.8 million tonnes contained zinc metal respectively. Rajasthan accounts for bulk of these reserves.

TABLE : 2.4 NON-FERROUS METALS : ZINC

	Units	1986-87	1987-88	1988-89	1989-90	1990-91
Capacity	Tonnes	93,000	99,000	99,000	99,000	99,000
Production	Tonnes	75,988	60,824	73,755	75,213	73,608
Sales	Tonnes	130,428	131,380	115,362	69,781	62,999
Imports <sup>1/</sup>	Tonnes	52,542	71,358	62,842	44,000	35,000
Manpower employed <sup>2/</sup>	Number	11,572	11,621	11,749	11,991	12,202
Energy generated (captive source)	Million Kwh.	14.73	31.03	21.88	-	-
Energy consumption <sup>3/</sup>	Million Kwh.	505.14	446.62	431.23	453.64	489.45
Excise duty paid	Rs. million	290.08	214.72	253.29	289.40	288.68
Customs duty paid <sup>5/</sup>	Rs. million	693.80	1,023.0	1,539.2	-	-

1/ : MMTC arrival

\* : includes duty on lead also in respect of HZL

	Units	1991-92	1992-93	1993-94	1994-95	1995-96
Capacity	Tonnes	169,000	169,000	169,000	179,000	179,000
Production	Tonnes	91,537	127,036	144,083	148,617	140,910
Sales	Tonnes	94,051	117,159	138,270	162,604	129,885
Imports <sup>1/</sup>	Tonnes	17,000	9,000	8,000	12,000	-
Manpower employed <sup>2/</sup>	Number	13,475	561 <sup>6/</sup>	561 <sup>6/</sup>	561 <sup>6/</sup>	561 <sup>6/</sup>
Energy generated (captive source)	Million Kwh.	-	63.388	71.729	93.493	115.943
Energy consumption <sup>3/</sup>	Million Kwh.	532.28	644.39	624.13	598.01	-
Excise duty paid	Rs. million	418.95	971.08 <sup>4/</sup>	1,017.94 <sup>4/</sup>	1,242.76 <sup>4/</sup>	1,209.36 <sup>4/</sup>
Custom duty paid <sup>5/</sup>	Rs. million	-	-	-	-	-

1 : MMTC arrival

2 : Includes man power employed for lead in case of HZL.

3 : Energy consumption at smelter and mine.

4 : Includes duty on lead also in respect of HZL.

5 : Customs duty paid by MMTC.

6 : Does not include man power employed by HZL.

MMTC' data exclude imports by actual users and imports made against Rep. licences other than those surrendered to MMTC.

Capacity and Production of Non-ferrous Metal  
(Zinc)

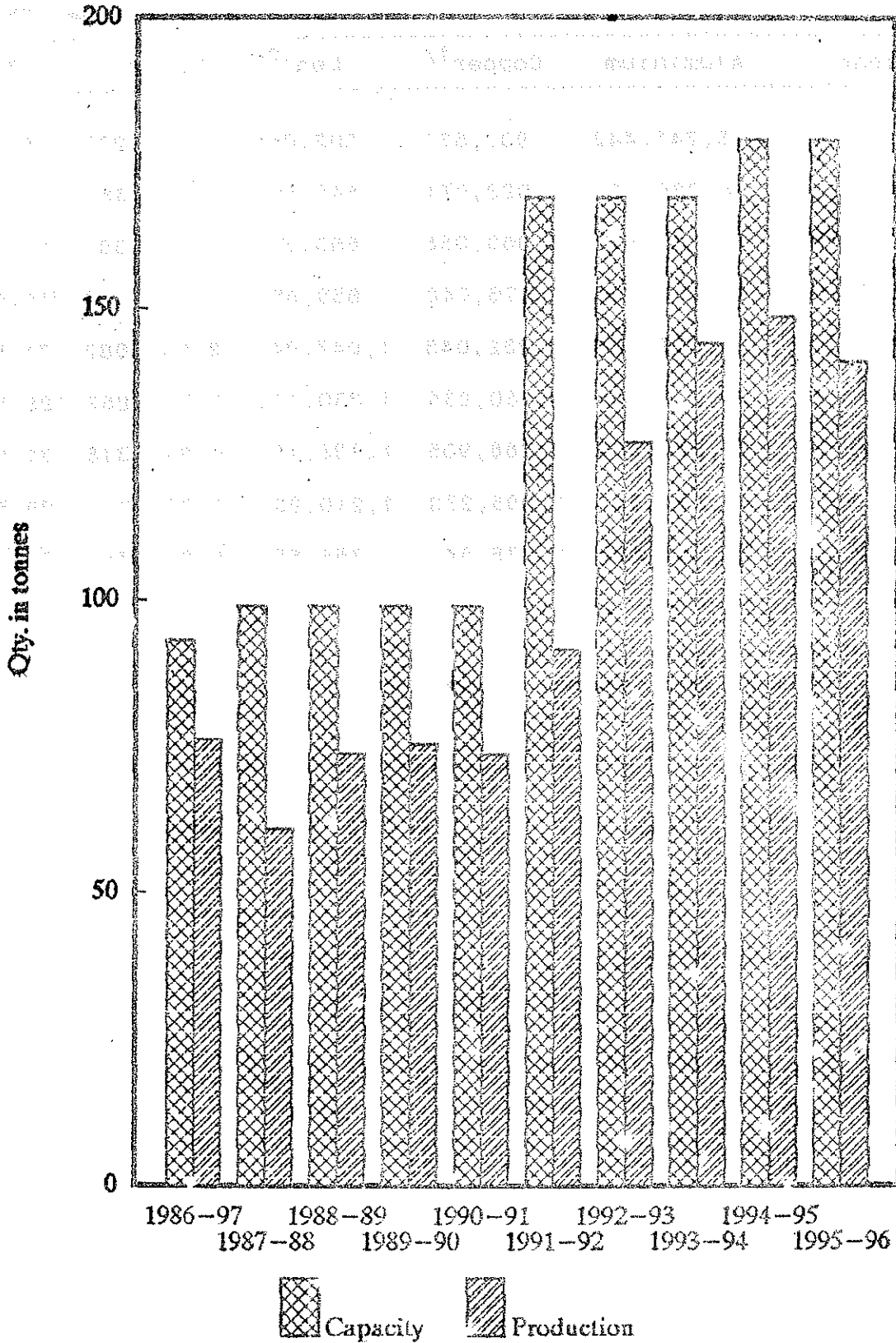


TABLE : 2.5 - VALUE OF METAL PRODUCTION  
(At Current Prices)

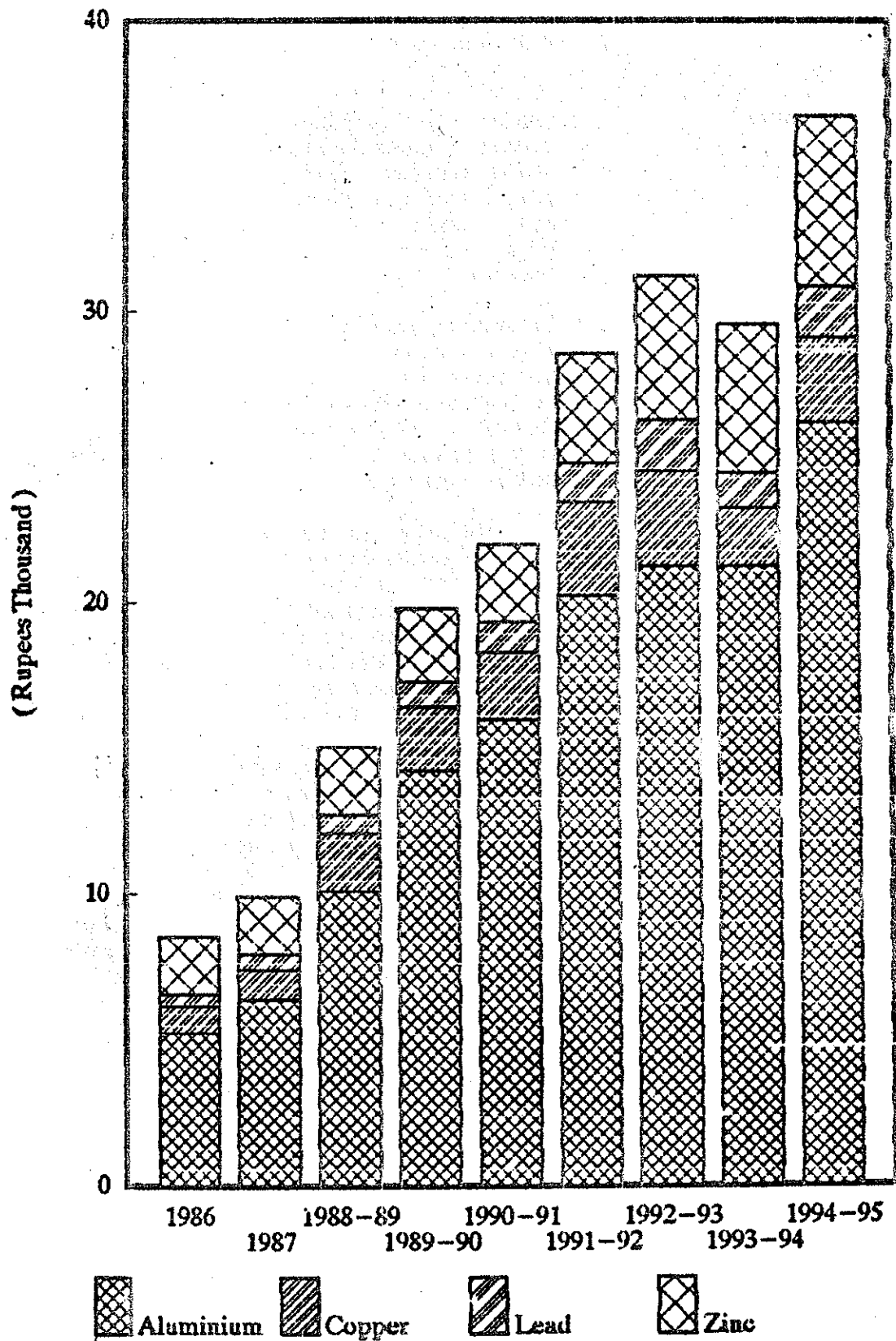
(Rupees Thousand)

Year	Aluminium	Copper <sup>1/</sup>	Lead <sup>2/</sup>	Zinc	Total
1986	5,241,442	933,537	382,065	1,971,273	8,528,317
1987	6,386,124	1,023,971	545,662	1,973,665	9,929,422
1988-89	10,130,482	1,969,056	660,223	2,310,389	15,070,150
1989-90	14,251,694	2,176,742	858,565	2,535,510	19,822,511
1990-91	16,017,624	2,282,048	1,047,841	2,633,082	21,980,595
1991-92	20,262,744	3,180,235	1,330,170	3,736,263	28,509,412
1992-93	21,258,260	3,266,905	1,738,151	4,948,318	31,070,634
1993-94	21,254,397	1,995,273	1,210,238	5,069,343	29,529,251
1994-95	26,167,805	2,875,847	1,758,553	5,903,740	36,705,945

1/ : Electrolytic wire bar.

2/ : Primary and secondary lead.

## Value of Metal Production





### 3. Reserves

#### 3.G GLOSSARY OF TERMS

- Recoverable Reserve** : Part of the insitu reserve which can be recovered after allowing for the losses due to mining, grade dilution, concentration and metallurgy.
- Proved Reserve** : Explored by suitable methods by sufficiently closely spaced exploratory openings with large scale maps/sections supported by adequate basic data from measurements on the thickness quality etc. Approximate allowable error within 20% Mine planning can be made on the basis of this reserve.
- Probable Reserve** : Estimation made on the basis of measurements from widely spaced sampling points with reasonable extrapolation. Also includes estimates made by extrapolation into the peripheral parts of "proved" reserve blocks. Decision on viability of the prospect for detailed exploration can be taken. Approximate allowable error within 50%.
- Possible Reserve** : Estimate based on the basis of assumed continuity of ore on the strength of geological inference. Data based on very widely spaced or scattered sampling points/past mining/analogy with similar deposits in the vicinity/geological interpretation of geophysical and geo-chemical anomalies. First approximation into the realm of quantitative commercial evaluation of an ore body.
- Basis of Grade Classification** : Classification of the reserve/resources under various end-use grades has been done by the IBM primarily based on the chemical analysis of the principal constituents reported by the Exploration/Exploiting/Inspecting Agency keeping in view the "Indian Standard" and "Users" specifications. Where information on the chemical analysis of principal constituents are not reported then the end-use grades reported/assigned by the Exploration/Inspecting Agency have been adopted. In the case of working large lease hold deposits, available information on despatches made to the consuming industries has been made use of.

: In the case of estimates of reserves which belong to more than one grade and their grade wise breakup is not available, such reserves/resources are treated as of "mixed" grade.

: In the case of reserves for which the range of reported values of chemical analysis was too wide to fit them into any single end-use grade of the mineral, the reserves/resources have been treated as of "unclassified" grade.

: Wherever information on the chemical analysis or the end-use grades of reserves/resources are not indicated by the Exploration/Exploitation/Prospecting Agency, grade of such reserves/resources have been shown as "NOT KNOWN"

---

**Table 3.1 : RECOVERABLE RESERVES OF BAUXITE**  
 ( as on 1.4.1990 )  
 (Qty. in 000" tonnes)

State / Grade	Proved	Probable	Possible	Total
<b>ALL INDIA</b>				
Total of all grades	6,68,041	5,50,471	13,06,826	25,25,338
Chemical	5,750	285	5,127	11,162
Refractory	10,818	369	14,531	25,718
Chemical/refractory mixed with others	5,883	316	9,984	16,183
Metallurgical - 1	4,59,244	4,11,104	10,14,141	18,84,489
Metallurgical - 2	1,23,715	73,771	1,21,899	3,19,385
Metallurgical mixed	35,569	1,290	15,817	52,676
Low	11,886	42,430	81,049	1,35,365
Mixed grade exclu- ding chemical/ refractory	12,217	16,560	19,985	48,762
Abrasive	801	-	388	1,189
Others	1,333	543	3,190	5,066
Unclassified	-	3,341	4,717	8,058
Not known	825	462	15,998	17,285
<b>Andhra Pradesh</b>				
Total of all grades	1,69,848	1,61,199	2,60,954	5,92,001
Metallurgical - 1	1,69,848	1,61,199	2,60,954	5,92,001
<b>Bihar</b>				
Total of all grades	11,893	13,498	35,713	61,104
Chemical	-	-	5	5
Refractory	26	24	388	438
Chemical/refractory mixed with others	-	-	2,050	2,050
Metallurgical - 1	3,997	1,765	14,527	20,289
Metallurgical - 2	3,997	4,199	4,297	12,493
Metallurgical mixed	261	829	7,009	8,099
Low	2,916	6,435	2,579	11,930
Mixed grade exclu- ding chemical/ refractory	36	246	2,025	2,307
Unclassified	-	-	1,200	1,200
Not known	660	-	1,633	2,293

State / Grade	Proved	Probable	Possible	Total
<b>Goa</b>				
Total of all grades	8,426	9,885	9,778	28,089
Refractory	-	-	1,504	1,504
Metallurgical - 1	-	211	936	1,147
Metallurgical - 2	5,456	703	1,735	7,894
Low	-	-	1,786	1,786
Mixed grade excluding chemical/refractory	2,970	8,971	979	12,920
Not known	-	-	2,838	2,838
<b>Gujarat</b>				
Total of all grades	36,423	18,967	52,353	1,07,743
Chemical	4,363	137	494	4,994
Refractory	5,813	16	10,398	16,227
Chemical/refractory mixed with others	3,602	52	716	4,370
Metallurgical - 1	7,070	631	14,195	21,896
Metallurgical - 2	387	608	434	1,429
Metallurgical mixed	-	125	189	314
Low	4,758	14,784	18,482	38,024
Mixed grade excluding chemical/refractory	8,537	2,110	3,711	14,358
Abrasive	801	-	388	1,189
Others	1,088	-	102	1,190
Unclassified	-	504	734	1,238
Not known	4	-	2,510	2,514
<b>Jammu &amp; Kashmir</b>				
Total of all grades	537	830	416	1,783
Chemical	-	-	416	416
Low	387	665	-	1,052
Not known	150	165	-	315
<b>Karnataka</b>				
Total of all grades	1,743	6,002	19,671	27,416
Refractory	296	94	102	492
Metallurgical - 1	35	108	522	665

State / Grade	Proved	Probable	Possible	Total
Metallurgical - 2	1,372	4,486	8,037	13,895
Metallurgical mixed	36	-	780	816
Low	4	1,152	7,729	8,885
Mixed grade excluding chemical/ refractory	-	162	-	162
Not known	-	-	2,501	2,501
<b>Kerala</b>				
Total of all grades	1,222	5,068	1,633	7,923
Refractory	56	-	-	56
Chemical/refractory mixed with others	-	130	-	130
Metallurgical - 1	62	-	-	62
Metallurgical - 2	17	-	-	17
Low	1,087	3,593	1,209	5,889
Mixed grade excluding chemical/ refractory	-	1,345	424	1,769
<b>Madhya Pradesh</b>				
Total of all grades	62,835	40,361	37,595	1,40,791
Chemical	227	75	432	734
Refractory	3,816	160	2,125	6,101
Chemical/refractory mixed with others	2,281	134	2,978	5,393
Metallurgical - 1	44,997	24,325	5,643	74,965
Metallurgical - 2	8,230	11,914	10,165	30,309
Metallurgical mixed	2,165	86	7,306	9,557
Low	600	2,525	2,316	5,441
Mixed grade excluding chemical/ refractory	264	10	344	618
Others	244	543	3,089	3,876
Unclassified	-	292	328	620
Not known	11	297	2,869	3,177
<b>Maharashtra</b>				
Total of all grades	58,099	11,762	17,389	37,250
Chemical	1,161	73	3,780	5,014

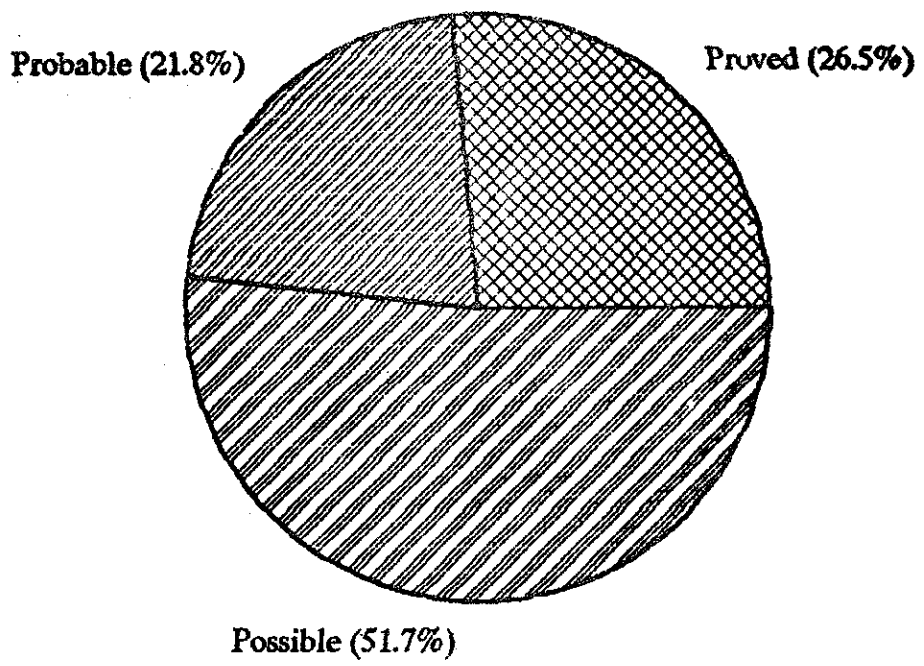
State / Grade	Proved	Probable	Possible	Total
Refractory	-	48	-	48
Chemical/refractory mixed with others	-	-	2,240	2,240
Metallurgical - 1	51,071	3,711	5,050	9,832
Metallurgical - 2	5,727	1,226	2,017	8,970
Metallurgical mixed	-	-	391	391
Low	140	6,704	1,662	8,506
Not known	-	-	2,249	2,249
<b>Meghalaya</b>				
Total of all grades	-	896	-	896
Metallurgical - 1	-	707	-	707
Metallurgical - 2	-	189	-	189
<b>Orissa</b>				
Total of all grades	3,10,462	2,66,689	8,65,125	4,42,276
Refractory	-	-	14	14
Metallurgical - 1	1,81,319	2,18,447	7,12,314	11,12,080
Metallurgical - 2	96,037	45,697	95,148	2,36,882
Metallurgical mixed	33,106	-	15	33,121
Low	-	-	44,294	44,294
Mixed grade exclu- ding chemical/ refractory	-	-	10,827	10,827
Unclassified	-	2,545	2,455	5,000
Not known	-	-	58	58
<b>Rajasthan</b>				
Total of all grades	-	-	318	318
Low	-	-	318	318
<b>Tamil Nadu</b>				
Total of all grades	1,359	15,064	1,904	18,327
Refractory	-	28	-	28
Metallurgical - 2	1,359	4,748	66	6,173
Low	-	6,572	498	7,070
Mixed grade exclu- ding chemical/ refractory	-	3,716	-	3,716
Not known	-	-	1,340	1,340

State / Grade	Proved	Probable	Possible	Total
<b>Uttar Pradesh</b>				
Total of all grades	5,193	250	3,977	9,420
Refractory	810	-	-	810
Chemical/refractory mixed with others	-	-	2,000	2,000
Metallurgical - 1	845	-	-	845
Metallurgical - 2	1,133	-	-	1,133
Metallurgical mixed	-	250	127	377
Low	1,995	-	175	2,170
Mixed grade exclu- ding chemical/ refractory	410	-	1,675	2,085

Note : Due to rounding off the figures, the statewise breakup of reserves may not add up to the all India total.

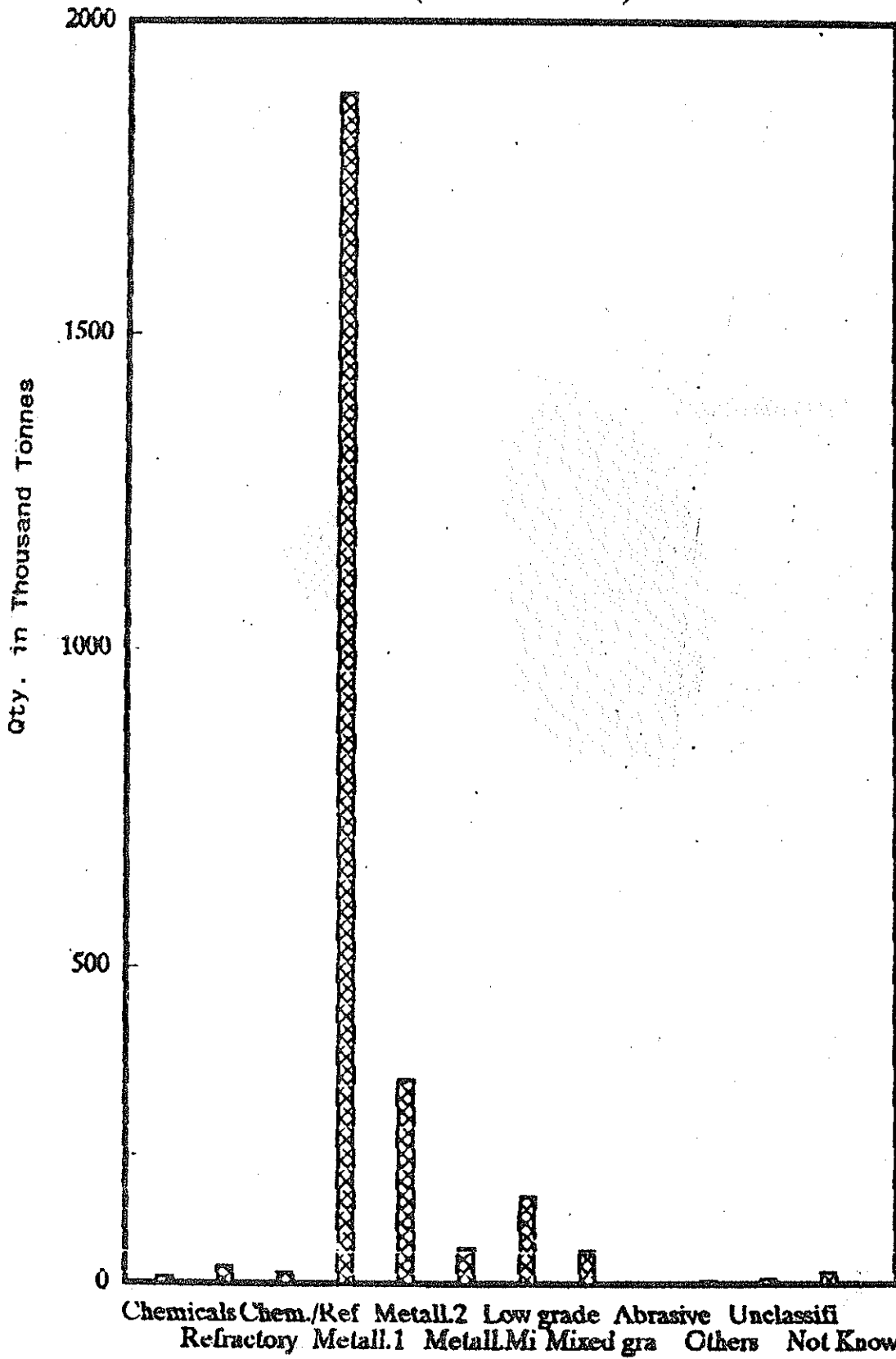
# Recoverble Reserves of Bauxite

(As on 1-4-1990)





Grade-wise Recoverable Reserves of Bauxite  
(As on 1-4-1990)



State-wise Recoverable Reserves of Bauxite  
(As on 1-4-1990)

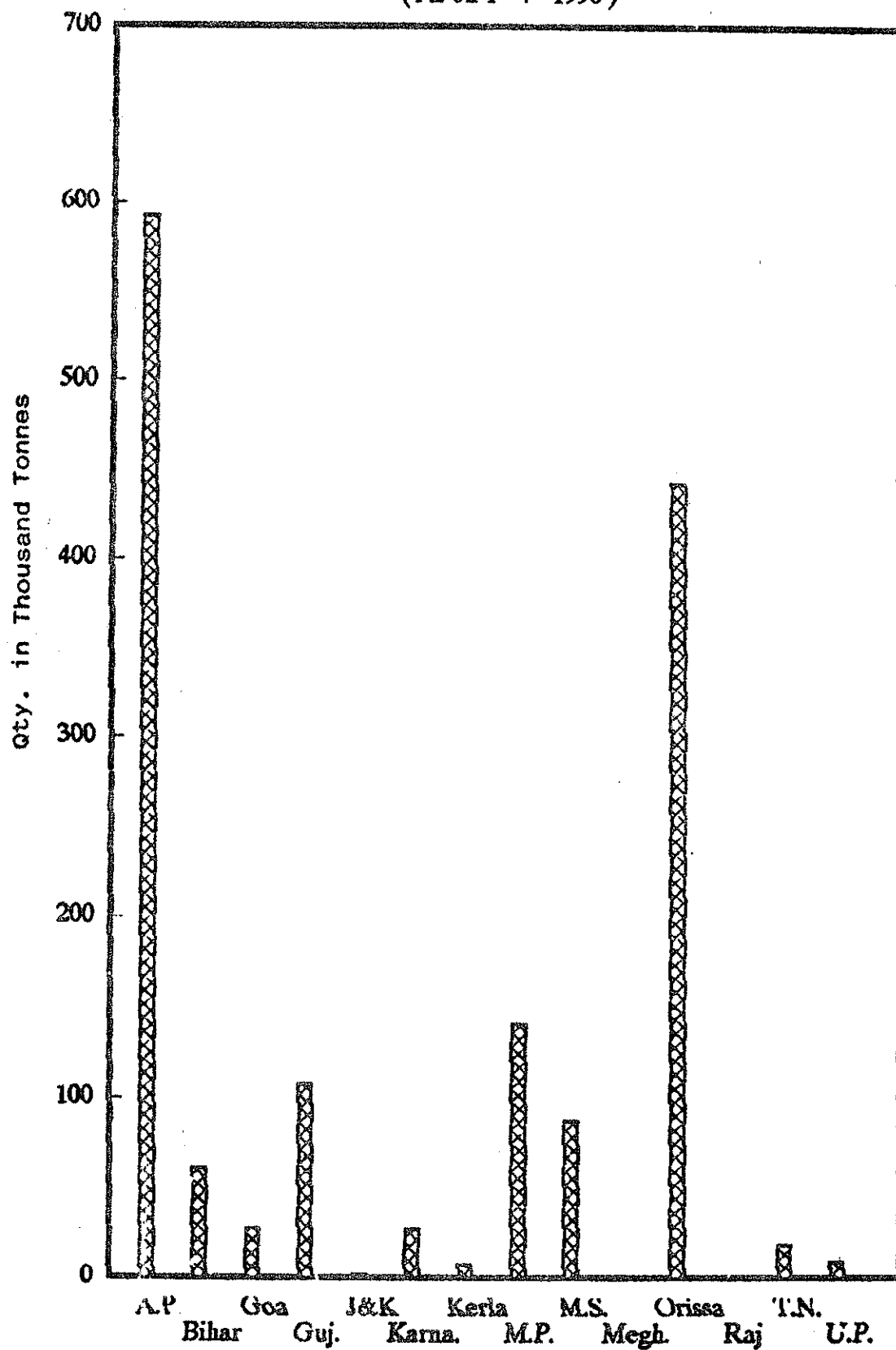


Table 3.2 : RECOVERABLE RESERVES OF COPPER ORE AND METAL  
( as on 1.4.1995)

(Qty. in 000" tonnes)

State/Grade	Proved	Probable	Possible	Total
<b>ALL INDIA</b>				
ORE (TOTAL)	165648.49	151711.83	99450.30	416810.62
ORE WITH 1.85 % & ABOVE Cu	308.00	3839.00	13836.20	17983.20
ORE WITH 1.00 % TO BELOW 1.85 % Cu	164704.33	147258.23	85415.30	397377.86
ORE WITH (-)0.5% TO (-)1.00% Cu	636.16	614.60	198.80	1449.56
METAL	1722.67	1610.48	1041.23	4374.38
<b>ANDHRA PRADESH</b>				
ORE (TOTAL)	338.10	4382.53	728.00	5448.63
ORE WITH 1.85 % & ABOVE Cu	0.00	430.00	0.00	430.00
ORE WITH 1.00 % TO BELOW 1.85 % Cu	338.10	3952.53	728.00	5018.63
METAL	4.33	55.77	7.83	67.93
<b>BIHAR</b>				
ORE (TOTAL)	46584.00	41852.00	20253.40	108689.60
ORE WITH 1.85 % & ABOVE Cu	0.00	0.00	399.70	399.70
ORE WITH 1.00 % TO BELOW 1.85 % Cu	46584.00	41852.20	19853.70	108289.90
METAL	446.91	429.43	209.56	1085.90
<b>GUJARAT</b>				
ORE (TOTAL)	2224.60	4410.00	1489.60	8124.20
ORE WITH 1.00 % TO BELOW 1.85 % Cu	2224.60	4410.00	1489.60	8124.20
METAL	30.90	61.25	20.69	112.84

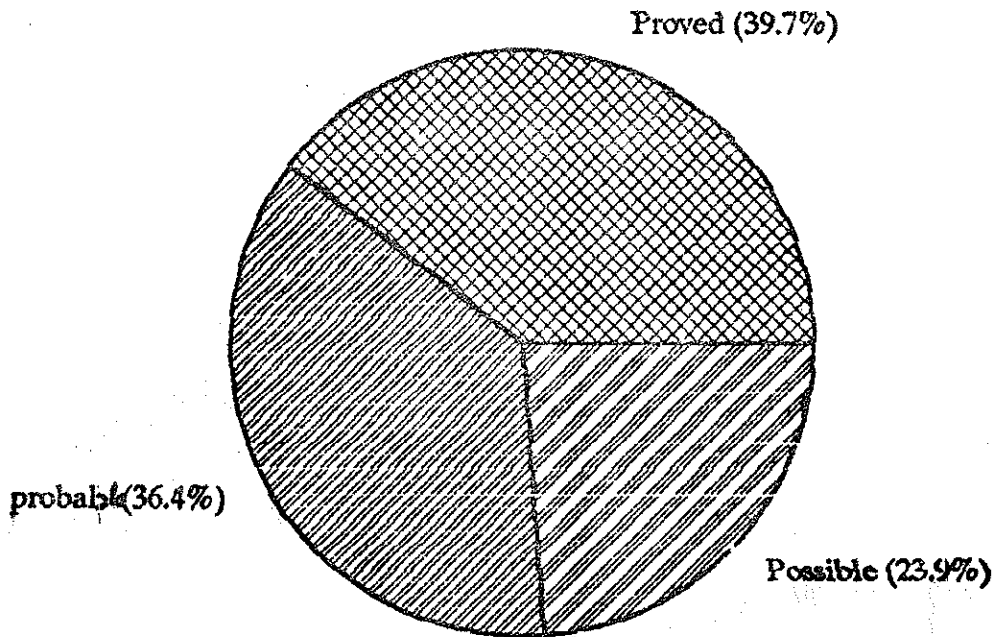
State/Grade	Proved	Probable	Possible	Total
KARNATAKA				
ORE (TOTAL)	963.16	3819.60	885.80	5668.56
ORE WITH 1.85 % & ABOVE Cu	0.00	91.00	0.00	91.00
ORE WITH 1.00 % TO BELOW 1.85 % Cu	327.00	3114.00	687.00	4128.00
ORE WITH (-)0.5% TO (-)1.00% Cu	636.16	614.60	198.80	1449.56
METAL	5.99	32.00	6.23	44.22
MADHYA PRADESH				
ORE (TOTAL)	91499.00	59671.00	26268.00	177438.00
ORE WITH 1.00 % TO BELOW 1.85 % Cu	91499.00	59671.00	26268.00	177438.00
METAL	1023.09	666.63	293.03	1982.75
MAHARASHTRA				
ORE (TOTAL)	0.00	83.00	523.00	606.00
ORE WITH 1.85 % & ABOVE Cu	0.00	61.00	0.00	61.00
ORE WITH 1.00 % TO BELOW 1.85 % Cu	0.00	22.00	523.00	545.00
METAL	0.00	1.74	7.28	9.02
MEGHALAYA				
ORE (TOTAL)	0.00	616.00	0.00	616.00
ORE WITH 1.00 % TO BELOW 1.85 % Cu	0.00	616.00	0.00	616.00
METAL	0.00	4.77	0.00	4.77
ORISSA				
ORE (TOTAL)	0.00	2264.00	962.00	3226.00

State/Grade	Proved	Probable	Possible	Total
ORE WITH 1.00 % TO BELOW 1.85 % Cu	0.00	2264.00	962.00	3226.00
METAL	0.00	20.55	9.45	30.00
<b>RAJASTHAN</b>				
ORE (TOTAL)	22274.63	34464.50	48235.50	104974.63
ORE WITH 1.85 % & ABOVE Cu	0.00	3178.00	13331.50	16509.50
ORE WITH 1.00 % TO BELOW 1.85 % Cu	22274.63	31286.50	34904.00	88465.13
METAL	188.01	336.25	484.92	1009.18
<b>SIKKIM</b>				
ORE (TOTAL)	645.00	70.00	105.00	820.00
ORE WITH 1.85 % & ABOVE Cu	308.00	0.00	105.00	413.00
ORE WITH 1.00 % TO BELOW 1.85 % Cu	337.00	70.00	0.00	407.00
METAL	9.28	0.98	2.24	12.50
<b>UTTAR PRADESH</b>				
ORE (TOTAL)	1120.00	0.00	0.00	1120.00
ORE WITH 1.00 % TO BELOW 1.85 % Cu	1120.00	0.00	0.00	1120.00
METAL	14.16	0.00	0.00	14.16
<b>WEST BENGAL</b>				
ORE (TOTAL)	0.00	79.00	0.00	79.00
ORE WITH 1.85 % & ABOVE Cu	0.00	79.00	0.00	79.00
METAL	0.00	1.11	0.00	1.11

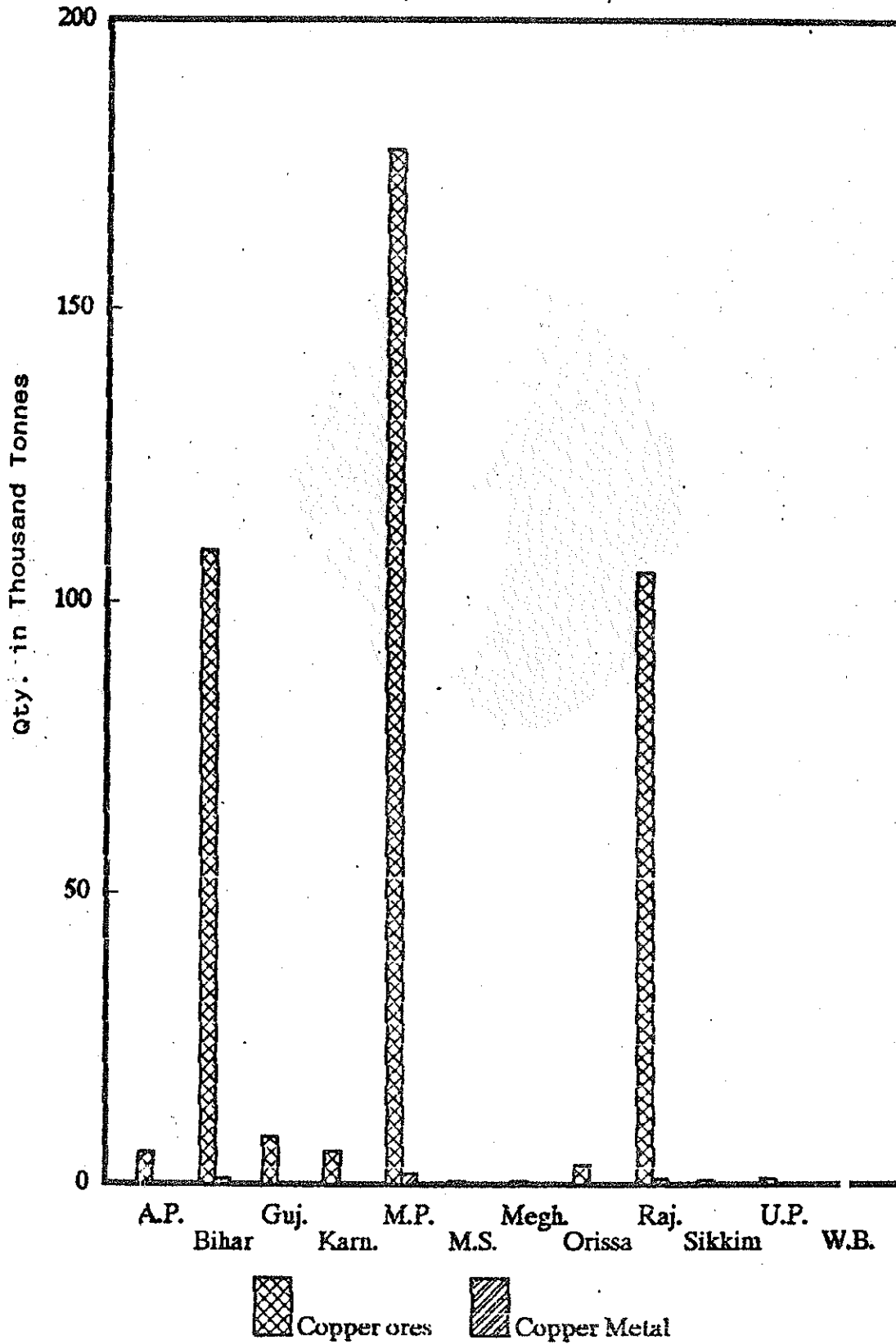
Note : Statewise breakup of reserves may not add up to the all India total.

# Recoverible Reserves of Copper

(As on 1-4-1995)



State-wise Recoverible Reserves of Copper  
(As on 1-4-1995)



**Table 3.3 : RECOVERABLE RESERVES OF LEAD-ZINC ORES AND METALS**  
 ( as on 1.4.1995 )  
 (Qty. in 000" tonnes)

State/ Grade	Proved	Probable	Possible	Total
<b>ALL INDIA</b>				
Pb & Zn ORE (TOTAL)	71287.34	47801.10	60043.50	179131.94
ORE WITH (+)10% Pb & Zn	33998.00	13113.00	16638.50	63749.50
ORE WITH 5-10 % Pb & Zn	37289.34	34028.10	43405.00	114722.44
ORE WITH (-)5% Pb & Zn	0.00	660.00	0.00	660.00
LEAD METAL	879.85	641.35	800.88	2318.66
ZINC METAL	4660.17	2553.72	2863.85	10080.99
<b>ANDHRA PRADESH</b>				
Pb & Zn ORE (TOTAL)	1161.75	714.30	78.00	1954.05
ORE WITH 5-10 % Pb & Zn	1161.75	714.30	78.00	1954.05
LEAD METAL	0.00	24.67	0.00	24.67
ZINC METAL	39.42	9.31	2.64	51.37
<b>GUJARAT</b>				
Pb & Zn ORE (TOTAL)	2156.50	4275.00	1444.00	7875.50
ORE WITH 5-10 % Pb & Zn	2156.50	4275.00	1444.00	7875.50
LEAD METAL	55.73	110.47	37.31	203.51
ZINC METAL	83.95	166.43	56.21	306.59
<b>MADHYA PRADESH</b>				
Pb & Zn ORE (TOTAL)	0.00	0.00	615.00	615.00
ORE WITH 5-10 % Pb & Zn	0.00	0.00	615.00	615.00
ZINC METAL	0.00	0.00	25.94	25.94
<b>MAHARASHTRA</b>				
Pb & Zn ORE (TOTAL)	1376.90	4413.50	0.00	5790.40



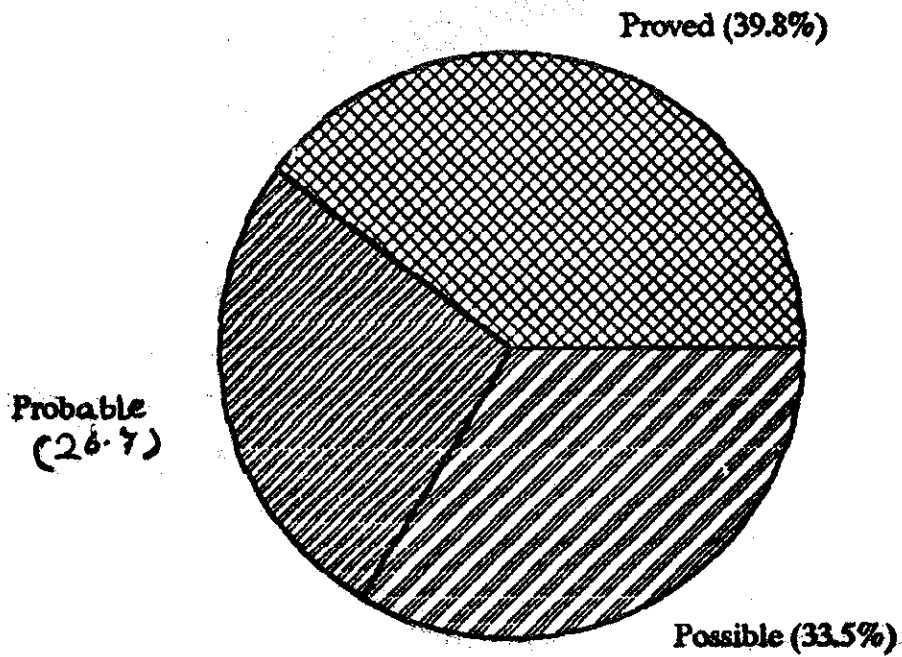
State/ Grade	Proved	Probable	Possible	Total
ORE WITH 5-10 % Pb & Zn	1376.90	4413.50	0.00	5790.40
ZINC METAL	62.77	201.22	0.00	263.99
MEGHALAYA				
Pb & Zn ORE (TOTAL)	0.00	660.00	0.00	660.00
ORE WITH (-)5% Pb & Zn	0.00	660.00	0.00	660.00
LEAD METAL	0.00	5.94	0.00	5.94
ZINC METAL	0.00	6.58	0.00	6.58
ORISSA				
Pb & Zn ORE (TOTAL)	1274.19	168.30	670.00	2112.49
ORE WITH 5-10 % Pb & Zn	1274.19	168.30	670.00	2112.49
LEAD METAL	47.22	6.20	24.82	78.24
RAJASTHAN				
Pb & Zn ORE (TOTAL)	63642.00	35836.00	55797.50	155275.50
ORE WITH (+)10% Pb & Zn	33998.00	13113.00	16638.50	63749.50
ORE WITH 5-10 % Pb & Zn	29644.00	22723.00	39159.00	91526.00
LEAD METAL	746.40	466.79	713.75	1926.94
ZINC METAL	4424.69	2127.32	2743.06	9295.07
SIKKIM				
Pb & Zn ORE (TOTAL)	336.00	70.00	0.00	406.00
ORE WITH 5-10 % Pb & Zn	336.00	70.00	0.00	406.00
LEAD METAL	4.25	0.88	0.00	5.13
ZINC METAL	7.94	1.64	0.00	9.58

State/ Grade	Proved	Probable	Possible	Total
<b>TAMIL NADU</b>				
Pb & Zn ORE (TOTAL)	140.00	322.00	0.00	462.00
ORE WITH 5-10 % Pb & Zn	140.00	322.00	0.00	462.00
LEAD METAL	1.02	2.40	0.00	3.42
ZINC METAL	5.53	11.22	0.00	16.75
<b>UTTAR PRADESH</b>				
Pb & Zn ORE (TOTAL)	1200.00	0.00	0.00	1200.00
ORE WITH 5-10 % Pb & Zn	1200.00	0.00	0.00	1200.00
LEAD METAL	25.23	0.00	0.00	25.23
ZINC METAL	35.87	0.00	0.00	35.87
<b>WEST BENGAL</b>				
Pb & Zn ORE (TOTAL)	0.00	1342.00	1439.00	2781.00
ORE WITH 5-10 % Pb & Zn	0.00	1342.00	1439.00	2781.00
LEAD METAL	0.00	24.00	25.00	49.00
ZINC METAL	0.00	30.00	36.00	66.00

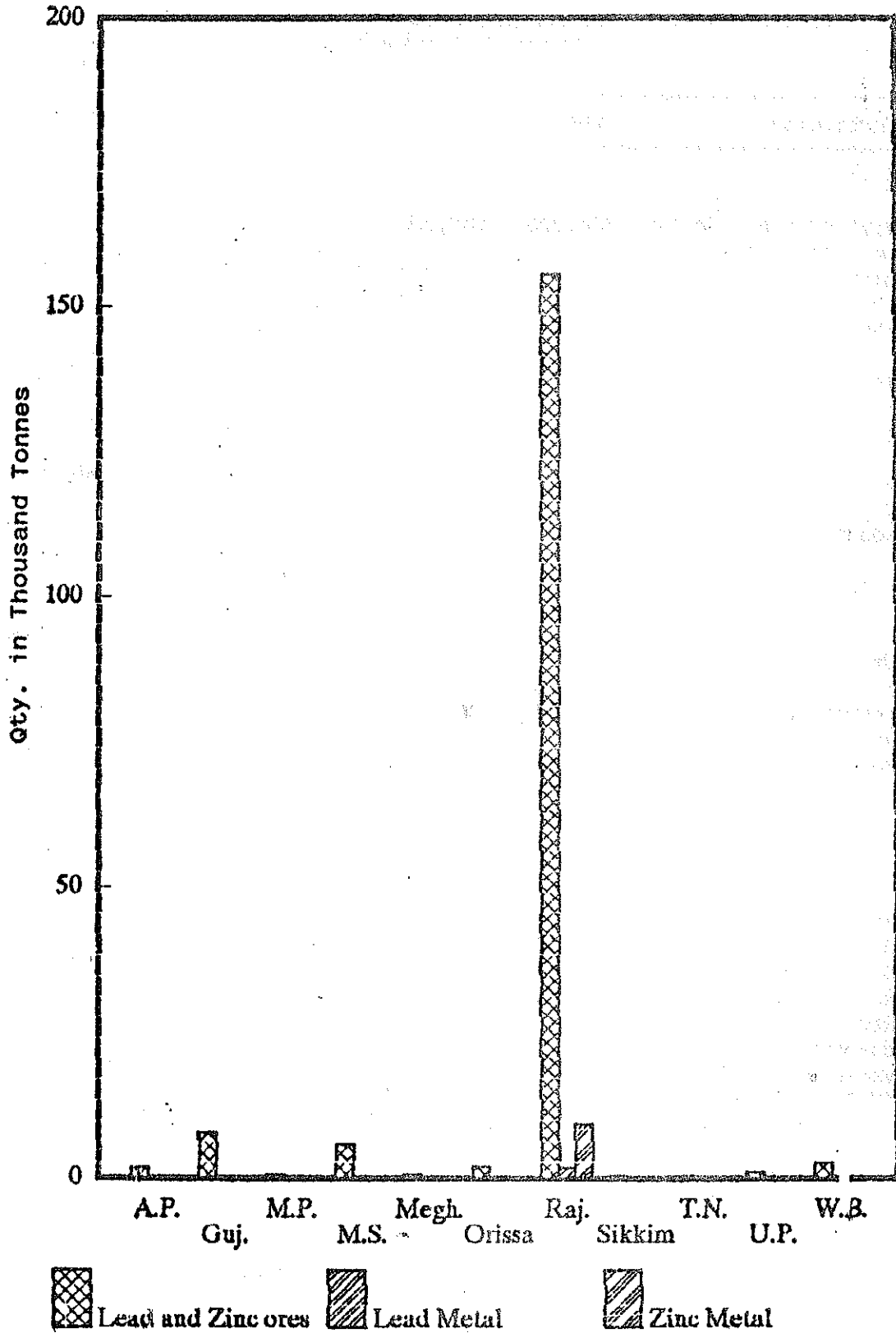
Note : Statewise breakup of reserves may not add up to the all India total.

# Recoverable Reserves of Lead & Zinc

(As on 1-4-1995)



State-wise Recoverible Reserves of Lead and Zinc  
(As on 1-4-1995)



## 4. Supply

### 4.1 CAPACITY & PRODUCTION TABLE : 4.1.1.ALUMINIUM

#### 4.1.1.1 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - ALUMINIUM Bharat Aluminium Co. Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	550,000	550,000	550,000	550,000	550,000
Mine production of bauxite	533,058	365,023	350,816	248,965	250,729
Alumina(Al <sub>2</sub> O <sub>3</sub> ) content in bauxite ( % )	48.1	48.2	48.3	N.A.	47.52
<b>Alumina</b>					
Licenced capacity	200,000	200,000	200,000	200,000	200,000
Installed plant capacity	200,000	200,000	200,000	200,000	200,000
<b>Production :</b>					
Hydrated alumina	162,250	167,340	176,695	182,120	184,700
Calcined alumina	160,415	161,145	172,905	182,005	183,335
<b>Smelter</b>					
Licenced capacity	100,000	100,000	100,000	100,000	100,000
Installed capacity					
Hot metal	100,000	100,000	100,000	100,000	100,000
E.C. Grade	50,000	50,000	50,000	50,000	50,000
C.G. Grade	50,000	50,000	50,000	50,000	50,000
<b>Production :</b>					
Hot metal	96,250	91,677	93,351	91,259	92,435
E.C. Grade	38,300	42,504	38,125	45,191	44,766
C.G. Grade	57,950	49,175	55,226	46,068	47,669
Rolled products	18,767	19,001	25,135	21,799	19,688
Recovery of by/ co-products					
vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> ) (Sludge)	3,414	2,320	N.A.	N.A.	N.A.

TABLE : 4.1.1.1 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Mine</b>					
Installed mine capacity	550,000	550,000	690,000	690,000	690,000
Mine production of bauxite	210,791	211,000	235,000	270,000	312,000
Alumina(Al <sub>2</sub> O <sub>3</sub> ) content in bauxite ( % )	47.12	48.00	48.00	48.5	48.00
<b>Alumina</b>					
Licensed capacity	200,000	200,000	200,000	200,000	200,000
Installed plant capacity	200,000	200,000	200,000	200,000	200,000
<b>Production :</b>					
Hydrated alumina	193,540	182,225	182,040	188,660	183,005
Calcined alumina	187,510	174,800	182,010	185,205	176,660
<b>Smelter</b>					
Licensed capacity	100,000	100,000	100,000	100,000	100,000
Installed capacity					
Hot metal	100,000	100,000	100,000	100,000	100,000
E.C. Grade	50,000	50,000	50,000	50,000	50,000
C.G. Grade	50,000	50,000	50,000	50,000	50,000
<b>Production :</b>					
Hot metal	92,691	92,830	92,138	92,567	94,423
E.C. Grade	47,031	40,578	50,831	51,176	42,600
C.G. Grade	45,660	47,752	41,307	41,391	51,823
Rolled products	23,426	20,220	25,512	35,074	32,858
Recovery of by/ co-products vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> ) (Sludge)	N.A.	3,555	3,107	3,041	3,889

TABLE:4.1.1.2 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - ALUMINIUM  
National Aluminium Co. Limited  
(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
Mine production of bauxite	192,000	675,016	1,748,448	2,230,040	1,920,000
Alumina(Al <sub>2</sub> O <sub>3</sub> ) content in bauxite ( % )	42.5	42.67	42.5	42.9	N.A.
<b>Alumina</b>					
Licenced capacity	N.A.	800,000	800,000	800,000	800,000
Installed plant capacity	N.A.	400,000	800,000	800,000	800,000
<b>Production :</b>					
Hydrated alumina	5,976	184,527	612,750	768,000	657,350
Calcined alumina	N.A.	160,501	562,100	739,000	652,485
<b>Smelter</b>					
Licenced capacity	N.A.	218,000	218,000	218,000	218,000
Installed capacity					
Hot metal	N.A.	110,660	133,000	148,856	184,250
E.C. Grade	N.A.	N.A.	96,000		
				85,000	98,825
C.G. Grade	N.A.	N.A.	35,750		
<b>Production :</b>					
Hot metal <sup>2/</sup>	N.A.	25,777	80,022	137,346	152,999
E.C. Grade <sup>1/</sup>	N.A.	5,226	67,423	52,668	84,408
C.G. Grade <sup>1/</sup>	N.A.	20,154	11,330	785	5,805
Recovery of by/ co-products vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> )	N.A.	N.A.	N.A.	N.A.	N.A.

TABLE:4.1.1.2 Continued

Particulars	(Tonnes)				
	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Mine</b>					
Installed mine capacity	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
Mine production of bauxite	1,860,000	N.A.	2,445,000	2,138,334	2,408,472
Alumina(Al <sub>2</sub> O <sub>3</sub> ) content in bauxite ( % )	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Alumina</b>					
Licenced capacity	800,000	800,000	800,000	800,000	800,000
Installed plant capacity	800,000	800,000	800,000	800,000	800,000
<b>Production :</b>					
Hydrated alumina	680,100	802,000	758,000	763,363	805,080
Calcined alumina	672,200	803,500	753,021	770,000	807,130
<b>Smelter</b>					
Licenced capacity	218,000	218,000	218,000	218,000	218,000
Installed capacity					
Hot metal E.C. Grade	192,500	N.A.	N.A.	N.A.	N.A.
C.G. Grade	103,250	106,880	N.A.	N.A.	N.A.
<b>Production :</b>					
Hot metal <sup>2/</sup>	193,619	155,183 <sup>3/</sup>	157,932 <sup>3/</sup>	104,612 <sup>3/</sup>	141,735 <sup>3/</sup>
E.C. Grade <sup>1/</sup>	126,016	148,742	145,010	101,303	119,054
C.G. Grade <sup>1/</sup>	3,586	6,441	12,922	3,309	22,681
Recovery of by/ co-products vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> )	N.A.	N.A.	N.A.	N.A.	N.A.

1/ Variable depending on pot condition.

2/ Total include the production of H.P.Grade, wirerods etc.

3/ Total of E.C.Grade and C.G.Grade



TABLE 4.1.1.3 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - ALUMINIUM  
Hindustan Aluminium Corpn. Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	N.A.	N.A.	N.A.	385,000	498,000
Mine production of bauxite					
Amarkantak	33,074	18,375	8,805	13,575	47,090
Others	321,400	416,700	441,880	312,960	315,075
Total	354,474	435,075	450,685	326,535	362,165
Alumina (Al <sub>2</sub> O <sub>3</sub> ) content in bauxite (%)	43.20	43.49	43.33	43.18	43.22
<b>Alumina</b>					
Licenced capacity	200,000	200,000	200,000	200,000	200,000
Installed plant capacity	160,000	260,000	260,000	260,000	300,000
Production :					
Hydrated alumina	197,319	235,948	310,966	257,126	N.A.
Calcined alumina	194,576	232,304	308,801	255,424	256,589
<b>Smelter</b>					
Licenced capacity	150,000	150,000	150,000	150,000	150,000
Other products :					
Conductor redraw rods	22,000	22,000	22,000	22,000	22,000
Rolled	25,200	25,200	25,200	25,200	25,200
Extrusion	8,500	8,500	8,500	8,500	8,500
Installed capacity					
Hot metal	120,000	120,000	124,000	135,000	150,000

## 4.1.1.3 Continued

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Production :</b>					
Hot metal	123,425	122,508	157,826	130,787	139,762
E.C. Grade	61,750	59,909	72,995	N.A.	N.A.
C.G. Grade	61,675	62,599	84,831	N.A.	N.A.
<b>Conductor redraw rods/</b>					
Commercial rods	30,443	32,808	40,991	38,711	39,954
Rolled products	26,493	23,524	31,702	28,787	27,762
Extrusions	9,064	9,902	12,969	10,000	9,652
<b>Recovery of by/ co-products</b>					
vanadium pentoxide (V2O5)	169	42	189	169	N.A.
Gallium <sup>2/</sup>	14.0	35.2	38.21	N.A.	N.A.

TABLE: 4.1.1.3 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995
<b>Mine</b>					
Installed mine capacity	540,000	N.A.	528,000	528,000	528,000 <sup>e</sup>
Mine production of bauxite					
Amarkantak	49,281	51,765	61,392	35,563	36,783
Others	N.A.	446,120	339,345	374,345	464,185
Total <sup>f</sup>	-	497,885	400,737	409,908	500,968
Alumina(Al <sub>2</sub> O <sub>3</sub> ) content in bauxite ( % )	42.45	N.A.	N.A.	N.A.	N.A.
<b>Alumina</b>					
Licenced capacity	200,000	300,000	375,000	375,000	375,000
Installed plant capacity	300,000	300,000	350,000	350,000	350,000
Production :					
Hydrated alumina	N.A.	N.A.	315,723	319,873	341,031
Calcined alumina	293,079	305,300	N.A.	N.A.	N.A.
<b>Smelter</b>					
Licenced capacity	375,000	375,000	375,000	375,000	375,000
Other products :					
Conductor redraw rods	40,000	40,000	40,000	40,000	40,000
Rolled	28,800	28,800	45,000	45,000	45,000
Extrusion	10,400	10,400	10,400	10,400	10,000
Installed capacity					
Hot metal	150,000	150,000	150,000	150,000	210,000

TABLE : 4.1.1.3 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
Production :					
Hot metal	166,197	163,485	155,761	164,290	175,398
E.C. Grade	82,034 <sup>e</sup>	86,327 <sup>e</sup>	74,989 <sup>e</sup>	70,208 <sup>e</sup>	85,566 <sup>e</sup>
C.G. Grade	84,163 <sup>e</sup>	77,158 <sup>e</sup>	80,772 <sup>e</sup>	94,072 <sup>e</sup>	89,832 <sup>e</sup>
Conductor redraw rods					
Commercial rods	42,329	37,740	40,225	44,454	45,865
Rolled products	31,529	29,619	30,740	38,202	31,378
Extrusions	10,385	9,799	9,807	11,416	12,589
Recovery of by/ co-products					
vanadium pentoxide (V2O5)	1,002.8	1,184.5	1,159.3	1,231.2	N.A.
Gallium <sup>2/</sup>	23.5	25.5	28.6	27.3	N.A.

1/ Apart from the mine production bauxite is purchased from own subsidiary company "Minerals & Minerals Ltd." & other sources.

2/ Quantity in kilogram.

e : Estimated

TABLE : 4.1.1.4 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - ALUMINIUM  
Indian Aluminium Co. Limited

(Tonnes)

Particulars	1986	1987	1988-89 (15 MONTH)	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	750,000	750,000	750,000 <sup>1/</sup>	750,000	750,000
Mine production of bauxite	621,000	548,000	956,000	721,788	690,835
Alumina (Al <sub>2</sub> O <sub>3</sub> ) content in bauxite (%)					
Lohardaga (Bihar)	40.54	48.58	48.17	48.17 <sup>e</sup>	48.17 <sup>e</sup>
Chandgad (Maharashtra)	48.67	48.33	46.84	N.A.	47.52
<b>Alumina</b>					
Installed plant capacity	255,000	255,000	255,000 <sup>1/</sup>	255,000	255,000
<b>Production :</b>					
Hydrated alumina	224,500	201,900	221,230	203,170	227,500
Calcined alumina	194,000	175,000	230,000	182,005	183,335
<b>Smelter.</b>					
Licensed capacity	117,000	117,000	117,000 <sup>1/</sup>	117,000	117,000
Installed capacity					
Cold metal	117,000	117,000	117,000 <sup>1/</sup>	117,000	117,000
Rolled products	33,175	33,175	33,175 <sup>1/</sup>	34,825	34,825
<b>Production :</b>					
Cold metal	28,522	31,582	57,345	66,459	64,769
E.C. Grade	4,771	N.A.	4,977	12,060	11,293
C.G. Grade	23,751	31,582	52,368	46,068	47,669
Rolled products	40,255	42,450	54,864	53,745	55,530
Recovery of by/ co-products					
vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> )	97	101	110	69	68

TABLE : 4.1.1.4 Continued

Particulars	(Tonnes)				
	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Mine</b>					
Installed mine capacity	N.A.	N.A.	N.A.	N.A.	N.A.
Mine production of bauxite	758,768	760,787	839,124	712,885	663,906
Alumina(Al <sub>2</sub> O <sub>3</sub> ) content in bauxite ( % )					
Lohardaga(Bihar)	48.17 <sup>e</sup>	48.17 <sup>e</sup>	48.17 <sup>e</sup>	48.17 <sup>e</sup>	48.17 <sup>e</sup>
Chandgad (Maharashtra)	47.12	47.12 <sup>e</sup>	47.12 <sup>e</sup>	47.12 <sup>e</sup>	47.12 <sup>e</sup>
<b>Alumina</b>					
Installed plant capacity	N.A.	292,000	292,000	292,000	292,000
Production :					
Hydrated alumina	214,500	245,600	267,050	276,350	306,750
Calcined alumina	187,510	191,870	N.A.	N.A.	N.A.
<b>Smelter</b>					
Licensed capacity	20,000	20,000	20,000	20,000	20,000
Installed capacity					
Cold metal	117,000	117,000	117,000	117,000	117,000
Rolled products	60,000	85,000	85,000	90,000	90,000
Production :					
Cold metal	63,363	38,559	23,267	43,365	54,084
E.C. Grade	47,031	N.A.	N.A.	N.A.	N.A.
C.G. Grade	45,660	N.A.	N.A.	N.A.	N.A.
Rolled products	57,537	58,918	64,921	69,771	68,928
Recovery of by/ co-products vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> )	65	63	55	53	46

1/: Capacity figures for 1988-89 are on annual basis.

e : Estimated

TABLE: 4.1.1.5 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - ALUMINIUM  
Madras Aluminium Co. Limited<sup>4/</sup>

(Tonnes)

Particulars	1986-87 <sup>1/</sup>	1987-88 <sup>2/</sup>	1988-89 <sup>3/</sup>	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	550,000	550,000	550,000	550,000	550,000
Mine production of bauxite	45,741	43,755	41,585	246,965	250,729
Alumina(Al <sub>2</sub> O <sub>3</sub> ) content in bauxite ( % )	43.74	48.20	47.31	N.A.	47.52
<b>Alumina</b>					
Licenced capacity	200,000	200,000	200,000	200,000	200,000
Installed plant capacity	45,000	45,000	45,000	200,000	200,000
Production :					
Hydrated alumina	19,176	16,484	25,862	182,120	184,700
Calcined alumina	20,205	16,605	23,571	82,005	183,335
<b>Smelter</b>					
Licenced capacity	25,000	25,000	25,000	25,000	100,000
Installed capacity					
Hot metal	25,000	25,000	25,000	25,000	100,000
Production :					
Hot metal	14,794	9,144	8,790	1,259	92,425
E.C. Grade	6,641	4,136	904	45,191	44,766
C.G. Grade	5,042	1,981	4,295	46,068	47,669
Rolled products	3,092	2,947	3,279	21,799	19,688

TABLE: 4.1.1.5 Continued

(Tonnes)

Particulars	1991-92	1995-96
<b>Mine</b>		
Installed mine capacity	550,000	550,000
Mine production of bauxite	210,791	131,256
Alumina(Al <sub>2</sub> O <sub>3</sub> ) content in bauxite (%)	47.12	N.A.
<b>Alumina</b>		
Licensed capacity	200,000	200,000
Installed plant capacity	200,000	45,000
Production :		
Hydrated alumina	193,540	43,752
Calcined alumina	187,510	41,325
<b>Smelter</b>		
Licensed capacity	100,000	150,000
Installed capacity		
Hot metal	100,000	25,000
Production :		
Hot metal	92,691	N.A.
E.C. Grade	47,031	15,254
C.G. Grade	45,660	
Rolled products	23,426	17

Note: Mine of malco were closed from 1.4.92 to 21.3.95.

1/ : For 18 months (January, 1986 to June, 1988)

2/ : For 12 months (July, 1987 to June, 1988)

3/ : for 9 months (July, 1988 to march, 1989)

4/ : Madras Alluminium Co.Ltd., remained closed from 1992-93 to 1994-95 as per the working group report on Non-ferrous group for the IX five year plan



TABLE: 4.1.2.COPPER

TABLE 4.1.2.1 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - COPPER  
Hindustan Copper Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	5,376,000	5,376,000	5,376,000	5,380,000	5,380,000
Mine production	4,522,485	4,993,282	5,009,695	5,106,000	5,166,000
Copper content of ore(%)	1.284	1.187	1.123	1.152	1.142
<b>Concentrates</b>					
Production	228,325	249,876	238,166	255,647	239,816
Copper contained	49,735	53,449	51,110	53,801	51,639
<b>Smelter ( blister copper)</b>					
Installed capacity	47,500	47,500	47,500	47,500	47,500
Production	37,959	33,923	44,840	42,500	40,403
<b>Refinery</b>					
<b>Installed capacity</b>					
Cathodes	42,000	42,000	42,000	47,000	47,000
Wire bars	39,400	39,400	39,400	39,400	39,400
<b>Production</b>					
Cathodes	34,393	30,958	39,596	41,179	40,598
Wire bars	22,180	20,732	26,136	28,154	26,721
<b>Rolled products</b>					
Installed capacity	9,600	9,600	9,600	9,600	9,600
Production	1,694	1,292	1,847	1,538	1,309
<b>By-products</b>					
Gold <sup>1/</sup>	102	158	100	101	75
Silver <sup>1/</sup>	1,007	1,717	1,025	954	866
Nickel Sulphate Tonnes	219	184	220	205	215
Selenium <sup>1/</sup>	4,857	4,378	5,034	4,000	3,052

TABLE: 4.1.2.1 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Mine</b>					
Installed mine capacity	5,380,000	5,380,000	5,380,000	5,380,000	5,380,000*
Mine production	5,099,000	5,098,002	4,905,799	4,705,956	4,690,274
Copper content of ore(%)	1.125	1.079	1.118	1.114	1.006
<b>Concentrates</b>					
Production	240,860	241,018	225,494	217,353	230,299
Copper contained	50,799	51,848	49,248	45,456	46,207
<b>Smelter ( blister copper)</b>					
Installed capacity	47,500	47,500	47,500	47,500	47,500
Production	46,755	48,006	37,160	50,454	40,259
<b>Refinery</b>					
Installed capacity					
Cathodes	47,000	47,500	47,500	47,500	47,500
Wire bars	39,400	39,400	39,400	39,400	39,400
Production					
Cathodes	45,495	45,275	39,002	46,136	41,183
Wire bars	27,275	25,306	21,267	21,250	24,160
<b>Rolled products</b>					
Installed capacity	9,600	9,600	- Production stopped -		
Production	982	299	-	-	-
<b>By-products</b>					
Gold <sup>1/</sup>	283	291	437	480	610
Silver <sup>1/</sup>	3,103	3,185	5,680	5,585	4,146
Nickel Sulphate	235	215	289	303	233
Selenium <sup>1/</sup>	8,250	9,656	11,116	11,582	11,449

\* : In addition, Kendadih mine has a capacity of 200 tpd (w.e.f. 1995-96)  
<sup>1/</sup>: Quantity in kilograms.

TABLE:4.1.2.2 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - COPPER  
The Hutti Gold Mine Co. Ltd.  
(Chitradurga Copper Project/Ingaldhal Copper Mine)  
(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	75,000	75,000	75,000	75,000	75,000
Mine production	35,590	41,941	37,597	47,155	47,927
Copper content of ore(%)	0.90	0.90	0.74	0.85	0.70
<b>Concentrator</b>					
Capacity(Input of ore)	75,000	75,000	75,000	75,000	75,000
Ore milled (wet)	35,634	44,085	36,584	47,409	47,663
Mill feed grade-Cu - (%)	0.83	0.90	0.74	0.80	0.639
<b>Concentrator</b>					
Production	1,396	1,700	1,151	1,468	1,159
Copper content of concentrates (%)	22.16	23.89	24.06	23.78	24.12

TABLE:4.1.2.2 Continued

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Mine</b>					
Installed mine capacity	75,000	75,000	75,000	75,000	75,000
Mine production	51,678	44,565	40,018	12,533	1,189
Copper content of ore(%)	0.72	0.69	0.60	0.58	0.68
<b>Concentrator</b>					
Capacity(Input of ore)	75,000	75,000	75,000	75,000	75,000
Ore milled (wet)	44,676	47,881	34,658	4,266	-Nil-
Mill feed grade-Cu - (%)	0.635	0.563	0.475	0.583	-Nil-
<b>Concentrator</b>					
Production	1,202	1,086	687	132	N.A.
Copper content of concentrates (%)	24.10	23.38	22.37	17.94	N.A.

TABLE: 4.1.2.3 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - COPPER  
The Hutti Gold Mine Co. Ltd.  
( Kalyadi Copper Project )

Particulars	(Tonnes)				
	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	75,000	75,000	75,000	75,000	75,000
Mine production	29,137	30,253	41,209	46,933	52,998
Copper content of ore(%)	0.90	0.57	0.60	0.66	0.77
<b>Concentrator</b>					
Capacity(Input of ore)	74,750	76,000	77,250	75,250	75,250
Ore milled (wet)	29,683	33,923	41,192	47,426	42,298
Mill feed grade-Cu-(%)	0.80	0.60	0.49	0.59	0.62
<b>Concentrator</b>					
Production	1,042.65	920.05	849.65	1,158.15	1,089.40
Copper content of concentrates (%)	23.24	22.78	23.40	24.26	24.12

TABLE: 4.1.2.3 Continued

Particulars	(Tonnes)				
	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Mine</b>					
Installed mine capacity	75,000	75,000	75,000	75,000	75,000
Mine production	54,913	50,077	52,430	48,337	37,446
Copper content of ore(%)	0.75	0.59	0.529	0.587	0.632
<b>Concentrator</b>					
Capacity(Input of ore)	75,250	75,000	75,000	75,000	75,000
Ore milled (wet)	38,777	41,280	31,576	38,380	43,088
Mill feed grade-Cu-(%)	0.64	0.59	0.529	0.587	0.632
<b>Concentrator</b>					
Production	1,049.10	1,224.20	667.78	925.35	1,136.56
Copper content of concentrates (%)	23.88	20.422	25.067	24.422	23.92

## TABLE:4.1.3.LEAD

TABLE : 4.1.3.1.CAPACITY AND PRODUCTION OF NON-FERROUS METALS - LEAD

## Indian Lead Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Smelter</b>					
Installed capacity	24,000	24,000	NA	24,000	24,000
Production	8,000	11,000	NA	13,457	14,750
Scrap consumed	11,000	19,000	NA	24,016	22,643

## TABLE:4.1.3.1 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Smelter</b>					
Installed capacity	24,000	24,000	24,000	22,000	22,000
Production	14,243	10,262	11,410	14,282	15,596
Scrap consumed	23,205	16,488	17,435	21,774	19,577

TABLE: 4.1.4.ZINC

TABLE : 4.1.4.1 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - ZINC  
BINANI INDUSTRIES LIMITED  
(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Smelter</b>					
Installed capacity	14,000	20,000	20,000	20,000	20,000
Production	9,988	11,824	14,755	10,213	1,608
<b>Recovery of by-product</b>					
Cadmium <sup>1/</sup>	24,891	26,863	22,936	22,752	3,736

TABLE: 4.1.4.1 Continued

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Smelter</b>					
Installed capacity	20,000	20,000	20,000	30,000	30,000
Production	16,537	20,036	24,083	28,617	25,910
<b>Recovery of by-product</b>					
Cadmium <sup>1/</sup>	32,769	40,958	42,429	44,041	35,052

1/ Quantity in kilogram.

TABLE : 4.1.5 LEAD &amp; ZINC

TABLE:4.1.5.1 CAPACITY AND PRODUCTION OF NON-FERROUS METALS - LEAD AND ZINC  
Hindustan Zinc Limited  
(Thousand Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	2,322	2,322	2,322	6,822	7,150 <sup>1/</sup>
Mine production	1,533	1,493	1,580	1,547	1,757
<b>Metal content</b>					
Zinc %	3.59	3.86	4.06	4.71	3.04
Lead %	2.05	1.99	1.76	3.19	5.00
<b>Concentrator</b>					
Installed Capacity	2,322	2,322	2,322	6,822	7,150 <sup>1/</sup>
<b>Production</b>					
Zinc	91	102	121	126	130
Lead	46	44	41	32	26
<b>Concentrates Consumed</b>					
<b>Indigenous</b>					
Zinc	89	84	131	133	134
Lead	44	45	43	32	26
<b>Imported</b>					
Zinc	43	17	N.A.	9	31
Lead	N.A.	N.A.	6	11	22
<b>Smelter</b>					
<b>Installed capacity</b>					
Zinc	79	79	79	79	79
Lead	30	30	30	30	30
<b>Production</b>					
Zinc	66	49	59	65	72
Lead	20	20	19	23	25

TABLE: 4.1.5.1 Continued

(Thousand tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Mine</b>					
Installed mine capacity	10,150 <sup>1/</sup>	10,140 <sup>1/</sup>	10,140 <sup>1/</sup>	10,140 <sup>1/</sup>	10,140 <sup>1/</sup>
Mine production	2,494	2,761	2,374	2,174	2,399
<b>Metal content</b>					
Zinc %	7.30	7.23	7.72	7.60	7.21
Lead %	2.80	2.81	2.87	3.13	3.13
<b>Concentrator</b>					
Installed Capacity	10,150 <sup>1/</sup>	10,140 <sup>1/</sup>	10,140 <sup>1/</sup>	10,140 <sup>1/</sup>	10,140 <sup>1/</sup>
<b>Production</b>					
Zinc	224	295	290	268	277
Lead	14	60	54	53	58
<b>Concentrates Consumed</b>					
<b>Indigenous</b>					
Zinc	97	247	263	196	243
Lead	14	55	58	79	51
<b>Imported</b>					
Zinc	1.6	N11	N11	N11	N11
Lead	N.A.	29	6	4	N11
<b>Smelter</b>					
<b>Installed capacity</b>					
Zinc	149	149	149	149	149
Lead	65	65	65	65	65
<b>Production</b>					
Zinc	85	107	120	120	115
Lead	30	38	25	34	28

1/ : Tonnes per day.

Note: Rampura-Agucha data is included since 1991-92.



## 4.1.6 COPPER-LEAD-ZINC

TABLE: 4.1.6.1 CAPACITY AND PRODUCTION OF NON-FERROUS METALS :  
COPPER, LEAD AND ZINC  
Sikkim Mining Corporation

Particulars	(tonnes)				
	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Mine</b>					
Installed mine capacity	30,000	30,000	30,000	30,000	30,000
Mine production	8,780	9,750	11,321	12,288	16,115
<b>Metal content</b>					
Copper(%)	0.61	0.98	1.19	0.96	0.92
Lead (%)	2.32	2.25	1.39	1.25	1.34
Zinc (%)	3.14	3.66	2.36	2.05	2.30
<b>Concentrators Capacity</b>					
Production					
Copper	117	235	404	408	436
Lead	70	93	118	90	120
Zinc	389	607	432	402	615
<b>Metal Content in concentrators</b>					
Copper	19.55	20.75	19.20	20.10	19.20
Lead	35.40	34.80	22.70	20.30	24.90
Zinc	35.20	36.72	32.75	34.40	34.50

TABLE: 4.1.6.1 Continued

(tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Mine</b>					
Installed mine capacity	30,000	30,000	30,000	30,000	30,000
Mine production	2,494	16,892	12,230	15,114	15,026
<b>Metal content</b>					
Copper (%)	2.80	0.97	0.89	0.88	0.81
Lead (%)	2.80	1.07	1.16	1.48	1.35
Zinc (%)	7.30	1.79	1.90	2.50	2.22
<b>Concentrators Capacity</b>					
<b>Production</b>					
Copper	14	435.50	351.25	270.00	205.75
Lead	14	120.00	73.00	317.63	499.50
Zinc	224	513.09	335.38	568.00	358.50
<b>Metal Content in concentrators</b>					
Copper (%)	14	19.50	18.20	20.70	19.30
Lead (%)	14	21.50	19.50	28.70	23.90
Zinc (%)	97	33.30	33.80	35.50	34.90

TABLE : 4.1.7 LEAD &amp; TIN

TABLE: 4.1.7.1 CAPACITY AND PRODUCTION OF NON-FERROUS METALS -  
ALUMINIUM / LEAD ALLOYS  
Hamco Mining & Smelting Limited  
(Tonnes)

Particulars	1993-94	1994-95	1995-96
<b>Aluminium Alloy</b>			
<b>1) Ingots</b>			
Licenced capacity	38,000	38,000	N.A.
Installed capacity	20,000	20,000	N.A.
<b>1i) Lead (Wire/strips/pipes)</b>			
Licenced capacity	20,000	20,000	N.A.
Installed capacity	10,000	10,000	N.A.
<b>1ii) Tin Lead Solder/wire</b>			
Licenced capacity	2,800	2,800	N.A.
Installed capacity	1,800	1,800	N.A.
<b>Production</b>			
Aluminium Alloy ingot	8,425	14,181	-
Lead (wire/strips/pipes)	2,944	8,478	-
Tin Lead Solder/wire	145	882	-
<b>Consumption</b>			
Aluminium Dross/scrap /ingots	11,500	16,100	-
Lead scrap/dross/Pig ingots/concs.	18,700	19,600	-
Copper scrap	140	485	-
Zinc slabs/scraps/ /dross/ ash	100	382	-

## 4.2 IMPORT

**Table :4.2.1 IMPORTS OF NON-FERROUS METALS  
Minerals And Metals Trading Corporation of India Limited**

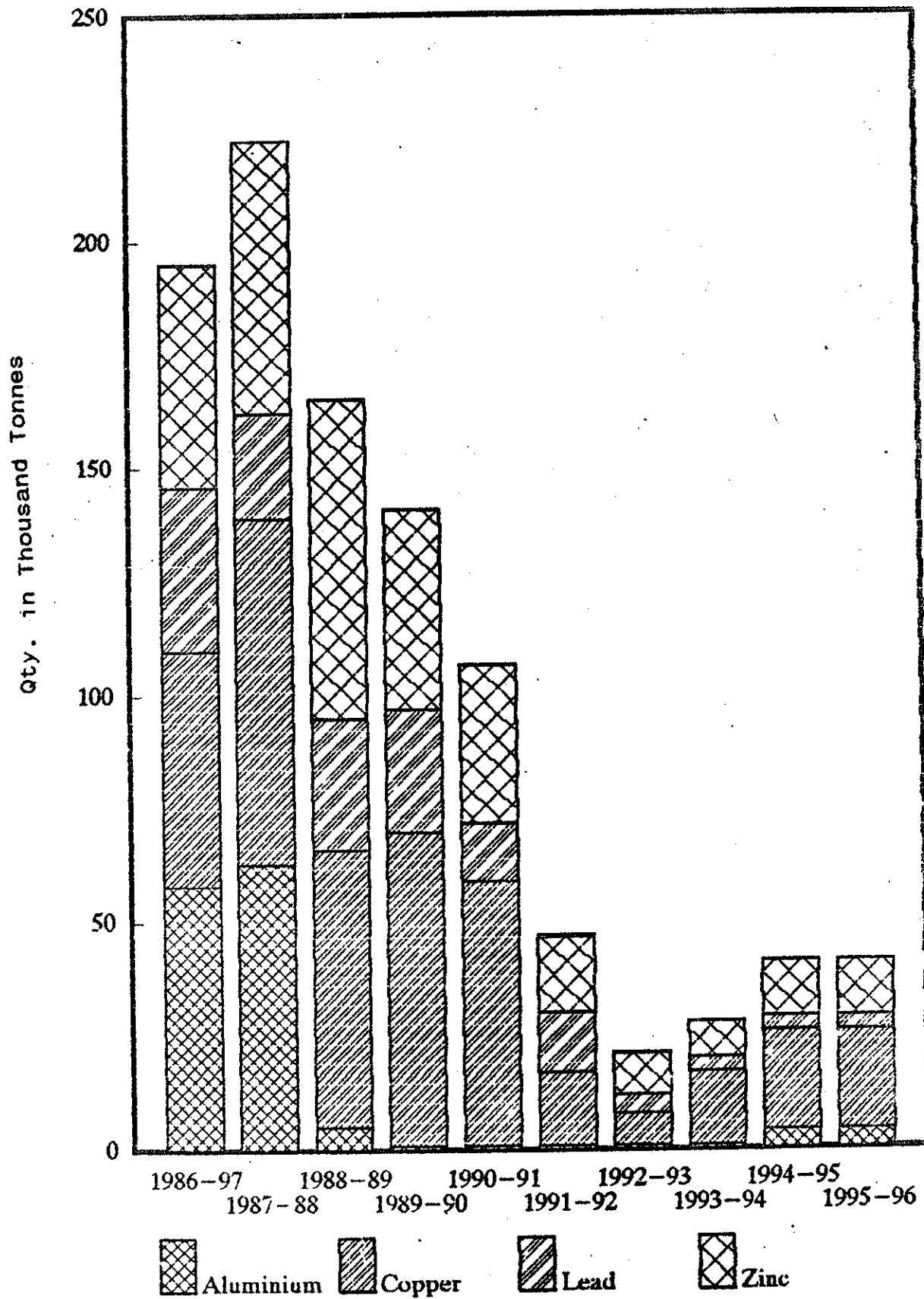
(000' Tonnes)

Year	Aluminium	Copper	Lead	Zinc
1986-87	58	52	36	49
1987-88	63	76	23	60
1988-89	5	61	29	70
1989-90	(++)	69	27	44
1990-91	1	58	13	35
1991-92	(++)	16	13	17
1992-93	(++)	7	4	9
1993-94	--	16	3	8
1994-95	4	22	3	12
1995-96	N.A.	N.A.	N.A.	N.A.

(++) : Negligible

Source : Annual Reports of MMTC

## Imports of Non-ferrous Metals by MMTC



## 4.3 SALES &amp; STOCKS

## 4.3.1 ALUMINIUM

TABLE:4.3.1.1 SALES AND STOCKS OF NON-FERROUS METALS : ALUMINIUM  
Bharat Aluminium Company Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Sales</b>					
Alumina :					
Ordinary(Hydrate)	N.A.	N.A.	N.A.	N.A.	N.A.
Calcined	N.A.	N.A.	N.A.	N.A.	N.A.
Special grade exports	N.A.	N.A.	N.A.	N.A.	N.A.
Total	N.A.	N.A.	N.A.	N.A.	N.A.
Aluminium :					
C.G. Ingots	30,559	25,992	16,380	23,712 <sup>1/</sup>	28,272 <sup>1/</sup>
E.C. Ingots	831	1,294	1,696	N.A.	N.A.
Alloy Ingots	709	784	1,850	N.A.	N.A.
Rolled products	19,746	19,573	24,846	19,976	20,504
Extrusions	4,747	6,279	6,308	6,308	4,972
Billets & slabs	59	871	1,122	N.A.	N.A.
Properzi rods	35,157	38,731	39,318	37,503	37,700
Busbars & anode stem	2,926	699	51	N.A.	N.A.
TOTAL	94,734	94,223	91,571	87,499	91,448
Consumption of aluminium (for own use)					
	10,091	8,492	N.A.	N.A.	N.A.
<b>Stocks</b>					
Opening stocks					
Alumina(Calcined)	N.A.	N.A.	N.A.	N.A.	N.A.
Aluminium	4,814	6,805	3,824	7,677	9,548
Closing stocks					
Alumina(Calcined)	N.A.	N.A.	N.A.	N.A.	N.A.
Aluminium	6,805	3,824	5,604	9,548	8,971

TABLE:4.3.1.1 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
<b>Alumina :</b>					
Ordinary(Hydrate)	261	N.A.	N.A.	N.A.	N.A.
Calcined	49	N.A.	N.A.	N.A.	N.A.
Special grade exports	N.A.	N.A.	N.A.	N.A.	247
Total	310	N.A.	N.A.	N.A.	247
<b>Aluminium :</b>					
C.G. Ingots	27,760 <sup>1/</sup>	21,220	28,286	5,458	3,601
E.C. Ingots	N.A.	N.A.	N.A.	N.A.	N.A.
Alloy Ingots	N.A.	1,229	754	1,139	473
Rolled products	22,802	19,779	24,231	36,919	28,790
Extrusions	7,313	5,214	4,532	6,675	6,829
Billets & slabs	N.A.	896	6,590	9,939	2,954
Properzi rods	32,313	30,203	36,143	37,657	38,635
Busbars & anode stem	N.A.	N.A.	77	132	235
TOTAL	90,188	78,541	100,643	97,969	81,517
<b>Consumption of aluminium (for own use)</b>					
	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Stocks</b>					
<b>Opening stocks</b>					
Alumina(Calcined)	N.A.	3,705	1,810	5,618	1,096
Aluminium	8,971	7,056	19,551	9,351	6,468
<b>Closing stocks</b>					
Alumina(Calcined)	N.A.	1,810	5,618	1,096	1,190
Aluminium	9,810	19,551	9,351	3,468	14,632

1/: Includes aluminium ingots, billets, alloys, slabs etc. brack up not available.

TABLE:4.3.1.2 SALES AND STOCKS OF NON-FERROUS METALS : ALUMINIUM  
National Aluminium Company Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Sales</b>					
Alumina :					
Ordinary(Hydrate)	N.A.	198	907	22,151	3,533
Calcined	N.A.	7,501	7,158	2,549	4,016
Exports	N.A.	76,840	384,161	448,650	335,401
Total	N.A.	84,539	392,226	473,350	342,950
Aluminium :					
C.G. Ingots	N.A.	19,081	14,943	678	
E.C. Ingots	N.A.	5,078	27,608	32,909	127,873
Properzi rods	N.A.	89	20,105	49,761	
Exports	N.A.	N.A.	N.A.	27,391	27,877
TOTAL	N.A.	24,248	94,026	110,739	155,150
<b>Stocks</b>					
Opening stocks					
Alumina	N.A.	14,980	27,512	61,147	74,214
Aluminium					
Ingot	N.A.	1,128	597	985	8,951
Wire rods	N.A.	4	62	61	931
Closing stocks <sup>1/</sup>					
Alumina	N.A.	14,980	61,147	74,214	95,287
Aluminium					
Ingot	N.A.	1,128	985	8,951	4,240
Wire rods	N.A.	4	61	931	273



TABLE:4.3.1.2 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
Alumina :					
Ordinary(Hydrate)	2,074	N.A.	N.A.	N.A.	N.A.
Calcined	1,306	N.A.	N.A.	N.A.	N.A.
Exports	15,578	N.A.	N.A.	N.A.	N.A.
Total	18,958	N.A.	N.A.	N.A.	N.A.
Aluminium :					
C.G. Ingots		N.A.	N.A.	N.A.	N.A.
E.C. Ingots	108,151 <sup>2/</sup>	N.A.	N.A.	N.A.	N.A.
Properzi rods		N.A.	N.A.	N.A.	N.A.
Exports	61,117	N.A.	N.A.	N.A.	N.A.
TOTAL	169,268	N.A.	N.A.	N.A.	N.A.
<b>Stocks</b>					
Opening stocks					
Alumina	95,287	52,159	56,992	N.A.	N.A.
Aluminium					
Ingot	4,240	21,549	23,890	N.A.	N.A.
Wire rods	273	5,558	3,821	N.A.	N.A.
Closing stocks <sup>1/</sup>					
Alumina	52,159	58,992	N.A.	N.A.	87,962
Aluminium					
Ingot	21,549	23,890	N.A.	N.A.	1,233
Wire rods	5,558	3,821	N.A.	N.A.	62

TABLE-4.3.1.3 SALES AND STOCKS OF NON-FERROUS METALS : ALUMINIUM  
Hindustan Aluminium Company Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89*	1989-90	1990-91
<b>Sales</b>					
Alumina					
Ordinary	9	2	1	N.A.	N.A.
Aluminium					
Ingots <sup>1/</sup>	57,727	50,734	69,971	50,115	59,526
Rolled products	26,582	28,538	31,767	28,957	26,999
Wire rods (Common rods/alloy rods)	959	1,213	2,865	N.A.	2,640
Extrusions <sup>2/</sup>	8,999	9,866	12,947	N.A.	8,613
Properzi rods	29,653	31,544	38,108	N.A.	37,271
TOTAL	123,920	121,895	155,658	79,072	135,049
<b>Consumption of aluminium (for own use)</b>					
	74	227	163	N.A.	N.A.
<b>Stocks</b>					
<b>Opening stocks</b>					
Alumina	13,998	11,648	2,205	N.A.	N.A.
<b>Aluminium</b>					
Aluminium metal	579	291	801	658	1,175
Rolled	1,400	1,386	1,321	1,135	941
Extrusions	553	589	611	500	283
Conductor					
re-draw rods	70	114	117	133	176
Commercial rods	6	13	28	N.A.	N.A.
<b>Closing stocks<sup>3/</sup></b>					
Alumina	11,648	2,205	N.A.	N.A.	N.A.
<b>Aluminium</b>					
Aluminium metal	291	801	658	1,175	3,635
Rolled	1,386	1,321	1,135	941	851
Extrusions	589	611	500	283	341
Conductor					
re-draw rods	114	117	133	170	2,090
Commercial rods	13	28	N.A.	6	N.A.

TABLE:4.3.1.3 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
Alumina					
Ordinary	N.A.	N.A.	N.A.	37	58
Aluminium					
Ingots <sup>1/</sup>	72,482	87,401	73,655	66,982	81,454
Rolled products	30,974	30,027	30,055	36,834	31,794
Wire rods (Common rods/alloy rods)	2,504	3,486	4,142	5,389	8,051
Extrusions <sup>2/</sup>	10,138	9,888	9,638	11,093	12,51*
Properzi rods	37,910	36,170	36,022	37,950	38,624
TOTAL	154,008	N.A.	N.A.	158,248	N.A.
<b>Consumption of aluminium (for own use)</b>					
	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Stocks</b>					
Opening stocks					
Alumina	N.A.	N.A.	N.A.	33,167	N.A.
Aluminium					
Aluminium metal	3,635	1,403	1,126	2,247	4,405
Rolled	851	443	1,128	2,496	2,080
Extrusions	341	252	421	744	816
Conductor re-draw rods	2,090	174	236	1,350	480
Commercial rods	N.A.	N.A.	N.A.	N.A.	N.A.
Closing stocks <sup>3/</sup>					
Alumina	N.A.	N.A.	N.A.	N.A.	N.A.
Aluminium					
Aluminium metal	1,403	1,126	2,247	4,405	N.A.
Rolled	443	1,128	2,496	2,080	N.A.
Extrusions	252	421	744	816	N.A.
Conductor re-draw rods	174	236	1,350	480	N.A.
Commercial rods	N.A.	N.A.	N.A.	N.A.	N.A.

\* : From the period January 1988 to March 1989.

1/: Includes C.G. ingot, E.C. ingot, Alloy ingot, Billets &amp; Slabs.

2/: Sales includes metal converted for/from outside parties.

3/: Stocks at the end of the year.

TABLE 4.3.1.4 SALES AND STOCKS OF NON-FERROUS METALS : ALUMINIUM  
Indian Aluminium Company Limited

(Tonnes)

Particulars	1986	1987-88**	1988-89	1989-90	1990-91
<b>Sales</b>					
<b>Alumina</b>					
Domestic	87,100	69,000	68,900	N.A.	N.A.
Export	64,400	56,000	89,000	N.A.	N.A.
Total(Hydrate & Alumina)	151,500	125,000	157,900	94,133	77,526
<b>Aluminium</b>					
Ingots & billets	330	N.A.	2,125	783	1,285
Rolled products	35,269	36,705	46,565	45,512	48,082
Extrusions	4,744	6,160	8,798	6,690	7,248
Properzi rods	1,808	N.A.	2,404	7,534	7,522
Foil	3,428	3,995	5,926	4,640	5,034
TOTAL	45,579	46,860	65,818	65,159	69,171
<b>Consumption of aluminium (for own use)</b>					
	41	39	123	N.A.	N.A.
<b>Stocks<sup>1/</sup></b>					
<b>Opening stocks</b>					
Alumina & hydrate	1,786	1,664	2,375	3,347	-
Ingots & billet	N.A.	N.A.	61	N.A.	-
Rolled products	1,231	936	750	1,458	-
Extrusions	233	118	198	440	-
Properzi rods	N.A.	N.A.	271	60	-
Foil	182	177	189	123	-
<b>Closing stocks</b>					
Alumina & hydrate	1,786	1,664	2,375	3,347	2,811
Ingots & billet	N.A.	N.A.	61	N.A.	N.A.
Rolled products	1,231	936	750	1,458	971
Extrusions	233	118	198	440	129
Properzi rods	N.A.	N.A.	271	60	191
Foil	182	177	189	123	145

\*\* : Fifteen months.

<sup>1/</sup> : Stocks at the end of the year.

TABLE 4.3.1.4 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
<b>Alumina</b>					
Domestic	N.A.	N.A.	N.A.	N.A.	N.A.
Export	N.A.	N.A.	N.A.	N.A.	N.A.
Total (Hydrate & Alumina)	84,315	160,931	193,993	205,700	206,378
<b>Aluminium</b>					
Ingots & billets	7,748	2,003	4,059	3,826	1,320
Rolled products	47,826	47,178	50,774	59,361	57,833
Extrusions	5,753	5,628	7,353	9,702	9,007
Properzi rods	7,112	2,810	3,058	4,025	5,489
Foil	5,271	5,457	5,463	5,716	5,932
TOTAL	73,710	N.A.	N.A.	N.A.	N.A.
<b>Consumption of aluminium (for own use)</b>					
	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Stocks<sup>1/</sup></b>					
<b>Opening stocks</b>					
Alumina & hydrate	2,811	2,688	3,948	17,751	6,037
Ingots & billet	N.A.	315	9	80	145
Rolled products	971	1,280	920	1,310	1,098
Extrusions	129	109	226	295	211
Properzi rods	191	460	70	69	57
Foil	145	236	134	96	178
<b>Closing stocks</b>					
Alumina & hydrate	2,688	3,948	17,751	6,037	11,834
Ingots & billet	315	9	80	145	21
Rolled products	1,280	920	1,310	1,098	1,131
Extrusions	109	226	296	211	224
Properzi rods	460	70	69	57	416
Foil	236	134	96	178	133

1/ : Stocks at the end of the year.

\*\* : Fifteen months.

TABLE:4.3.1.5 SALES AND STOCKS OF NON-FERROUS METALS : ALUMINIUM  
Madras Aluminium Company Limited

(Tonnes)

Particulars	1986-87 <sup>1/</sup>	1987-88 <sup>2/</sup>	1988-89 <sup>3/</sup>	1989-90	1990-91
<b>Sales</b>					
Alumina	518	596	662	N.A.	N.A.
Aluminium					
C.G. Ingots	5,046	1,961	4,308	N.A.	N.A.
E.C. Ingots	142	211	88	N.A.	N.A.
Alloy Ingots	N.A.	N.A.	N.A.	N.A.	N.A.
Rolled products	193	793	1,500	19,976	20,504
Extrusions	2,947	2,050	1,720	6,308	4,972
Billets & slabs	68	13	-	-	-
Properzi rods	6,446	3,924	772	37,503	37,700
TOTAL	14,842	8,952	8,388	87,499	91,448
<b>Stocks</b>					
Opening stocks					
Alumina	3,024	3,064	1,826	-	-
Aluminium					
Ingots	21	20	42	23,712	28,272
Rods	28	15	-	-	-
Alloys	-	-	-	-	-
Rolled products	11	8	111	19,976	20,504
Extrusions	55	9	10	6,308	4,972
Billets & slabs	2	-	-	-	-
Closing stocks					
Alumina	3,064	1,826	3,045	-	-
Aluminium					
Ingots	20	42	27	23,712	28,272
Rods	15	-	46	-	-
Alloys	-	-	-	-	-
Rolled products	11	111	156	19,976	20,504
Extrusions	9	10	24	6,308	4,972
Billets & slabs	-	-	-	-	-

TABLE: 4.3.1.5 Continued

(Tonnes)

Particulars	1991-92	1995-96
<b>Sales</b>		
Alumina	N.A.	N.A.
Aluminium		
C.G. Ingots	N.A.	N.A.
E.C. Ingots	N.A.	N.A.
Alloy Ingots	N.A.	N.A.
Rolled products	22,802	N.A.
Extrusions	7,313	N.A.
Billets & slabs	N.A.	N.A.
Properzi rods	32,313	N.A.
TOTAL	90,188	N.A.
<b>Stocks</b>		
Opening stocks		
Alumina	N.A.	N.A.
Aluminium		
Ingots	27,760	N.A.
Rods	N.A.	N.A.
Alloys	N.A.	N.A.
Rolled products	22,802	N.A.
Extrusions	7,313	N.A.
Billets & slabs	N.A.	N.A.
Closing stocks		
Alumina	310	N.A.
Aluminium		
Ingots	27,760	N.A.
Rods		
Alloys	N.A.	N.A.
Rolled products	2,802	N.A.
Extrusions	7,313	N.A.
Billets & slab		

\* : Madras Aluminium Co.Ltd., remained closed from 92-93 to 94-95 as per the Working Group Report on Non-ferrous group for the IX five year plan.

## 4.3.2. COPPER

TABLE :4.3.2.1 SALES AND STOCKS OF NON-FERROUS METALS : COPPER  
Hindustan Copper Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Sales</b>					
Cathodes	9,094	7,960	9,338	10,405	7,925
Wire bars	22,913	19,163	23,431	25,169	26,688
Wire rods	16,218	14,200	17,641	13,606	29,717
Rolled Products	1,569	1,112	1,560	2,044	1,159
Copper scrap	2,419	1,346	323	N.A.	N.A.
<b>Stocks <sup>1/</sup></b>					
Cathodes	1,180	370	856	720	1,806
Wire bars	221	677	1,191	1,270	962
Wire rods	1,327	564	115	3,666	4,031
Rolled Products	182	442	736	253	162
Scrap	284	29	45	N.A.	N.A.

TABLE:4.3.2.1 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
Cathodes	8,808	5,843	12,035	9,226	6,601
Wire bars	25,187	24,260	24,154	22,054	23,065
Wire rods	18,023	18,534	20,630	29,837	35,475
Rolled Products	1,005	N.A.	N.A.	N.A.	N.A.
Copper scrap	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Stocks <sup>1/</sup></b>					
Cathodes	2,297	94,824	1,486	979	2,053
Wire bars	2,558	4,050	1,076	331	1,418
Wire rods	321	174,297	176	194	1,858
Rolled Products	176	N.A.	N.A.	N.A.	N.A.
Scrap	N.A.	N.A.	N.A.	N.A.	N.A.

1/ : Stocks at the end of the year.



TABLE:4.3.2.2 SALES AND STOCKS OF NON-FERROUS METALS : COPPER  
The Hutt1 Gold Mines Co. Limited  
(Chitradurga Copper Unit)\*

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Sales</b>					
Copper concs.	1,704.515	1,673.76	1,048.204	1,558.314	1,145.826
Copper content (%)	21.870	23.63	24.152	23.986	24.156
<b>Stocks</b>					
Opening stocks <sup>1/</sup> Copper concs.	332.64	24.125	50.36	108.048	17.734
Closing stocks <sup>2/</sup> Copper concs.	24.125	50.36	108.048	17.734	30.908

TABLE:4.3.2.2 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
Copper concs.	923.267	5,843	12,035	9,226	6,601
Copper content (%)	24.103	60	24,154	22,054	23,065
<b>Stocks</b>					
Opening stocks <sup>1/</sup> Copper concs.	30.908	4,050	1,076	331	1,418
Closing stocks <sup>2/</sup> Copper concs.	309.641	N.A.	N.A.	N.A.	N.A.

\* Ingaldhal copper mine

1/ : As at the beginning of the year

2/ : As at the end of the year

**Table:4.3.2.3 SALES AND STOCKS OF NON-FERROUS METALS : COPPER**  
**The Hutti Gold Mines Co. Limited**  
**(Kalyadi Copper Unit)**

Particulars	(Tonnes)				
	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Sales</b>					
Copper concs.	1,170.00	936.00	828.00	1,180.42	1,062.00
Copper content (%)	22.15	21.58	23.13	23.95	23.77
<b>Stocks</b>					
Opening stocks <sup>1/</sup> Copper concs.	154.02	26.67	10.72	32.37	10.10
Closing stocks <sup>2/</sup> Copper concs.	26.67	10.72	32.37	10.10	37.50

**Table:4.3.2.3 Continued**

Particulars	(Tonnes)				
	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
Copper concs.	798.39	671.00	nil	1,970.40	1,246.01
Copper content (%)	23.83	21.00	ni	21.14	24.61
<b>Stocks</b>					
Opening stocks <sup>1/</sup> Copper concs.	37.50	288.21	841.41	1,509.19	413.11
Closing stocks <sup>2/</sup> Copper concs.	288.21	841.41	1,509.19	413.11	385.59

1/ : As at the beginning of the year

2/ : As at the end of the year

## 4.3.3. LEAD

TABLE : 4.3.3.1 SALES AND STOCKS OF NON-FERROUS METALS : LEAD

Indian Lead Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
Sales	8,000	11,000	11,000	13,237	14,734

TABLE:4.3.3.1 Continued

Indian Lead Limited

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
Sales	8,336	10,348	11,433	14,223	15,531

## 4.3.4.ZINC

TABLE:4.3.4.1. SALES AND STOCKS OF NON-FERROUS METALS : ZINC  
BINANI ZINC LIMITED

Particulars	(Tonnes)				
	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Sales</b>					
Electrolytic High grade zinc	12,365	12,707	14,773	9,781 <sup>2/</sup>	1,999 <sup>2/</sup>
<b>Stocks<sup>1/</sup></b>					
Zinc	1,307	404	369	774	376

TABLE:4.3.4.1 Continued

Particulars	(Tonnes)				
	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
Electrolytic High grade zinc	15,051 <sup>2/</sup>	20,159	24,270	28,604	26,885
<b>Stocks<sup>1/</sup></b>					
Zinc	1,852	1,852	1,719	1,515	1,518

1/: Stocks of the end of the year.

2/: Zinc ingot.

4.3.5. LEAD AND ZINC  
 TABLE:4.3.5.1 SALES AND STOCKS OF NON-FERROUS METALS : ZINC  
 Hindustan Zinc Limited

(Thousand tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Sales</b>					
<b>Lead</b>					
Pig lead 99.97%	15	24	17	19	21
<b>Zinc</b>					
Electrolytic H.G.Zinc 99.95%	63	54	50	61	61
Special H.G.Zinc	--	--	--	--	--
<b>Stocks</b>					
<b>Opening stocks</b>					
Lead	3.512	7.474	2.352	3.144	6.558
Zinc	12.268	10.642	1.63	6.497	6.785
<b>Closing stocks</b>					
Lead	7.494	2.352	3.144	6.558	7.127
Zinc	10.642	1.63	6.497	6.785	14.591

TABLE:4.3.5.1 Continued

(Thousand tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
<b>Lead</b>					
Pig lead 99.97%	29	29	36	31	25
<b>Zinc</b>					
Electrolytic H.G.Zinc 99.95%	79	97	114	134	103
Special H.G. Zinc					
<b>Stocks</b>					
<b>Opening stocks</b>					
Lead	7.127	2.696	11.802	1.261	5.170
Zinc	14.591	4.199	13.931	19.920	5.635
<b>Closing stocks</b>					
Lead	2.696	11.802	1.261	5.170	2.767
Zinc	4.199	13.931	19.920	5.635	11.799

## 4.2.6 COPPER, LEAD &amp; ZINC

TABLE: 4.2.6.1 SALES AND STOCKS OF NON-FERROUS METALS : COPPER, LEAD &amp; ZINC

Sikkim Mining Corporation Limited

(Tonnes)

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Sales</b>					
Copper concentrates	233	96	288	365	385
Copper content (%)	19.90	19.50	19.30	18.60	19.39
Lead concentrates	*	*	*	*	*
Lead content (%)	N.A.	N.A.	N.A.	N.A.	N.A.
Zinc concentrates	269	337	673	408	360
Zinc content (%)	33.80	33.70	33.70	29.60	38.89
<b>Stocks<sup>1/</sup></b>					
Copper concentrates	10	31	28	48	107
Lead concentrates	1,308	1,378	1,468	1,579	1,228
Zinc concentrates	19	72	5	30	107

TABLE: 4.2.6.1 Continued

(Tonnes)

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Sales</b>					
Copper concentrates	487	420.5	361	215	189
Copper content (%)	17.81	From 17 to 24			
Lead concentrates	*	N11	N11	3553.5	N11
Lead content (%)	-			19 to 25	
Zinc concentrates	607	561	356	594	238
Zinc content (%)	29.06			28 to 40	
<b>Stocks<sup>1/</sup></b>					
Copper concentrates	55	36.50	26.75	71.75	88.50
Lead concentrates	1,348	1,916	3,489	254	753
Zinc concentrates	45	37	36	10	131

: Not acceptable grade due to ; (i) loss of Pb content, (ii) By contamination about 0.80 - 1.00% against acceptable < 0.01% in concentrate, (iii) By separation process costly and non-existence in India.

1/ : As at the beginning of the year.

## 5. Apparent Consumption

Table :5.0 APPARENT CONSUMPTION OF NON-FERROUS METALS<sup>3</sup>

( Tonnes )					
Metal	1986-87	1987-88	1988-89	1989-90	1990-91
Aluminium	336,987	358,827	407,069	N.A.	473,657
Copper	105,223	117,806	111,405	158,582	219,613
Lead	59,065	57,764	55,860	86,547	80,231
Zinc	130,428	131,380	115,362	170,237	138,996

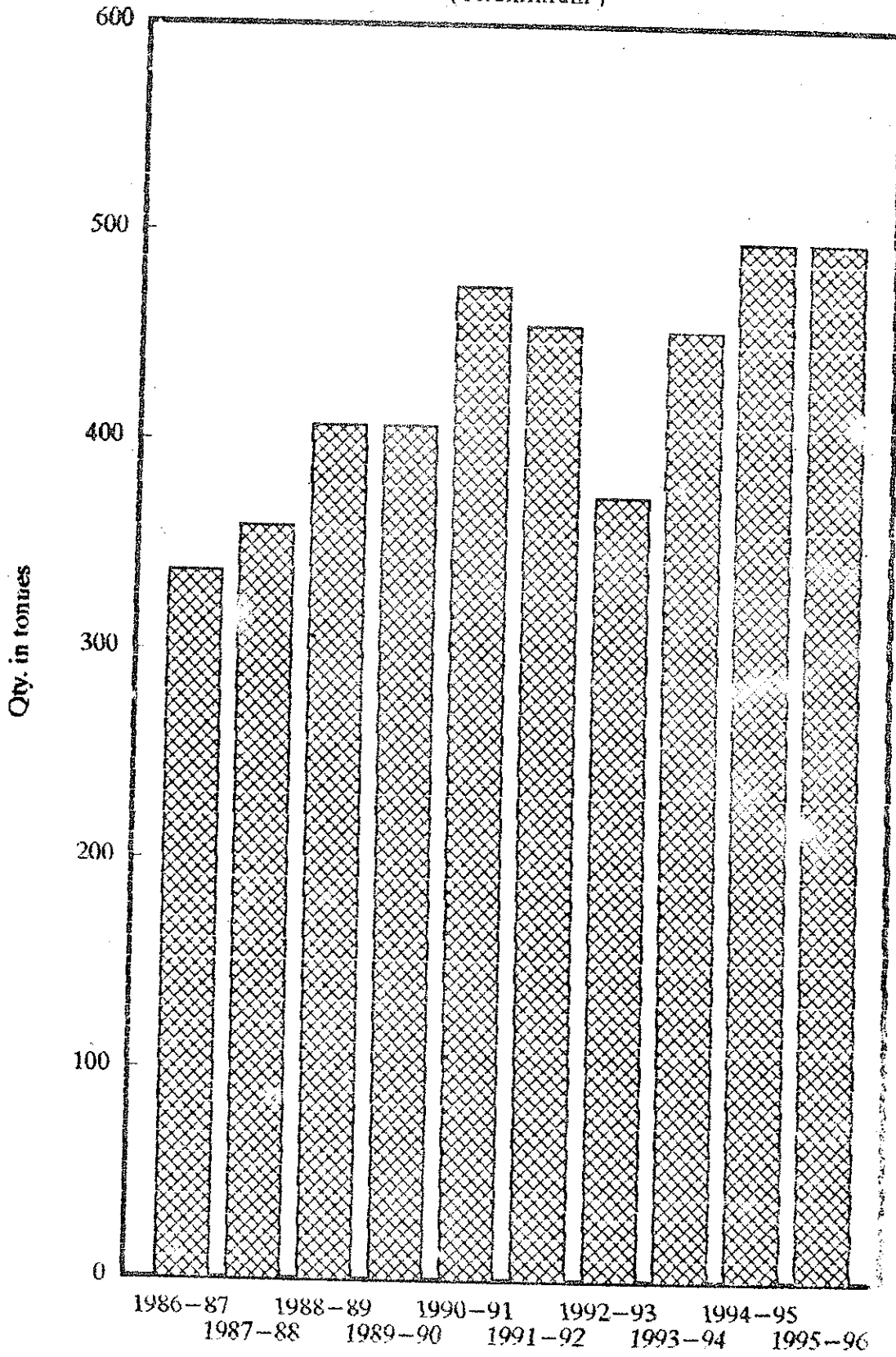
( Tonnes )					
Metal	1991-92	1992-93	1993-94	1994-95 <sup>(P)</sup>	1995-96 <sup>(P)</sup>
Aluminium	455,142	373,982	453,196	496,443	N.A.
Copper	173,253	175,750	258,424	266,466	280,179
Lead	71,446	49,250	96,106	118,151	96,796
Zinc	142,395	133,959	164,141	191,967	190,219

(P) Provisinal

\* Aluminium : Apparent demand has been calculated by aggregating production by domestic producers and imports and then deducting from this total the exports of primary metals, alloys, scrap, etc from India.

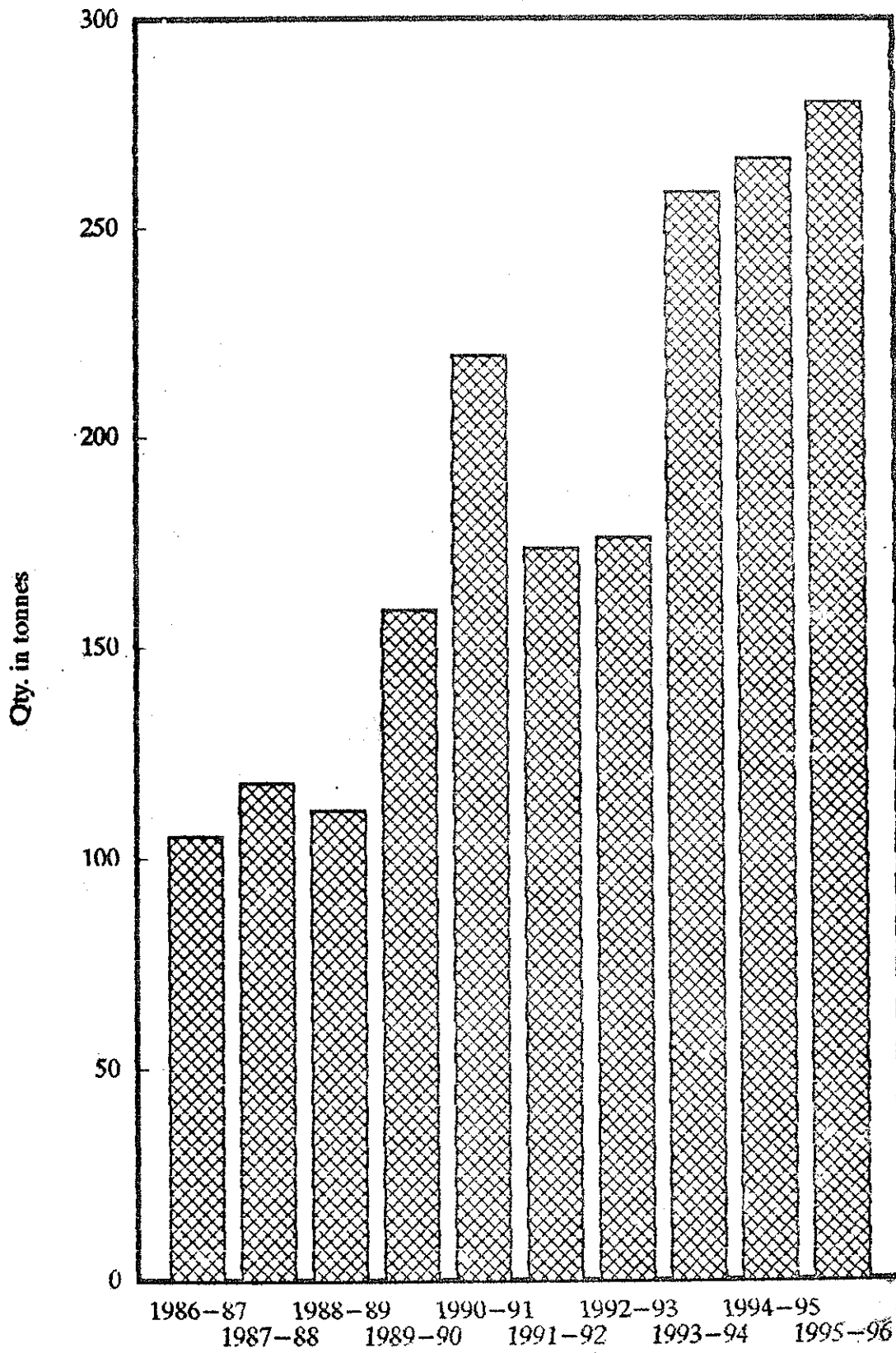
Copper, Lead & Zinc : Apparent demand has been calculated by aggregating sales by domestic producers and imports and then deducting from this total the exports of primary metals, alloys, articles, scrap, etc from India.

Apparent Consumption of Non-ferrous Metals  
(Aluminium)

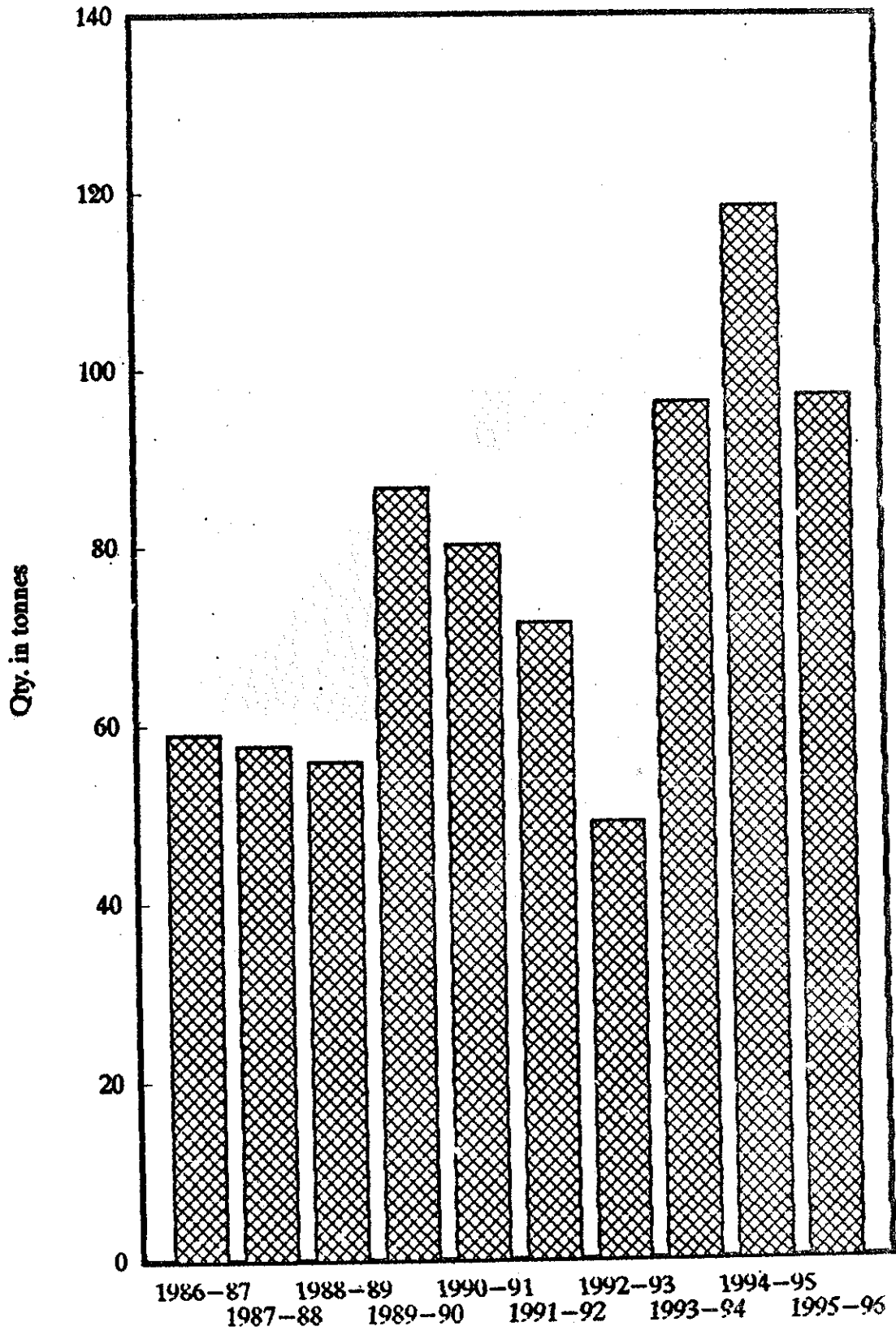




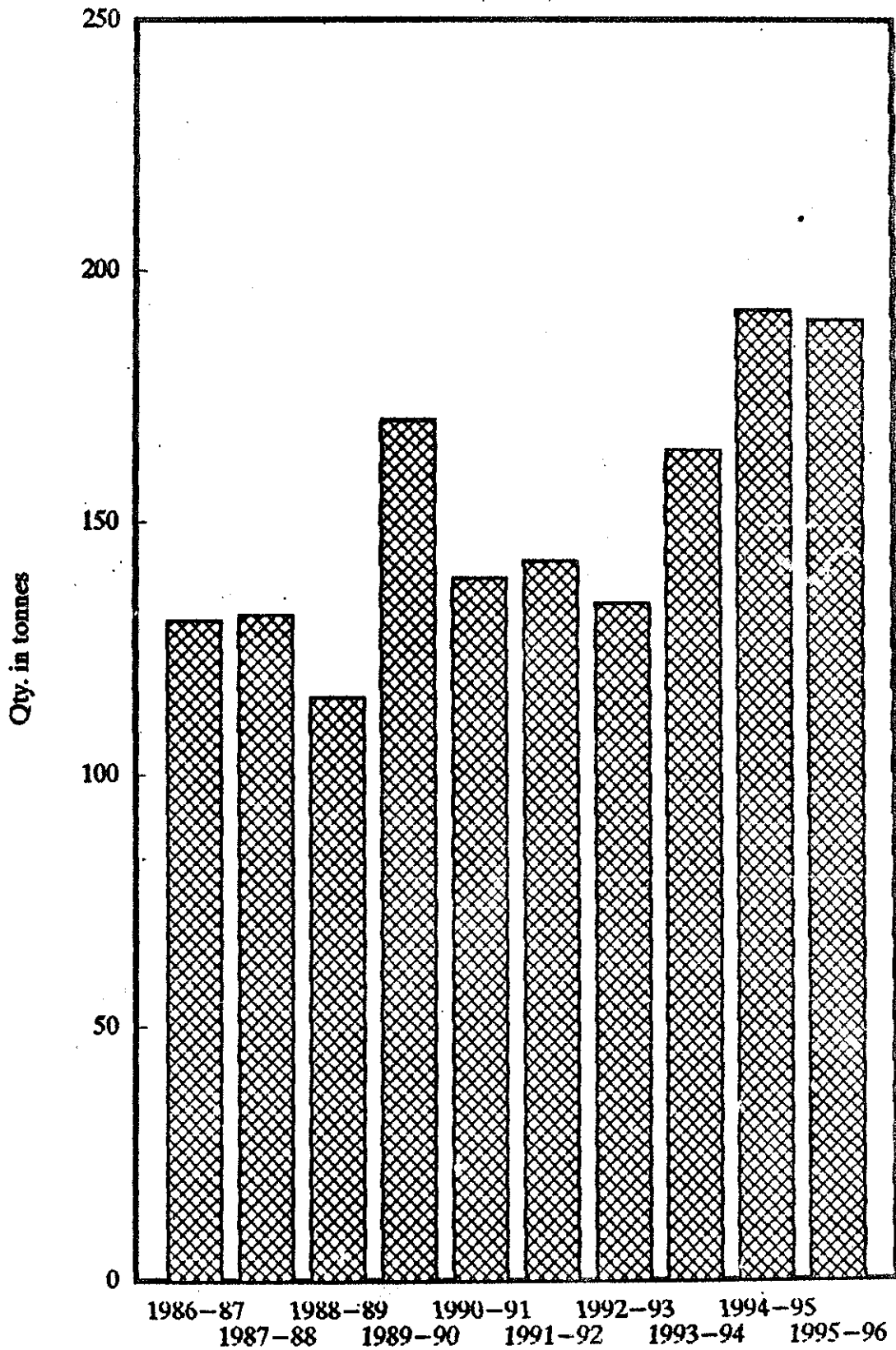
Apparent Consumption of Non-ferrous Metals  
(Copper)



Apparent Consumption of Non-ferrous Metals  
(Lead)



Apparent Consumption of Non-ferrous Metals  
(Zinc)



## 6. Raw Materials and Specific Consumption

### 6.1 ALUMINIUM

TABLE:6.1.1 RAW MATERIALS AND SPECIFIC CONSUMPTION : ALUMINIUM  
Bharat Aluminium Company Limited

(In tonnes)

I T E M S	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Consumption</b>					
<b>Raw materials :</b>					
Bauxite	458,375	465,040	N.A.	N.A.	537,315
Alumina(Calcined)	190,181	182,266	N.A.	180,693	183,021
Cryolite	4,027	4,084	N.A.	N.A.	N.A.
Aluminium fluoride	4,130	4,246	N.A.	N.A.	4,161
Calcined petroleum coke	37,091	37,382	N.A.	N.A.	38,986
<b>Energy :</b>					
Electricity <sup>1/</sup>	182.6	181.6	N.A.	207.6	208.56
Coal	112,391	118,496	N.A.	N.A.	N.A.
Fuel oil <sup>2/</sup>	38,593	35,448	N.A.	N.A.	N.A.
<b>Specific Consumption Rates</b>					
<b>Alumina :</b>					
Bauxite <sup>3/</sup>	2.71	2.68	2.77	2.54	2.54
Caustic soda <sup>4/</sup>	112.2	107.8	121.0	117.2	124.2
Steam <sup>3/</sup>	3.52	3.57	3.67	3.60	3.68
Furnace oil <sup>5/</sup>	131.8	131.4	116.04	109.2	108.58
<b>Aluminium :</b>					
Power(AC) <sup>6/</sup>	16,887	17,624	17,116	17,693	17,465
Calcined alumina <sup>3/</sup>	1.97	1.98	1.98	1.98	1.98
Cryolite <sup>4/</sup>	49.10	43.34	37.28	35.25	36.16
Aluminium fluoride <sup>4/</sup>	43.00	45.40	48.37	45.42	45.00
Anode paste <sup>4/</sup>	563.8	575.6	569.0	565.0	569.0

Table : 6.1.1. Continued

(In tonnes)

I T E M S	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Consumption</b>					
Raw materials :					
Bauxite	532,402	490,000	436,000	477,000	489,000
Alumina(Calcined)	183,528	183,446	170,668	180,506	183,931
Cryolite	N.A.	1,481	727	616	177
Aluminium fluoride Calcined	4,110	3,903	3,291	3,821	4,689
petroleum coke	37,842	36,438	37,628	37,708	39,744
Energy :					
Electricity <sup>1/</sup>	212.66	10,805 <sup>7/</sup>	1833.58 <sup>7/</sup>	1831.5 <sup>7/</sup>	1863.1 <sup>7/</sup>
Coal	123,774	117,628	120,077	125,723	144,412
Fuel oil <sup>2/</sup>	28,196	26,466	27,898	26,958	29,846
<b>Specific Consumption Rates</b>					
Alumina :					
Bauxite <sup>3/</sup>	2.54	2.66	2.63	2.63	2.67
Caustic soda <sup>4/</sup>	100.7	77.7	78.0	83.3	100.3
Steam <sup>3/</sup>	3.36	3.35	3.34	3.35	3.35
Furnace oil <sup>5/</sup>	103.08	102.0	101.4	104.80	106.60
Aluminium :					
Power(AC) <sup>6/</sup>	17,672	17,150	17,480	17,350	17,253
Calcined alumina <sup>3/</sup>	1.98	1.98	1.95	1.95	1.95
Cryolite <sup>4/</sup>	35.42	16.0	7.9	6.67	1.88
Aluminium fluoride <sup>4/</sup>	44.58	42.10	35.7	41.30	49.70
Anode paste <sup>4/</sup>	570.00	566.70	568.70	568.90	593.00

1/ : MW ,2/ :K.Litres ,3/ : T/T, 4/: Kg/t ,5/ :Lit/t,6/ :KWH/T,  
7/ : In MKWH

TABLE:6.1.2 RAW MATERIALS AND SPECIFIC CONSUMPTION : ALUMINIUM  
National Aluminium Company Limited

(In tonnes)

ITEMS	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Consumption</b>					
<b>Raw materials :</b>					
Bauxite	17,690	548,128	1,823,221	2,222,288	1,866,874
Alumina	N.A.	61,058	157,029	270,622	296,136
Cryolite	N.A.	7,128	3,329	1,459	1,096
Aluminium fluoride	N.A.	551	1,671	2,466	3,047
Calcined petroleum coke	N.A.	36,811	35,754	54,421	61,286
<b>Energy :</b>					
Electricity <sup>1/</sup>	N.A.	598,221	1,483,024	N.A.	N.A.
Coal	N.A.	1,496,616	2,307,782	2,791,881	2,867,824
Fuel oil <sup>2/</sup>	N.A.	50,223	95,194	107,527	98,922
<b>Specific Consumption Rates</b>					
<b>Alumina :</b>					
Bauxite	N.A.	2.97	2.98	3.01	2.86
Caustic soda <sup>3/</sup>	N.A.	73	63	66	57
HFO.SGP <sup>4/</sup>	N.A.	77	37	N.A.	N.A.
HFO in calcination <sup>4/</sup>	N.A.	93	91	N.A.	N.A.
Coal <sup>3/</sup>	N.A.	630	700	628	668
Lime <sup>3/</sup>	N.A.	27	28	N.A.	N.A.
Bran <sup>3/</sup>	N.A.	4	4	N.A.	N.A.
Energy <sup>5/</sup>	N.A.	653	401	N.A.	N.A.
<b>Aluminium :</b>					
Energy <sup>5/</sup>	N.A.	18,533	15,464	14,910	15,453
Alumina <sup>3/</sup>	N.A.	2.29	1.99	1.99	1.95
C.P.Coke <sup>3/</sup>	N.A.	540	454	415	425
C.T. Pitch <sup>3/</sup>	N.A.	128	105	102	108
Hard pack & tar					
Fuel oil <sup>3/</sup>	N.A.	136	111	89	86

TABLE:6.1.2 Continued

(In tonnes)

ITEMS	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Consumption</b>					
<b>Raw materials :</b>					
Bauxite	1,934,376	2,304,802	2,158,438	2,132,062	2,379,527
Alumina	374,454	371,083	344,524	325,452	376,285
Cryolite	495	210	N.A.	40	559
Aluminium fluoride	4,141	4,716	4,784	5,823	5,928
Calcined petroleum coke	78,675	85,796	65,938	76,047	85,047
<b>Energy :</b>					
Electricity <sup>1/</sup>	N.A.	N.A.	2,771,247	2,629,360	N.A.
Coal <sup>2/</sup>	692,120	N.A.	N.A.	N.A.	N.A.
Fuel oil	93,722	N.A.	N.A.	N.A.	N.A.
<b>Specific Consumption Rates</b>					
<b>Alumina :</b>					
Bauxite	2.88	2.87	2.85	2.79	2.96
Caustic soda <sup>3/</sup>	60	65	60	62	78
HFO.SGP <sup>4/</sup>	N.A.	N.A.	N.A.	N.A.	N.A.
* - in KL 4					
HFO in calcination	N.A.	93	91	90	87
Coal <sup>3/</sup>	678	640	666	705	723
Lime <sup>3/</sup>	N.A.	N.A.	N.A.	N.A.	N.A.
Bran <sup>3/</sup>	N.A.	4.8	4.3	4.4	4.4
Energy <sup>5/</sup>	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Aluminium<sup>5/</sup> :</b>					
Energy <sup>5/</sup>	15,119	N.A.	N.A.	N.A.	N.A.
Alumina <sup>3/</sup>	1.95	1.94	2.00	2.19	1.96
C.P.Coke <sup>3/</sup>	397	N.A.	N.A.	N.A.	N.A.
C.T. Pitch <sup>3/</sup>	96	N.A.	N.A.	N.A.	N.A.
Hard pitch & tar					
Fuel oil <sup>3/</sup>	82	N.A.	N.A.	N.A.	N.A.

1/ :Kwh ,2/ :K.Litres ,3/: Kg/t ,4/ :Lit/t,5/ :KWH/T

TABLE:6.1.3 RAW MATERIALS AND SPECIFIC CONSUMPTION : ALUMINIUM  
Hindustan Aluminium Corpn. Limited

(In tonnes)

I T E M S	1986-87	1987-88	1988-89*	1989-90	1990-91
<b>Consumption</b>					
Raw materials :					
Bauxite	577,557	690,577	896,247	747,065	758,969
Alumina	248,769	250,585	334,642	253,500	284,619
Cryolite	802	1,220	1,450	731	510
Aluminium fluoride	2,612	2,793	4,074	3,584	5,204
Calcined petroleum coke	44,207	45,380	57,968	48,175	52,299
Energy :					
Electricity <sup>1/</sup>	2,201.19	2,207.57	2,819.66	2,294.90	2,415.10
Coal	222,902	259,058	326,364	261,750	269,678
Fuel oil/LD oil/ H.S.D. oil <sup>2/</sup>	44,042	38,662	47,314	40,132	40,898
Steam	N.A.	N.A.	8,210	N.A.	N.A.
<b>Specific Consumption Rates</b>					
Alumina :					
Bauxite	2.927	2.927	2.903	2.947	2.937
Caustic soda	0.080	0.081	0.082	0.088	0.096
Lime	0.163	0.239	0.256	0.272	N.A.
Steam	5.147	5.045	4.887	4.482	4.790
Fuel oil <sup>2/</sup>	0.140	0.092	0.084	0.083	0.086
Power <sup>3/</sup>	462	467	471	487	417
Aluminium :					
Alumina	2.015	2.040	2.120	2.086	2.040
C.P.Coke	0.357	0.369	0.366	0.359	0.843
Hard pitch	0.153	0.159	0.153	0.148	0.326
Bath material	0.031	0.038	0.038	0.034	0.041
Power <sup>3/</sup>	16.685	16.627	16.495	16.186	N.A.



TABLE: 6.1.3 Continued

(In tonnes)

I T E M S	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Consumption</b>					
Raw materials :					
Bauxite	833,048	891,907	900,995	877,452	908,421
Alumina	335,181	328,929	311,896	326,769	N.A.
Cryolite	20	537	1,479	1,722	N.A.
Aluminium fluoride	7,102	6,477	5,934	6,581	4,636
Calcined petroleum coke	58,807	61,136	57,638	62,126	65,535
Energy :					
Electricity <sup>1/</sup>	2,655.23	2,672.1	2,552.53	2,740.68	2,912.50
Coal	261,903	395,049	319,260	389,849	427,023
Fuel oil/LD oil/ <sup>2/</sup>	42,837	43,840	43,806	46,171	47,922
H.S.D. oil <sup>2/</sup>					
Steam	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Specific Consumption Rates</b>					
Alumina :					
Bauxite	2.862	2.921	2.853	2.743	2.664
Caustic soda	0.109	0.109	0.091	0.100	0.092
Lime	N.A.	0.193	0.210	0.162	0.190
Steam	4.260	N.A.	N.A.	N.A.	N.A.
Fuel oil <sup>2/</sup>	0.083	0.143	0.139	0.144	0.140
Power <sup>3/</sup>	373	N.A.	N.A.	N.A.	N.A.
Aluminium					
Alumina	2.033	2.012	2.002	1.989	N.A.
C.P.Coke	0.851	0.374	0.370	0.378	0.374
Hard pitch	0.277	N.A.	N.A.	N.A.	N.A.
Bath material	0.043	N.A.	N.A.	N.A.	N.A.
Power <sup>3/</sup>	N.A.	N.A.	N.A.	N.A.	N.A.

\* : Period from January, 1988 to March 1989. 1/ : Million kwh  
 2/ : kilo litres 3/ : kwh

TABLE :6.1.4 RAW MATERIALS AND SPECIFIC CONSUMPTION : ALUMINIUM  
Indian Aluminium Company Limited

I T E M S	(Tonnes)				
	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Consumption</b>					
Raw materials :					
Bauxite	660,000	599,000	857,000	N.A.	N.A.
Alumina	55,000	61,000	110,000	180,693	N.A.
Cryolite	108	69	1,135	927	1,023
Aluminium fluoride	1,011	1,114	1,983	2,143	2,117
Calcined petroleum coke	11,940	14,465	28,245	33,304	31,853
<b>Energy</b>					
Electricity <sup>1/</sup>	528	577	1,110	1,173	1,139
Coal <sup>2/</sup>	90,000	84,000	112,000	83,907	82,026
Fuel oil (LSHS)	41,491	38,556	54,775	2,009	1,213
Furnace oil <sup>4/</sup>	N.A.	N.A.	N.A.	1,160	1,341
<b>Specific Consumption Rates</b>					
Alumina					
Bauxite	2.94	2.97	3.04	2.54	2.54
Caustic soda	0.127	0.121	0.130	0.128	0.097
Aluminium					
Alumina	1.91	1.91	1.91	1.98	1.98
Cryolite	0.008	0.010	0.020	35.25	36.16
Fluoride	0.033	0.034	0.033	45.42	45.00
Energy (D.C.Power) <sup>3/</sup>	16,014	15,858	16,310	17,391	17,087

TABLE :6.1.4 Continued

(Tonnes)

I T E M S	1991-92	1992-93	1993-94	1994-95	1995-96
-----------	---------	---------	---------	---------	---------

## Consumption

## Raw materials :

Bauxite	N.A.	N.A.	N.A.	N.A.	260,814
Alumina	N.A.	N.A.	N.A.	N.A.	N.A.
Cryolite	936	237	5	N.A.	N.A.
Aluminium fluoride	2,074	1,367	776	N.A.	N.A.
Calcined petroleum coke	26,982	15,210	13,495	23,653	29,497

## Energy

Electricity <sup>1/</sup>	1,107	697	366	478	592
Coal	80,262	85,894	84,072	82,558	79,886
Fuel oil (LSHS) <sup>2/</sup>	1,489	438	593	N.A.	N.A.
Furnace oil <sup>4/</sup>	1,132	2,945	2,815	3,740	4,076

## Specific Consumption Rate

## Alumina

Bauxite	2.54	N.A.	N.A.	N.A.	N.A.
Caustic soda	0.097	0.092	0.082	0.088	0.080

## Aluminium

Alumina	1.98	N.A.	N.A.	N.A.	N.A.
Cryolite	35.42	N.A.	N.A.	N.A.	N.A.
Fluoride	44.58	N.A.	N.A.	N.A.	N.A.
Energy (D.C.Power) <sup>3/</sup>	17,210	16,956	16,481	17,049	17,461

\* :Fifteen months. 1/ :Smelter plants only in million kwh.

2/ :Alumina plants only

3/ :kwh/tonne 4/ :in kilo litres.

TABLE :6.1.5 RAW MATERIALS AND SPECIFIC CONSUMPTION : ALUMINIUM  
 Madras Aluminium Company Limited<sup>1/</sup>

(Tonnes)					
I T E M S	1986-87 <sup>1/</sup>	1987-88 <sup>2/</sup>	1988-89 <sup>3/</sup>	1989-90	1990-91
<b>Consumption</b>					
<b>Raw materials :</b>					
Bauxite	50,639	45,639	71,370	N.A.	N.A.
Alumina	28,201	17,886	17,048	N.A.	N.A.
Cryolite	155	127	212	N.A.	N.A.
Aluminium fluoride	576	394	335	N.A.	N.A.
Anode paste	8,754	5,376	5,209	N.A.	N.A.
<b>Energy</b>					
Electricity (million kwh)	286.81	172.64	161.35	N.A.	N.A.
Petroleum coke	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Specific Consumption Rates<sup>4/</sup></b>					
<b>Alumina</b>					
Bauxite	2,141	2,731	2,760	N.A.	N.A.
Caustic soda	83	75	83	N.A.	N.A.
Energy(kwh)	36	46	42	N.A.	N.A.
Burnt lime	319	350	268	N.A.	N.A.
<b>Aluminium</b>					
Alumina	1,906	1,956	1,940	N.A.	N.A.
Cryolite	1	1	N.A.	N.A.	N.A.
Fluoride	39	49	38	N.A.	N.A.
Anode paste	562	588	593	N.A.	N.A.
Energy(kwh/t)	19,388	18,880	18,356	N.A.	N.A.

TABLE :6.1.5 Continued

(Tonnes)

ITEMS	1991-92	1995-96
<b>Consumption</b>		
<b>Raw materials :</b>		
Bauxite	N.A.	131,256
Alumina	N.A.	35,040
Cryolite	N.A.	790
Aluminium fluoride	N.A.	856
Anode paste	N.A.	N.A.
<b>Energy</b>		
Electricity (millionkwh)	N.A.	25,100 <sup>6/</sup>
Petroleum coke	N.A.	7,537
<b>Specific Consumption Rates<sup>4/</sup></b>		
<b>Alumina</b>		
Bauxite	N.A.	N.A.
Caustic soda	N.A.	5,119 <sup>5/</sup>
Energy(kwh)	N.A.	N.A.
Burnt lime	N.A.	N.A.
<b>Aluminium</b>		
Alumina	N.A.	N.A.
Cryolite	N.A.	N.A.
Fluoride	N.A.	N.A.
Anode paste	N.A.	N.A.
Energy(kwh/t)	N.A.	N.A.

1/ : For 18 months (Jan 1986 to June 1987)

2/ : For 12 months (July 1987 to June 1988)

3/ : For 9 months (July 1988 to march 1989) 4/ : kg/tonne

5/ : total Lime. 6/ : Total in smelter in kwh/tonne.

7/ : During the period from 1992-93 to 1994-95 the plant was closed.

## 6.2 : COPPER

TABLE : 6.2.1 RAW MATERIALS AND SPECIFIC CONSUMPTION : COPPER  
Hindustan Copper Limited

I T E M S	(Tonnes)				
	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Consumption</b>					
<b>Raw materials</b>					
Copper ore	4,454,854	4,948,217	4,995,356	5,077,000	5,045,000
Copper concentrates	202,963	206,273	247,169	N.A.	51,639
Sulphuric acid	19,879	19,921	29,337	29,371	17,837
Xanthates	295	195	195	151	N.A.
Pine oil <sup>1/</sup>	155	178	174	118	N.A.
Limestone/Lime	1,024	883	860	N.A.	N.A.
Green poles <sup>2/</sup>	17,277	11,965	14,844	N.A.	N.A.
<b>Energy</b>					
Electricity <sup>3/</sup>	357.0	360.3	382.7	396.0	398.5
Coal	62,956	49,704	50,698	46,800	51,353
Fuel oil <sup>4/</sup>	65,444	58,045	51,737	40,800	43,141
<b>Specific consumption</b>					
Ore per tonne of Saleable copper	86	113	96	N.A.	N.A.
Electricity <sup>5/</sup>	6,038	8,230	7,318	7,731	9,815

TABLE :6.2.1 Continued

(Tonnes)

ITEMS	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Consumption</b>					
<b>Raw materials</b>					
Copper ore	4,924,000	3,167,288	2,860,221	2,729,428	2,785,757
Copper concentrates	50,799	289,147	238,263	360,013	266,399
Sulphuric acid	30,373	21,804	8,692	14,380	17,830
Xanthates	N.A.	195	146	162	154
Pine oil <sup>1/</sup>	N.A.	142	118	119	125
Limestone/Lime	N.A.	948	1,321	1,316	2,927
Green poles <sup>2/</sup>	N.A.	15,723	11,589	7,888	9,548
<b>Energy</b>					
Electricity <sup>3/</sup>	412.4	374.9	342.8	360.8	359.4
Coal	50,990	59,928	57,032	47,563	40,301
Fuel oil <sup>4/</sup>	45,409	42,311	37,129	41,965	36,866
<b>Specific consumption</b>					
Ore per tonne of Saleable copper	N.A.	89.96 <sup>+</sup>	98.77 <sup>+</sup>	94.20 <sup>+</sup>	109.27 <sup>+</sup>
Electricity <sup>5/</sup>	9,064	N.A.	N.A.	N.A.	N.A.

+ Data supplied by kcc. 1/ :Includes MIBC 2/ :Numbers 3/ : 10<sup>6</sup> kwh  
4/ :Kiloliter 5/ : kwh

TABLE :6.2.2 RAW MATERIALS AND SPECIFIC CONSUMPTION : COPPER

The Hutti Gold Mine Co. Limited  
(Chitradurga Copper Unit\Ingaldhal Copper Mine)

I T E M S	(Tonnes)				
	1986-87	1987-88	1988-89	1989-90	1990-91
Consumption					
Electricity <sup>1/</sup>	20,54,758	27,49,397	29,93,529	36,49,053	39,24,186
Specific consumption					
Ore per tonne of copper concs.	25.53	25.93	31.78	32.29	30.78
Electricity <sup>1/</sup>	566.51	594.29	877.30	842.54	1,140
I T E M S	(Tonnes)				
	1991-92	1992-93	1993-94	1994-95	1995-96
Consumption					
Electricity <sup>1/</sup>	36,05,064	374.9	342.8	360.8	359.39
Specific consumption					
Ore per tonne of copper concs.	34.67	241,018	225,494	217,353	230,299
Electricity <sup>1/</sup>	1,114	3,426	3,683	3,335	3,592
1/ : KWH					



**TABLE :6.2.3 RAW MATERIALS AND SPECIFIC CONSUMPTION : COPPER**  
**The Hutti Gold Mine Co. Limited**  
**(Kalyadi Copper Unit)**

(Tonnes)

<b>I T E M S</b>	<b>1986-87</b>	<b>1987-88</b>	<b>1988-89</b>	<b>1989-90</b>	<b>1990-91</b>
<b>Consumption</b>					
<b>Electricity<sup>1/</sup></b>	<b>21,45,086</b>	<b>21,83,441</b>	<b>28,10,007</b>	<b>27,89,935</b>	<b>28,83,605</b>
<b>Specific consumption</b>					
<b>Ore per tonne of     copper concs.</b>	<b>28.47</b>	<b>36.63</b>	<b>48.48</b>	<b>40.95</b>	<b>44.23</b>
<b>Electricity<sup>1/</sup></b>	<b>1,049.37</b>	<b>1,285.35</b>	<b>1,415.86</b>	<b>1,222.13</b>	<b>1,378.06</b>

(Tonnes)

<b>I T E M S</b>	<b>1991-92</b>	<b>1992-93</b>	<b>1993-94</b>	<b>1994-95</b>	<b>1995-96</b>
<b>Consumption</b>					
<b>Electricity<sup>1/</sup></b>	<b>24,46,472</b>	<b>24,31,448</b>	<b>24,27,681</b>	<b>20,79,843</b>	<b>20,16,429</b>
<b>Specific consumption</b>					
<b>Ore per tonne of     copper concs.</b>	<b>41.92</b>	<b>33.72</b>	<b>47.28</b>	<b>41.48</b>	<b>37.91</b>
<b>Electricity<sup>1/</sup></b>	<b>1,301.39</b>	<b>1,098.41</b>	<b>1,444.88</b>	<b>1,208.71</b>	<b>1,136.32</b>

1/ : KWH

## 6.3 : LEAD &amp; ZINC

TABLE :6.3.1 RAW MATERIALS AND SPECIFIC CONSUMPTION : LEAD & ZINC  
Hindustan Zinc Limited

(Tonnes)

I T E M S		1986-87	1987-88	1988-89	1989-90	1990-91
<b>Consumption</b>						
<b>Raw materials</b>						
<b>Lead concentrates</b>						
	Chanderya	N.A.	N.A.	N.A.	N.A.	N.A.
	Vizag	N.A.	N.A.	35,128	29,774	32,102
	Tundoo	N.A.	N.A.	13,586	13,538	15,302
	<b>Total</b>			<b>48,714</b>	<b>43,312</b>	<b>47,404</b>
<b>Zinc concentrates</b>						
	Chanderya	N.A.	N.A.	N.A.	N.A.	N.A.
	Debari	N.A.	N.A.	73,800	77,308	98,524
	Vizag	N.A.	N.A.	56,015	64,531	67,139
	<b>Total</b>			<b>129,815</b>	<b>141,839</b>	<b>165,663</b>
<b>Energy</b>						
<b>Electricity<sup>1/</sup> (million kwh)</b>						
	Zawar mines	62.87	61.63	70.20	72.90	70.52
	Rajpura Dariba	32.71	49.85	42.74	46.94	50.04
	Rampura Agucha	N.A.	N.A.	N.A.	N.A.	N.A.
	Agnigundala	4.97	3.87	3.70	3.82	3.851
	Sargipalli	7.17	8.26	8.69	8.43	9.331
	<b>Total</b>	<b>107.72</b>	<b>123.61</b>	<b>125.33</b>	<b>132.09</b>	<b>133.74</b>
<b>Smelter</b>						
	Chanderya	N.A.	N.A.	N.A.	N.A.	N.A.
	Debari	N.A.	N.A.	194.1	198.2	224.1
	Vizag	N.A.	N.A.	115.9	135.6	144.79
	Tundoo	N.A.	N.A.	4.09	4.0	4.33
	<b>Total</b>			<b>314.09</b>	<b>337.2</b>	<b>373.22</b>
<b>Fuel oil (Litres)</b>						
	Zawar mines	N.A.	N.A.	N.A.	9.246	7.01
	Rajpura Dariba	N.A.	N.A.	2.342	2.096	0.85
	Rampura Agucha	N.A.	N.A.	N.A.	N.A.	N.A.
	Agnigundala	N.A.	N.A.	N.A.	0.099	0.23
	Sargipalli	N.A.	N.A.	0.43	0.76	0.26
	<b>Total</b>			<b>2.77</b>	<b>12.2</b>	<b>8.35</b>
<b>Smelter</b>						
	Chanderya(K.Lt)	N.A.	N.A.	N.A.	N.A.	N.A.
	Debari	214.67	175.21	9.19	9.60	13.45
	Vizay	139.69	96.63	54.86	108.10	105.58
	Tundoo	3.69	4.28	4.0	5.10	4.97
	<b>Total</b>	<b>358.05</b>	<b>276.12</b>	<b>68.05</b>	<b>122.80</b>	<b>124.00</b>
<b>Coal (tonnes)</b>						
	Chanderya	N.A.	N.A.	N.A.	N.A.	N.A.
<b>L.P.G. (tonnes)</b>						
	Chanderya	N.A.	N.A.	N.A.	N.A.	N.A.

Table : 6.3.1 Continued

(Tonnes)

I T E M S		1986-87	1987-88	1988-89	1989-90	1990-91	
<b>Specific consumption</b>							
<b>Lead-zinc conc.</b>							
Ore consumed per tonne of conc. produced (tonnes)	Zawar	N.A.	N.A.	14.136	14.129	15.0472	
	Rajpura Dariba	N.A.	N.A.	7.14	6.75	7.687	
	Rampura Agucha	N.A.	N.A.	N.A.	N.A.	N.A.	
	Agnigundala	N.A.	N.A.	16.81	16.79	17.073	
	Sargipalli	N.A.	N.A.	14.28	16.62	15.947	
Electricity consumed per tonne of lead-zinc metal produced (Kwh)	Zawar	N.A.	N.A.	490	494	530	
	Rajpura Dariba	N.A.	N.A.	356	335	386	
	Rampura Agucha	N.A.	N.A.	N.A.	N.A.	N.A.	
	Agnigundala	N.A.	N.A.	430	425	397	
	Sargipalli	N.A.	N.A.	470	467	410	
<b>Lead-zinc metal</b>							
Conc. consumed per tonne of metal produced (tonnes)	Lead conc. :						
	Vizag	N.A.	N.A.	2.21	1.86	1.83	
	Tundoo	N.A.	N.A.	2.14	1.91	2.04	
	Chanderiya	N.A.	N.A.	N.A.	N.A.	N.A.	
	Zinc conc. :						
	Debari	N.A.	N.A.	2.34	2.38	2.38	
	Vizag	N.A.	N.A.	2.40	2.36	2.32	
Chanderiya	N.A.	N.A.	N.A.	N.A.	N.A.		
Electricity consumed per tonne of lead-zinc metal produced (Kwh)	Chanderiya	N.A.	N.A.	N.A.	N.A.	N.A.	
	Debari Zn	N.A.	N.A.	4,265	4,241	4,250	
	Vizag Lead	N.A.	N.A.	540	483	582	
	Zinc	N.A.	N.A.	4,306	4,015	4,201	
	Tundoo Pb	N.A.	N.A.	588	475	551	

TABLE :6.3.1 Continued

(Tonnes)

I T E M S		1991-92	1992-93	1993-94	1994-95	1995-96
<b>Consumption</b>						
<b>Raw materials</b>						
<b>Lead concentrates</b>						
	Chanderya	N.A.	31,953	48,001	46,795	33,209
	Vizag	N.A.	36,929	7,971	27,770	8,765
	Tundoo	14,261	15,275	8,171	8,336	9,279
	<b>Total</b>	<b>14,261</b>	<b>84,157</b>	<b>64,143</b>	<b>82,901</b>	<b>51,253</b>
<b>Zinc concentrates</b>						
	Chanderya	N.A.	74,716	37,600	28,839	80,514
	Debari	98,483	97,698	96,278	103,760	100,460
	Vizag	N.A.	74,984	68,967	63,012	61,768
	<b>Total</b>	<b>98,483</b>	<b>247,398</b>	<b>202,845</b>	<b>195,611</b>	<b>242,742</b>
<b>Energy</b>						
<b>Electricity (million kwh)</b>						
	Zawar mines	69.41	73.63	60.87	53.43	52.49
	Rajpura Dariba	54.78	55.07	42.17	26.27	35.48
	Rampura Agucha	40.33	56.04	53.09	55.80	57.17
	Agnigundala	3.99	4.19	4.32	3.74	3.61
	Sargipalli	10.78	9.90	8.27	6.16	8.24
	<b>Total</b>	<b>179.30</b>	<b>198.82</b>	<b>168.72</b>	<b>147.42</b>	<b>156.99</b>
<b>Smelter</b>						
	Chanderya	N.A.	82.462	91.396	91.825	84.980
	Debari	219.13	220.294	226.921	230.816	226.483
	Vizag	148.63	156.896	149.680	142.116	141.433
	Tundoo	4.96	4.190	4.369	4.169	4.298
	<b>Total</b>	<b>372.72</b>	<b>463.842</b>	<b>472.366</b>	<b>468.926</b>	<b>457.194</b>
<b>Fuel oil (Litres)</b>						
	Zawar mines	4.17	638,737	912,374	328,633	1,178,906
	Rajpura Dariba	1.56	166,565	295,100	46,130	191,770
	Rampura Agucha	N.A.	794,117	203,065	1,991,873	238,664
	Agnigundala	0.31	44,195	40,128	64,218	129,497
	Sargipalli	0.59	117,939	29,045	68,115	28,080
	<b>Total</b>	<b>6.63</b>	<b>1,761,553</b>	<b>1,479,712</b>	<b>2,498,969</b>	<b>1,766,917</b>
<b>Smelter</b>						
	Chanderya(K.Lt)	N.A.	165,42	13,958	14,980	13,859
	Debari	5.35				
	Vizay	99.74				
	Tundoo	3.54				
	<b>Total</b>	<b>108.63</b>	<b>165,42</b>	<b>13,958</b>	<b>14,980</b>	<b>13,859</b>
<b>Coal (tonnes)</b>						
	Chanderya	N.A.	34,153	42,695	46,478	39,949
<b>L.P.G. (tonnes)</b>						
	Chanderya,	N.A.	3,169	3,243	407	2,294

Table 6.3.1 Continued

(Tonnes)

ITEMS	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Specific consumption</b>					
<b>Lead-zinc conc.</b>					
Ore consumed ; Zawar	15.049	15.02	13.05	11.48	12.48
per tonne of ; Rajpura Dariba	7.073	7.82	6.62	6.97	6.78
conc. produced; Rampura Agucha	4.718	4.67	4.63	4.50	4.88
(tonnes) ; Agnigundala	17.03	16.91	16.32	14.76	13.40
; Sargipalli	16.147	16.00	15.28	14.48	14.75
Electricity con; Zawar	534	929.64	808.47	717.50	776.34
sumed per tonne; Rajpura Dariba	353	636.39	591.71	711.12	591.68
of lead-zinc ; Rampura Agucha	273	236.85	256.60	242.80	251.05
metal produced; Agnigundala	430	760.69	739.44	667.47	595.19
(Kwh) ; Sargipalli	430	946.24	940.00	888.49	859.48
<b>Lead-zinc metal</b>					
Conc.consumed ; Lead conc. :					
per tonne of ; Vizag	2.21	2.10	3.59	2.52	1.27
metal produced; Tundoo	2.03	2.12	1.69	1.62	2.32
(tonnes) ; Chanderiya	N.A.	2.35	2.30	2.55	1.94
; Zinc conc. :					
; Debari	2.41	2.12	1.91	1.99	1.95
; Vizag	2.51	2.53	2.30	1.97	2.20
; Chanderiya	N.A.	2.22	2.34	2.13	2.19
Electricity consumed; Chanderiya	N.A.	899	761	721	758
per tonne of lead- ; Debari Zn	4206	4,167	4,082	4,047	3,988
zinc metal produced; Vizag Lead	514				
(Kwh) ; Zinc	4208	4,694	4,927	4,982	4,933
; Tundoo Pb	623	634	614	730	714

## 6.4 : COPPER-LEAD-ZINC

TABLE :6.4.1 RAW MATERIALS AND SPECIFIC CONSUMPTION : COPPER, LEAD &amp; ZINC

Sikkim Mining Corporation

(Tonnes)

I T E M S	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Consumption</b>					
Electricity <sup>1/</sup>	8.32	4.91	5.30	6.64	6.04
<b>Specific consumption</b>					
Ore per tonne of concs. (Cu, Pb & Zn);	20.38	15.22	9.90	29.32	24.57
Electricity <sup>2/</sup>	1,401	851	538	351	335

TABLE :6.4.1 Cont'd

(Tonnes)

I T E M S	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Consumption</b>					
Electricity <sup>1/</sup>	4.78	5.31	4.17	5.21	3.76
<b>Specific consumption</b>					
Ore per tonne of concs. (Cu, Pb & Zn);	14.80	15.80	15.68	13.08	10.36
Electricity <sup>2/</sup>	204	497	535	451	353

1/ : 10<sup>5</sup> KWH

2/ : KWH

## 7. Energy - Capacity and Generation

### 7.1 ALUMINIUM

Table :7.1.1 CAPACITY AND GENERATION OF ENERGY FOR  
NON-FERROUS METALS : ALUMINIUM

Bharat Aluminium Co. Limited

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
Installed capacity of captive power plant <sup>1/</sup>	N.A.	270	270	270	270
Type and source of fuel used	N.A.	Coal	Coal	Coal	Coal
Energy generated <sup>2/</sup>	N.A.	512.3	1,310.6	N.A.	1,491.0

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
Installed capacity of captive power plant <sup>1/</sup>	270	270	270	270	270
Type and source of fuel used	Coal	Coal/ Furnace	Coal/ Furnace	Coal/ Furnace	Coal/ Furnace
Energy generated <sup>2/</sup>	1,670.0	1,834.00	2,037.40	2,088.30	2,233.40

1	Unit in M.W.	2	Million Kwh.
---	--------------	---	--------------

**Table :7.1.2 CAPACITY AND GENERATION OF ENERGY FOR  
NON-FERROUS METALS : ALUMINIUM**

**National Aluminium Co. Limited**

<b>Particulars</b>	<b>1986-87</b>	<b>1987-88</b>	<b>1988-89</b>	<b>1989-90</b>	<b>1990-91</b>
Installed capacity of captive power plant <sup>1</sup>	240	360	600	5x120 <sup>4</sup> 3x18.5 <sup>5</sup>	5x120 <sup>4</sup> 3x18.5 <sup>5</sup>
Type and source of fuel used <sup>2</sup>	Coal/ fuel oil	Coal/ fuel oil	Coal/ fuel oil	Coal/ fuel oil	Coal/ fuel oil
Energy generated <sup>3</sup>	174	1,625	1,625	2,805	2,973

<b>Particulars</b>	<b>1991-92</b>	<b>1992-93</b>	<b>1993-94</b>	<b>1994-95</b>	<b>1995-96</b>
Installed capacity of captive power plant <sup>1</sup>	5x120 <sup>4</sup> 3x18.5 <sup>5</sup>	N.A.	N.A.	N.A.	6x120 <sup>4</sup> 3x18.5 <sup>5</sup>
Type and source of fuel used <sup>2</sup>	Coal/ fuel oil	Coal/ fuel oil	Coal/ fuel oil	Coal/ fuel oil	Coal/ fuel oil
Energy generated <sup>3</sup>	4,105	N.A.	N.A.	N.A.	N.A.

- 1 Unit in M.W. ,2 Thermal coal from Bhartpur mines of SECL and fuel oil for back up support, 3 Million Kwh., 4 Angul plant,  
5 Damanjoli plant



**Table :7.1.3 CAPACITY AND GENERATION OF ENERGY FOR  
NON-FERROUS METALS : ALUMINIUM**

**Hindustan Aluminium Corporation Limited**

Particulars	1986-87	1987-88	1988-89 <sup>2</sup>	1989-90	1990-91
Installed capacity of captive power plant <sup>1</sup>	269.8	269.8	337.8	337.8	337.8
Type and source of fuel used <sup>2</sup>	Coal	Coal	Coal	Coal	Coal
Energy generated <sup>3</sup>	2,321	2,291	2,954	2,470	2,411

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
Installed capacity of captive power plant <sup>1</sup>	337.8	337.8	350.0	350.0	350.0
Type and source of fuel used <sup>2</sup>	Coal	Coal	Coal	Coal	Coal
Energy generated <sup>3</sup>	2,729	2,739.7	2,665.0	2,899.0	2,986.0

1 Unit in M.W. ,2 Northern Coal Fields Ltd, Singrauli (Source),  
3 Million Kwh., \* Period from January 1988 to March 1989.

## 7.2 COPPER

Table :7.2.1 CAPACITY AND GENERATION OF ENERGY FOR  
NON-FERROUS METALS : COPPER

Hindustan Copper Limited					
Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Installed capacity of captive power plant<sup>1</sup></b>					
K.C.C.	46.2	46.2	46.2	42	42
I.C.C.	14.9	18.4	22.8	23	23
M.C.P.	8.5	8.5	8.5	8	6.8
<b>Type of fuel used</b>					
K.C.C.	Oil	Oil/ Naptha	HSD/ Naptha	HSD/ Naptha	HSD/ Naptha
I.C.C.	Coal/oil	Coal/oil	Coal/oil	Coal/oil	Coal/oil
M.C.P.	Oil	Oil	Oil	Oil	Oil
<b>Energy generated<sup>2</sup></b>					
K.C.C.	44.0	48.2	23.0	21.59	14.2
I.C.C.	32.7	19.6	20.4	22.01	30.91
M.C.P.	0.6	2.8	2.0	1.81	0.5
	77.3	70.6	45.4	45.3	45.6
Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
<b>Installed capacity of captive power plant<sup>1</sup></b>					
K.C.C.	42	33	33	33	33
I.C.C.	23	26.3	26.3	26.3	26.3
M.C.P.	6.8	6.8	6.8	6.8	6.8
<b>Type of fuel used</b>					
K.C.C.	HSD/ Naptha	HSD/ Naptha	HSD/ Naptha	HSD/ Naptha	HSD/ Naptha
I.C.C.	Coal/oil	Coal/ Diesel	Coal/ Diesel	Coal/ Diesel	Coal/ Diesel
M.C.P.	Oil	HSD	HSD	HSD	HSD
<b>Energy generated<sup>2</sup></b>					
K.C.C.	18.07	12.24	25.90	18.26	21.63
I.C.C.	31.21	34.41	31.47	22.89	15.78
M.C.P.	1.1	1.31	1.33	3.92	9.69
	50.38	47.96	58.70	45.07	47.1

<sup>1</sup> Unit in M.W., <sup>2</sup> Million Kwh.

K.C.C. : Khatri Copper Complex., I.C.C. : Indian Copper Complex.

M.C.P. : Malanjkhand Copper Complex.

7.3 ZINC

Table : 7.3.1 CAPACITY AND GENERATION OF ENERGY FOR NON-FERROUS METALS : ZINC

Binani Industries Limited

Particulars	1986-87	1987-88	1988-89	1989-90	1990-91
Installed capacity of captive power plant <sup>1</sup>	-	-	-	5.0	5.0
Type of fuel used				OIL/ LSHS/ FO	OIL/ LSHS/ FO
Energy generated <sup>1</sup>				N11	-

Particulars	1991-92	1992-93	1993-94	1994-95	1995-96
Installed capacity of captive power plant <sup>1</sup>	5.0	5.0	5.0	5.0	5.0
Type of fuel used	OIL/ LSHS/ FO	OIL/ LSHS/ LPG	OIL/ LSHS/ LPG	OIL/ LSHS/ LPG	OIL/ LSHS/ LPG
Energy generated <sup>1</sup>	1	82.0	20.0	39.0	140.0

1/ : In MW

## 7.4 LEAD &amp; ZINC

Table : 7.4.1 CAPACITY AND GENERATION OF ENERGY FOR  
NON-FERROUS METALS : LEAD & ZINC

Particulars		Hindustan Zinc Limited				
		1986-87	1987-88	1988-89	1989-90	1990-91
Installed capacity of captive power plant						
1. Installed cap. capacity of (Mw.)	Zawar Mines	-	-	7	7	7
	Rajpura Dariba	-	-	3.5	3.5	7
	Rampura Agucha	-	-	-	-	-
	Agnigundala	-	-	-	0.35	0.4
	Sargipalli	-	-	0.9	0.9	0.6
	Chanderiya	-	-	-	-	-
	Debari	-	-	9.03	9.03	-
	Vizag	-	-	12	22	-
	Tundoo	-	-	0.78	0.78	-
2. Type of sources of fuel used				HSD/LSHD	OIL/LDO	
3. Electricity generated (M.W)	Zawar Mines	-	-	-	-	2,050
	Rajpura Dariba	-	-	-	-	281.884
	Rampura Agucha	-	-	-	-	-
	Agnigundala	-	-	-	-	80.942
	Sargipalli	-	-	-	-	51.480
	Chanderiya	-	-	-	-	-
	Debari	-	-	-	-	-
	Vizag	-	-	-	-	-
	Tundoo	-	-	-	-	-

Table :7.4.1 Continued

Particulars		1991-92	1992-93	1993-94	1994-95	1995-96
<b>Installed capacity of captive power plant</b>						
<b>1. Installed capacity of (Mw.)</b>	Zawar Mines	7	7	7	7	7
	Rajpura Dariba	7	7	7	7	7
	Rampura Agucha	-	10	10	10	10
	Agnigundala	0.4	0.5	0.5	0.5	0.5
	Sargipalli	0.6	0.75	0.75	0.75	0.75
	Chanderya	-	20	20	20	20
	Debari	-	15	15	15	15
	Vizag	-	22	22	22	22
	Tundoo	-	0.68	0.68	0.68	0.68
<b>g. Type of sources of fuel used</b>						
----- HSD/LSHD/OIL/LDO -----						
<b>3. Electricity generated (M.W)</b>	Zawar Mines	1,160.00	1,728.00	2,651.00	1,024.00	3,734.00
	Rajpura Dariba	447.48	555.62	956.28	145.72	662.45
	Rampura Agucha	797.34	3,023.67	7,502.89	7,078.82	9,361.59
	Agnigundala	96.55	148.35	136.65	201.92	53.60
	Sargipalli	180.03	312.33	105.27	258.47	108.71
	Chanderya	-	N.A.	17,127.40	31,249.25	23,551.20
	Debari	-	9,406.20	17,127.40	31,249.25	23,551.20
	Vizag	-	48,674.20	26,363.97	22,746.20	54,735.78
	Tundoo	-	19.30	355.54	195.47	185.01
	<b>Total</b>	-	63,867.67	72,326.40	94,149.10	115,943.54
	Lead	276.03	479.98	597.46	655.86	347.32
	Zinc (including L)	N.A.	63,387.69	71,728.94	93,493.24	115,943.2

## 8. Employment

### 8.1. ALUMINIUM

Table :8.1.1 MANPOWER EMPLOYED IN NON-FERROUS METALS : ALUMINIUM  
Bharat Aluminium Co. Limited

(Numbers)					
Category	1986-87	1987-88	1988-89	1989-90	1990-91
Mines	818	790	741	693	675
Alumina plant	714	708	704	701	703
Smelter plant	1,507	1,519	1,498	1,482	1,476
Fabrication	1,474	1,517	1,501	1,495	1,445
Auxiliary services and central facilities	2,687	2,689	2,677	2,685	2,710
Other establishments <sup>1</sup>	354	351	360	360	353
<b>Total</b>	<b>7,554</b>	<b>7,574</b>	<b>7,482</b>	<b>7,416</b>	<b>7,362</b>

(Numbers)					
Category	1991-92	1992-93	1993-94	1994-95	1995-96
Mines	666	648	578	463	435
Alumina plant	705	725	718	707	697
Smelter plant	1,478	1,383	1,312	1,210	1,300
Fabrication	1,435	:	:	:	:
Auxiliary services and central facilities	2,698	4,137	4,104	4,136	4,011
Other establishments <sup>1</sup>	352	:	:	:	:
<b>Total</b>	<b>7,321</b>	<b>6,892</b>	<b>6,712</b>	<b>6,518</b>	<b>6,443</b>

1/ Includes, Head quarter, Marketing, Sales etc.

**Table :8.1.2 MANPOWER EMPLOYED IN NON-FERROUS METALS : ALUMINIUM**  
**National Aluminium Co. Limited**

(Numbers)

Category	1986-87	1987-88	1988-89	1989-90	1990-91
Mines	262	334	332	1,761	1,734
Alumina plant	1,013	1,187	1,328		
Smelter plant	N.A.	1,532	1,846	1,967	1,921
Auxiliary plant	N.A.	N.A.	N.A.	N.A.	N.A.
Port facilities	30	34	40	N.A.	N.A.
Power generation plant	856	1,054	1,113	1,156	1,130
Other establishments <sup>1</sup>	340	377	332	403	659
<b>Total</b>	<b>2,401</b>	<b>4,518</b>	<b>4,991</b>	<b>5,287</b>	<b>5,444</b>

(Numbers)

Category	1991-92	1992-93	1993-94	1994-95	1995-96
Mines	1,779	N.A.	N.A.	N.A.	484
Alumina plant					
Smelter plant	2,006	N.A.	N.A.	N.A.	N.A.
Auxiliary plant	N.A.	N.A.	N.A.	N.A.	N.A.
Port facilities	N.A.	N.A.	N.A.	N.A.	N.A.
Power generation plant	1,148	N.A.	N.A.	N.A.	N.A.
Other establishments <sup>1</sup>	543	N.A.	N.A.	N.A.	N.A.
<b>Total</b>	<b>5,476</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>

1/ Includes Headquarter, Marketing, sales, etc.

## 8. Employment

### 8.1. ALUMINIUM

Table :8.1.1 MANPOWER EMPLOYED IN NON-FERROUS METALS : ALUMINIUM  
Bharat Aluminium Co. Limited

(Numbers)

Category	1986-87	1987-88	1988-89	1989-90	1990-91
Mines	818	790	741	693	675
Alumina plant	714	708	704	701	703
Smelter plant	1,507	1,519	1,498	1,482	1,476
Fabrication	1,474	1,517	1,501	1,495	1,445
Auxiliary services and central facilities	2,687	2,689	2,677	2,685	2,710
Other establishments <sup>1</sup>	354	351	360	360	353
<b>Total</b>	<b>7,554</b>	<b>7,574</b>	<b>7,482</b>	<b>7,416</b>	<b>7,362</b>

(Numbers)

Category	1991-92	1992-93	1993-94	1994-95	1995-96
Mines	666	648	578	463	435
Alumina plant	705	725	718	707	697
Smelter plant	1,476	1,383	1,312	1,210	1,300
Fabrication	1,435	:	:	:	:
Auxiliary services and central facilities	2,698	4,137	4,104	4,136	4,011
Other establishments <sup>1</sup>	352	:	:	:	:
<b>Total</b>	<b>7,321</b>	<b>6,892</b>	<b>6,712</b>	<b>6,518</b>	<b>6,440</b>

1/ Includes, Head quarter, Marketing, Sales etc.



**Table :8.1.2 MANPOWER EMPLOYED IN NON-FERROUS METALS : ALUMINIUM**  
**National Aluminium Co. Limited**

(Numbers)

Category	1986-87	1987-88	1988-89	1989-90	1990-91
Mines	262	334	332	1,731	1,734
Alumina plant	1,013	1,187	1,320		
Smelter plant	N.A.	1,532	1,846	1,967	1,921
Auxiliary plant	N.A.	N.A.	N.A.	N.A.	N.A.
Port facilities	30	34	40	N.A.	N.A.
Power generation plant	856	1,054	1,113	1,156	1,130
Other establishments <sup>1</sup>	340	377	332	403	659
<b>Total</b>	<b>2,401</b>	<b>4,518</b>	<b>4,991</b>	<b>5,287</b>	<b>5,444</b>

(Numbers)

Category	1991-92	1992-93	1993-94	1994-95	1995-96
Mines	1,779	N.A.	N.A.	N.A.	484
Alumina plant					
Smelter plant	2,006	N.A.	N.A.	N.A.	N.A.
Auxiliary plant	N.A.	N.A.	N.A.	N.A.	N.A.
Port facilities	N.A.	N.A.	N.A.	N.A.	N.A.
Power generation plant	1,148	N.A.	N.A.	N.A.	N.A.
Other establishments <sup>1</sup>	543	N.A.	N.A.	N.A.	N.A.
<b>Total</b>	<b>5,476</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>

1/ Includes Headquarter, Marketing, sales, etc.

**Table :8.1.3 MANPOWER EMPLOYED IN NON-FERROUS METALS : ALUMINIUM  
Hindustan Aluminium Corporation Limited**

(Numbers)					
Category	1986-87	1987-88	1988-89 <sup>1</sup>	1989-90	1990-91
Mines	1,006	1,972	1,056	N.A.	1,345
Plant <sup>2</sup>	N.A.	N.A.	N.A.	N.A.	6,341 <sup>2</sup>
Managerial/ Administrative	363	431	453	N.A.	N.A.
Technical	941	918	1,009	N.A.	N.A.
Skilled Labour	3,090	3,215	3,249	N.A.	N.A.
Semi-skilled	199	222	181	N.A.	N.A.
Unskilled	1,348	1,404	1,341	N.A.	N.A.
Sub-total	5,941	6,190	6,238	N.A.	6,341
Grand total	6,947	7,162	7,294	N.A.	7,686

(Numbers)					
Category	1991-92	1992-93	1993-94	1994-95	1995-96
Mines	1,347	1161	1117	1113	N.A.
Plant <sup>2</sup>	7,239 <sup>2</sup>	N.A.	N.A.	N.A.	N.A.
Managerial/ Administrative	N.A.	N.A.	N.A.	N.A.	N.A.
Technical	N.A.	N.A.	N.A.	N.A.	N.A.
Skilled Labour	N.A.	N.A.	N.A.	N.A.	N.A.
Semi-skilled	N.A.	N.A.	N.A.	N.A.	N.A.
Unskilled	N.A.	N.A.	N.A.	N.A.	N.A.
Sub-total	7,239	N.A.	N.A.	N.A.	N.A.
Grand total	8,586	1161	1117	1113	N.A.

1/ Period from January 1988 to March 1989.  
2/ Total employment in plant.

**Table 8.1.4 MANPOWER EMPLOYED IN NON-FERROUS METALS : ALUMINIUM  
Indian Aluminium Co. Limited**

Category	(Numbers)				
	1986-87	1987-88	1988-89 <sup>1</sup>	1989-90	1990-91
Mines	371	367	375	693	675
Plant <sup>2</sup>	6,838	6,799	7,019	701	703
Other establishments <sup>3</sup>	512	522	493	360	353
<b>Total</b>	<b>7,721</b>	<b>7,688</b>	<b>7,887</b>	<b>7,932</b>	<b>8,121</b>

Category	(Numbers)				
	1991-92	1992-93	1993-94	1994-95	1995-96
Mines	666	N.A.	N.A.	N.A.	N.A.
Plant <sup>2</sup>	705	N.A.	N.A.	N.A.	N.A.
Other establishments <sup>3</sup>	352	N.A.	N.A.	N.A.	N.A.
<b>Total</b>	<b>8,168</b>	<b>8,203</b>	<b>8,167</b>	<b>8,298</b>	<b>8,108</b>

- 1 15 months (January 1988 to March 1989)  
 2 Includes Aluminium plant, smelter, Rolling plants,  
 Extrusion plant and Foil plant.  
 3 Head office, sales office etc.

Table ; 8.1.5 MANPOWER EMPLOYED IN NON-FERROUS METALS : ALUMINIUM  
Madras Aluminium Co. Limited\*

(Numbers)

Category	1986-87 <sup>1</sup>	1987-88 <sup>2</sup>	1988-89 <sup>3</sup>	1989-90	1990-91
Mines					
Workers	70	69	69	N.A.	N.A.
Supervisors	16	16	13	N.A.	N.A.
Manager	3	3	3	N.A.	N.A.
Alumina plant					
Workers	35	35	35	N.A.	N.A.
Supervisors	9	9	9	N.A.	N.A.
Manager	N.A.	N.A.	N.A.	N.A.	N.A.
Smelter plant					
Workers	85	85	85	N.A.	N.A.
Supervisors	11	13	13	N.A.	N.A.
Manager	N.A.	N.A.	N.A.	N.A.	N.A.
Other establishments (Sales)	6	6	6	N.A.	N.A.
Total	235	236	233	N.A.	N.A.

(Numbers)

Category	1991-92	1992-93*	1993-94*	1994-95*	1995-96
Mines					
Workers	N.A.	N.A.	N.A.	N.A.	N.A.
Supervisors	N.A.	N.A.	N.A.	N.A.	N.A.
Manager	N.A.	N.A.	N.A.	N.A.	N.A.
Alumina plant					
Workers	N.A.	N.A.	N.A.	N.A.	N.A.
Supervisors	N.A.	N.A.	N.A.	N.A.	N.A.
Manager	N.A.	N.A.	N.A.	N.A.	N.A.
Smelter plant					
Workers	N.A.	N.A.	N.A.	N.A.	N.A.
Supervisors	N.A.	N.A.	N.A.	N.A.	N.A.
Manager	N.A.	N.A.	N.A.	N.A.	N.A.
Other establishments (Sales)	N.A.	N.A.	N.A.	N.A.	N.A.
Total	N.A.	N.A.	N.A.	N.A.	N.A.

1 January 1986 to June 1987

2 July 1987 to June 1988

3 July 1988 to March 1989

\* Madras Aluminium Co. Limited remained closed from 1992-93 to 1994-95 as per the Working Group Report On Non-Ferrous Group for the 9<sup>th</sup> Five Year Plan (page no. 14)

## 8.2. COPPER

Table : 8.2.1 MANPOWER EMPLOYED IN NON-FERROUS METALS : COPPER  
Hindustan Copper Limited

Category		(Numbers)				
		1986-87	1987-88	1988-89	1989-90	1990-91
Executives	K.C.C.	561	558	563	613	654
	I.C.C.	481	488	520	552	574
	M.C.P.	156	157	165	172	189
	Others	130	133	150	N.A.	N.A.
Sub-total		1,328	1,336	1,398	1,337	1,417
Class II Officers	K.C.C.	220	220	218	188	249
	I.C.C.	201	193	162	125	156
	M.C.P.	60	59	59	52	58
	Others	52	58	49	N.A.	N.A.
Sub-total		533	530	488	365	463
Workmen	K.C.C.	8,038	7,897	7,813	8,169	8,051
	I.C.C.	12,315	11,925	11,707	12,314	12,141
	M.C.P.	1,737	1,714	1,689	1,676	1,698
	Others	1,750	1,647	1,608	N.A.	N.A.
Sub-total		23,840	23,183	22,817	22,159	21,890
Grand total		25,701	25,049	24,703	23,861	23,770

Category		(Numbers)				
		1991-92	1992-93	1993-94	1994-95	1995-96
Executives	K.C.C.	667	N.A.	N.A.	N.A.	N.A.
	I.C.C.	597	N.A.	N.A.	N.A.	N.A.
	M.C.P.	189	N.A.	N.A.	N.A.	N.A.
	Others	N.A.	N.A.	N.A.	N.A.	N.A.
Sub-total		1,453	N.A.	N.A.	N.A.	N.A.
Class II Officers	K.C.C.	256	N.A.	N.A.	N.A.	N.A.
	I.C.C.	153	N.A.	N.A.	N.A.	N.A.
	M.C.P.	63	N.A.	N.A.	N.A.	N.A.
	Others	N.A.	N.A.	N.A.	N.A.	N.A.
Sub-total		482	N.A.	N.A.	N.A.	N.A.
Workmen	K.C.C.	7,969	N.A.	N.A.	N.A.	N.A.
	I.C.C.	11,902	N.A.	N.A.	N.A.	N.A.
	M.C.P.	1,676	N.A.	N.A.	N.A.	N.A.
	Others	N.A.	N.A.	N.A.	N.A.	N.A.
Sub-total		21,547	21,748	17,862	N.A.	N.A.
Grand total		23,462	23,958	21,520	20,513	N.A.

K.C.C. Khetri Copper Complex.  
I.C.C. Indian Copper Complex.  
M.C.P. Malanjhand Copper Complex.

Table :8.2.2 MANPOWER EMPLOYED IN NON-FERROUS METALS : COPPER  
 The Hutt1 Gold Mine Co. Ltd.  
 (Chitradurga Copper Unit/Ingaldhal Copper Mine)

(Numbers)					
Category	1986-87	1987-88	1988-89	1989-90	1990-91
Mines	483	483	485	533	519
Plant	53	53	58	56	56
Total	536	536	541	589	575

(Numbers)					
Category	1991-92	1992-93	1993-94	1994-95	1995-96
Mines	511	534	522	494	619
Plant	58	N.A.	N.A.	N.A.	N.A.
Total	569	534	522	494	619

**Table :8.2.3 MANPOWER EMPLOYED IN NON-FERROUS METALS : COPPER**  
**The Hutti Gold Mine Co. Ltd.**  
**(Kalyadi Copper Unit)**

Category	(Numbers)				
	1986-87	1987-88	1988-89	1989-90	1990-91
Mines	372	346	397	382	398
Plant	17	33	35	39	39
<b>Total</b>	<b>389</b>	<b>379</b>	<b>432</b>	<b>421</b>	<b>437</b>

Category	(Numbers)				
	1991-92	1992-93	1993-94	1994-95	1995-96
Mines	377	423	420	414	406
Plant	39	46	46	45	50
<b>Total</b>	<b>416</b>	<b>469</b>	<b>466</b>	<b>459</b>	<b>456</b>

## 8.3. LEAD

Table :8.3.1 MANPOWER EMPLOYED IN NON-FERROUS METALS : LEAD  
Indian Lead Ltd.

(Numbers)					
Category	1986-87	1987-88	1988-89	1989-90	1990-91
Planten	150	170	148	148	148
Others(Administration, sales,etc. )	67	67	67	95	95
Total	217	237	237	243	243

(Numbers)					
Category	1991-92	1992-93	1993-94	1994-95	1995-96
Planten	148	175	175	175	175
Others(Administration, sales,etc. )	95	68	68	68	90
Total	243	243	243	243	265



## &lt; 8.4 ZINC

Table :8.4.1 MANPOWER EMPLOYED IN NON-FERROUS METALS : ZINC  
Hindustan Zinc Limited

(Numbers)

	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Mine</b>					
Opencast	243	242	319	367	457
Underground	5,660	5,670	5,702	5,825	5,831
Concentrator plant	943	959	970	973	975
Smelter					
Refinery	4,156	4,186	4,204	4,269	4,405
Auxiliary plant					
<b>Total</b>	<b>11,002</b>	<b>11,057</b>	<b>11,195</b>	<b>11,434</b>	<b>11,668</b>

(Numbers)

	1991-92 <sup>1</sup>	1992-93	1993-94	1994-95	1995-96
<b>Mine</b>					
Opencast	1,022	N.A.	N.A.	N.A.	N.A.
Underground	5,875	N.A.	N.A.	N.A.	N.A.
Concentrator plant	1,015	N.A.	N.A.	N.A.	N.A.
Smelter					
Refinery	4,999	N.A.	N.A.	N.A.	N.A.
Auxiliary plant					
<b>Total</b>	<b>12,911</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>

<sup>1</sup> Also includes Rampura-Agucha mine.

**Table :6.4.2 MANPOWER EMPLOYED IN NON-FERROUS METALS : ZINC  
Binani Industries Limited**

(Numbers)

	1986-87	1987-88	1988-89	1989-90	1990-91
Smelter	570	564	554	557	534
Captive power plant	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Total</b>	<b>570</b>	<b>564</b>	<b>554</b>	<b>557</b>	<b>534</b>

(Numbers)

	1991-92	1992-93	1993-94	1994-95	1995-96
Smelter	564	574	573	567	567
Captive power plant	N.A.	8	8	8	8
<b>Total</b>	<b>564</b>	<b>582</b>	<b>581</b>	<b>575</b>	<b>575</b>

## 8.5 COPPER, LEAD &amp; ZINC

Table :8.5.1 MANPOWER EMPLOYED IN NON-FERROUS METALS : COPPER, LEAD AND ZINC  
Sikkim Mining Corporation

	(Numbers)				
	1986-87	1987-88	1988-89	1989-90	1990-91
Mine	120	123	112	109	106
Concentrator Plant	23	26	23	24	24
Others	104	103	99	97	N.A.
<b>Total</b>	<b>389</b>	<b>379</b>	<b>432</b>	<b>421</b>	<b>437</b>

	(Numbers)				
	1991-92	1992-93	1993-94	1994-95	1995-96
Mine	108	1,272	1,416	1,284	1,296
Concentrator Plant	24	288	300	240	240
Others	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Total</b>	<b>416</b>	<b>1,560</b>	<b>1,716</b>	<b>1,524</b>	<b>1,536</b>

## 9. Financial Structure

### 9.1. Aluminium

Table : 9.1.1 FINANCIAL STRUCTURE  
Bharat Aluminium Company Limited

(Rupees Million)					
Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid up capital	4,678.6	4,805.6	4,868.5	4,888.5	4,888.5
Reserves & surplus	13.0	6.4	5.9	118.7	109.9
Loans	4,620.1	5,254.9	4,913.0	6,307.6	6,307.5
Capital employed					
Net fixed assets	1,689.4	1,589.8	4,997.6	5,118.8	5,067.3
Working capital	788.8(-)	234.6	340.0	503.8	475.9
Sales turnover/Exports	2,776.1	3,187.2	3,676.8	4,161.9	4,671.5
Corporate tax paid	N.A.	N.A.	N.A.	N.A.	N.A.
Profit					
Before tax	(-)431.5	(+)3.6	(+) 52.2	(+) 57.8	(+) 17.7
After tax	(-)431.5	(+)3.6	(+) 52.2	(+) 11.0	(+) 2.0

(Rupees Million)					
Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid up capital	4,888.5	4,888.5	4,888.5	4,888.5	4,888.5
Reserves & surplus	118.8	137.3	289.8	1,194.9	2,727.5
Loans	6,943.2	1,965.8	1,525.8	727.0	592.1
Capital employed					
Net fixed assets	4,936.8	4,682.2	4,658.1	4,341.9	4,246.0
Working capital	1,680.2	1,664.9	1,469.5	1,781.1	3,554.1
Sales turnover/Exports	5,186.0	5,131.8	6,279.9	7,165.3	6,911.9
Corporate tax paid	N.A.	N.A.	3.0	N.A.	N.A.
Profit					
Before tax	(+) 13.8	(+) 18.53	(+) 155.7	(+) 905.1	1636.57
After tax	(+) 9.1	(+) 18.53	(+) 152.7	(+) 905.1	1633.34

Table :9.1.2 FINANCIAL STRUCTURE  
National Aluminium Company Limited

(Rupees Million)

Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid up capital	11,041.2	12,331.2	12,886.2	12,886.2	12,886
Reserves & surplus	-	-	-	1,217	1,936
Loans	15,285.0	13,294.3	16,959.0	17,286.4	18,355
Capital employed					
Net fixed assets	2,785.4	14,319.8	21,756.9	24,769.0	25,947
Working capital	2,988.9	86.9	2,751.4	3,572.8	5,126
Sales turnover/Exports	-	887.6	4,387.4	8,460.1	8,840
Profit					
Before tax	(-) 32.0	(-)509.2	(+)189.2	(+)1568.7	(+)719
After tax	(-) 32.0	(-)509.2	(+)189.2	(+)1568.7	(+)719

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid up capital	12,886	N.A.	12,886.1	12,886.1	12,886.1
Reserves & surplus	2,528	N.A.	4,754.2	7,170.5	13,006.7
Loans	26,521	N.A.	N.A.	N.A.	N.A.
Capital employed					
Net fixed assets	32,866	N.A.	N.A.	N.A.	N.A.
Working capital	6,123	N.A.	N.A.	N.A.	N.A.
Sales turnover/Exports	9,740	N.A.	11,959.6	14,767.8	17,439.8
Profit					
Before tax	(+) 591	N.A.	N.A.	N.A.	N.A.
After tax	(+) 591	N.A.	1,586.0	3,001.7	5,352.6

**Table :9.1.3 FINANCIAL STRUCTURE**  
**Hindustan Aluminium Corporation Limited**

(Rupees Million)					
Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid up capital	183.9	183.9	228.5	228.5	437.7
Reserves & surplus (including Revaluation Reserve)	1,692.7	1,666.4	1,623.9	2,004.7	2,872.5
Loans	680.0	685.7	951.4	1,984.1	2,267.7
Capital employed					
Net fixed assets	2,080.5	1,923.0	1,875.4	2,180.3	2,274.3
Working capital	251.9	386.1	603.5	N.A.	N.A.
Sales turnover/Exports					
Gross sales	3,218.0	3,720.6	5,635.5	6,080.7	6,716.3
Net sales (Net of excise duty & Aluminium Regulation Account)					
Corporate tax paid	-	38.0	126.0	287.0	356.0
Profit					
Before tax	34.5	238.2	407.7	931.1	1,004.2
After tax	34.5	200.2	281.7	644.1	648.2

(Rupees Million)					
Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid up capital	387.7	387.7	433.8	480.1	496.5
Reserves & surplus (including Revaluation Reserve)	3,474.2	13,612.7	16,225.9	21,417.9	25,199.2
Loans	2,606.4	3,369.6	3,007.4	4,385.0	5,282.4
Capital employed					
Net fixed assets	2,375.6	11,823.3	11,893.7	13,292.0	15,184.0
Working capital	N.A.	N.A.	N.A.	N.A.	N.A.
Sales turnover/Exports					
Gross sales	8,558.7	9,755.7	9,216.9	11,307.0	14,222.2
Net sales (Net of excise duty & Aluminium Regulation Account)					
Corporate tax paid	621.5	772.5	625.0	1,380.0	2,400.0
Profit					
Before tax	1,501.9	1,846.1	2,204.1	4,299.3	6,411.5
After tax	880.4	1,073.6	1,579.1	2,919.3	4,011.5

Table :9.1.4 FINANCIAL STRUCTURE  
Indian Aluminium Company Limited

(Rupees Million)

Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid up capital	325.0	411.6	415.0	415.0	415.0
Reserves & surplus	404.0	490.9	667.9	1,128.3	1,521.1
Loans	672.9	816.4	988.8	838.7	984.4
Capital employed					
Net fixed assets	669.7	681.6	815.4	892.0	1,177.0
Working capital	705.3	865.3	857.3	807.0	1,030.0
Sales turnover	2,412.6	2,748.7	4,465.2	5,364.0	5,642.0
Profit					
Before tax	66.8	54.4	359.7	861.0	764.0
After tax	61.8	45.8	277.3	585.0	517.0

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid up capital	415.0	415.0	474.1	474.1	711.1
Reserves & surplus	1,740.7	2,047.1	4,129.2	4,824.5	5,420.3
Loans	1,566.3	2,221.1	2,052.4	2,334.2	2,744.5
Capital employed					
Net fixed assets	1,956	2,884	4,914	5,067	5,742
Working capital	1,397	1,834	1,458	2,242	2,926
Sales turnover	6,592.8	7,617.9	8,113.9	10,378.1	11,706.5
Profit					
Before tax	471	447	542	956	1,500
After tax	343	429	511	918	1,142

Table :9.1.5 FINANCIAL STRUCTURE  
Madras Aluminium Company Limited

(Rupees Million)

Item	1986-87 <sup>1</sup>	1987-88 <sup>2</sup>	1988-89 <sup>3</sup>	1989-90	1990-91
Paid up capital	59.3	59.3	59.3	4,888.5	4,888.5
Reserves & surplus	284.0	251.7	228.1	118.7	109.9
Loans	235.7	248.6	268.9	6,307.6	6,307.5
Capital employed					
Net fixed assets	337.0	298.7	270.1	5,118.8	5,067.3
Working capital	123.2	115.7	134.9	503.8	475.9
Sales turnover/Exports	359.2	238.8	270.1	4,161.9	4,671.5
Profit	(-) 67.6	(-) 23.0	(+) 1.2	(+) 57.8	(+) 17.7
Revaluation of assets	273.4	241.2	217.5	(+) 11.0	(+) 2.0

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid up capital	4,888.5	N.A.	N.A.	N.A.	N.A.
Reserves & surplus	118.8	N.A.	N.A.	N.A.	N.A.
Loans	6,943.2	N.A.	N.A.	N.A.	N.A.
Capital employed					
Net fixed assets	4,936.8	N.A.	N.A.	N.A.	N.A.
Working capital	1,680.2	N.A.	N.A.	N.A.	N.A.
Sales turnover/Exports	5,186.0	N.A.	N.A.	N.A.	N.A.
Profit	(+) 13.8	N.A.	N.A.	N.A.	N.A.
Revaluation of assets	(+) 9.1	N.A.	N.A.	N.A.	N.A.

1 For 18 months (January 1986 to June 1987)

2 For 12 months (July 1987 to June 1988)

3 For 9 months (July 1988 to March 1989)



## 9.2. COPPER

Table :9.2.1 FINANCIAL STRUCTURE  
Hindustan Copper Limited

(Rupees Million)

Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid-up capital	2,269.0	2,449.0	2,696.9	2,947.4	3,041.98
Reserves & surplus	64.3	63.5	323.0	359.1	358.52
Loans	2,703.6	2,710.6	2,448.5	2,232.1	2,001.63
Capital employed	2,328.1	2,589.5	3,006.6	3,240.3	4,822.79
Net fixed assets	1,960.9	1,897.3	2,020.4	1,998.3	2,347.56
Working capital	367.2	692.2	986.2	1,242.0	2,475.23
Sales turnover/Exports	2,663.2	2,935.7	4,367.3	4,398.3	6,389.97
Corporate tax paid	-	-	-	-	-
Profit	88.7	161.2	432.8	451.8	451.03
Before tax	88.7	161.2	432.8	451.8	451.03
After tax	1,467.4	1,467.4	1,467.4	1,467.4	1,467.40

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid-up capital	3,041.98	3,041.98	3,051.98	3,301.98	N.A.
Reserves & surplus	358.52	891.44	357.35	909.34	N.A.
Loans	1,825.62	3,757.46	3,869.68	3,766.73	N.A.
Capital employed	4,434.4	4,737.70	3,525.20	3,856.00	N.A.
Net fixed assets	2,740.9	2,825.70	2,792.30	2,748.50	N.A.
Working capital	1,693.5	1,912.00	732.90	1,107.50	N.A.
Sales turnover/Exports	6,606.37	6,846.65	6,723.75	9,329.54	N.A.
Corporate tax paid	-	-	-	-	N.A.
Profit					
Before tax	514.0	263.95	(-)695.48	722.62	N.A.
After tax	514.0	263.95	(-)695.48	722.62	N.A.

**Table :9.2.2 FINANCIAL STRUCTURE  
The Hutti Gold Mine Co. Limited  
(Kalyadi Copper Unit)**

(Rupees Million)

Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid-up capital	----- Amalgamated with HGML -----				
Reserves & surplus	-	-	-	-	-
Loans	24.54	16.67	17.42	N.A.	148.98
Capital employed					
Net fixed assets	17.14	15.44	15.64	-	209.52
Working capital	12.56	15.3	14.36	-	91.32
Sales turnover/Exports	9.03	4.97	6.21	-	102.85
Corporate tax paid	-	-	-	-	-
Loss	8.25	18.66	16.58		127.62

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid-up capital	----- Amalgamated with HGML -----				
Reserves & surplus	-	-	-	-	-
Loans	136.31	6.00	3.00	3.00	-
Capital employed					
Net fixed assets	214.82	20.117	21.623	20.016	-
Working capital	96.66	-	-	-	-
Sales turnover/Exports	141.44	8.74	-	49.134	-
Corporate tax paid	-	-	-	-	-
Loss	170.64	N.A.	-	-	-

**Table :9.2.3 FINANCIAL STRUCTURE**  
**The Hutti Gold Mine Co. Limited**  
**(Chitradurga Copper Unit/Ingaldhal Copper Unit)**

(Rupees Million)

Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid-up capital**	----- Not applicable -----				
Reserves & surplus**	-	-	-	-	-
Loans	12.26	5.84	0.92	0.02	N.A.
Capital employed					
Net fixed assets	18.43	19.84	22.34	22.91	219.96
Working capital	17.6	20.65	10.85	14.71	
Sales turnover/Exports	12.75	9.07	8.50	16.60	N.A.
Corporate tax paid	-	-	-	-	-
Loss					
Before tax	-	-	-	-	256.19
After tax	-	-	-	-	256.19

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid-up capital**	----- Not applicable -----				
Reserves & surplus**	-	-	-	-	-
Loans	N.A.	6.00	3.00	3.00	-
Capital employed					
Net fixed assets	219.92 <sup>1</sup>	20.117	21.623	20.016	-
Working capital					
Sales turnover/Exports	N.A.	8.74	-	49.134	-
Corporate tax paid	-	467.4	1,467.4	1,467.4	1,467.4
Loss					
Before tax	-	467.4	1,467.4	1,467.4	1,467.4
After tax	-	1,467.4	1,467.4	1,467.4	1,467.4

\* Ingaldhal Copper unit.

\*\* Not applicable as the company got merged with HGML.

1/ Provisional

## 9.3. LEAD

**Table 9.3.1 FINANCIAL STRUCTURE**  
**Indian Lead Limited**

(Rupees Million)

Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid-up capital	0.64	2.00	4.86	5.00	5.00
Reserves & surplus	0.98	0.86	4.41	5.68	7.82
Loans	110.96	95.82	11.20	116.55	99.70
Capital employed					
Net fixed assets	6.85	8.90	24.70	28.35	51.96
Working capital	-	-	-	84.32	83.09
Sales turnover/Exports	104.70	180.56	195.74	333.10	370.79
Corporate tax paid	-	-	-	1.45	1.45
Profit					
Before tax	-	-	-	12.73	16.62
After tax	-	-	-	11.53	16.62

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid-up capital	5.00	2,488.3	3,155.3	4,037.32	4,045.32
Reserves & surplus	11.71	1,577.1	1,281.9	2,122.13	2,644.20
Loans	139.40	148.70	105.22	76.10	361.70
Capital employed					
Net fixed assets	56.38	2,488.3	3,155.3	4,037.32	4,045.32
Working capital	99.73	2,488.3	3,155.3	4,037.32	4,045.32
Sales turnover/Exports	404.88	2,488.3	3,155.3	4,037.32	4,045.32
Corporate tax paid	7.07	20.00	-	-	-
Profit					
Before tax	11.06	141.10	163.80	280.60	395.10
After tax	3.99	73.10	160.50	280.60	395.10

## 9.4. ZINC

**Table :9.4.1 FINANCIAL STRUCTURE**  
Binani Industries Limited

(Rupees Million)

Item	1985-87 <sup>1</sup>	1987-88	1988-89	1989-90	1990-91
Paid-up capital	37.80	37.80	37.80	37.80	22.70
Reserves & surplus	80.20	82.40	138.00	179.10	46.70
Loans	140.50	265.80	198.40	224.20	213.70
<b>Capital employed</b>					
Net fixed assets	109.40	234.30	176.50	168.40	186.00
Working capital	-	-	-	272.70	97.10
Sales turnover/Exports	518.00	412.90	658.00	541.70	104.20
Corporate tax paid	9.60	2.10	45.10	28.50	-
<b>Profit</b>					
Before tax	49.60	9.90	106.40	74.10	79.50
After tax	40.00	7.80	61.30	45.60	79.50

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid-up capital	22.70	22.60	56.70	237.10	283.10
Reserves & surplus	121.30	187.60	281.80	1611.10	2803.40
Loans	207.40	148.70	105.22	76.10	361.70
<b>Capital employed</b>					
Net fixed assets	210.00	165.00	477.10	1031.30	3147.00
Working capital	141.40	265.90	1508.10	844.00	326.30
Sales turnover/Exports	905.40	1346.10	1271.40	1725.40	1650.40
Corporate tax paid	34.00	68.00	20.00	-	-
<b>Profit</b>					
Before tax	114.30	141.10	163.80	280.60	395.10
After tax	80.30	73.10	160.50	280.60	395.10

1/ 18 month

## 9.5. LEAD &amp; ZINC

Table 9.5.1 FINANCIAL STRUCTURE  
Hindustan Zinc Limited

(Rupees Million)

Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid-up capital	1,725.6	1,947.8	2,488.3	3,155.3	4,037.32
Reserves & surplus	272.1	301.7	577.1	1,281.9	2,122.13
Loans	842.5	656.9	355.7	138.3	3,333.87
Capital employed					
Net fixed assets	2,031.3	1,963.1	1,935.7	1,903.8	4,096.40
Working capital	1,189.5	1,213.7	1,270.7	1,783.7	2,349.40
Sales turnover/Exports	2,155.6	2,396.3	2,909.9	4,253.8	4,570.57
Corporate tax paid	-	1.0	55.4	138.7	16.00
Profit					
Before tax	49.50	35.80	346.80	849.60	864.50
After tax	49.50	34.80	291.40	710.90	848.50

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid-up capital	4,045.32	4,225.32	4,225.32	4,225.32	4,225.32
Reserves & surplus	2,644.20	3,007.68	3,058.20	3,824.54	4,198.15
Loans	4,160.66	4,585.57	4,320.35	3,416.31	3,293.39
Capital employed					
Net fixed assets	7,990.66	7,448.78	7,239.57	6,664.24	6,336.48
Working capital	2,266.78	3,632.29	3,848.29	4,311.83	4,801.44
Sales turnover/Exports	6,676.01	7,583.14	7,424.55	9,549.04	8,160.12
Corporate tax paid	-	-	-	-	232.63
Profit					
Before tax	944.66	628.64	45.53	764.34	657.05
After tax	944.66	628.64	45.53	764.34	424.42

## 9.6. COPPER-LEAD-ZINC

Table :9.6.1 FINANCIAL STRUCTURE  
Sikkim Mining Corporation

(Rupees Million)

Item	1986-87	1987-88	1988-89	1989-90	1990-91
Paid-up capital	5.7	5.7	9.5	9.5	22.47
Reserves & surplus	-	-	-	-	-
Loans	10.2	11.4	9.5	11.5	5.8
Capital employed					
Net fixed assets	4.5	4.3	4.1	5.2	5.6
Working capital	7.0	1.0	1.5	5.9	3.9
Sales turnover/Exports	3.2	2.0	4.7	5.0	6.0
Corporate tax paid	-	-	-	-	-
Profit/(Loss)					
Before tax	0.2	(0.21)	-	(0.7)	(0.8)
After tax	0.2	(0.21)	-	(0.7)	(0.8)

(Rupees Million)

Item	1991-92	1992-93	1993-94	1994-95	1995-96
Paid-up capital	22.47	272.10	272.10	295.10	420.10
Reserves & surplus	-	N11	NIL	NIL	N11
Loans	5.8	79.54	110.92	126.20	140.98
Capital employed					
Net fixed assets	6.0	60.37	59.32	55.20	52.00
Working capital	4.0	35.69	20.75	35.15	117.17
Sales turnover/Exports	7.0	74.04	45.58	104.37	38.21
Corporate tax paid	-	N11	NIL	NIL	N11
Profit/(Loss)					
Before tax	0.01	N11	NIL	NIL	N11
After tax	0.01	N11	NIL	NIL	N11

# 10. Prices

## 10.1 DOMESTIC PRICES

### 10.1.1 ALUMINIUM

Table : 10.1.1.1 DOMESTIC ALUMINIUM PRICES<sup>1/</sup>  
(Rs./Kg.)

Year	Market	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	Bombay	22.95	23.06	23.42	24.41	25.49	25.54
	Calcutta	23.37	23.68	23.65	23.50	23.84	24.25
	Delhi	23.70	23.56	23.91	25.30	25.02	25.18
1987	Bombay	24.78	24.55	27.20	27.28	28.34	28.97
	Calcutta	25.00	25.00	26.15	26.74	27.00	28.75
	Delhi	23.98	24.78	25.50	26.79	28.66	30.00
1988	Bombay	31.87	31.95	30.42	31.98	33.30	34.64
	Calcutta	30.12	35.50	32.04	32.05	32.75	34.00
	Delhi	31.75	31.15	33.31	32.00	33.60	35.75
1989	Bombay	46.61	47.77	46.67	45.28	45.23	44.64
	Calcutta	45.50	48.25	48.50	46.00	46.85	45.22
	Delhi	47.25	48.25	48.00	45.75	44.95	44.93
1990	Bombay	42.74	43.60	44.42	45.01	46.58	46.62
	Calcutta	42.60	43.25	43.75	46.00	46.00	46.50
	Delhi	43.06	43.48	44.25	45.50	47.25	47.25
1991	Bombay	52.08	50.33	49.02	48.25	48.41	49.23
	Calcutta	52.25	50.00	49.50	49.16	49.75	49.00
	Delhi	50.00	49.80	49.70	48.81	49.00	49.60
1992	Bombay Ingots	52.23	51.61	52.46	54.39	55.38	55.36
	Wirerods	N.A.	N.A.	N.A.	56.39	58.23	58.34
	Calcutta Wirerods	53.09	53.33	53.50	55.25	54.52	56.83
	Delhi Ingots	51.50	52.00	52.94	54.19	54.91	56.36

<sup>1/</sup> Monthly average price.



TABLE :10.1.1.1 Continued

(Rs./kg.)

Year	Market	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	Bombay	25.43	24.72	24.22	24.20	23.98	24.12
	Calcutta	25.00	25.00	25.00	25.00	25.00	25.00
	Delhi	25.27	25.50	25.50	25.38	24.58	24.02
1987	Bombay	29.42	29.26	29.14	29.00	29.28	30.33
	Calcutta	28.75	29.00	29.25	29.25	29.80	29.75
	Delhi	30.00	30.00	30.00	30.57	29.44	30.75
1988	Bombay	35.96	37.67	39.57	41.44	41.52	43.41
	Calcutta	36.25	36.75	37.00	39.06	39.04	43.50
	Delhi	36.50	37.96	39.50	40.50	40.88	45.25
1989	Bombay	43.75	43.27	42.29	43.40	42.70	42.35
	Calcutta	44.12	42.94	44.00	43.00	43.50	42.85
	Delhi	44.42	43.70	42.93	42.75	43.63	43.25
1990	Bombay	47.11	47.25	47.92	48.43	50.33	50.86
	Calcutta	47.50	47.75	47.25	47.10	48.75	49.50
	Delhi	47.50	48.35	47.75	48.10	49.35	50.00
1991	Bombay	51.76	54.09	53.71	52.74	52.61	52.85
	Calcutta	52.40	54.75	54.00	53.75	53.11	53.04
	Delhi	52.24	53.00	54.00	54.00	54.15	51.25
1992	Bombay	55.72	55.49	55.50	56.10	58.06	59.50
	Ingots	55.72	55.49	55.50	56.10	58.06	59.50
	Wirerods	59.10	58.68	58.47	58.77	60.20	61.00
	Calcutta	58.37	58.75	58.75	58.50	59.65	62.11
Wirerods	58.37	58.75	58.75	58.50	59.65	62.11	
Delhi	56.98	56.45	57.00	57.50	58.50	59.58	
Ingots	56.98	56.45	57.00	57.50	58.50	59.58	

1/ Monthly average price.

TABLE :10.1.1.1 Continued

(Rs.Kg.)

Year	Market		Jan.	Feb.	Mar.	Apr.	May	Jun.
1993	Bombay	Ingots	58.56	57.25	56.73	56.80	57.35	59.41
		Wirerods	61.38	61.50	60.07	61.11	61.51	61.16
	Calcutta	Wirerods	62.00	63.00	61.50	60.93	61.50	61.57
	Delhi	Ingots	58.86	59.00	58.25	57.76	57.40	60.45
1994	Bombay	Ingots	58.90	57.73	55.11	55.57	57.86	64.50
		Wirerods	61.95	62.01	60.23	60.31	62.45	66.85
	Calcutta	Wirerods	60.00	60.00	60.86	N.Q.	N.Q.	N.Q.
	Delhi	Ingots	57.62	56.31	55.52	55.19	58.48	63.82
1995	Bombay	Ingots	87.00	82.98	80.90	80.54	80.23	79.26
		Wirerods	83.03	89.49	85.32	82.51	83.31	81.19
	Calcutta	Ingots	N.Q.	N.Q.	N.Q.	77.75	80.90	76.00
	Delhi	Ingots	84.25	84.9	76.66	76.50	75.64	74.48
		Rod	--	--	--	83.31	82.34	83.70
1996	Bombay	Ingots	75.97	76.28	75.06	75.00	75.75	75.23
		Wirerods	84.82	85.05	84.06	83.98	82.52	79.49
	Calcutta	Ingots	81.02	81.00	81.00	81.00	81.00	81.20
	Delhi	Ingots	78.18	78.25	77.64	78.41	78.56	77.86
		Wirerods	85.07	84.24	82.56	84.57	83.61	82.44

TABLE :10.1.1.1 Continued

(Rs/Kg.)

Year	Market	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
1993	Bombay	Ingots	58.26	57.88	57.91	58.00	59.00	59.25
		Wirerods	60.26	60.08	51.87	61.09	61.16	61.11
	Calcutta	Wirerods	61.50	61.25	59.80	59.00	58.90	59.59
	Delhi	Ingots	59.00	58.00	57.55	59.43	58.33	57.07
1994	Bombay	Ingots	60.90	68.24	70.96	74.45	73.79	84.93
		Wirerods	70.35	69.55	74.01	73.05	77.92	86.66
	Calcutta	Wirerods	N.Q.	N.Q.	N.Q.	N.Q.	N.Q.	N.Q.
	Delhi	Ingots	67.21	66.00	72.00	75.98	64.64	80.81
1995	Bombay	Ingots	75.41	76.32	77.55	77.37	76.16	76.16
		Wirerods	81.66	77.23	80.25	82.29	82.20	82.52
	Calcutta	Ingots	75.48	76.18	81.38	80.50	74.00	80.25
	Delhi	Ingots	75.62	76.50	76.50	77.42	78.45	78.33
		Wirerods	82.45	84.00	84.15	86.14	84.50	84.95
1996	Bombay	Ingots	75.02	75.06	74.84	73.04	71.05	70.87
		Wirerods	79.07	80.20	80.84	79.75	79.25	77.46
	Calcutta	Ingots	81.00	81.00	81.00	79.47	75.37	77.31
	Delhi	Ingots	75.89	75.29	75.48	73.71	73.05	73.57
		Wirerods	80.52	80.76	81.48	78.83	77.90	77.07

Table 10.1.1.2  
DOMESTIC AVERAGE PRICES OF ALUMINIUM IN DIFFERENT METAL EXCHANGES  
(Rs./Kg)

Year	Bombay		Delhi		Calcutta	
	Ingots	Wirerods	Ingots	Wirerods	Ingots	Wirerods
1986	24.30 <sup>1/</sup>	N.A.	24.72 <sup>1/</sup>	N.A. <sup>1/</sup>	24.36 <sup>1/</sup>	N.A.
1987	28.13 <sup>1/</sup>	N.A.	28.37 <sup>1/</sup>	N.A.	27.87 <sup>1/</sup>	N.A.
1988	36.14 <sup>1/</sup>	N.A.	36.51 <sup>1/</sup>	N.A.	35.67 <sup>1/</sup>	N.A.
1989	44.50	N.A.	44.98	N.A.	45.06	N.A.
1990	46.74	N.Q.	46.82	N.Q.	46.33	N.A.
1991-92	51.66	N.Q.	51.87	N.Q.	52.41	N.A.
1992-93	56.50	59.34	57.30	N.Q.	N.Q.	59.10
1993-94	57.97	60.30	57.87	N.Q.	N.Q.	60.41
1994-95	71.84	74.92	70.83	N.Q.	N.Q.	N.Q.
1995-96	77.19	82.26	76.96	83.95	78.62	N.Q.

<sup>1/</sup>- Monthly Average

10.1.2 COPPER  
Table 10.1.2.1. DOMESTIC COPPER PRICES (Rs./Kg.)

Year	Market	Item	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	Bombay	Wirebars	46.59	46.17	45.15	45.73	45.18	46.51
	Calcutta	Clean wire	41.62	41.59	42.24	42.52	42.81	43.08
	Delhi	Wire rods	48.99	48.44	47.60	48.80	49.69	48.84
1987	Bombay	Wirebars	49.89	50.72	57.20	53.57	54.62	55.04
	Calcutta	Clean wire	43.54	43.95	44.25	44.44	44.75	45.50
	Delhi	Rod	52.44	53.00	54.38	55.43	58.39	57.75
1988	Bombay	Wirebars	73.07	72.65	73.65	74.11	75.19	79.00
	Calcutta	Clean wire	64.50	64.50	61.00	62.00	64.00	65.00
	Delhi	Rods	76.16	75.93	77.58	80.50	79.75	83.15
1989	Bombay	Wirebars	90.74	88.22	89.73	91.25	91.25	88.57
	Calcutta	Clean wire	70.48	70.50	73.15	75.50	75.39	73.35
	Delhi	Rods	90.00	90.00	91.00	91.50	93.00	90.76
1990	Bombay	Wirebars	84.14	83.53	85.17	83.38	84.38	84.81
	Calcutta	Clean Wire	74.81	73.91	77.00	75.04	74.50	75.09
	Delhi	Rods	86.81	85.50	86.75	86.00	87.35	89.50
1991	Bombay	Wirebars	144.00	144.00	144.00	114.14	114.03	112.78
	Calcutta	Clean wire	144.00	144.00	144.00	95.17	97.85	95.75
	Delhi	Rod	144.00	144.00	144.00	116.99	118.11	119.00
1992	Bombay	Wirebars	120.67	117.86	126.81	133.11	129.52	130.05
		Wirerods	N.A.	N.A.	N.A.	136.00	132.50	133.25
	Calcutta	Rods	108.07	104.79	110.67	134.40	134.73	133.00
	Delhi	Wirebars	N.A.	N.A.	N.A.	134.50	130.40	131.00
		Rods	126.75	121.70	129.32	137.63	133.84	134.02

TABLE :10.1.2.1 Continued

(Rs./Kg.)

Year	Market	Item	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	Bombay	Wirebars	46.23	45.85	45.39	45.64	45.58	49.58
	Calcutta	Clean wire	43.07	42.96	42.24	42.00	42.12	43.12
	Delhi	Wire rods	49.81	49.37	48.36	48.63	48.50	51.50
1987	Bombay	Wirebars	56.66	56.89	57.25	60.26	66.16	77.98
	Calcutta	Clean wire	44.60	47.62	49.75	49.80	53.75	66.80
	Delhi	Rod	59.17	60.22	60.43	64.16	69.39	81.24
1988	Bombay	Wirebars	77.58	76.36	77.22	80.59	89.91	96.09
	Calcutta	Clean wire	64.75	62.50	62.50	62.80	71.31	82.25
	Delhi	Rods	81.15	80.25	80.85	82.58	96.25	98.10
1989	Bombay	Wirebars	86.95	87.56	89.10	88.25	85.94	84.67
	Calcutta	Clean wire	73.50	74.12	76.00	75.65	74.00	74.30
	Delhi	Rods	89.21	88.60	91.25	90.80	88.80	88.00
1990	Bombay	Wirebars	86.18	88.46	93.74	95.11	94.17	95.70
	Calcutta	Clean Wire	74.75	76.16	78.65	80.48	80.15	81.50
	Delhi	Rods	89.75	91.61	97.00	97.75	96.75	98.35
1991	Bombay	Wirebars	131.02	141.30	138.42	139.67	135.86	125.17
	Calcutta	Clean wire	109.33	111.15	113.39	114.00	115.15	112.00
	Delhi	Rod	144.07	147.87	143.25	146.06	140.78	128.50
1992	Bombay	Wirebars	137.28	137.09	135.38	130.12	125.81	124.90
		Wirerods	141.00	140.40	139.06	133.93	129.97	129.33
	Calcutta	Rods	136.91	139.88	139.75	133.25	133.25	129.74
	Delhi	Wirebars	138.81	137.71	137.00	134.50	128.60	125.25
		Rods	141.89	140.97	140.01	137.50	131.61	128.24

TABLE :10.1.2.1 Continued

(Rs./Kg.)

Year	Market	Item	Jan.	Feb.	Mar.	Apr.	May	Jun.
1993	Bombay	Wirebars	123.88	123.25	125.07	114.91	107.09	109.98
		Wire rods	128.21	127.50	129.84	120.74	112.70	114.44
	Calcutta	Rods	127.79	126.75	127.70	120.48	114.50	112.64
	Delhi	Wirebars	124.67	123.80	125.50	118.29	105.53	109.93
		Wire rods	127.67	126.65	129.25	121.60	111.97	113.90
1994	Bombay	Wirebars	99.44	94.36	111.60	115.25	120.48	131.29
		Wire rods	103.76	94.62	114.32	118.83	129.69	136.87
	Calcutta	Rods	103.79	101.65	110.48	114.80	116.25	129.36
	Delhi	Wirebars	99.42	100.00	112.92	116.18	121.33	132.97
		Wire rods	101.05	102.03	115.74	118.72	123.70	135.64
1995	Bombay	Wirebars	146.14	147.45	146.13	148.55	147.53	152.75
		Wire rods	150.98	150.21	149.50	150.61	152.15	156.74
	Calcutta	Wirebar	144.0	144.0	144.0	145.53	151.73	153.32
	Delhi	Wirebars	146.81	147.50	147.02	149.84	149.43	154.64
		Wire rods	151.76	152.76	152.39	154.66	153.48	157.84
1996	Bombay	Wirebars	161.86	159.90	155.69	148.55	147.53	152.75
		Wire rods	168.84	165.00	162.17	148.55	147.53	152.75
	Calcutta	Wirebars	163.50	160.23	160.61	148.55	147.53	152.75
	Delhi	Wirebars	164.32	160.25	157.67	148.55	147.53	152.75
		Wire rods	168.31	164.65	160.95	148.55	147.53	152.75

TABLE :10.1.2.1 Continued

(Rs./Kg.)

Year	Market	Item	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1993	Bombay	Wirebars	110.87	110.67	110.80	106.63	99.42	100.15
		Wire rods	113.97	114.15	114.38	110.96	103.78	103.39
	Calcutta	Rods	113.00	112.00	110.57	110.61	107.78	103.91
	Delhi	Wirebars	110.26	111.50	112.33	108.30	100.78	101.65
		Wire rods	113.90	114.50	115.46	111.52	105.20	104.63
1994	Bombay	Wirebars	132.08	131.29	133.50	130.97	139.83	141.56
		Wire rods	139.96	141.60	140.58	143.31	146.90	148.86
	Calcutta	Rods	135.25	133.50	133.73	140.05	137.58	145.14
	Delhi	Wirebars	131.95	131.93	136.09	140.38	140.68	140.31
		Wire rods	134.57	134.47	137.80	144.25	145.79	145.64
1995	Bombay	Wirebars	159.94	157.71	154.99	159.47	163.94	164.30
		Wire rods	163.92	161.31	161.61	165.24	169.93	172.30
	Calcutta	Wirebar	160.19	160.47	160.25	160.44	163.73	167.75
	Delhi	Wirebars	161.31	157.53	155.95	161.45	165.07	165.44
		Wire rods	164.00	160.97	160.11	164.63	168.25	168.64
1996	Bombay	Wirebars	159.94	157.71	154.99	159.47	163.94	164.30
		Wire rods	159.94	157.71	154.99	159.47	163.94	164.30
	Calcutta	Wirebars	159.94	157.71	154.99	159.47	163.94	164.30
	Delhi	Wirebars	159.94	157.71	154.99	159.47	163.94	164.30
		Wire rods	159.94	157.71	154.99	159.47	163.94	164.30



Table 10.1.2.2  
DOMESTIC AVERAGE PRICES OF COPPER IN DIFFERENT METAL EXCHANGES  
(Rs./Kg.)

Year	Bombay		Delhi		Calcutta	
	Wirebars	Wirerods	Wirebars	Wirerods	Clean wire	Rods
1986	46.13 <sup>1/</sup>	N.Q.	N.A.	49.04 <sup>1/</sup>	42.45 <sup>1/</sup>	—
1987	58.02 <sup>1/</sup>	N.A.	N.A.	60.5 <sup>1/</sup>	48.40 <sup>1/</sup>	—
1988	78.79 <sup>1/</sup>	N.A.	N.A.	82.69 <sup>1/</sup>	65.59 <sup>1/</sup>	—
1989	88.52	N.Q.	N.Q.	88.00	73.83	N.Q.
1990	88.23	N.Q.	N.Q.	91.09	76.84	N.Q.
1991-92	126.48	N.Q.	N.Q.	131.87	106.94	N.Q.
1992-93	129.62	133.42	130.98	134.12	110.29	133.10
1993-94	106.33	110.10	105.58	110.96	96.87	110.12
1994-95	134.66	141.44	136.10	139.79	109.85 *	135.49
1995-96	157.22	162.49	158.58	162.21	134.88 *	158.98

\* : Clean wire scrap

1/ : Monthly Average

## 10.1.3 LEAD

Table :10.1.3.1 DOMESTIC LEAD PRICES

(Rs./Kg)

Year	Market	Item	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	Bombay		13.62	13.90	14.00	14.37	14.37	14.26
	Calcutta	Scrap	12.11	12.33	12.24	12.29	12.31	12.08
	Delhi	Soft	11.91	11.78	11.75	11.81	12.00	11.80
		Hard	12.72	12.50	12.50	12.56	13.00	12.50
1987	Bombay		15.24	15.25	15.03	15.06	16.77	18.23
	Calcutta	Scrap	13.00	13.76	13.60	13.55	13.50	15.00
	Delhi	Soft	12.50	13.00	13.00	12.86	13.77	15.00
		Hard	13.77	13.99	13.75	13.61	14.35	15.50
1988	Bombay		21.94	22.16	22.42	22.60	23.18	25.38
	Calcutta	Scrap	18.50	19.25	19.00	20.00	20.50	22.50
	Delhi	Soft	18.25	18.58	19.02	19.75	21.00	23.00
		Hard	19.10	19.66	20.02	20.75	22.00	24.00
1989	Bombay		28.20	27.56	27.32	26.89	27.97	28.26
	Calcutta	Scrap	23.56	23.00	24.00	24.00	24.15	23.90
	Delhi	Soft	23.00	22.80	22.80	23.25	22.90	22.75
		Hard	24.00	24.02	24.10	24.50	24.25	24.00
1990	Bombay		29.24	29.00	30.78	32.67	32.07	32.00
	Calcutta	Scrap	24.50	24.50	26.00	27.56	27.25	28.75
	Delhi	Soft	25.38	24.50	26.50	28.50	27.25	27.50
		Hard	26.88	26.00	27.50	30.50	29.25	29.50
1991	Bombay		13.62	13.90	14.00	35.47	34.20	34.72
	Calcutta	Scrap	12.11	12.33	12.24	30.04	29.90	29.90
	Delhi	Soft	11.91	11.78	11.75	30.65	29.50	29.75
		Hard	12.72	12.50	12.50	33.15	31.50	32.50

TABLE :10.1.3.1 Continued

(Rs./Kg)

Year	Market	Item	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	Bombay		14.62	14.57	14.64	14.66	14.63	14.61
	Calcutta	Scrap	12.05	11.93	11.74	11.70	11.89	13.00
	Delhi	Soft	11.87	11.60	11.60	11.55	11.61	11.75
		Hard	12.81	12.50	12.50	12.50	12.51	12.50
1987	Bombay		18.32	19.08	19.54	19.80	20.21	21.09
	Calcutta	Scrap	15.00	16.50	15.50	16.00	17.50	17.25
	Delhi	Soft	15.15	15.56	15.83	15.70	16.38	17.26
		Hard	15.65	17.04	17.25	16.55	17.25	18.04
1988	Bombay		25.92	24.35	24.00	24.22	26.24	28.11
	Calcutta	Scrap	23.50	22.00	21.50	21.50	23.50	26.50
	Delhi	Soft	23.15	22.15	21.00	21.25	22.45	24.75
		Hard	24.15	23.15	22.00	22.25	23.55	26.80
1989	Bombay		28.42	28.74	28.87	29.37	29.35	29.24
	Calcutta	Scrap	24.06	24.50	25.25	25.50	25.00	24.75
	Delhi	Soft	22.75	25.00	24.50	26.25	25.41	25.25
		Hard	24.00	25.75	26.15	27.50	26.83	26.75
1990	Bombay		32.25	32.86	33.96	34.38	33.42	34.05
	Calcutta	Scrap	28.00	27.96	30.00	30.00	30.25	29.50
	Delhi	Soft	28.50	29.00	30.20	30.18	30.50	30.50
		Hard	30.00	30.75	32.05	32.18	32.50	33.50
1991	Bombay		40.70	40.71	40.33	38.38	37.66	37.54
	Calcutta	Scrap	33.65	33.50	33.00	32.85	33.00	32.75
	Delhi	Soft	33.38	33.00	33.00	32.75	32.05	32.58
		Hard	35.44	35.00	35.00	34.75	34.00	33.58

TABLE :10.1.3.1 Continued

(Rs./Kg)

Year	Market	Item	Jan.	Feb.	Mar.	Apr.	May	Jun.
1992	Bombay		38.70	38.53	38.75	40.39	41.00	41.00
	Calcutta	Scrap	32.45	31.50	33.20	33.32	31.64	32.06
	Delhi	Soft	32.50	32.50	32.71	32.68	31.57	31.65
		Hard	33.50	33.50	33.63	33.68	32.57	32.62
1993	Bombay		38.50	38.00	34.53	29.08	29.00	29.06
	Calcutta	Scrap	32.00	32.00	29.70	25.52	25.45	25.15
	Delhi	Soft	31.64	31.75	27.75	25.72	25.25	25.00
		Hard	32.64	32.85	28.75	26.72	26.25	25.50
1994	Bombay		30.32	32.09	33.38	33.08	33.00	33.19
	Calcutta	Scrap	24.03	23.80	23.71	23.73	24.03	24.80
	Delhi	Soft	23.94	23.18	22.93	22.85	22.24	23.92
		Hard	26.03	26.25	26.71	26.50	26.03	27.43
1995	Bombay		39.00	38.37	33.63	33.00	34.00	34.33
	Calcutta	Scrap	26.80	26.71	25.61	25.71	27.73	28.73
	Delhi	Soft	25.55	24.80	23.94	24.38	26.77	26.33
		Hard	27.80	27.05	27.24	26.38	27.99	27.23
1996	Bombay		46.51	48.78	48.92	49.88	49.93	52.34
	Calcutta	Scrap	34.05	34.00	36.24	36.95	37.50	37.90
	Delhi	Soft	33.09	35.01	35.39	36.43	40.61	40.23
		Hard	34.36	36.66	36.42	37.34	41.44	41.00

TABLE :10.1.3.1 Continued

(Rs./Kg.)

Year	Market	Item	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1992	Bombay		41.00	41.48	41.46	41.10	39.00	38.78
	Calcutta	Scrap	32.39	33.75	33.75	32.25	31.75	32.50
	Delhi	Soft	32.35	34.21	32.75	32.00	31.75	31.50
		Hard	33.35	33.39	33.75	33.00	32.75	32.50
1993	Bombay		28.70	28.73	27.91	26.73	26.76	27.53
	Calcutta	Scrap	25.00	24.15	23.54	23.00	22.83	23.20
	Delhi	Soft	23.15	24.00	23.78	23.11	22.58	23.15
		Hard	25.00	25.50	26.00	25.57	25.00	25.59
1994	Bombay		34.78	35.42	35.77	36.90	38.67	39.00
	Calcutta	Scrap	27.00	26.95	27.09	28.22	28.11	27.17
	Delhi	Soft	27.38	25.80	26.25	27.50	26.42	25.05
		Hard	31.48	29.36	28.91	28.95	28.58	27.29
1995	Bombay		34.31	34.68	36.47	37.62	41.36	46.33
	Calcutta	Scrap	29.19	29.29	29.88	30.94	33.45	35.75
	Delhi	Soft	27.51	21.18	28.34	29.40	32.00	33.94
		Hard	28.76	29.32	29.99	31.07	33.14	35.60
1996	Bombay		49.68	48.53	49.64	49.08	46.23	44.60
	Calcutta	Scrap	38.36	38.38	38.88	39.47	41.28	45.52
	Delhi	Soft	40.50	40.86	41.61	41.07	39.01	40.01
		Hard	41.32	41.45	42.23	41.80	39.95	41.01

Table 10.1.3.2  
DOMESTIC AVERAGE PRICES OF LEAD IN DIFFERENT METAL EXCHANGES  
(Rs./Kg.)

Year	Bombay	Delhi		Calcutta
	Lead	Soft	Hard	Scraps
1986	14.35 <sup>1/</sup>	11.75 <sup>1/</sup>	12.59 <sup>1/</sup>	12.14 <sup>1/</sup>
1987	17.90 <sup>1/</sup>	14.67 <sup>1/</sup>	15.56 <sup>1/</sup>	15.01 <sup>1/</sup>
1988	24.21 <sup>1/</sup>	21.20 <sup>1/</sup>	22.29 <sup>1/</sup>	21.52 <sup>1/</sup>
1989	28.35	23.89	25.15	24.31
1990	32.22	28.20	30.05	27.86
1991-92	37.97	32.03	33.80	32.12
1992-93	39.69	31.80	32.65	32.43
1993-94	29.11	23.82	25.84	24.12
1994-95	35.90	25.14	28.05	26.36
1995-96	39.69	30.03	31.41	31.25

1/- : Monthly Average

## 10.1.4. ZINC

Table :10.1.4.1 DOMESTIC ZINC PRICES

(Rs./Kg.)

Year	Market	Item	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	Bombay		26.26	26.37	26.46	26.68	27.24	27.89
	Calcutta	Hard Spel.	23.03	23.83	22.80	22.04	21.63	21.97
		Dross	22.76	21.84	21.05	20.65	21.17	21.17
	Delhi		27.12	27.12	26.78	26.20	27.47	27.87
1987	Bombay		30.93	30.97	31.43	30.72	30.79	31.28
	Calcutta	Ingot	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
		Dross	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Delhi		31.17	31.98	30.77	32.24	32.50	32.50
1988	Bombay		34.33	34.68	35.01	37.27	39.86	44.10
	Calcutta	Ingot	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
		Dross	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Delhi		32.95	33.73	36.60	37.91	39.81	43.25
1989	Bombay		43.96	46.11	50.82	52.13	51.16	51.26
	Calcutta	Dross	33.15	35.25	41.80	43.00	44.67	44.87
	Delhi		42.80	44.80	49.80	49.91	50.25	51.36
1990	Bombay		50.51	50.00	49.69	49.83	52.23	53.08
	Calcutta	Dross	43.25	44.00	44.00	43.85	44.25	44.80
	Delhi		51.22	50.00	50.15	50.65	52.00	53.25
1991	Bombay		44.0	44.0	44.0	58.93	57.73	56.52
	Calcutta	Dross	44.0	44.0	44.0	40.75	41.15	41.00
	Delhi		49.0	49.0	49.0	59.64	59.00	56.75
1992	Bombay		60.43	59.11	61.48	64.58	68.23	72.09
	Calcutta	Dross	42.52	43.25	47.19	52.14	53.07	54.44
	Delhi		60.76	61.50	63.90	66.22	68.39	72.40

TABLE :10.1.4.1 Continued

(Rs./Kg.)

Year	Market	Item	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	Bombay		28.13	28.01	29.27	28.91	30.34	30.34
	Calcutta	Hard Spel.	22.50	22.20	22.20	22.20	22.20	22.20
		Dross	22.40	22.40	22.40	22.40	22.40	22.40
	Delhi		28.20	28.22	29.19	29.62	30.37	30.37
1987	Bombay		32.83	32.88	33.06	33.88	34.27	33.92
	Calcutta	Ingot	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
		Dross	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Delhi		33.11	34.08	34.56	34.82	33.52	33.25
1988	Bombay		44.10	45.80	45.58	45.38	48.73	48.89
	Calcutta	Ingot	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
		Dross	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Delhi		45.10	44.75	46.10	45.81	46.75	45.25
1989	Bombay		52.65	53.92	54.54	53.65	52.78	51.29
	Calcutta	Dross	46.22	45.00	45.50	45.50	43.54	43.00
	Delhi		52.27	53.46	54.25	53.00	52.15	50.95
1990	Bombay		53.20	53.89	54.90	54.42	53.16	53.71
	Calcutta	Dross	43.25	42.85	42.75	41.65	41.85	39.75
	Delhi		53.50	54.25	54.45	54.51	55.00	54.50
1991	Bombay		62.23	62.00	61.36	60.28	58.50	59.30
	Calcutta	Dross	42.49	40.75	41.75	41.65	42.45	42.75
	Delhi		63.26	62.75	62.00	60.20	59.28	61.50
1992	Bombay		77.53	74.50	73.78	73.11	65.20	63.53
	Calcutta	Dross	53.26	52.50	52.50	52.00	49.25	48.00
	Delhi		73.63	72.07	71.24	71.50	65.71	65.60



TABLE :10.1.4.1 Continued

(Rs./Kg.)

Year	Market	Item	Jan.	Feb.	Mar.	Apr.	May	Jun.
1993	Bombay		63.24	62.20	61.00	56.59	56.32	55.02
	Calcutta		48.00	48.50	48.00	58.34	57.80	55.18
		Dross	48.00	48.50	48.00	45.95	44.20	44.14
	Delhi		63.69	61.75	61.75	58.86	58.15	56.63
1994	Bombay		53.17	54.02	55.04	55.27	54.88	57.13
	Calcutta		54.00	54.09	55.05	56.33	55.33	56.48
		Dross	40.03	39.65	40.29	41.28	41.99	42.89
	Delhi		55.45	55.68	60.48	57.44	56.40	60.16
1995	Bombay		68.14	65.67	57.44	57.32	58.09	57.21
	Calcutta	Ingot	67.81	66.47	62.72	57.15	58.27	56.77
		Dross	42.71	42.76	43.24	42.96	44.23	43.50
	Delhi		69.81	67.45	62.80	64.00	62.60	63.18
1996	Bombay		60.14	61.45	63.22	57.32	58.09	57.21
	Calcutta	Ingot	62.18	63.34	64.32	57.15	58.27	56.77
		Dross	43.94	44.95	45.92	42.96	44.23	43.50
	Delhi		65.82	68.00	66.92	64.00	62.60	63.18

TABLE : 10.1.4.1 Continued

(Rs./Kg.)

Year	Market	Item	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1993	Bombay		53.52	53.73	50.73	49.04	50.72	52.00
	Calcutta		53.40	52.00	49.17	43.32	50.14	52.24
		Dross	42.20	42.00	39.35	39.11	39.21	39.28
	Delhi		53.95	53.00	51.17	50.15	49.98	53.33
1994	Bombay		57.30	56.67	56.94	59.55	61.80	66.68
	Calcutta		57.95	56.31	56.00	59.30	65.26	68.48
		Dross	44.21	42.66	39.76	39.06	43.42	43.83
	Delhi		62.90	60.20	63.09	64.95	70.68	67.71
1995	Bombay		56.33	56.88	56.11	57.62	60.65	61.48
	Calcutta	Ingot	56.17	55.59	54.29	57.60	59.05	60.39
		Dross	43.02	42.39	41.50	42.27	43.95	43.63
	Delhi		59.79	57.94	58.65	61.94	65.39	65.93
1996	Bombay		56.33	56.88	56.11	57.62	60.65	61.48
	Calcutta	Ingot	56.17	55.59	54.29	57.60	59.05	60.39
		Dross	43.02	42.39	41.50	42.27	43.95	43.63
	Delhi		59.79	57.94	58.65	61.94	65.39	65.93

Table: 10.1.4.2.

DOMESTIC AVERAGE PRICES OF ZINC IN DIFFERENT METAL EXCHANGES  
(Rs./Kg.)

Year	Bombay	Delhi	Calcutta	
	Zinc	Zinc	Zinc	Dross
1986	27.99 <sup>1/</sup>	28.21 <sup>1/</sup>	22.4 <sup>1/</sup>	21.92 <sup>1/</sup>
1987	32.25 <sup>1/</sup>	32.88 <sup>1/</sup>	N.A.	N.A.
1988	41.98 <sup>1/</sup>	41.50 <sup>1/</sup>	N.A.	N.A.
1989	51.19	50.42	N.Q.	42.63
1990	52.39	52.79	N.Q.	43.10
1991-92	59.82	60.88	N.Q.	42.31
1992-93	68.25	67.83	67.36	50.97
1993-94	49.16	54.74	53.31	41.28
1994-95	59.79	63.53	60.70	42.31
1995-96	58.88	63.35	58.76	43.52

1/- : Monthly Average

Table : 10.2. WORLD PRICES  
 10.2.1. L.M.E. PRICES  
 10.2.1.1. L.M.E. MONTHLY AVERAGE PRICES : ALUMINIUM  
 (lb/tonne \*)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	786.18	780.18	796.32	777.75	765.41	784.24
1987	778.11	840.33	858.69	860.15	846.96	903.91
1988	1,112.70	1,216.83	1,379.41	1,336.79	1,600.60	2,016.73
1989	2,399.62	2,184.75	2,075.45	2,127.10	2,261.48	1,916.05
1990	1,528.91	1,454.85	1,567.95	1,526.32	1,527.52	1,566.33
1991	1,515.68	1,505.15	1,496.55	1,392.43	1,296.57	1,275.75
1992	1,177.48	1,267.23	1,280.82	1,317.40	1,307.05	1,275.91
1993	1,235.50	1,201.85	1,151.33	1,108.53	1,123.96	1,000.00
1994	1,174.93	1,270.30	1,289.35	1,279.08	1,322.93	1,400.93
1995	2,060.98	1,916.60	1,496.55	1,392.43	1,296.57	1,275.75
1996	1,177.48	1,267.23	1,280.82	1,317.40	1,307.05	1,275.91

Year	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	745.20	759.85	820.39	814.24	794.91	787.52
1987	1,027.42	1,131.74	1,061.83	1,180.93	946.83	997.33
1988	1,516.29	1,593.64	1,419.00	2,352.52	2,437.45	2,505.00
1989	1,757.29	1,799.23	1,719.14	1,821.41	1,737.18	1,634.00
1990	1,571.64	1,782.68	2,068.10	1,946.96	1,618.36	1,552.94
1991	1,297.30	1,256.95	1,212.33	1,150.41	1,135.14	1,097.87
1992	1,313.43	1,305.43	1,269.93	1,174.09	1,159.36	1,207.10
1993	1,202.13	1,172.14	1,115.38	1,087.10	1,039.61	1,094.30
1994	1,492.86	1,455.77	1,569.59	1,698.45	1,693.97	1,678.80
1995	1,297.30	1,256.95	1,212.33	1,150.41	1,135.14	1,097.87
1996	1,313.43	1,305.43	1,269.93	1,174.09	1,159.36	1,207.10

\* : \$/tonne since 1993

Table :10.2.1.2 L.M.E. MONTHLY AVERAGE PRICES : COPPER  
(lb/tonne \*)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	980.45	983.10	984.79	957.61	932.29	937.03
1987	894.81	902.73	920.09	909.31	911.86	964.59
1988	1,478.50	1,325.33	1,287.13	1,217.26	1,309.48	1,429.68
1989	1,913.50	1,766.25	1,905.00	1,833.20	1,679.62	1,639.41
1990	1,433.23	1,391.48	1,616.30	1,640.68	1,634.67	1,511.14
1991	1,265.61	1,247.05	1,322.93	1,412.83	1,337.69	1,345.23
1992	1,182.55	1,240.87	1,292.07	1,261.13	1,224.95	1,239.45
1993	1,472.26	1,536.74	1,472.34	1,261.93	1,159.01	1,228.53
1994	1,805.35	1,866.40	1,914.87	1,881.82	2,150.60	2,364.20
1995	3,008.93	2,877.65	2,924.04	2,903.50	2,773.31	2,928.14
1996	2,616.41	2,537.71	2,561.02	2,595.78	2,658.26	1,275.91

(lb/tonne \*)

Year	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	891.68	879.46	916.40	922.54	915.01	927.63
1987	1,052.77	1,097.51	1,100.74	1,182.73	1,419.90	1,566.62
1988	1,298.14	1,296.82	1,446.30	1,690.57	1,327.25	1,916.33
1989	1,539.79	1,732.27	1,835.50	1,802.50	1,647.80	1,514.63
1990	1,530.25	1,555.25	1,612.93	1,410.15	1,316.48	1,293.18
1991	1,354.22	1,326.07	1,346.43	1,371.70	1,337.29	1,216.68
1992	1,314.20	1,297.53	1,307.39	1,360.68	1,413.60	1,422.51
1993	1,926.76	1,947.04	1,861.20	1,646.01	1,632.02	1,724.19
1994	2,458.19	2,404.23	2,505.93	2,547.67	2,802.45	2,985.30
1996	1,313.43	1,305.43	1,269.93	1,174.09	1,159.36	1,207.10

\* | \$/ tonne since 1993

Table :10.2.1.3 L.M.E. MONTHLY AVERAGE PRICES : LEAD

(lb/tonne *)						
Year	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	258.65	250.88	250.20	246.61	247.20	277.03
1987	308.88	301.03	305.57	337.96	415.38	385.87
1988	307.20	372.95	353.89	345.74	357.50	381.30
1989	380.95	354.54	343.88	357.53	394.57	428.93
1990	428.66	459.78	653.91	510.68	492.21	489.93
1991	310.34	302.33	331.06	343.40	322.06	333.04
1992	284.61	284.04	302.36	303.33	287.53	295.47
1993	284.59	297.41	277.39	272.09	262.88	261.01
1994	490.08	485.43	451.46	439.89	473.50	525.05
1995	666.64	579.85	585.57	608.50	580.48	611.80
1996	709.50	709.67	817.93	815.00	840.25	796.50

(lb/tonne**)						
Year	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	251.77	263.62	276.75	304.02	352.14	359.70
1987	389.85	411.74	392.89	361.47	361.35	359.96
1988	363.17	354.48	362.11	376.81	382.27	400.35
1989	425.10	440.43	463.33	473.59	440.55	445.29
1990	483.70	460.34	446.13	391.10	356.95	325.06
1991	331.93	320.79	312.67	303.13	284.46	291.21
1992	326.49	336.76	336.38	325.15	301.57	292.84
1993	387.99	388.08	375.39	383.90	400.25	461.21
1994	580.14	570.75	613.50	641.83	667.18	634.30
1995	621.90	623.64	592.71	639.09	713.59	731.61
1996	783.25	816.13	795.35	741.89	718.25	686.24

\* : \$/tonne since 1993

Table :10.2.1.4 L.M.E. MONTHLY AVERAGE PRICES : ZINC

(lb/tonne \* )

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	452.09	425.75	426.37	440.50	464.69	532.76
1987	508.30	484.14	459.10	466.67	502.76	536.67
1988	487.73	498.43	535.66	569.26	629.43	768.41
1989	1,733.95	1,932.35	1,961.62	1,656.40	1,628.38	1,538.95
1990	1,297.00	1,396.80	1,667.23	1,686.79	1,775.86	1,715.67
1991	1,206.84	1,188.15	1,199.13	1,255.95	1,091.26	1,062.00
1992	1,154.23	1,131.13	1,214.89	1,304.88	1,373.50	1,386.00
1993	1,061.10	1,072.14	996.08	1,004.59	980.38	928.03
1994	997.05	969.20	936.22	924.03	955.93	966.57
1995	1,156.86	1,032.60	1,022.61	1,061.83	1,036.55	1,010.02
1996	1,019.39	1,036.17	1,064.29	1,045.73	1,036.14	1,008.85

(lb/tonne \* )

Year	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	535.05	549.04	592.14	620.34	575.54	554.19
1987	515.11	502.26	459.58	462.80	477.11	473.20
1988	725.67	761.25	1,330.27	1,519.67	1,559.00	1,594.25
1989	1,616.90	1,730.41	1,628.90	1,584.59	1,448.55	1,455.00
1990	1,638.00	1,616.23	1,538.95	1,353.43	1,278.55	1,265.94
1991	1,063.63	1,046.67	1,023.57	992.09	1,093.74	1,188.50
1992	1,320.61	1,360.83	1,367.45	1,164.02	1,047.33	1,057.92
1993	927.58	883.99	874.24	914.92	924.75	974.76
1994	964.40	945.34	992.80	1,058.90	1,152.05	1,114.78
1995	1,027.07	1,014.77	986.57	979.50	1,031.02	1,018.45
1996	1,000.16	1,007.97	999.98	1,003.46	1,044.16	1,036.94

\* : \$/tonne since 1993

10.2.2. U.S. PRODUCER PRICES  
 Table :10.2.2.1 U.S. PRODUCER MONTHLY AVERAGE PRICES : ALUMINIUM  
 (cents/lb)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	81.00	81.00	81.00	81.00	81.00	81.00
1987	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1988	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1989	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1990	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1991	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1992	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1993	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1994	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1995	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1996	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q

(cents/lb)

Year	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	81.00	81.00	81.00	81.00	81.00	81.00
1987	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1988	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1989	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1990	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1991	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1992	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1993	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1994	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1995	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q
1996	N.Q	N.Q	N.Q	N.Q	N.Q	N.Q

N.Q. : No Quotation



Table :10.2.2. U.S. PRODUCER PRICES  
 10.2.2.2.U.S. PRODUCER MONTHLY AVERAGE PRICES : COPPER  
 (cents/lb)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	68.481	66.853	68.744	68.801	67.085	67.471
1987	63.588	64.125	66.671	65.729	69.585	72.946
1988	131.096	106.117	108.320	102.241	102.923	112.875
1989	156.237	138.811	147.092	142.086	125.746	114.501
1990	107.244	109.816	127.014	125.536	123.174	115.946
1991	113.214	113.612	112.553	111.727	104.174	102.477
1992	99.323	103.628	104.783	103.338	103.525	107.702
1993	103.998	102.250	99.098	92.020	86.228	87.209
1994	86.510	89.825	92.197	90.339	102.741	111.093
1995	143.942	137.984	142.764	138.474	131.324	141.139
1996	121.431	120.020	121.540	122.628	126.667	107.828

(cents/lb)

Year	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	62.415	61.714	63.444	62.064	61.385	62.237
1987	79.019	80.782	84.207	87.453	107.128	131.915
1988	103.448	100.051	114.720	136.648	150.920	159.870
1989	112.087	126.030	137.259	130.259	116.709	107.816
1990	124.715	133.558	132.815	128.872	118.362	114.271
1991	102.944	104.569	109.709	109.936	108.634	101.572
1992	117.260	115.740	111.095	103.754	99.990	102.144
1993	89.615	89.385	87.212	83.680	78.911	82.267
1994	114.292	113.363	124.476	122.999	133.961	140.953
1995	141.383	141.128	135.518	131.376	139.860	135.103
1996	94.479	95.479	93.848	96.873	104.097	106.114

**Table :10.2.2.3 U.S. PRODUCER MONTHLY AVERAGE PRICES : LEAD  
(cents/lb)**

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	18.354	17.790	18.202	18.731	19.384	21.926
1987	27.875	26.038	26.000	27.845	34.950	36.932
1988	38.000	34.845	34.000	34.000	34.571	36.295
1989	40.244	37.000	35.023	35.018	36.338	39.152
1990	39.813	41.840	54.107	48.727	45.124	45.160
1991	34.521	33.231	33.336	33.303	32.595	32.033
1992	34.485	34.294	34.301	34.377	34.267	34.526
1993	32.152	31.523	31.414	31.563	31.429	31.363
1994	35.139	34.461	34.135	34.133	34.557	36.032
1995	42.484	41.542	41.503	41.512	41.392	41.545
1996	45.215	46.590	48.726	50.245	50.348	49.849

Year	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	21.940	22.422	28.370	25.550	29.866	28.685
1987	41.674	42.000	42.000	42.000	42.000	42.000
1988	36.500	36.522	38.405	39.149	41.375	42.018
1989	40.288	41.752	43.625	43.625	41.256	39.366
1990	50.128	50.362	49.472	46.158	42.747	38.521
1991	32.792	32.858	33.386	34.624	34.475	34.649
1992	36.334	38.694	38.491	35.908	33.073	32.469
1993	31.300	31.407	31.444	31.579	31.943	33.723
1994	37.818	38.068	38.951	40.300	40.934	41.569
1995	41.646	41.999	41.931	42.458	43.954	45.386
1996	49.477	49.592	49.573	49.042	48.718	48.523

Table :10.2.2.4 U.S. PRODUCER MONTHLY AVERAGE PRICES : ZINC

(cents/lb)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.
1986	32.868	30.879	31.493	32.128	32.971	36.538
1987	41.397	38.379	37.703	38.187	42.232	45.048
1988	44.439	45.439	47.901	51.501	56.036	62.550
1989	79.269	87.699	93.710	88.052	84.644	80.590
1990	67.631	64.748	73.781	80.739	85.601	87.192
1991	58.083	55.931	56.109	57.628	49.837	48.391
1992	54.498	52.885	56.945	60.528	63.167	63.754
1993	50.519	50.896	47.261	48.106	47.220	44.814
1994	47.763	46.963	44.847	44.492	46.067	47.150
1995	60.855	55.838	54.515	55.289	53.979	52.018
1996	50.591	50.690	51.240	50.683	50.499	49.573

(cents/lb)

Year	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1986	39.548	40.830	43.704	45.976	45.881	43.510
1987	45.668	44.430	42.592	41.745	42.378	43.311
1988	65.644	66.463	68.255	69.446	71.248	73.440
1989	79.669	81.320	81.076	79.948	75.922	72.330
1990	86.098	78.984	77.771	67.535	62.941	62.089
1991	48.669	48.357	49.773	48.535	54.635	57.294
1992	62.391	64.951	65.372	53.958	50.006	50.121
1993	45.089	42.874	42.419	43.884	44.343	46.441
1994	47.721	46.880	49.760	53.267	58.540	57.266
1995	52.444	51.234	50.048	49.679	52.017	50.867
1996	49.866	51.259	51.389	51.516	53.305	50.771

10.3 TREND IN DOMESTIC AND WORLD PRICES<sup>1/-</sup>  
 Table :10.3.1 TRENDS IN DOMESTIC AND WORLD PRICES : ALUMINIUM

Year	cents/lb		
	Domestic Price (Rs./Kg.)	L.M.E. Price <sup>2/</sup> (\$/tonne)	U.S.Producer Price (Cents/ Pound)
1986	24.47	784.75	81.00
1987	28.12	956.30	N.Q.
1988	33.50	2597.77	N.Q.
1989	24.47	1951.46	N.Q.
1990	24.47	1643.94	N.Q.
1991	24.47	1302.43	N.Q.
1992	N.A.	1253.81	N.Q.
1993	N.A.	1139.75	N.Q.
1994.	N.A.	1479.92	N.Q.
1995	N.A.	1805.41	N.Q.
1996	N.A.	1504.47	N.Q.

1/- : Annual Average Prices

2/- : Prices in pounds/tonne till Oct 1988

NQ : No Quotation,

Table :10.3.2 TRENDS IN DOMESTIC AND WORLD PRICES<sup>1/</sup> : COPPER

Year	Domestic Price <sup>2/</sup> (Rs./tonne)	L.M.E. Price (\$/tonne)	U.S.Producer Price <sup>4/</sup> (Cents/ Pound)
1986	44,750	965.07 <sup>3/5/</sup>	64.652
1987	56,338	1080.16 <sup>5/</sup>	81.097
1988	78,416	1460.13 <sup>5/</sup>	119.108
1989	90,958	1734.89	129.534
1990	24.47	1496.71	121.764
1991	24.47	1325.11	107.927
1992	N.A.	1297.09	106.023
1993	N.A.	1789.91	91.555
1994	N.A.	2312.72	111.046
1995	N.A.	2936.52	138.333

- 1/- : Annual Average Prices  
2/- : Price of wire bar  
3/- : Grade A Copper  
4/- : Cathodes  
5/- : in \$ per tonne

Table :10.3.3 TRENDS IN DOMESTIC AND WORLD PRICES<sup>1/</sup> : LEAD

Year	Domestic Price <sup>3/</sup> (Rs./tonne)	L.M.E. Price <sup>2/</sup> (\$/tonne)	U.S.Producer Price (Cents/ Pound)
1986	14,058	277.36 <sup>4/</sup>	25.692
1987	18,818	363.66 <sup>4/</sup>	35.943
1988	23,700	368.40 <sup>4/</sup>	37.140
1989	27,400	413.11	39.350
1990	24.47	459.78	46.021
1991	24.47	315.66	33.484
1992	N.A.	306.73	35.102
1993	N.A.	399.41	31.737
1994	N.A.	549.01	37.174
1995	N.A.	630.51	42.279

Table :10.3.4 TRENDS IN DOMESTIC AND WORLD PRICES<sup>1/</sup> : ZINC

Year	Domestic Price <sup>2/</sup> (Rs./tonne)	L.M.E. Price <sup>3/</sup> (\$/tonne)	U.S.Producer Price <sup>4/</sup> (Cents/ Pound)
1986	27,338	515.99 <sup>5/</sup>	36.000
1987	30,339	487.56 <sup>5/</sup>	41.922
1988	40,250	1498.36	60.197
1989	49,183	1659.52	80.019
1990	N.A.	1520.27	74.592
1991	N.A.	1115.67	52.772
1992	N.A.	1239.88	58.381
1993	N.A.	960.68	46.155
1994	N.A.	998.28	52.017
1995	N.A.	1030.80	52.235

1/- : Annual Average Price

2/- : Price of Electrolytic high grades Zinc

3/- : G.O.B. Zinc 98% minimum purity.

4/- : High Grade Zinc

5/- : In cent per tonne

## 11. World Statistics

### 11.R : WORLD RESERVES OF NON-FERROUS MINERALS\* ( BAUXITE, COPPER, LEAD AND ZINC )

Table 11.R-1 :  
WORLD RESERVES OF BAUXITE

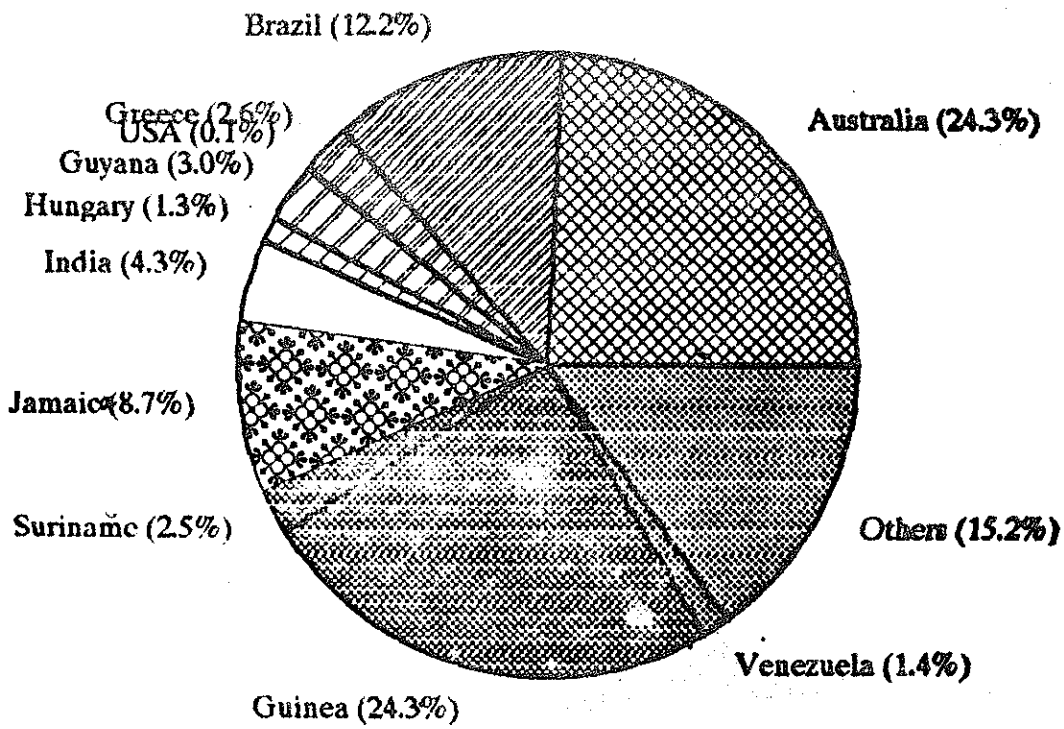
Country	Reserves (000"Tonnes)
World Total	23,000,000
Australia	5,600,000
Brazil	2,800,000
Greece	600,000
Guinea	5,600,000
Guyana	700,000
Hungary	300,000
India	1,000,000
Jamaica	2,000,000
Suriname	580,000
United States	20,000
Venezuela	320,000
Other Countries	3,500,000

Table 11.R-2 :  
WORLD RESERVES OF COPPER  
CONTENT

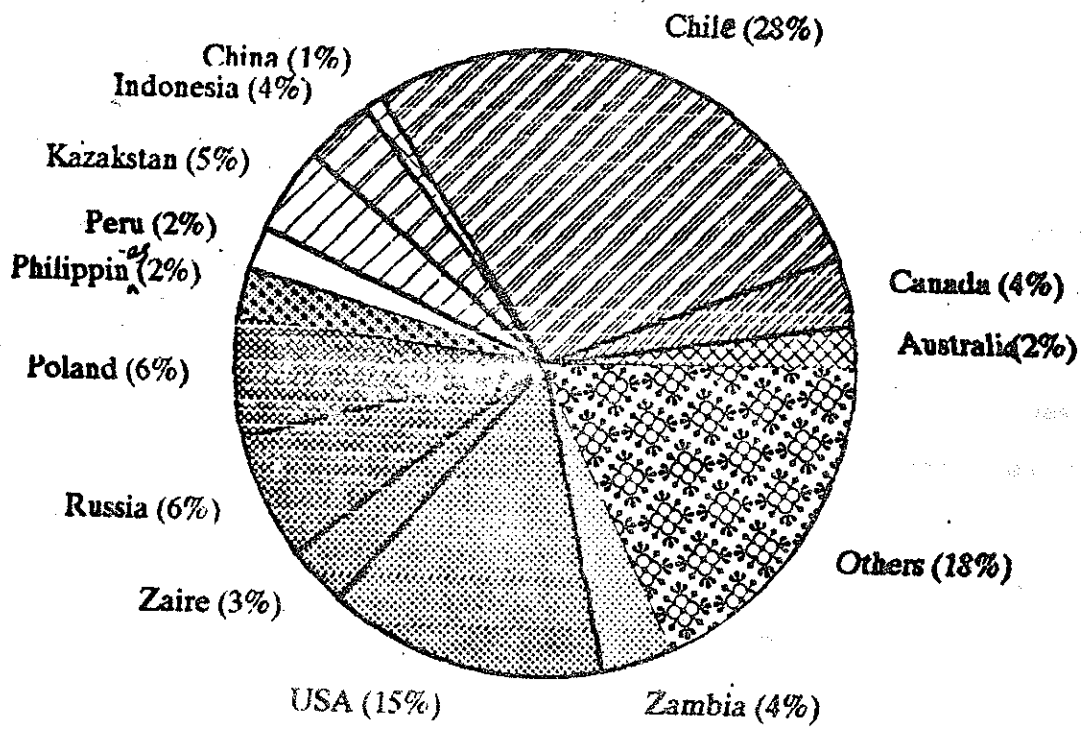
Country	Reserves (000"Tonnes)
World Total	310,000
Australia	7,000
Canada	11,000
Chile	88,000
China	3,000
Indonesia	11,000
Kazakistan	14,000
Peru	7,000
Philippines	7,000
Poland	20,000
Russia	20,000
United States	45,000
Zaire	10,000
Zambia	12,000
Other Countries	55,000



## World Reserves of Bauxite



# World Reserves of Copper



**Table 11.R-3 :**  
**WORLD RESERVES OF LEAD**  
**CONTENT**  
 (000\*Tonnes)

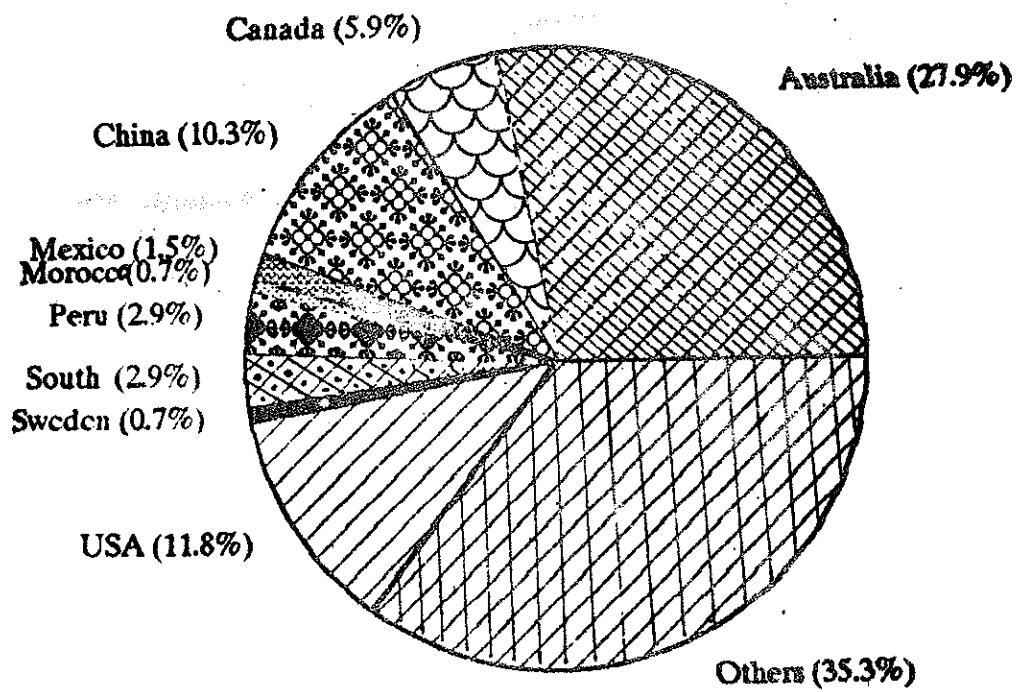
Country	Reserves
World Total	68,000
Australia	19,000
Canada	4,000
China	7,000
Mexico	1,000
Morocco	500
Peru	2,000
South Africa	2,000
Sweden	500
United States	8,000
Other Countries	24,000

**Table 11.R-4 :**  
**WORLD RESERVES OF ZINC**  
**CONTENT**  
 (000\*Tonnes)

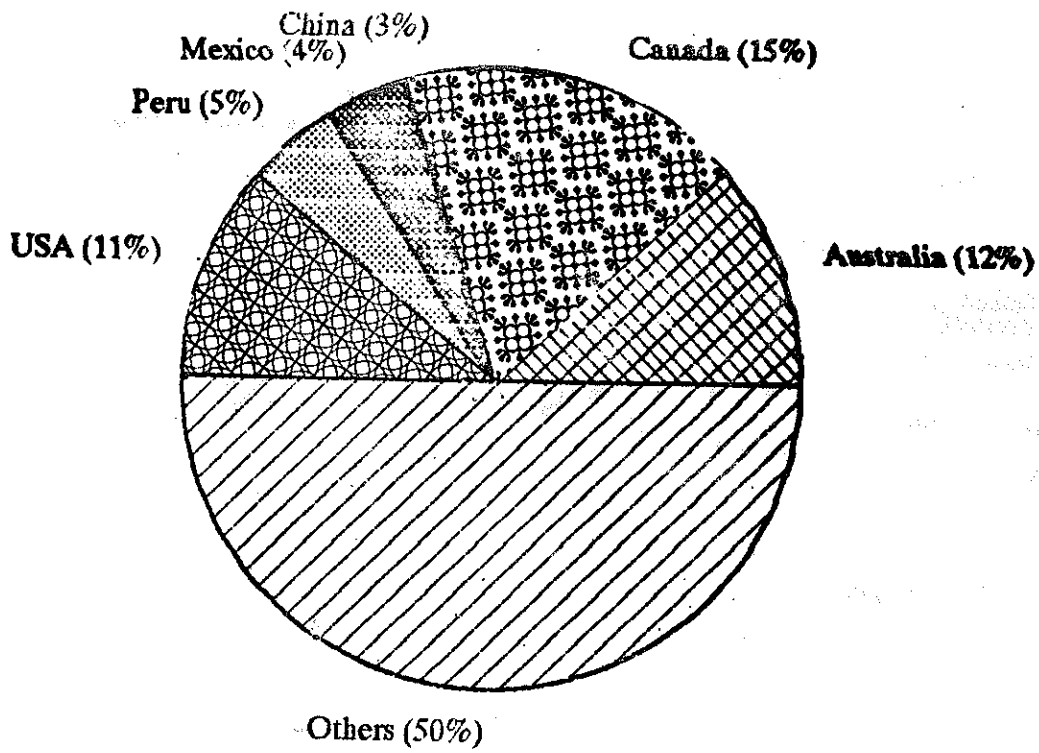
Country	Reserves
World	140,000
Australia	17,000
Canada	21,000
China	5,000
Mexico	6,000
Peru	7,000
United States	18,000
Others Countries	72,000

Source\* : Mineral Commodity Summaries, 1996

# World Reserves of Lead



## World Reserves of Zinc



## 11.1 WORLD PRODUCTION

Table : 11.1.1 WORLD PRODUCTION OF ALUMINIUM

(Thousand tonnes)

Ore / Metal	1986	1987	1988	1989	1990
Bauxite	92,841.7	96,498.7	103,003.7	107,963.0	114,850.8
Alumina	26,114.0	28,053.0	29,155.0	31,537.0	32,894.0
of which for non-metallic uses	2,389.0	2,390.0	2,690.0	3,148.0	3,113.0
Aluminium					
Refined	15,629.4	16,492.7	17,487.3	18,179.1	18,032.1
Secondary	4,183.6	4,494.9	5,061.4	5,149.0	5,062.0

(Thousand tonnes)

Ore / Metal	1991	1992	1993	1994	1995
Bauxite	115,093.8	110,452.0	114,342.6	111,467.7	110,773.3
Alumina	33,947.0	33,771.0	35,168.0	35,511.0	38,457.0
of which for non-metallic uses	2,955.0	3,014.0	3,172.0	3,518.0	4,036.0
Aluminium					
Refined	19,652.6	19,455.9	19,721.1	19,152.5	19,605.5
Secondary	5,391.7	5,547.9	6,124.2	6,442.4	6,597.1

## World Production of Aluminium

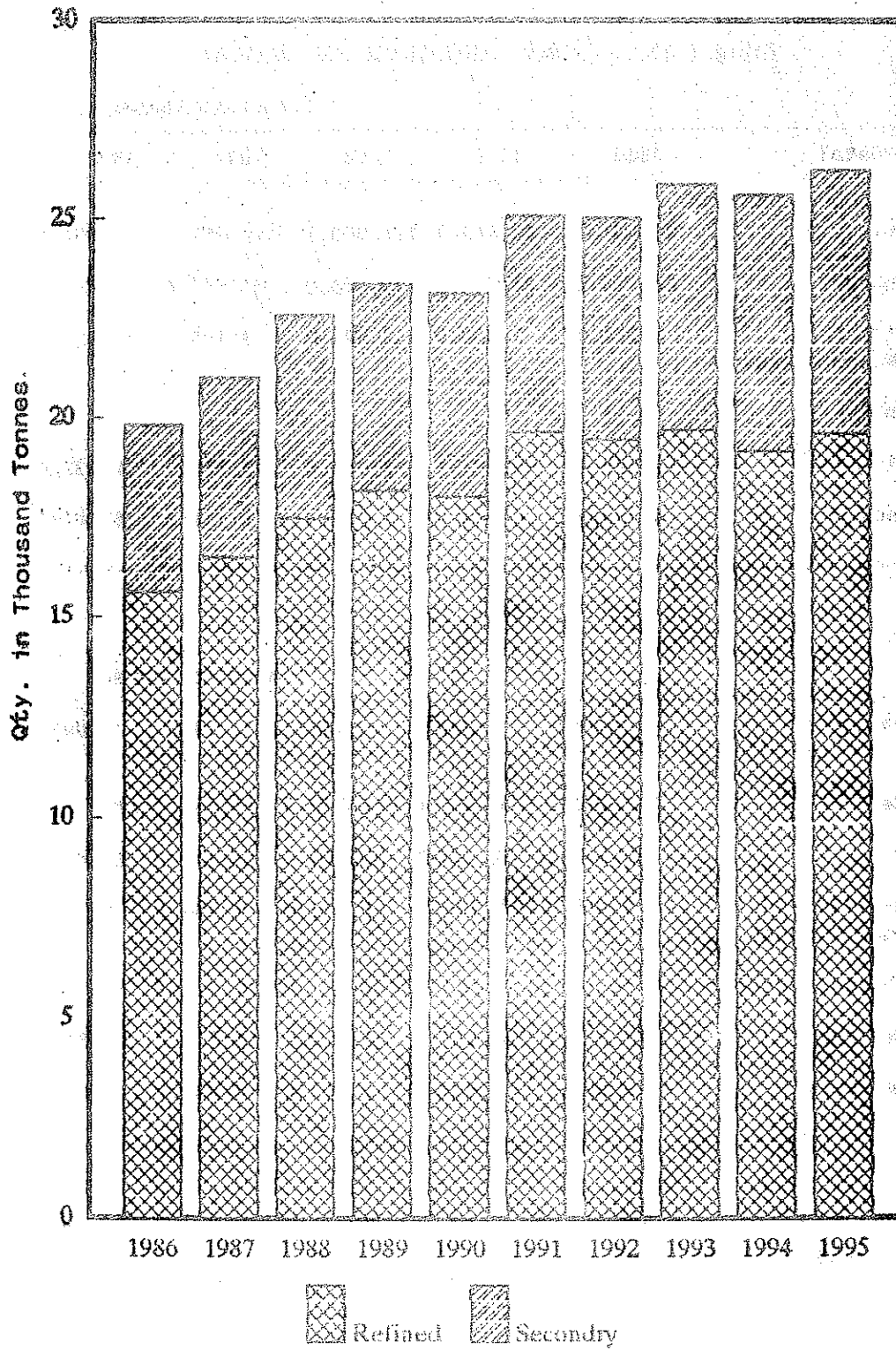


Table : 11.1.2 WORLD PRODUCTION OF COPPER

(Thousand tonnes)

Ore / Metal	1986	1987	1988	1989	1990
Mine <sup>1</sup>	8,393.2	8,744.6	8,778.6	9,082.3	9,025.8
Smelter <sup>2</sup>	9,164.8	9,291.8	9,485.0	9,802.9	9,454.9
Refinery <sup>3</sup>	9,862.1	10,159.9	10,489.3	10,814.7	10,740.4

(Thousand tonnes)

Ore / Metal	1991	1992	1993	1994	1995
Mine <sup>1</sup>	9,099.4	9,415.8	9,427.7	9,399.8	10,038.2
Smelter <sup>2</sup>	9,067.2	9,698.8	9,668.7	9,714.8	9,702.0
Refinery <sup>3</sup>	10,688.0	11,177.8	11,304.0	11,145.0	11,605.1

1/ : Recoverable copper content of ores and concentrates

2/ : Metal production in the form of blister and anode copper from ores, concentrates, other primary materials and secondary blister produced from scrap.

3/ : Data relates to electrolytic and fire refined copper. It includes production from blister, anodes and other primary materials, together with secondary production from scrap and other similar materials. It does not include copper recovered from materials by simply remelting.



# World Production of Copper

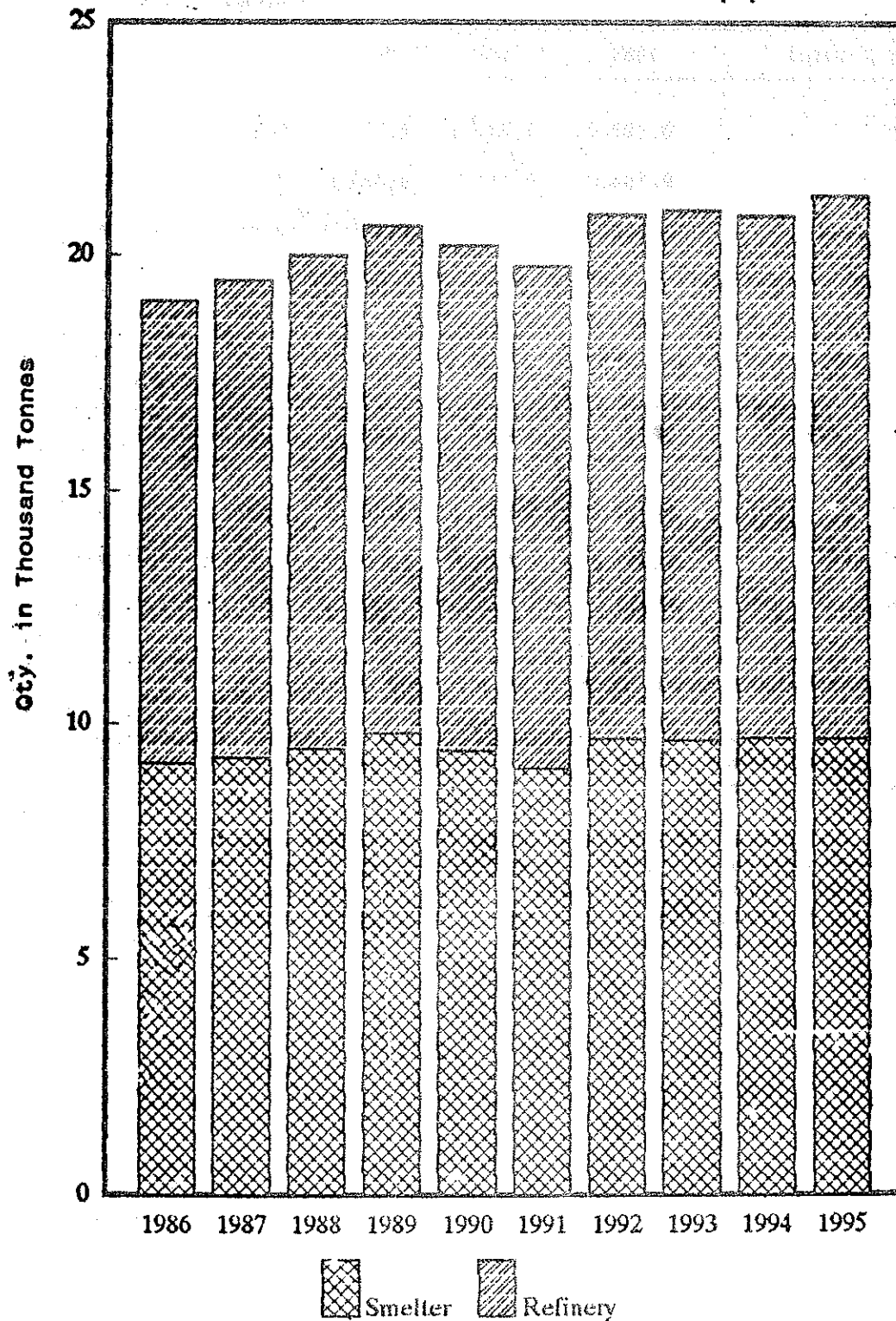


Table : 11.1.3 WORLD PRODUCTION OF LEAD

(Thousand tonnes)

Metal	1986	1987	1988	1989	1990
Mine <sup>1</sup>	3,364.9	3,422.1	3,414.2	3,287.9	3,329.9
Refined <sup>2</sup>	5,474.8	5,640.2	5,762.4	5,889.1	5,877.0
Secondary Refined <sup>3</sup>	1,867.4	2,045.6	2,103.9	2,272.9	2,338.6

(Thousand tonnes)

Metal	1991	1992	1993	1994	1995
Mine <sup>1</sup>	3,114.8	3,076.0	2,796.3	2,713.4	2,692.9
Refined <sup>2</sup>	5,361.4	5,388.7	5,446.3	5,363.4	5,344.2
Secondary Refined <sup>3</sup>	2,285.3	2,287.4	2,261.5	2,406.3	2,471.4

- 1 : Content by analysis of lead ores and concentrates plus the lead content of mixed ores.
- 2 : Production of refined lead including the lead content of antimonial lead from primary and secondary materials. Metal recovered from secondary materials by remelting alone is excluded.
- 3 : Production of secondary refined lead including the lead content of antimonial lead.

## World Production of Lead

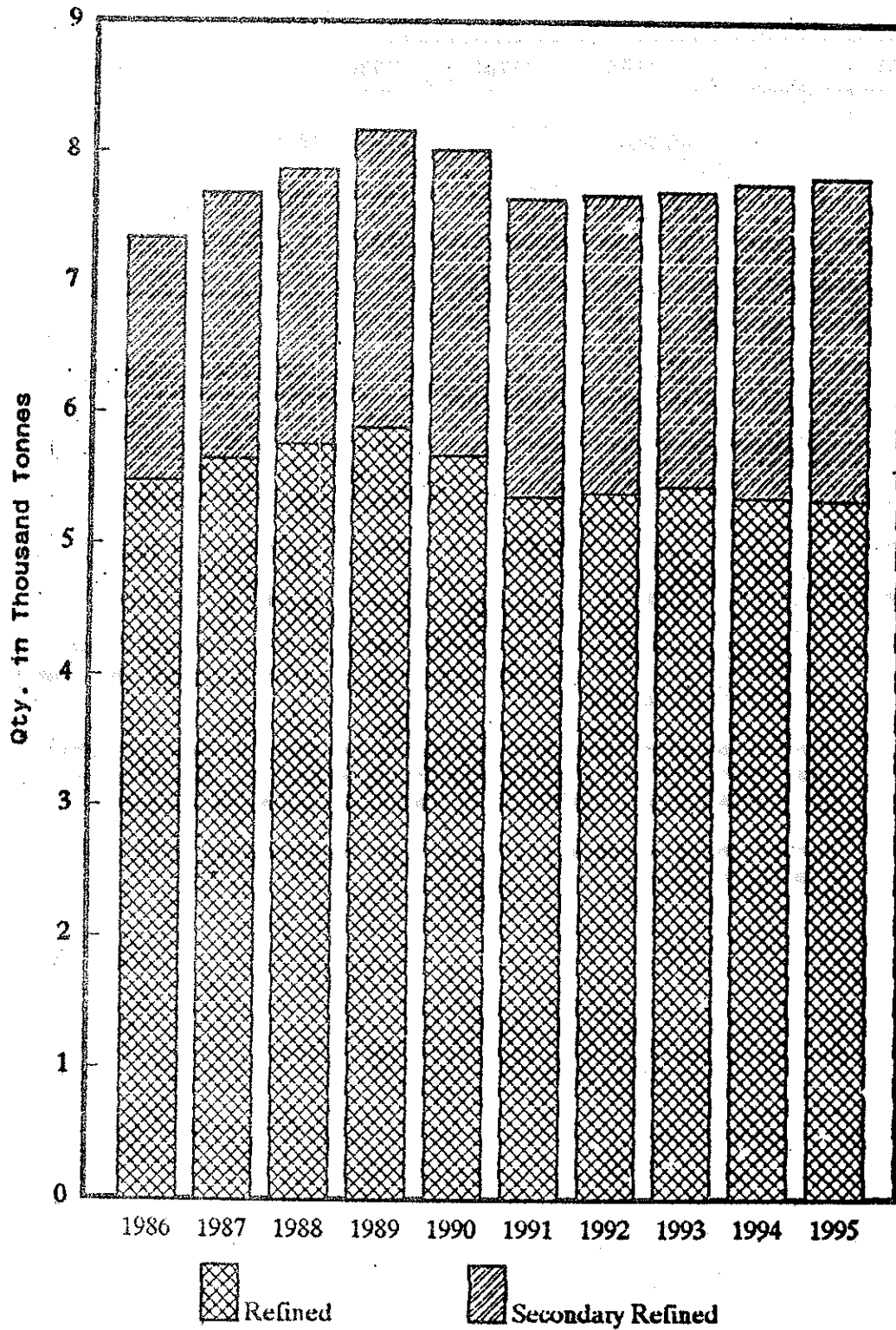


Table : 11.1.4 WORLD PRODUCTION OF ZINC

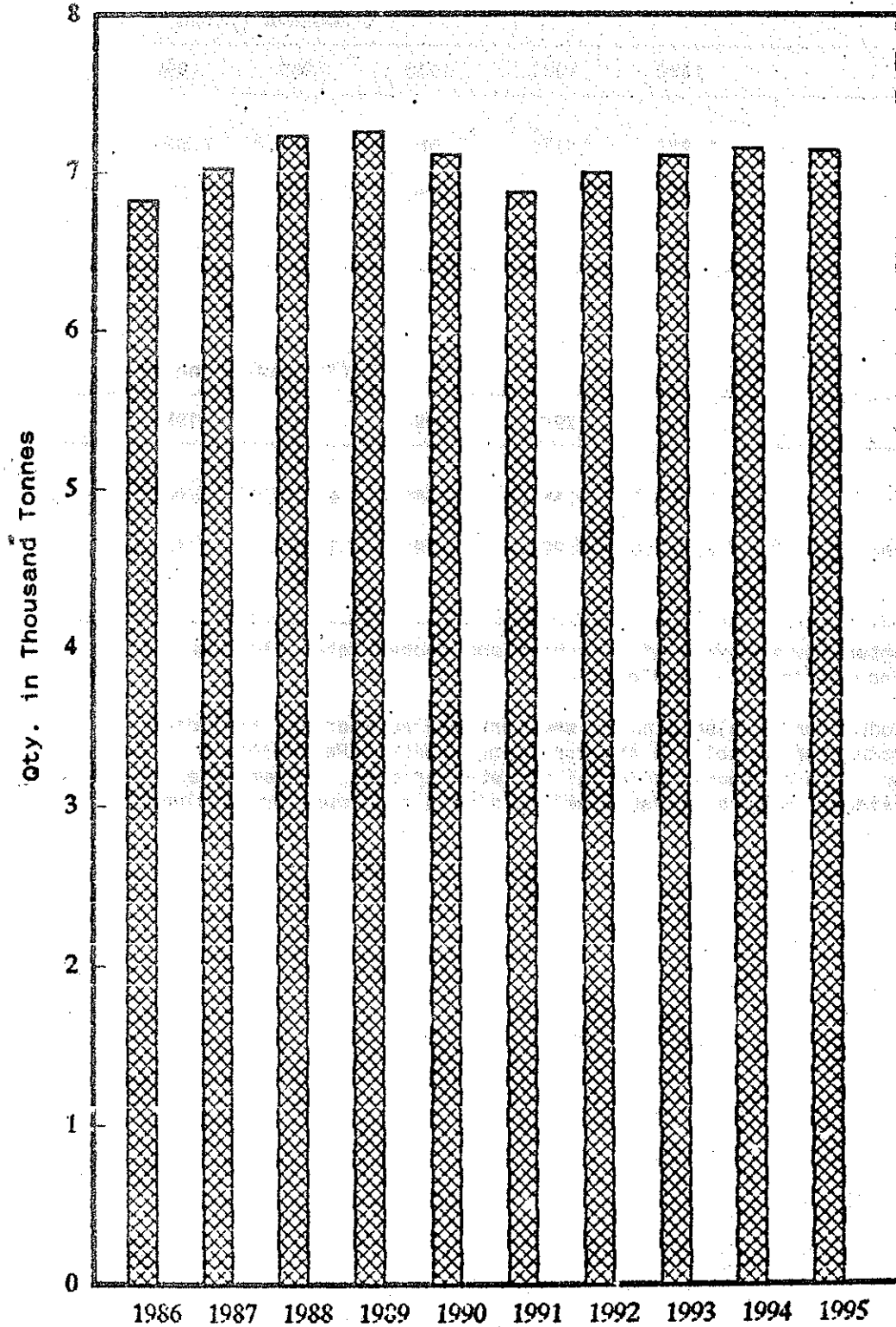
(Thousand tonnes)					
Metal	1986	1987	1988	1989	1990
Mine <sup>1/</sup>	6,982.7	7,278.9	7,064.3	7,114.0	7,325.8
Slab zinc <sup>2/</sup>	6,814.7	7,014.3	7,219.1	7,248.2	7,099.9

(Thousand tonnes)					
Metal	1991	1992	1993	1994	1995
Mine <sup>1/</sup>	7,286.5	7,186.0	6,786.9	6,824.0	6,942.1
Slab zinc <sup>2/</sup>	6,862.0	6,993.4	7,091.1	7,139.9	7,132.5

1/ : Content by analysis of zinc ores and concentrates plus the zinc content of mixed ores.

2/: Production of slab zinc by smelters and refineries, including production on toll in the reporting country. Regardless of the type of source material i.e. whether ores, concentrates, residues, slag or scrap. Remelted zinc & zinc dust are excluded.

# World Production of Slab Zinc



## 11.2 WORLD CONSUMPTION

Table : 11.2.1 WORLD CONSUMPTION OF NON-FERROUS METALS

(Thousand tonnes)					
Metal	1986	1987	1988	1989	1990
Aluminium <sup>1/</sup>	16,071.3	17,055.2	17,754.6	18,123.8	19,251.8
Copper <sup>2/</sup>	10,075.1	10,420.2	10,551.3	10,987.0	10,784.1
Lead <sup>3/</sup>	5,494.5	5,613.3	5,664.5	5,789.0	5,531.3
Zinc <sup>4/</sup>	6,711.8	6,887.7	7,194.5	7,126.0	6,965.3
(Thousand tonnes)					
Metal	1991	1992	1993	1994	1995
Aluminium <sup>1/</sup>	18,744.3	18,449.1	18,066.6	19,585.8	20,089.6
Copper <sup>2/</sup>	10,695.0	10,855.5	11,014.4	11,607.3	11,901.9
Lead <sup>3/</sup>	5,147.8	5,114.6	5,184.0	5,333.8	5,416.7
Zinc <sup>4/</sup>	8,558.8	8,629.9	8,862.1	8,860.2	7,113.7

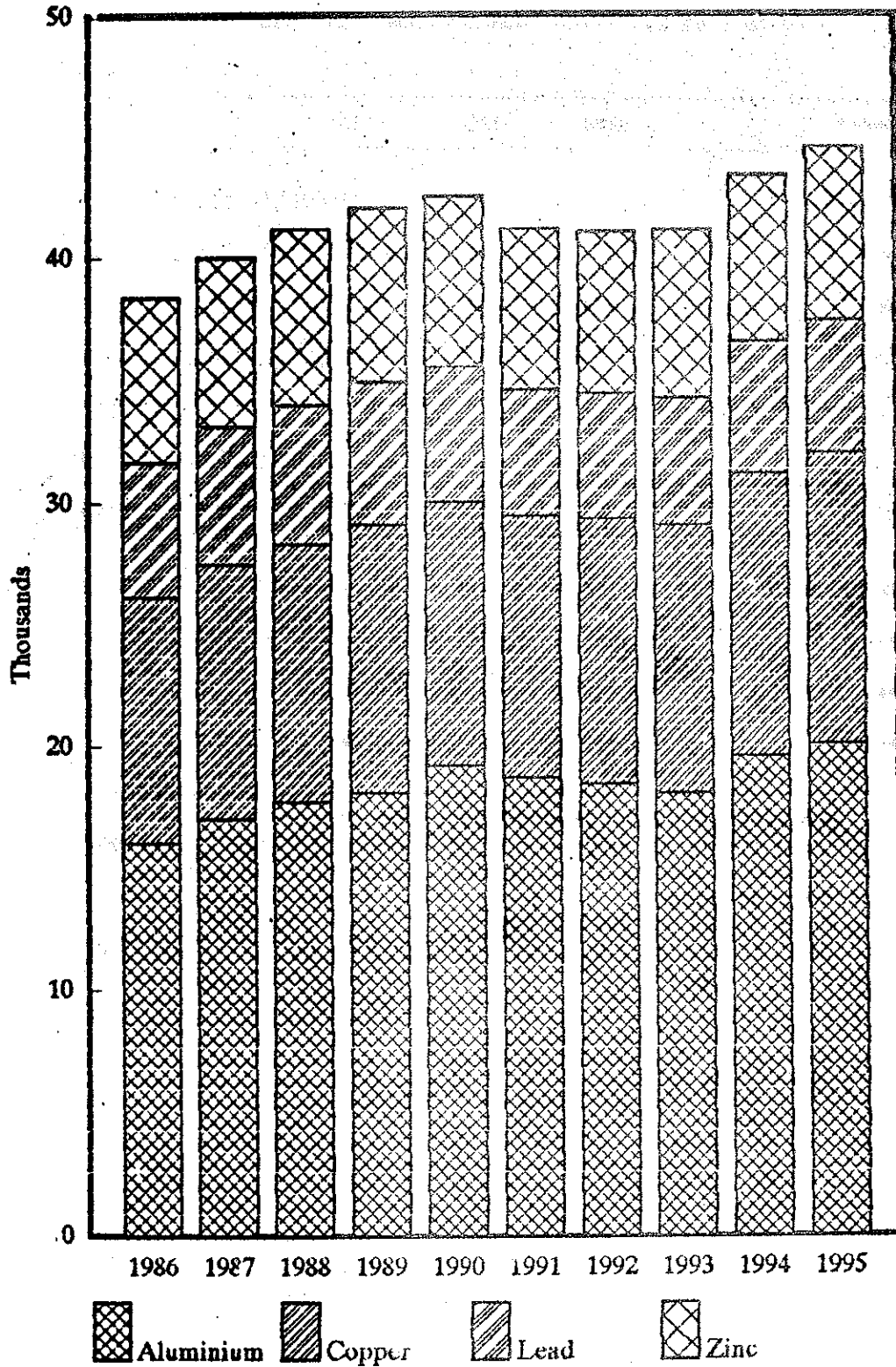
1 / :Data relate to refined primary aluminium.

2 / :Data relate to refined copper, whether refined from primary or secondary materials. Excludes direct use of copper in the form of scrap.

3 / :Data relate to refined lead.

4 / :Data relate to slab zinc. Excludes remelted zinc and zinc dust.

World Consumption of Non-ferrous Metals



## 11.3 WORLD STOCKS

Table 11.3.1 WORLD STOCKS OF ALUMINIUM<sup>1/</sup>

	(Thousand tonnes)				
	1986	1987	1988	1989	1990
Metal Exchange					
L M E	111.2	83.9	136.9	57.4	310.6
Comex	9.0	3.5	0.4	-	-
Total Metal Exchange	120.2	87.4	137.3	57.4	310.6
Total Country Stocks	2,051.3	1,641.5	1,721.4	1,802.7	1,756.8
Total Commercial Stocks	2,171.5	1,728.9	1,858.7	1,860.1	2,067.4
Strategic Stockpiles USA	1.9	1.9	1.9	1.9	1.9

	(Thousand tonnes)				
	1991	1992	1993	1994	1995
Metal Exchange					
L M E	987.2	1,526.8	2,486.3	1,674.7	584.5
Comex	-	-	-	-	-
Total Metal Exchange	987.2	1,526.8	2,486.3	1,674.7	584.5
Total Country Stocks	2,104.4	2,024.5	2,425.6	2,486.9	2,429.2
Total Commercial Stocks	3,091.6	3,551.3	4,911.9	4,161.6	3,013.7
Strategic Stockpiles USA	1.9	57.0	57.0	57.0	57.0

1 / :Data relate to unwrought primary aluminium. The figures show stocks at the end of the period.



Table : 11.3.2 WORLD STOCKS OF COPPER<sup>1/</sup>

	(Thousand tonnes)				
	1986	1987	1988	1989	1990
Blister and Anode	183.6	184.6	198.2	216.2	201.6
Refined Copper					
Metal Exchange					
L M E	174.8	42.6	65.8	108.0	178.7
Comex	81.9	16.6	12.1	14.8	19.1
Total Metal Exchange	256.7	59.2	77.9	122.8	197.8
Total Country Stocks	632.1	450.6	482.4	513.6	517.8
Total Commercial Stocks	888.8	509.8	585.1	636.4	691.6
Strategic Stockpiles USA	20.2	20.2	20.2	20.2	N.A

	(Thousand tonnes)				
	1991	1992	1993	1994	1995
Blister and Anode	211.5	256.2	-	-	-
Refined Copper					
Metal Exchange					
L M E	327.6	342.6	2,486.3	1,674.7	584.5
Comex	29.6	88.3	-	-	-
Total Metal Exchange	359.0	430.7	2,486.3	1,674.7	584.5
Total Country Stocks	505.2	638.4	2,425.6	2,486.9	2,429.2
Total Commercial Stocks	862.3	1,069.0	4,911.9	4,161.6	3,013.7
Strategic Stockpiles USA	N.A	N.A	57.0	57.0	57.0

1 / : Data relate to the stocks of unwrought copper. Figures show stocks at the end of the period.

N.A : Not Available

Table : 11.3.3 WORLD STOCKS OF LEAD<sup>1</sup>

	(Thousand tonnes)				
	1986	1987	1988	1989	1990
Metal Exchange					
L M E	37.8	18.9	61.6	23.4	56.7
Total Country Stocks	363.8	364.0	341.9	338.8	326.1
Total Commercial Stocks	401.7	382.9	404.7	362.2	382.7
Strategic Stockpiles USA	542.2	545.2	545.2	545.3	545.3

	(Thousand tonnes)				
	1991	1992	1993	1994	1995
Metal Exchange					
L M E	126.5	212.7	303.6	343.6	132.3
Total Country Stocks	325.1	363.3	342.2	278.7	300.3
Total Commercial Stocks	451.5	575.9	645.7	622.3	446.8
Strategic Stockpiles USA	545.3	545.3	525.8	460.8	414.3

1 / :Data relate to refined Lead. Figures show stocks at the end of the period.

Table : 11.3.4 WORLD STOCKS OF ZINC<sup>1</sup>

	(Thousand tonnes)				
	1986	1987	1988	1989	1990
Metal Exchange					
L M E	18.7	29.0	40.7	80.7	54.8
Comex	-	-	-	-	-
Total Metal Exchange	18.7	29.0	40.7	80.7	54.8
Total Country Stocks	567.1	485.2	449.9	486.7	447.9
Total Commercial Stocks	585.8	514.4	503.4	567.4	521.6
Strategic Stockpiles USA	340.6	340.6	340.6	341.0	341.0

	(Thousand tonnes)				
	1991	1992	1993	1994	1995
Metal Exchange					
L M E	152.4	457.7	906.9	1,185.3	664.9
Comex	-	-	-	-	-
Total Metal Exchange	152.4	457.7	906.9	1,185.3	664.9
Total Country Stocks	496.9	515.1	544.2	475.6	464.3
Total Commercial Stocks	649.3	972.8	1,451.1	1,660.9	1,146.2
Strategic Stockpiles USA	341.0	341.0	325.9	290.4	273.6

1 / :Data relate to refined Zinc. Figures show stocks at the end of the period.

## 11.4 WORLD TRADE

Table : 11.4.1 WORLD TRADE IN ALUMINIUM

	(Thousand tonnes)				
	1986	1987	1988	1989	1990
Exports <sup>1/</sup>	5,947.1	6,437.9	6,525.3	7,259.3	7,748.2
Imports <sup>1/</sup>	6,446.9	6,789.2	7,474.7	7,743.1	8,247.1
East/West trade <sup>2/</sup>					
Exports by Western countries	185.2	101.8	96.1	110.2	55.7
Imports by Western countries	339.9	383.5	515.5	415.3	458.5

	(Thousand tonnes)				
	1991	1992	1993	1994	1995
Exports <sup>1/</sup>	8,349.8	9,583.5	10,496.5	11,556.9	10,732.8
Imports <sup>1/</sup>	8,449.9	9,119.5	9,928.7	12,045.1	11,699.1
East/West trade <sup>2/</sup>					
Exports by Western countries	33.0	210.2	128.9	130.8	311.1
Imports by Western countries	701.7	902.0	1,692.7	2,436.0	2,426.6

1 / : Data relate to unwrought primary aluminium. Figures show stocks at the end of the period.

2 / : Data mostly based on official import and export statistics issued by Western countries.

Table : 11.4.2 WORLD TRADE IN UNREFINED /REFINED COPPER

(Thousand tonnes)

Trade	1986	1987	1988	1989	1990
<b>Unrefined</b>					
<b>Exports<sup>1/</sup></b>					
Concentrates (copper content)	1,509.5	1,514.3	1,491.5	1,772.7	1,690.1
Blister & Anode	770.1	654.2	726.5	662.4	612.0
<b>Imports<sup>1/</sup></b>					
Concentrates (copper content)	1,399.8	1,362.9	7,474.7	7,743.1	8,251.6
Blister & Anode	587.3	455.7	349.5	325.9	503.4
<b>East/West trade<sup>2/</sup></b>					
<b>Concentrates</b>					
Exports by Western countries	76.0	92.0	46.9	61.4	26.3
Imports by Western countries	18.8	20.6	27.6	6.0	18.4
<b>Blister</b>					
Exports by Western countries	43.0	24.4	8.2	8.0	5.9
Imports by Western countries	3.6	2.6	4.7	2.4	4.3
<b>Refined</b>					
Exports	2,965.6	3,029.0	2,733.6	3,078.3	3,497.8
Imports	3,165.7	3,271.2	3,152.2	3,375.2	3,660.1
<b>East/West trade<sup>3/</sup></b>					
Exports by Western countries	118.0	78.9	96.5	85.4	67.0
Imports by Western countries	152.2	191.5	247.9	232.5	320.1

(Thousand tonnes)

Trade	1991	1992	1993	1994	1995
<b>Unrefined</b>					
<b>Exports<sup>1/</sup></b>					
Concentrates (copper content)	1,956.7	2,162.2	2,130.6	2,100.8	2,304.1
Blister & Anode	505.2	566.8	541.4	573.1	517.5
<b>Imports<sup>1/</sup></b>					
Concentrates (copper content)	1,617.2	1,624.6	1,710.8	1,718.2	1,760.5
Blister & Anode	505.8	495.9	565.4	573.1	408.6
<b>East/West trade<sup>2/</sup></b>					
<b>Concentrates</b>					
Exports by Western countries	82.1	65.7	50.4	26.9	163.6
Imports by Western countries	9.6	3.4	11.1	12.2	15.0
<b>Blister</b>					
Exports by Western countries	0.2	25.4	27.2	21.8	40.0
Imports by Western countries	9.4	28.5	28.6	28.9	11.4
<b>Refined</b>					
Exports	3,570.0	3,504.7	3,710.9	3,521.8	3,690.1
Imports	3,919.3	3,901.4	3,989.2	4,112.7	4,877.9
<b>East/West trade<sup>3/</sup></b>					
Exports by Western countries	46.2	257.6	186.3	91.9	148.4
Imports by Western countries	374.5	444.4	643.2	850.0	855.1

1 / : Figures for ores and concentrates are in terms of copper content either as reported or estimated from gross weight data.

2 : Data mostly based on official import and statistics issued by Western countries.

3 / : Data mostly based on official import and export statistics issued by Western countries.

Table : 11.4.3 WORLD TRADE IN LEAD<sup>1/</sup>

(Thousand tonnes)

Trade	1986	1987	1988	1989	1990
Exports	873.5	873.7	957.8	861.7	871.8
Imports	781.2	785.1	825.3	747.1	850.9
East/West trade <sup>2/</sup>					
Exports by Western countries	51.8	47.1	62.7	53.7	16.0
Imports by Western countries	36.5	37.2	33.4	27.6	55.2

(Thousand Tonnes)

Trade	1991	1992	1993	1994	1995
Exports	947.8	984.0	955.8	1,011.7	908.2
Imports	905.7	986.8	899.1	994.4	1,045.4
East/West trade <sup>2/</sup>					
z Exports by Western countries	10.7	3.3	5.3	7.3	6.7
Imports by Western countries	54.2	34.2	24.9	71.6	148.4

1/ : Data relate to refined lead.

2/ : Data mostly based on official import and export statistics issued by Western countries.

Table :11.4.4 WORLD TRADE IN ZINC<sup>1/</sup>

(Thousand tonnes)

Trade	1986	1987	1988	1989	1990
Exports	1,886.9	2,113.9	2,051.8	1,957.4	1,940.1
Imports	1,808.1	1,936.0	1,987.0	1,757.3	1,800.3
East/West trade <sup>2/</sup>					
Exports by Western countries	125.7	156.6	128.7	74.4	39.2
Imports by Western countries	111.8	142.4	110.8	119.5	122.9

(Thousand tonnes)

Trade	1991	1992	1993	1994	1995
Exports	1,876.3	2,176.6	2,261.3	2,359.4	2,002.7
Imports	1,799.6	2,164.9	2,399.1	2,484.1	2,570.2
East/West trade <sup>2/</sup>					
Exports by Western countries	17.8	12.4	11.9	12.2	13.2
Imports by Western countries	117.0	203.8	322.0	386.9	271.8

1/ :Data relate to slab zinc.

2/ : Data mostly based on official import and export statistics issued by Western countries.



## 12. Excise and Customs Duty

TABLE : 12.1 EXCISE DUTY PAID ON NON FERROUS METALS  
(By principal producers)

(Rupees million)

Metal Company	1986-87	1987-88	1988-89	1989-90	1990-91
<b>ALUMINIUM</b>					
Bharat Aluminium Co.Ltd.	357.600	432.500	N.A	999.130	1,095.329
National Aluminium Co.Ltd.	-	72.000	292.94	896.000	1,311.000
Indian Aluminium Co.Ltd.	411.205 <sup>1/</sup>	486.681 <sup>1/</sup>	743.824 <sup>1/</sup>	1,065.268	1,167.080
Hindustan Aluminium Corpn.Ltd.	461.900 <sup>1/</sup>	533.200 <sup>1/</sup>	932.000 <sup>2/</sup>	1,426.700	1,553.900
Madras Aluminium Co.Ltd.	50.087 <sup>3/</sup>	40.042 <sup>4/</sup>	59.287 <sup>5/</sup>	N.A.	N.A.
<b>Total on Aluminium</b>	<b>1,280.792</b>	<b>1,564.423</b>	<b>2,067.611</b>	<b>4,387.098</b>	<b>5,127.309</b>
<b>COPPER</b>					
Hindustan Copper Ltd.	164.700	126.900	234.700	253.700	320.400
<b>Total on Copper</b>	<b>164.700</b>	<b>126.900</b>	<b>234.700</b>	<b>253.700</b>	<b>320.400</b>
<b>LEAD</b>					
Indian Lead Ltd.	3.042	3.912	3.252	5.150	8.380
Hindustan Zinc Ltd.	17.400	21.300	18.000	19.300	47.350
<b>Total on Lead</b>	<b>20.442</b>	<b>25.212</b>	<b>21.252</b>	<b>24.45</b>	<b>55.73</b>
<b>ZINC</b>					
Hindustan Zinc Ltd.	246.400	172.200	197.100	244.800	281.180
Binani Inds. Ltd	43.678	42.515	56.185	44.600	7.500
<b>Total on Zinc</b>	<b>290.078</b>	<b>214.715</b>	<b>253.285</b>	<b>289.400</b>	<b>288.680</b>
<b>GRAND TOTAL OF EXCISE DUTY PAID</b>	<b>1,756.012</b>	<b>1,931.250</b>	<b>2,576.848</b>	<b>4,700.948</b>	<b>5,471.719</b>

(Rupees million)

Metals Company	1991-92	1992-93	1993-94	1994-95	1995-96
<b>ALUMINIUM</b>					
Bharat Aluminium Co. Ltd.	1,261.586	1,238.445	1,220.540	1,186.937	907.950
National Aluminium Co. Ltd.	1,247.000	-	-	-	-
Indian Aluminium Co. Ltd.	1,417.693	1,556.999	1,259.308	1,447.949	1,311.782
Hindustan Aluminium Corpn. Ltd.	2,014.900	2,203.330	1,721.880	1,744.080	1,704.110
Madras Aluminium Co. Ltd.	N.A.	CLOSED <sub>6/</sub>	CLOSED <sub>6/</sub>	CLOSED <sub>6/</sub>	N.A.
<b>Total on Aluminium</b>	<b>5,941.179</b>	<b>4,998.774</b>	<b>4,201.728</b>	<b>4,378.996</b>	<b>3,923.842</b>
<b>COPPER</b>					
Hindustan Copper Ltd	353.450	985.000	799.000 <sub>(e)</sub>	1152.000 <sub>(e)</sub>	N.A.
<b>Total on Copper</b>	<b>353.450</b>	<b>985.000</b>	<b>799.000<sub>(e)</sub></b>	<b>1152.000<sub>(e)</sub></b>	<b>N.A.</b>
<b>LEAD</b>					
Indian Lead Ltd.	7.82	-	-	-	-
Hindustan Zinc Ltd.	64.280	22.580	33.080	55.900	61.930
<b>Total on Lead</b>	<b>72.100</b>	<b>22.580</b>	<b>33.080</b>	<b>55.900</b>	<b>61.930</b>
<b>ZINC</b>					
Hindustan Zinc Ltd.	334.750	830.380*	856.540*	1,022.960*	1,006.860*
Binani Inds. Ltd	84.200	140.700	161.400	219.800	202.500
<b>Total on Zinc</b>	<b>418.950</b>	<b>971.080</b>	<b>1,017.940</b>	<b>1,242.760</b>	<b>2,216.220</b>
<b>GRAND TOTAL OF EXCISE DUTY PAID</b>	<b>6,785.679</b>	<b>6,977.434</b>	<b>6,051.748</b>	<b>6,829.626</b>	<b>6,201.992</b>

- \* Include duty in respect of-Pb also., (e) : Estimated
- 1/ The data pertain to calendar year.
- 2/ January 1988 to March 1989.
- 3/ January 1986 to June 1987.
- 4/ July 1987 to June 1988.
- 5/ July 1988 to March 1989.
- 6/ CLOSED DURING THE PERIOD 1992-93 TO 94-95

TABLE : 12.2 CUSTOMS DUTY PAID ON NON FERROUS METALS  
(Rupees million)

Metal Company	1986-87	1987-88	1988-89	1989-90	1990-91
<b>ALUMINIUM</b>					
Bharat Aluminium Co.Ltd.	26.0	21.4	N.A.	-	-
Minerals & Metals Trading Corporation of India Ltd	379.0	318.9	9.9	-	-
Total on Aluminium	405.0	340.3	9.9	-	-
<b>COPPER</b>					
Minerals & Metals Trading Corporation of India Ltd	914.4	2,423.8	1,776.1	-	848.5
H.C.L.	-	-	-	-	-
Total on Copper	914.4	2,423.8	1,776.1	-	848.5
<b>LEAD</b>					
Indian Lead Ltd.	15.77	26.70	27.97	45.41	42.21
Minerals & Metals Trading Corporation of India Ltd	267.90	240.70	328.10	-	-
Total on Lead	283.67	267.40	356.07	45.41	42.21
<b>ZINC</b>					
Minerals & Metals Trading Corporation of India Ltd	693.8	1,023.0	1,539.2	-	-
Total on Zinc	693.8	1,023.0	1,539.2	-	-
<b>GRAND TOTAL OF CUSTOMS DUTY PAID</b>	<b>2,296.87</b>	<b>4,054.5</b>	<b>3,681.27</b>	<b>-</b>	<b>-</b>

TABLE : 12.2 Continued

(Rupees million)

Metals Company	1991-92	1992-93	1993-94	1994-95	1995-96
<b>ALUMINIUM</b>					
Bharat Aluminium Co.Ltd.	-	-	-	-	-
Minerals & Metals Trading Corporation of India Ltd	-	-	-	-	-
Total on Aluminium	N I L				
<b>COPPER</b>					
Minerals & Metals Trading Corporation of India Ltd	-	-	-	-	-
H.C.L.	-	6.12	3.58	6.83	-
Total on Copper	-	6.12	3.58	6.83	-
<b>LEAD</b>					
Indian Lead Ltd.	96.61	56.57	31.73	45.57	44.91
Minerals & Metals Trading Corporation of India Ltd	-	-	-	-	-
Total on Lead	96.61	56.57	31.73	45.57	44.91
<b>ZINC</b>					
Minerals & Metals Trading Corporation of India Ltd	-	-	-	-	-
Total on Zinc	N I L				
GRAND TOTAL OF CUSTOMS DUTY PAID	98.61	62.69	35.31	52.40	44.91

Excise Duty Paid on Non-ferrous Metals

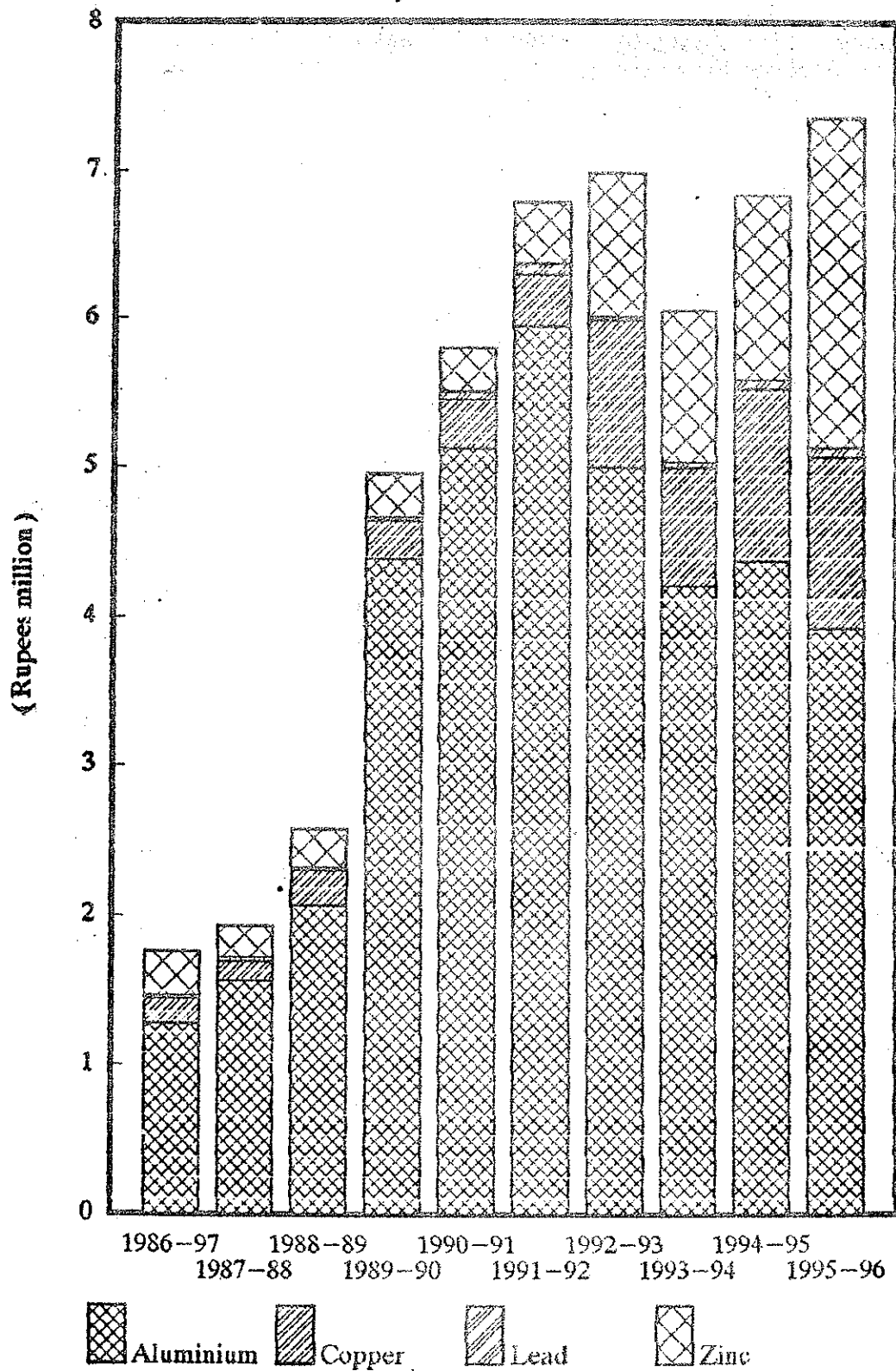


TABLE : 12.3 CENTRAL EXCISE AND CUSTOMS REVENUE COLLECTION OF  
INDIAN UNION,

(Rupees Thousand)

Metal Category	1986-87	1987-88	1988-89	1989-90	1990-91
<b>Central Excise Revenue Collection</b>					
Aluminium	1,600,000	1,080,954	2,709,141	5,230,283	5,571,064
Copper	430,000	397,633	517,845	560,037	635,005
Lead	26,100	28,879	29,359	42,736	42,618
Zinc	340,000	224,422	285,211	328,711	237,447
<b>Total</b>	<b>2,396,100</b>	<b>1,731,888</b>	<b>3,541,566</b>	<b>6,161,767</b>	<b>6,486,134</b>
<b>Customs Revenue Collection</b>					
Aluminium	500,000	562,764	351,636	746,556	434,133
Copper	2,700,000	4,008,803	4,277,517	4,307,970	4,665,972
Lead	410,000	298,481	458,780	484,069	440,851
Zinc	1,150,000	1,593,250	1,561,900	1,214,458	1,292,489
<b>Total</b>	<b>4,760,000</b>	<b>6,463,298</b>	<b>6,649,833</b>	<b>6,753,055</b>	<b>6,833,445</b>

TABLE 12.3 Continued

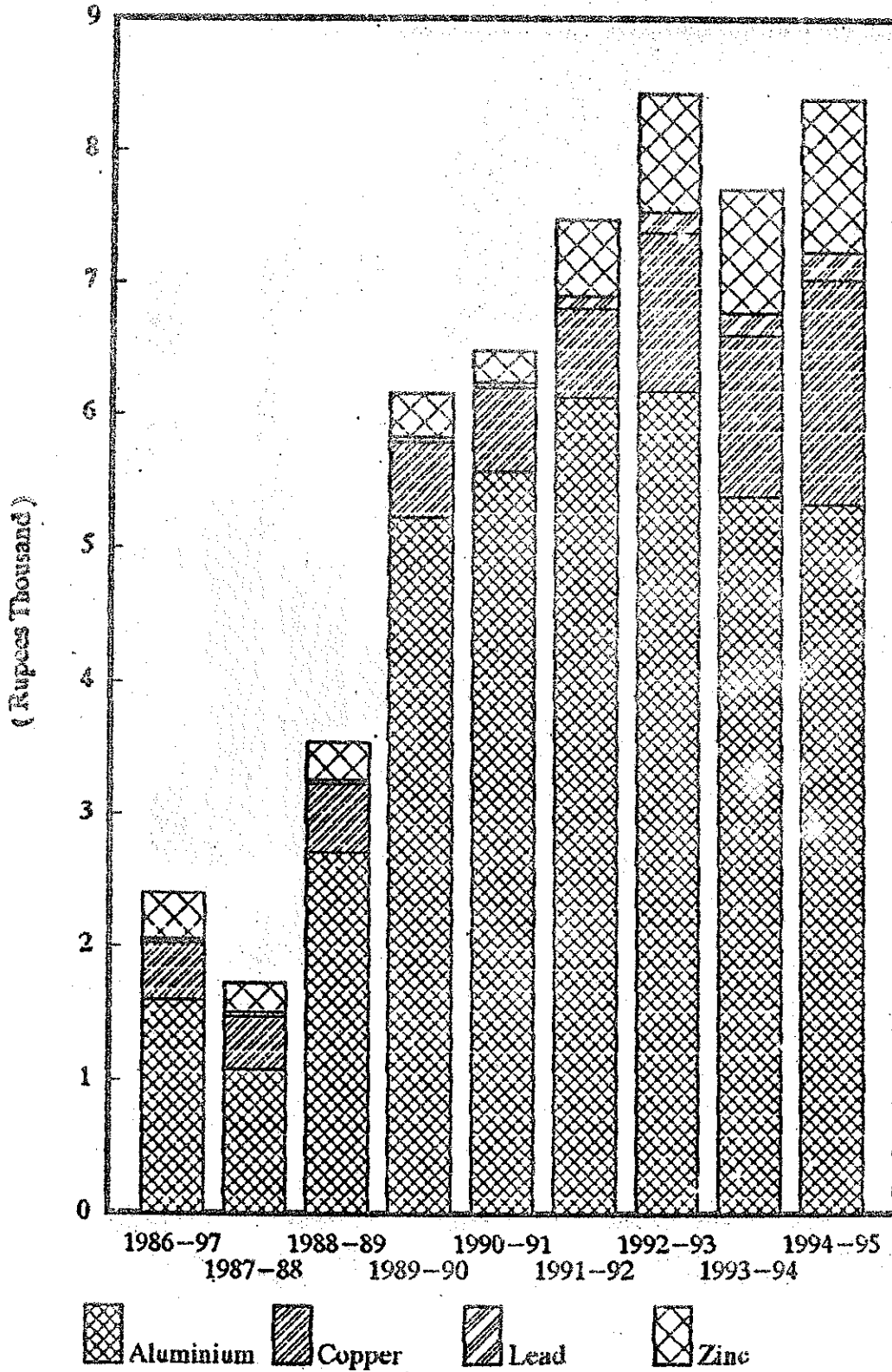
(Rupees Thousand)

Metal Company	1991-92 <sup>2/</sup>	1992-93	1993-94	1994-95	1995-96
<b>Central Excise Revenue Collection</b>					
Aluminium	6,130,800	6,190,067	5,389,317	5,331,598	-
Copper	680,000	1,190,136	1,218,696	1,696,705	-
Lead	88,000	156,420	166,596	207,854	-
Zinc	577,500	892,139	934,166	1,156,299	-
<b>Total</b>	<b>7,476,300</b>	<b>8,428,762</b>	<b>7,708,775</b>	<b>8,392,456</b>	<b>-</b>
<b>Customs Revenue Collection</b>					
Aluminium	400,000	403,630	510,169	1,143,379	-
Copper	4,100,000	5,660,801	6,176,210	8,306,444	-
Lead	320,000	180,625	295,332	472,905	-
Zinc	1,000,000	410,839	324,140	683,206	-
<b>Total</b>	<b>5,820,000</b>	<b>6,655,895</b>	<b>7,305,851</b>	<b>10,605,934</b>	<b>-</b>

1 Statistics of the Customs And Excise Revenue Collection of the Indian Union by DGCIS.

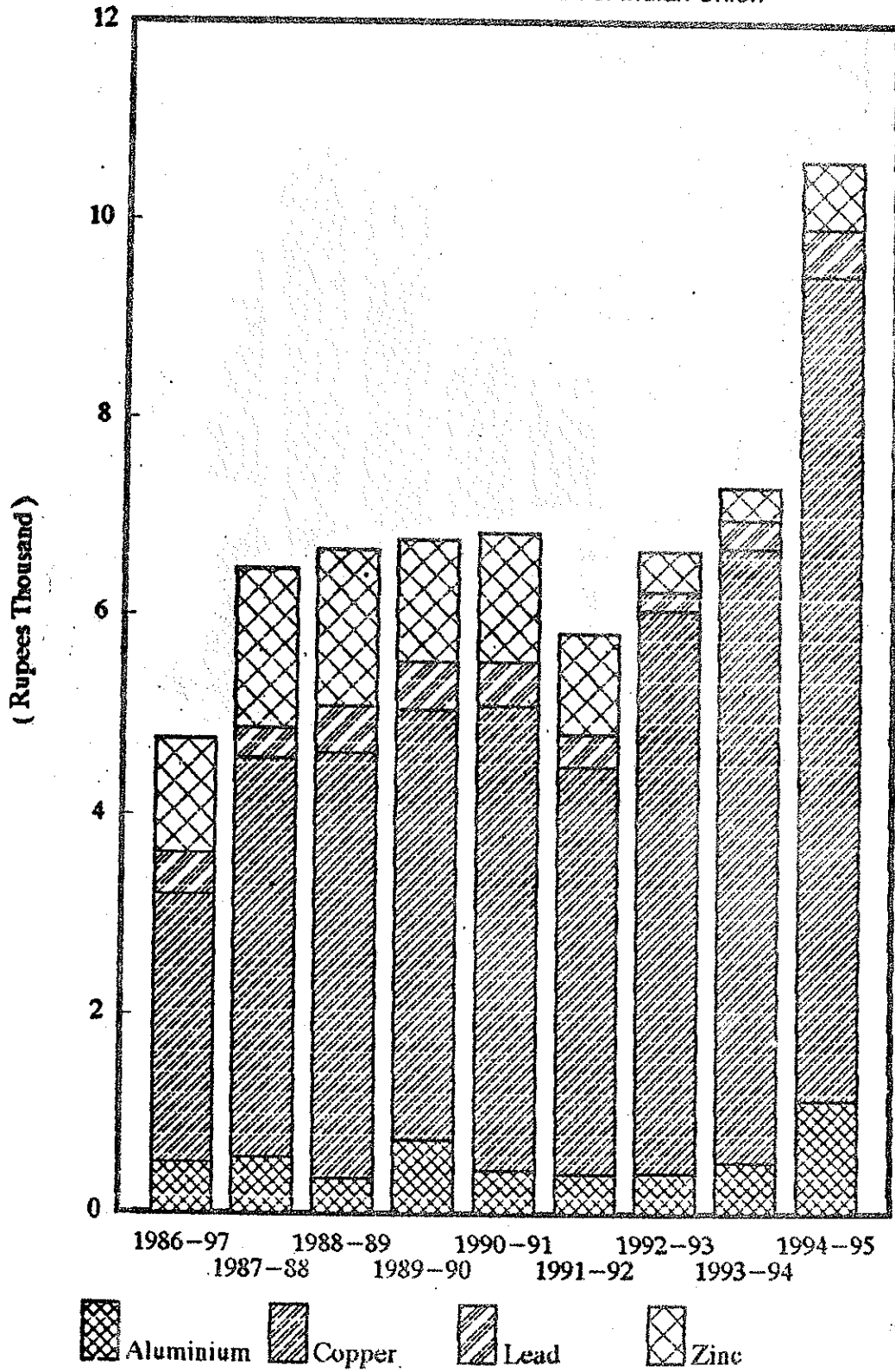
2 Mineral & Metal Review Annual, 1992-93 (p.250).

Central Excise Revenue Collection of Indian Union





Custom Revenue Collection of Indian Union



## 13. Plan Statistics

**TABLE 13.1.1 PLAN STATISTICS OF NON-FERROUS METALS: ALUMINIUM  
Bharat Aluminium Company Ltd.**

Activity	VII th Plan (1985-90)		1987-88	
	Physical target (tonnes)	Physical Achievement (tonnes)	Physical target (tonnes)	Physical Achievement (tonnes)
<b>Production</b>				
Mines (GBP)	-	-	-	-
Plants	91,000 <sup>1/</sup>	93,000 <sup>1/</sup>	100,000 <sup>1/</sup>	91,111 <sup>1/</sup>
R & D activity	-	-	-	-
<b>Others</b>				
B. B. Unit	-	2,400 <sup>1/</sup>	4,500 <sup>1/</sup>	1,600 <sup>1/</sup>
C. T. P. P.	-	-	-	-
Andhra Project	476,930	212,913	476,930	212,913

Activity	VIII th Plan (1992-96)	
	Physical target	Physical Achievement
<b>Production</b>		
Mines (GBP)	-	-
Plants	95,000 <sup>1/</sup>	-
R & D activity	-	-
<b>Others</b>		
B. B. Unit	2,400 <sup>1/</sup>	-
C. T. P. P.	-	-
Andhra Project	476,930	212,913

<sup>1/</sup> : Terminal year.

Activity	VIII th Plan (1996-97)		VIII th Plan (1997-99)	
	Physical Target (tonnes)	Physical Achievement (tonnes)	Physical Target (tonnes)	Physical Achievement (tonnes)
<b>Exploration</b>				
Mainpat	2,000	-	3,000	-
Rajnandgaon	1,000	-	5,000	-
<b>Capacities</b>				
Mines	-	-	-	-
Plants	100,000	-	100,000	-
<b>Production</b>				
Mines (GBP)	300,000	-	370,000	-
Plants (saleable metal)	94,000	-	94,000	-
<b>Expansion programme</b>				
Mines	Rajnandgaon mine			

Activity	IX th Plan	
	1997-98 to 2001-2002	
<b>Expansion Programme</b>		
Bauxite mine Development	Rs 700 million	
Korba aluminium plant (improvements)	Rs 160 million	
Korba Smelter plant (expansion)	Rs 100 million	

TABLE- 13.1.2 PLAN STATISTICS OF NON-FERROUS METALS:ALUMINIUM  
National Aluminium Company Ltd.

Activity	VII th Plan (1985-90)		VIII th Plan (1992-96)	
	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)
Aluminium complex	Equipment	Equipment	Equipment	13,340.0
	erection	erection	erection	
	132,699 m	132,699 m	132,699 m	
	structural	structural	structural	
	erection	erection	erection	
	49,810 m	49,810 m	49,810 m	
	Tankage	Tankage	Tankage	
	8,670 m	8,670 m	8,670 m	
	Piping	Piping	Piping	
	200.2 km	200.2 km	200.2 km	
	Concreating	Concreating	Concreating	
	12,075,000 m3	12,075,000 m3	12,075,000 m3	

Activity	Annual Plan (1990-91)		Annual Plan (1991-92)	
	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)
Exploration	4,450	2,455	3,755	4,429.8
Development	7,20,000	6,60,970	6,80,000	4,49,440
Capacity				
Mines	24,00,000	19,20,000	24,00,000	18,60,000
Refinery	8,00,000	6,57,350	8,00,000	6,72,200
Smelter	1,50,000	1,51,328	1,90,000	1,92,000
CPP <sup>1/</sup>	2,600	2,673.46	3,465	3,531.08
Production				
Mine ore	20,00,000	19,20,000	23,40,000	18,60,000
Refinery	6,40,000	6,57,350	7,80,000	6,72,200
Plant (cast /metal)	1,50,000	1,51,328	1,90,000	1,92,000
CPP <sup>1/</sup>	2,600	2,673.46	3,465	3,531.08
Expansion Programme envisaged & achieved				
Mines	-	-	-	-
Concentrator	-	-	-	-
Smelter <sup>2/</sup>	-	-	-	-
Refinery	-	-	-	-
CPP	-	-	-	-

Activity	Annual Plan (1995-96)		Annual Plan (1996-97)	
	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)
Exploration	-	-	-	-
Development	-	-	-	-
<b>Capacity</b>				
Mines	24,00,000	24,00,000	24,00,000	24,00,000
Refinery	8,00,000	8,00,000	8,00,000	8,00,000
Smelter	2,18,000	2,18,328	2,18,000	2,18,000
CPP <sup>3/</sup>	720	720	720	720
<b>Production</b>				
Mine ore	2,28,000	24,08,472	24,00,000	25,58,002
Refinery	8,00,000	8,07,130	8,00,000	8,40,062
Plant (cast/metal)	1,95,000	1,92,288	2,00,000	2,03,823
CPP <sup>1/</sup>	3,900	4,147	3,950	4,187
<b>Expansion Programme envisaged &amp; achieved</b>				
Mines	-	-	-	-
Concentrator	-	-	-	-
Smelter <sup>2/</sup>	-	-	-	-
Refinery	-	-	-	-
CPP	-	-	-	-

Activity	VIII th Plan (1992-96)		IX th Plan (1997-2002)	
	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)
Exploration	-	-	-	-
Development	-	-	-	-
Capacity				
Mines	24,00,000	-	48,00,000	-
Refinery	8,00,000	-	15,75,000	-
Smelter	1,95,000	-	3,45,000	-
CPP <sup>1/</sup>	5,200	-	840 <sup>3/</sup>	-
Production				
Mine ore	24,00,000	-	48,00,000	-
Refinery	8,00,000	-	15,75,000	-
Plant (cast/metal)	1,95,000	-	3,45,000	-
CPP <sup>1/</sup>	5,200	-	840 <sup>3/</sup>	-
Expansion Programme envisaged & achieved				
Mines	24,00,000TPY	-	24,00,000	-
Concentrator	-	-	-	-
Smelter <sup>2/</sup>	-	-	11,500	-
Refinery	5,50,000TPY	-	7,75,000	-
CPP	360 <sup>3/</sup>	-	120 <sup>3/4/</sup>	-

1/ : In mv

2/ : Besides above expansion of smelter 36,000 tpa aluminium rolled product at cost of Rs. 3,048.5 million is planned.

3/ : In mw

4/ : During the PIB meeting held on 29.08.97, Govt. has cleared one unit of CPP i.e. 1x120 mw in place of 2x120 mw as originally proposed.

Note: Besides above feasibility report preparation for a separate mines and alumina plant is joint sector with m/s Hydro having capacity of bauxite mine and 0.9 mtpy of alumina.

TABLE 13.2. COPPER  
TABLE 13.2.1. PLAN STATISTICS OF NON-FERROUS METALS: COPPER  
Hindustan Copper Ltd.

Activity	VII th Plan (1985-90)	
	Physical target	Physical Achievement (Up to 1988-89)
<b>A. Khetri Copper Complex</b>		
Development	70,595	50,575
Production Mines	9,496,000	6,621,000
Plants		
Concentrators	575,106	434,762
Smelter	141,184	93,453
Tank-house	139,658	89,006
Wirebar plant	108,100	57,979
Sulphuric Acid Plant	371,000	208,347
SSP Plant	476,930	212,913
R & D Activity	-	-
<b>B. Malanjkhand Copper Project</b>		
Exploration (in metres)	32,500	39,088
Production Mines		
Ore (in million tonnes)	9.55	7.63
Excavation -do-	56.83	44.06
Plant		
Ore milling <sup>1/</sup>	81.33	78.03
Metal in Concentrator <sup>1/</sup>	112,700	93,479



Activity	1990-91		1991-92	
	Physical target	Physical Achievement	Physical target	Physical Achievement
<b>A. Kietri Copper Complex</b>				
Development	22,000	20,965	22,000	19,976
Production Mines	5,150,000	5,166,000	5,250,000	5,099,000
Plants				
Concentrators	215,260	206,556	214,000	203,196
Smelter	41,000	40,598	43,500	45,595
Tank-house	139,658	89,006	139,658	89,006
Wirebar plant	108,100	57,979	108,100	57,979
Sulphuric Acid Plant	371,000	208,347	371,000	208,347
SSP Plant	476,930	212,913	476,930	212,913
R & D Activity	-	-	-	-
<b>B. Malanjkhanda Copper Project</b>				
Exploration (in metres)	32,500	39,088	-	-
Production Mines				
Ore (in million tonnes)	9.55	7.63	-	-
Excavation -do-	56.83	44.06	-	-
Plant				
Ore milling <sup>1/</sup>	81.33	78.03	-	-
Metal in Concentrator <sup>1/</sup>	112,700	93,479	-	-
1/ in tonnes				

Activity	VIII Plan			
	Physical Target			
	92-93	93-94	94-95	95-96
<b>C.I.C.C. Group</b>				
Exploration (in metres)	-----25,050-----			
Development (in metres)				
Mosabani	6200	6000	4050	2280
Pathargora	900	1210	1220	1385
Surda	1850	1520	1530	1650
Kendadih	1600	1430	1450	2600
Rakha	1650	1500	1450	1780
Dhobani				
Production (in tonnes)				
Mines				
Mosabani	600000	577500	494000	330000
Pathargora	120000	126000	123000	135000
Surda	340000	350000	344000	350000
Kendadih	15000	60000	60000	85000
Rakha	300000	300000	300000	300000
Dhobani	-	-	-	-
Plants				
Mosabani	824000	865000	770000	791700
S.B.T.P	251000	248500	251000	35000
Rakha	300000	300000	300000	373300

Activity	VIII Plan				
	Achievement				
	92-93	93-94	94-95	95-96	96-97
<b>C.I.C.C. Group</b>					
Exploration (in metres)	-----20,410-----				
Development (in metres)					
Mosabani	6092	5285	4271	3007	1800
Pathargora	958	1177	1139	1098	1200
Surda	1864	1657	1567	1652	1650
Kendadih	1064	1035	769	1714	3000
Rakha	1649	1343	1017	736	1800
Dhobani					
Production (in tonnes)					
Mines					
Mosabani	575036	500131	405309	318885	300000
Pathargora	123120	114667	115175	126585	135000
Surda	314255	317238	308464	327096	350000
Kendadih	37789	34685	49645	56257	8000
Rakha	277088	271500	250335	230137	270500
Dhobani	-	-	-	-	-
Plants					
Mosabani	861577	771785	688857	763756	830000
S.B.T.P	189373	194936	192702	27881	-
Rakha	276338	271500	247369	267320	305500

Activity	IX Plan			
	Anticipated Target			
	97-98	98-99	99-2000	2000-2001
<b>C.I.C.C. Group</b>				
Exploration (in metres)	N.A.			
Development (in metres)				
Mosabani	1500	800	400	-
Pathargora	2400	2400	2400	2400
Surda	2600	2600	2600	3000
Kendadih	3000	3500	3500	3500
Rakha	1800	2000	2000	3000
Dhobani	1800	2000	2200	2200
Production (in tonnes)				
Mines				
Mosabani	230000	150000	120000	-
Pathargora	135000	135000	135000	172500
Surda	390000	390000	390000	390000
Kendadih	90000	100000	120000	120000
Rakha	270000	300000	330000	330000
Dhobani	22500	30000	52500	120000
Plants				
Mosabani	777500	745000	787500	772500
S.B.T.P	-	-	-	-
Rakha	360000	360000	360000	360000

TABLE 13.3.ZINC  
TABLE 13.3.1 PLAN STATISTICS OF NON-FERROUS METALS:LEAD & ZINC  
Hindustan Zinc Limited

Activity	VII th Plan (1985-90)		VIII th Plan (1985-90)	
	Target(m)	Achievement(m)	Target(m)	Achievement(m)
<b>Exploration</b>				
Zawar group of mines				
Surface drilling	-	1,458 <sup>1/</sup>	-	-
Underground drilling	62,500	57,346 <sup>1/</sup>	62,500	-
Rajpura-Dariba mines				
Underground drilling	17,400	17,095 <sup>2/</sup>	18,000	-
Agnigundala mines				
Underground drilling	13,500	11,995 <sup>3/</sup>	13,500	-
Sargipalli mines				
Surface drilling	-	1,458	-	-
Underground drilling	93,400	87,675	94,000	-
<b>Development</b>				
Zawar group mines	46,060	37,062 <sup>4/</sup>	-	-
Rajpura-Dariba mines	16,982	10,517	18,000	-
Agnigundala mines	3,600	2,569	3,600	-
Sargipalli mines	-	4,039	6,000	-
Hindustan Zinc Limited	66,642	54,187	27,600	-
<b>Production (tonnes)</b>				
Zawar <sup>4/</sup>				
Ore	5,280,000	4,309,626	-	-
Concentrates	417,000	338,220	-	-
Dariba <sup>2/</sup>				
Ore	2,615,000	1,506,492	3,000,000	-
Concentrates	402,280	229,262	-	-

Activity	IX th Plan	X th Plan
	Target(m)	Target (m)
<b>Exploration</b>		
Zawar group of mines		
Surface drilling	-	-
Underground drilling	62,500	62,500
Rajpura-Dariba mines		
Underground drilling	18,000	18,000
Agnigundala mines		
Underground drilling	13,500	13,500
Sargipalli mines		
Surface drilling	-	-
Underground drilling	94,000	94,000
<b>Development</b>		
Zawar group mines	-	-
Rajpura-Dariba mines	18,000	18,000
Agnigundala mines	3,600	3,600
Sargipalli mines	5,000	-
Hindustan Zinc Limited	26,600	21,600
<b>Production (tonnes)</b>		
Zawar		
Ore	-	-
Concentrates	-	-
Dariba		
Ore	3,000,000	3,000,000
Concentrates	-	-

Activity	VII th Plan (1985-90)		VIII th Plan (1985-90)	
	Target(m)	Achievement(m)	Target(m)	Achievement(m)
<b>Agnigundala</b>				
Ore	351,000	276,000	360,000	-
Concentrates	21,740	16,680	22,350	-
<b>Sargipalli</b>				
Ore	-	592,600	-	-
Concentrates	21,740	35,364 <sup>1/</sup>	-	-

Activity	IX th Plan	X th Plan
	Target(m)	Target (m)
<b>Agnigundala</b>		
Ore	360,000	360,000
Concentrates	22,350	22,350
<b>Sargipalli</b>		
Ore	-	-
Concentrates	-	-

- 1 / : Achievement upto 31.7.1989  
2 / : Achievement upto 1989  
3 / : Achievement upto 31.3.1989  
4 / : Achievement upto July 1989

TABLE 13.4 COPPER, LEAD & ZINC  
 TABLE 13.4.1 PLAN STATISTICS OF NON-FERROUS METALS:  
 Copper, Lead & Zinc

Sikkim Mining Corporation Ltd.

Activity	VIIIth Plan (1992-96)		IXth Plan (1997-2002)	
	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)	Physical target (tonnes/metres)	Physical Achievement (tonnes/metres)
Exploration	-	-	-	-
Development	9,3267	1,619	2535	-
Capacities				
Mines	100 <sup>1/</sup>		100 <sup>1/</sup>	-
Concentrator	-do-		-do-	-
Production				
Mines	97,500	62,066	97,500	
Concentrator	6,105	4,578	5,900	
Expansion Programme				
Mines	Proposed to take up one more base metal deposit at Pacheykhani area, East Sikkim			
Concentrator	219 <sup>1/</sup>	-	300 <sup>1/</sup>	

1/ : Tonnes per day.



1000

1000

1000

1000

1000

1000

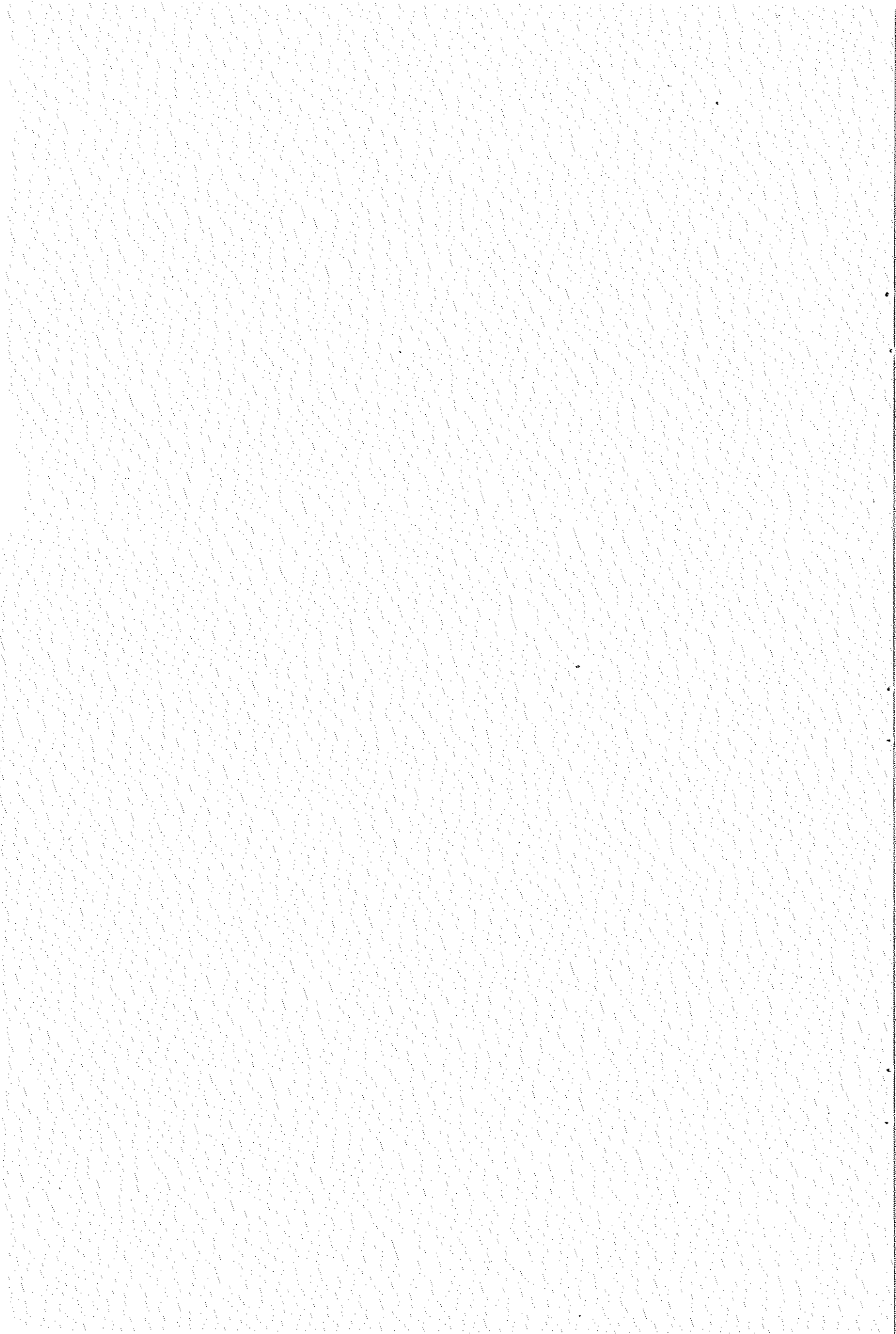
1000

---

# ANNEXURE

---

Exploration and Development



## Annexure: 1.1.1 MINERAL EXPLORATION AND DEVELOPMENT : BAUXITE

## Bharat Aluminium Company Limited

Particulars	1986-87	1987-88	1988-89
Area/Name of deposit	Gandhamardan	Gandhamardan	Gandhamardan
State	Orissa	Orissa	Orissa
District	Sambalpur	Sambalpur	Sambalpur
Mapping Area(Sq. km)			
Sampling No. of samples collected & analysed			
Drilling No. of boreholes	6	-	-
Metreage drilled	164	-	-
Recoverable reserves (inclusive of all categories at the end of year)			
Quantity(million tonnes)			
Grade			
Al <sub>2</sub> O <sub>3</sub>			
SiO <sub>2</sub>			

Particulars		1989-90	1990-91	1991-92
Area/Name of deposit		Raktidadar- Nanhudadar	Raktidadar- Nanhudadar	Raktidadar- Nanhudadar
State		Madhya Pradesh	Madhya Pradesh	Madhya Pradesh
District		Mandla	Mandla	Mandla
Mapping	Area(Sq. km)	0.06	0.07	0.07
Sampling	No. of samples collected & analysed	224	115	130
Drilling	No. of boreholes	73	112	112
	Metreage drilled	1,548.8	1,800.7	1,829.9
Recoverable reserves (inclusive of all categories at the end of year)				
Quantity(million tonnes)				
Grade				
Al <sub>2</sub> O <sub>3</sub>				
SiO <sub>2</sub>				

## Annexure: 1.1.2 MINERAL EXPLORATION AND DEVELOPMENT : BAUXITE

## National Aluminium Company Limited

Particulars	1986-87	1987-88	1988-89
Area/Name of deposit	Panchpatmali	Panchpatmali	Panchpatmali
State	Orissa	Orissa	Orissa
District	Koraput	Koraput	Koraput
Mapping(Area in hecets.)0	13.0	16.5	13.0
Sampling			
No. of samples collected	5,593	6,002	5,513
No. of samples analysed	7,873	4,265	5,275
Drilling			
No. of boreholes	211	265	210
Metreage drilled	5,242	5,955	5,303
Recoverable reserves(inclusive of all categories at the end of year)			
Quantity(million tonnes)	11	13	16
Grade			
Al <sub>2</sub> O <sub>3</sub>	43.20	43.15	43.50
SiO <sub>2</sub>	2.30	2.40	2.45

Particulars	1989-90	1990-91	1991-92	1992-93
Area/Name of deposit	Panchpatmali	Panchpatmali	Panchpatmali	Panchpatmali
State	Orissa	Orissa	Orissa	Orissa
District	Koraput	Koraput	Koraput	Koraput
Mapping(Area in hect.)	-	-	-	-
Sampling				
No. of samples collected	5,200	3,627	3,617	4,471
No. of samples analysed	7,503	3,316	3,010	4,238
Drilling				
No. of boreholes	212	114	175	155
Metreage drilled	5,277	2,455	4,451	3,071
Recoverable reserves(inclusive of all categories at the end of year)				
Quantity(million tonnes)	-	-	-	0.26
Grade				
Al <sub>2</sub> O <sub>3</sub>	-	-	-	-
SiO <sub>2</sub>	-	-	-	-

Particulars	1993-94	1994-95	1995-96
Area/Name of deposit	Panchpatmali	Panchpatmali	Panchpatmali
State	Orissa	Orissa	Orissa
District	Koraput	Koraput	Koraput
Mapping(Area in hect.)0	15.5	9.8	13.53
<b>Sampling</b>			
No.of samples collected	5,450	3,878	6,000
No.of samples analysed	5,450	3,878	6,000
<b>Drilling</b>			
No.of boreholes	248	157	215
Metreage drilled	5,465	3,370	5,150
<b>Recoverable reserves(inclusive of all categories at the end of year)</b>			
Quantity(million tonnes)	0.55	0.6	0.85
<b>Grade</b>			
Al <sub>2</sub> O <sub>3</sub>	-	-	-
SiO <sub>2</sub>	-	-	-



## Annexure:1.1.3 MINERAL EXPLORATION AND DEVELOPMENT : BAUXITE

## Hindustan Aluminium Corpn. Limited

Particulars	1991-92	1994-95
Area/Name of deposit	Chota-nagpur	Jokapat, Jompani, Asanpani, Lohsunpat & Badichaigali
State	Bihar	M.P.
District	Gumla, Palamau & Lohardaga	Surguja
Mapping ( Area in Sq. km)	2	2591.78 Hect
Sampling		
No. of samples collected	78	734
No. of samples analysed	68	665
Drilling		
No. of boreholes	20	151
Metreage drilled	96	1754
Recoverable reserves (inclusive of all categories at the end of year)		
Quantity (million tonnes)	0.28	3.55
Grade		
Al <sub>2</sub> O <sub>3</sub>	42.76%	45%
SiO <sub>2</sub>	2.72%	5%

## Annexure : 1.2.1 MINERAL EXPLORATION AND DEVELOPMENT : COPPER

## Mineral Exploration Corporation Limited

Particulars		1988-89	1989-89	1989-90
Area/Name of deposit		Chandmari (Quarry Sector)	Maianjkhand	Banwas North Block
State		Rajasthan	Madhya Pradesh	Rajasthan
District		Jhunjhunu	Balaghat	Jhunjhunu
Mapping	Area(Sq. km)	0.70	1.50	0.77
Pitting/Trenching				
Sampling	No. of samples collected & analysed.	2,501	16,270	946
Drilling	No. of boreholes Metreage drilled	23 8,323.35	100 68,340.73	15+1 (running) 5,433.85
Development				
Shaft sinking				
Levels				
Raises/winzes				
Overburden removed(million M3)				
Reserves estimated				
	Quantity(million tonnes)	1.74	357.37	23.9
	Proved			
	Probable			
	Possible			
Grade(% of metal content)				
	Average gr. (%)	1.10 Cu	1.18 Cu	2.06 Cu
	Cut-off gr. (%)			

Particulars		1980-91			
Area/Name of deposit		Basantgarh	Chandmari, (SBE sector)	Askot	Khetri mine
State		Rajasthan	Rajasthan	U.P.	Rajasthan
District		Sirohi	Jhunjhunu	Pithoragarh	Jhunjhunu
Mapping	Area(Sq. km)	-	0.54	102 M3	1.00
Pitting/Trenching		1,273.30 M3	-		
Sampling	No. of samples collected & analysed	688	1,576	902	1,110
Drilling	No. of boreholes Metreage drilled	-	22 6,942.20	-	10 7,860.2
Development					
Shaft sinking		410 m	-	352.00 m	-
Levels		458.95 m.	-	-	-
Raises/winzes		35.20 m	-	-	-
Overburden removed(million M3)					
Reserves estimated					
Quantity(million tonnes)		-	-	-	1.23.9
Proved		-	-	-	-
Probable		-	3.12	-	-
Possible		-	0.75	-	-
Grade(% of metal content)					
Average gr. (%)		-	1.00 Cu	-	1.252 Cu
Cut-off gr. (%)		-	0.5	-	-

Particulars		1991-92			
Area/Name of deposit		Banwas Block	Akwali	Malanjkhand	Banwas Block
State		Rajasthan	Rajasthan	Madhya Pradesh	Rajasthan
District		Jhunjhunu	Jhunjhunu	Balaghat	Jhunjhunu
Mapping Area(Sq. km)		1.00	0.58	-	0.10
Pitting/Trenching					
Sampling	No. of samples collected & analysed	3,200	2,005	6,074	3,508
Drilling	No. of boreholes	33	23	28	18
	Metreage drilled	10,444.2	8,349.45	18,632.70	9,283.00
Development					
Shaft sinking					
Levels					
Raises/winzes					
Portal making( M3 )					
Reserves estimated (In million tonnes)					
	Proved	-	-	17.68	-
	Probable	-	2.49	-	6.275
	Possible	30	-	-	0.528
Grade(% of metal content)					
	Average gr. (%)	-	1.40 Cu	1.28 Cu	1.33 Cu
	Cut-off gr. (%)	2.06 Cu	0.50	0.50	0.50

Particulars		1991-92	1992-93	1993-94	
Area/Name of deposit		South Hanotia	Askot	Jaliya	Basantgarh
State		Rajasthan	U.P.	Rajasthan	Rajasthan
District		Jhunjhunu	Pithoragarh	Bhilwara	Sirohi
Mapping	Area(Sq. km)	0.80	-	3.00	0.3 -surface 1,391.4 m(U/G)
Pitting/Trenching		-	1546.10	-	
Sampling	No. of samples collected & analysed	1,506		2,943	2,698
Drilling	No. of boreholes			6	5
	Metresage drilled	27 5,914.40		2,366.60	2,029.70
Development					
Shaft sinking		-	-	-	478.70 m
Levels		-	-	-	755.85 m
Raises/winzes		-	-	-	32.70 m
Portal making( MG )		-	-	-	400.00 Cu.m
Reserves estimated (In million tonnes)					
Proved		-	-	-	0.354
Probable		-	-	-	-
Possible		1.217 0.246	-	2.62	-
Grade(% of metal content)					
Average gr. (%)		1.48 Cu	2.61 Cu 2.96 Pb 4.39 Zn	0.40 Pb 2.10 Zn	1.50 Cu 0.76 Zn
Cut-off gr. (%)		0.50		2.0%	0.5%
					0.50

Particulars		1994-95	:	1995-96	
Area/Name of deposit		Chandmari (Intervening block)	Banwas North	Khetri Mine	Surda Block
State		Rajasthan	Rajasthan	Rajasthan	Bihar
District		Jhunjhunu	Jhunjhunu	Jhunjhunu	East Singhbhum
Mapping	Area(Sq. km)	1.10	0.50	-	9.0
Pitting/Trenching		N11	-	-	-
Sampling	No. of samples collected & analysed	3,110	1,520	3,610 83-Petr.	1,853 +34 Sp.gr.
Drilling	No. of boreholes Metreage drilled	38 17,893.35	64 28,738.7	20 13,372.75	17 9,063.70
Development					
Shaft sinking		N11	N11	N11	N11
Driving		"	"	"	"
Raises		"	"	"	"
Cross cuts		"	"	"	"
Excavation		"	"	"	"
Reserves estimated (million tonnes)					19.23
Proved:		-	-	-	-
Probable:		4.530	21.92	7.28	19.23
Possible		7.570	3.48	15.16	-
Grade(% of metal content)					
Average gr. (%)		1.03 Cu	1.62 Cu	1.16 Cu	1.21 Cu
Cut-off grade (%)		0.50	-	-	-

## Annexure : 1.2.2 MINERAL EXPLORATION : COPPER

## Geological Survey of India

Particulars		1986		
Area/Name of deposit		Tosam	Gadag	Devtalai
State		Haryana	Karnataka	Rajasthan
District		Bhiwani	Dharwar	Bhilwara
Mapping	Area(Sq. km)	-	4.37	0.8
	Scale	-	1: 2000	1:2000.
Pitting	No.of pits	-	-	41
	Volume in M3	-	-	-
Sampling	No.of samples collected	704 (Phase II)	498	50 (Geochemical)
	No.of samples analysed	-	-	890 (cores)
Drilling	No.of boreholes	3 (Phase II)	3	14
	Metreage drilled	671.60	640.80	2288.75
Reserves	Quantity (million tonnes)	-	Not yet estimated	Not calculated.
Remarks		Ore is associated with chalcopyrite in form of disseminations and cavity filling. The objective of exploration phase II is to locate strategic minerals.	-	In addition, ground geophysical survey was conducted over 5.6 sq.k.m in Devtalai block & over 2.5 sq. Km. in Retrai Hill of Hajiwas Paroli area in this district.

Particulars		1986	
Area/Name of deposit		Ladere-Mundoli	Khetri Southern Extension
State		Rajasthan	Rajasthan
District		Jaipur & Ajmer	Jhunjhunu
Mapping	Area(Sq. km) Scale	13 1:10,000	142 1:25,000
Pitting	No.of pits Volume in M3	- -	- -
Sampling	No.of samples collected No.of samples analysed	235 (Geochemical) N.A.	N.A. 127
Drilling	No.of borsholes Metreage drilled	- -	- -
Reserves	Quantity (million tonnes)	Not yet computed	Not yet computed
Remarks		-	-



Particulars		1986			
Area/Name of deposit	Pindwara- Wadera	Kotri	Kuber- Jagat	Pratapgarh	
State	Rajasthan	Rajasthan	Rajasthan	Rajasthan	
District	Sirohi	Udaipur	Udaipur	Alwar/ Jaipur	
Mapping					
Area(Sq. km)	0.9	-	154 & 2	5.5	
Scale	1:10,000	-	1:25000 1:5000	1:5,000	
Sampling					
No. of samples collected	-	70 (cores)	115 (Geochemical)	130	
No. of samples analysed	-	70	115	130	
Drilling					
No. of boreholes	5	1	-	6	
Metreage drilled	869.410	76.75	-	2,076.70	
Reserves					
Quantity (million tonnes)	-	0.21	-	-	
Grade( % of metal content)	-	0.3% cut off grade	-	-	
Remarks	Investig- ation in progress	-	Investig- ation in progress	Investig- ation in progress	

Particulars	1987		
	Taregaon	Amla Bordehi	Devtalai
Area/Name of deposit			
State	Madhya Pradesh	Madhya Pradesh	Rajasthan
District	Balaghat	Betul & Chindwara	Bhilwara
Mapping			
Area(Sq. km)	49.60 & 1	308	-
Scale	1:25,000 & 1:1,000	1:50,000	1: 2000
Sampling			
No.of samples collected	997 (Geochemical)	1,259 (Geochemical)	578 (Core)
No.of samples analysed	N.A.	N.A.	578
Drilling			
No.of boreholes	7	-	10
Metreage drilled	377.25	-	1,546.40
Reserves			
Quantity (million tonnes)	-	-	0.6
Grade( % of metal content)	-	-	0.80% Cu )
Remarks	Thin zones of copper minerali- sation encountered	-	To continue

Particulars		1986	1987	
Area/Name of deposit		Hajiwasi Paroli	Shakun- Ladera	Southern Khetri
State		Rajasthan	Rajasthan	Rajasthan
District		Bhilwara	Jaipur	Jhunjhunu
Mapping	Area(Sq. km)	5.5	32	63
	Scale	-	1:2,000	1:25,000
Pitting	No. of pits	-	N.A.	N.A.
	Volume in M3	-	110	N.A.
Sampling	No. of samples collected	-	538 (Geochemical)	-
	No. of samples analysed	-	-	-
Drilling	No. of boreholes	-	-	-
	Metreage drilled	-	-	-
Reserves	Quantity (million tonnes)	-	-	-
Grade( % of metal content)		-	-	-
Remarks		To delineate strikecontinuity in Jahazpur belt	To continue	-

Particulars		1987		
Area/Name of deposit		Pratapgarh- Raiser	Karoli	Ruraban Jagan Benula
State		Rajasthan	Rajasthan	Rajasthan
District		Alwar & Jaipur	Udaipur	Udaipur
Mapping Area(Sq. km)		2.25	0.55	66
Scale		1:2,000	1: 1,000	25,000
Sampling	No.of samples collected	70 (Cores)	142 (Core)	25(Geochemical)
	No.of samples analysed	-	102 (Geochemical)	-
Drilling	No.of boreholes	4	244	-
	Metreage drilled	1,760.55	6	-
			1,344.30	-
Reserves	Quantity (million tonnes)	Not attempted so for	-	-
Grade( % of metal content)		-	0.5 to 2.5 % Cu	-
Remarks		-	To continue	-

Particulars		1987	
Area/Name of deposit		Salumber-Keshriyad	South of Kurawar
State		Rajasthan	Rajasthan
District		Udaipur	Udaipur
Mapping Area(Sq. km)		125	-
Scale		1:25,000	-
Sampling	No.of samples collected	2 (Geochemical)	146 (Geochemical)
	No.of samples analysed	-	-
Drilling	No.of boreholes	-	-
	Metreage drilled	-	-
Reserves	Quantity (million tonnes)	-	-
Grade( % of metal content)		-	-
Remarks		-	To find out the mantle cover relationship

Particulars		1987		
Area/Name of deposit		Ranmangli	Thutanbori	Khapri
State		Maharashtra	Maharashtra	Maharashtra
District		Nagpur	Nagpur	Bhandara
Mapping	Area(Sq. km)	1.60	2.5	-
	Scale	1:2,000	1: 2,000	-
Pitting	No.of pits	-	-	-
	Volume in M3	-	30	-
Sampling	No.of samples collected	-	320	-
	No.of samples analysed	-	-	-
Drilling	No.of boreholes	9	4	4
	Metreage drilled	2,114.55	984.20	1,364.70
Reserves	Quantity (million tonnes)	Infered 0.5	Drilling in progress	Sporadic Occurences
Grade( % of metal content)		.1.23 % Cu	0.5% to 1% Cu % Cu	-
Remarks		-	To continue	-

Particulars		1988	
Area/Name of deposit		Ingaldhalu (West Nainapura Block)	South Devtalai & Balwa
State		Karnataka	Rajasthan
District		Chitradurga	Bhilwara
Mapping	Area(Sq. km)	9 & 0.92	0.85(Balwa)
	Scale	1:25,000 & 1:2,000	1:2,000
Pitting	No.of pits	10	N.A.
	Volume in M3	-	-
Sampling	No.of samples collected	2014 (Geochemical)	275 (Geochemical)
	No.of samples analysed	14	9
Drilling	No.of boreholes	2943	1488
	Metreage drilled	-	-
Reserves	Quantity (million tonnes)	Not estimated	Not estimated
Grade( % of metal content)		-	-
Remarks		-	To fined out the mantle cover

Particulars		1988-89		
Area/Name of deposit		Devtalai South Block	Meena-ka-Khera Block	Belwa Block
State		Rajasthan	Rajasthan	Rajasthan
District		Bhilwara	Bhilwara	Bhilwara
Mapping	Area(Sq. km) Scale	0.10	0.15	-
Sampling	No. of samples collected	56	-	139
	No. of samples analysed	56	-	139
Drilling	No. of boreholes	4	3	-
	Metreage drilled	946	371	788
Reserves	Quantity (million tonnes)	Poor Mineralisation	Poor Mineralisation	Not estimated
Grade (% of metal content)		-	-	-
Remarks		-	-	-

Particulars		1988	
Area/Name of deposit		Karoli	Salumbar-Keshriyad
State		Rajasthan	Rajasthan
District		Udaipur	Udaipur
Mapping	Area(Sq. km) Scale	2.0 1:1,000	60.0 1:25,000
Sampling	No. of samples collected	303	114
	No. of samples analysed	65	114
Drilling	No. of boreholes	2	-
	Metreage drilled	386	-
Reserves	Quantity (million tonnes)	Not estimated	Not estimated
Grade (% of metal content)		-	-
Remarks		-	-

Particulars		1989-90		
Area/Name of deposit		Thutanbori	Pahungaon	Karaundiya
State		Maharashtra	Maharashtra	Madhya Pradesh
District		Nagpur	Bhandara	Shahdol
Mapping	Area(Sq. km)	15	1.5	2.80
	Scale		1:2,000	1:2,000
Pitting	No. of pits	-	-	-
	Volume in M3	-	-	-
Sampling	No. of samples collected	-	-	1240
	No. of samples analysed	-	-	-
Drilling	No. of boreholes	4	1	-
	Metreage drilled	1055.25	216.30	-
Reserves	Quantity (million tonnes)	0.747	Not estimated	-
Grade (% of metal content)		1.84% Cu	-	-
Remarks		-	-	-

Particulars		1989-90	
Area/Name of deposit		Bhadugaon/Bagda	Thariya
State		Madhyapradesh	Rajasthan
District		Hoshangabad/Dewas	Bhilwara
Mapping	Area(Sq. km)	21.0 & 2.1	40 & 0.1
	Scale	1:25,000 & 1:2,000	1:50,000 & 1:1,000
Pitting	No. of pits	-	-
	Volume in M3	-	-
Sampling	No. of samples collected	719	-
	No. of samples analysed	-	-
Drilling	No. of boreholes	-	3
	Metreage drilled	-	401.30
Reserves	Quantity (million tonnes)	-	Not estimated
Grade (% of metal content)		-	-
Remarks		-	-

Particulars		1989-90		
Area/Name of deposit		Karmari	Akola/Dariba	Kalipal, Bedwal-ki-pal
State		Rajasthan	Rajasthan	Rajasthan
District		Jhunjhunu	Chittorgarh	Udaipur
Mapping	Area(Sq. km)	0.85	53	0.40
	Scale	1:2,000	1:10,000	1:1,000
Pitting	No. of pits	-	-	-
	Volume in M3	-	-	-
Sampling	No. of samples collected	-	53	-
	No. of samples analysed	-	-	-
Drilling	No. of boreholes	9	5	5
	Metreage drilled	1830.50	1016.40	758.20
Reserves	Quantity (million tonnes)	1.5	2.94	2.0
Grade (% of metal content)		0.42% Cu	0.75% Cu	0.5% Cu
Remarks		-	-	-

Particulars		1989-90	
Area/Name of deposit		Burel, Bedwal-ki-pal sector	Isarwas, Bedwal-ki-pal sector
State		Rajasthan	Rajasthan
District		Udaipur	Udaipur
Mapping	Area(Sq. km)	0.25	0.40
	Scale	1:1,000	1:1,000
Pitting	No. of pits	-	-
	Volume in M3	-	-
Sampling	No. of samples collected	-	-
	No. of samples analysed	-	-
Drilling	No. of boreholes	3	7
	Metreage drilled	223.80	909.80
Reserves	Quantity (million tonnes)	Not estimated	1
Grade (% of metal content)		-	0.5% Cu
Remarks		-	-



Particulars		1990-91		
Area/Name of deposit		Saradhana	Pahungaon	Karaundiya
State		Rajasthan	Maharashtra	Madhya Pradesh
District		Ajmer	Bhandra	Shahdol
Mapping	Area(Sq. km)	-	1.5	2.4
	Scale	-	1:2,000	1:4,000
Pitting	No. of pits	-	-	-
	Volume in M3	-	-	-
Sampling	No. of samples collected	-	-	737
	No. of samples analysed	-	-	-
Drilling	No. of boreholes	1	4	1
	Metreage drilled	84.80	790.95	172.50
Reserves	Quantity (million tonnes)	Not estimated	Not estimated	-
Grade (% of metal content)		-	-	-
Remarks		-	-	-

Particulars		1989-90	
Area/Name of deposit		Bhadugaon/Bagda	Karmari
State		Madhya Pradesh	Rajasthan
District		Hoshangabad/Dewas	Jhunjhunu
Mapping	Area(Sq. km)	30 & 1.68	-
	Scale	1:25,000 & 1:2,000	-
Pitting	No. of pits	-	-
	Volume in M3	-	-
Sampling	No. of samples collected	696	92
	No. of samples analysed	-	-
Drilling	No. of boreholes	1	3
	Metreage drilled	275.0	604.30
Reserves	Quantity (million tonnes)	-	Investigation closed
Grade (% of metal content)		-	0.5% Cu
Remarks		-	-

Particulars		1990-91		
Area/Name of deposit		Bhagatwalon-ki-Dhoni/Neori	Akola-Dariba	Kalipal, Bedwal-ki-pal sector
State		Rajasthan	Rajasthan	Rajasthan
District		Jhunjhunu	Chittorgarh	Udaipur
Mapping	Area(Sq. km)	1.85	52 & 0.5	-
	Scale	1:2,000	1:10,000 & 1:2,500	-
Pitting	No.of pits	-	-	-
	Volume in M3	-	-	-
Sampling	No.of samples collected	231	192	-
	No.of samples analysed	-	-	-
Drilling	No.of boreholes	2	3	1
	Metreage drilled	328.25	547.40	44.20
Reserves	Quantity (million tonnes)	Not estimated	2.94	Investigation closed
	Grade (% of metal content)	-	0.75% Cu	-
Remarks		-	-	-

Particulars		1990-91	
Area/Name of deposit		Baroliya, Bedwal-ki-pal sector	Isarwas, Bedwal-ki-pal sector
State		Rajasthan	Rajasthan
District		Udaipur	Udaipur
Mapping	Area(Sq. km)	-	-
	Scale	-	-
Pitting	No.of pits	-	-
	Volume in M3	-	-
Sampling	No.of samples collected	-	-
	No.of samples analysed	-	-
Drilling	No.of boreholes	3	1
	Metreage drilled	495.0	80.65
Reserves	Quantity (million tonnes)	Not estimated	Investigation closed
	Grade (% of metal content)	-	-
Remarks		-	-

Particulars		1990-91	1991-92	
Area/Name of deposit		Saradhana	Pahungaon	Karundiya
State		Rajasthan	Maharashtra	Madhya Pradesh
District		Ajmer	Bhandara	Shahdol
Mapping	Area(Sq. km)	-	-	-
	Scale	-	-	-
Pitting	No.of pits	-	-	-
	Volume in M3	-	-	-
Sampling	No.of samples collected	-	-	205
	No.of samples analysed	-	-	-
Drilling	No.of boreholes	4	1	5
	Metreage drilled	700.45	67.65	901.15
Reserves	Quantity (million tonnes)	Investigation closed	Investigation closed	Not estimated
Grade (% of metal content)		-	-	-
Remarks		-	-	-

Particulars		1990-91	
Area/Name of deposit		Bhadugaon/Bagda	Bhagwalon-k1-Dhoni/Neori
State		Madhya Pradesh	Rajasthan
District		Hoshangabad/Dewas	Jhunjhunu
Mapping	Area(Sq. km)	2.83	-
	Scale	1:2,000	-
Pitting	No.of pits	-	-
	Volume in M3	-	-
Sampling	No.of samples collected	385	-
	No.of samples analysed	-	-
Drilling	No.of boreholes	5	3
	Metreage drilled	781.30	594.30
Reserves	Quantity (million tonnes)	Not estimated	Not estimated
Grade (% of metal content)		-	-
Remarks		-	-

Particulars		1991-92	:	1994-95
Area/Name of deposit		Akola-Dariba	Khadandungr1	Telaitnur
State		Rajasthan	Bihar	Bihar
District		Chittorgarh	East Singhbhum	East Singhbhum
Mapping	Area(Sq. km)	10 & 0.6	3.70	35 & 4.508
	Scale	1: 10,000 & 1: 1,000	-	1 :25,000 & 1:5,000
Pitting	No.of pits	-	-	-
	Volume in M3	-	-	-
Sampling	No.of samples collected	-	-	-
	No.of samples analysed	-	-	-
Drilling	No.of boreholes	3	4	1
	Metreage drilled	468.75	471	22.95
Reserves	Quantity (million tonnes)	-	-	-
Grade (% of metal content)		-	-	-

Particulars		1994-95	
Area/Name of deposit		Kadamiha	Sankhadih
State		Bihar	Bihar
District		West Singhbhum	West Singhbhum
Mapping	Area(Sq. km)	-	170
	Scale	-	1 :2,000
Pitting	No.of pits	-	-
	Volume in M3	-	-
Sampling	No.of samples collected	34	164
	No.of samples analysed	34	-
Drilling	No.of boreholes	1	4
	Metreage drilled	99	804.10
Reserves	Quantity (million tonnes)	-	-
Grade (% of metal content)		-	-

**Annexure :1.2.3 MINERAL EXPLORATION AND DEVELOPMENT :COPPER  
Hindustan Copper Limited, KCC**

Particulars		1986-87		1988-89	
Area/Name of deposit		Chandmari, Dariba		Chandmari, Dariba	
State		Khetri & Rajasthan	Rajasthan	Khetri & Rajasthan	Rajasthan
District		Jhunjhunu	Alwar	Jhunjhunu	Alwar
Mapping	Area(Sq. km) Scale				
Pitting	No.of pits Volume in M3				
Trenching	No.of trenches Volume in M3	K.C.C. do not undertake surface exploration departmentally.			
Sampling	No.of samples collected No.of samples analysed				
Drilling	No.of boreholes Metreage drilled				
Shaft sinking	No.of shafts Volume in M3				
Levels	No.of levels cut Volume in M3		11,410		10,633
Raises/winzes	Nos. cut Volume in M3				
Overburden removed(million M3)			0.64		0.48
Recoverable reserves(inclusive of all categories at the end of year)					
Quantity(million tonnes)		Chandmari	1.30		1.30
		Khetri	39.23		39.23
		Kolihan	29.69		29.69
		Dariba	0.243		0.243
Grade(% of metal content)		Chandmari	1.252% Cu		1.252% Cu
		Khetri	0.94% Cu		0.94% Cu
		Kolihan	1.25% Cu		1.25% Cu
		Dariba	1.73% Cu		1.73% Cu

Particulars		1986-87			
Area/Name of deposit		Chandmari, Dariba		Chandmari, Dariba	
		Khetri & Kolihan		Khetri & Kolihan	
State		Rajasthan		Rajasthan Rajasthan	
District		Jhunjhunu Alwar		Jhunjhunu Alwar	
Mapping	Area(Sq. km) Scale				
Pitting	No. of pits Volume in M3				
Trenching	No. of trenches Volume in M3	K.C.C. do not undertake surface exploration departmentally.			
Sampling	No. of samples collected No. of samples analysed				
Drilling	No. of boreholes Metreage drilled				
Shaft sinking	No. of shafts Volume in M3				
Levels	No. of levels cut Volume in M3				
Raises/winzes	Nos. cut Volume in M3				
Overburden removed(million M3)					
Recoverable reserves(inclusive of all categories at the end of year)					
Quantity(million tonnes)		Chandmari			
		Khetri			
		Kolihan			
		Dariba			
Grade(% of metal content)		Chandmari			
		Khetri			
		Kolihan			
		Dariba			

Particulars	1992-93	1993-94	1994-95	1995-96
Area/ Name of deposit	Chandmari, Khetri & Kolihan	Chandmari, Khetri & Kolihan	Chandmari, Khetri & Kolihan	Chandmari, Khetri & Kolihan
State	Rajasthan	Rajasthan	Rajasthan	Rajasthan
District	Jhunjhunu	Jhunjhunu	Jhunjhunu	Jhunjhunu
<b>Sampling</b>				
No. of samples collected				
Chandmari	1,801	652	451	536
Khetri	18,783	14,479	13,929	13,252
Kolihan	9,991	7,702	6,554	6,186
No. of samples analysed				
Chandmari	1,801	652	451	536
Khetri	18,783	14,479	13,929	13,252
Kolihan	9,991	8,802	6,493	6,209
<b>Drilling</b>				
No. of boreholes				
Chandmari	-	-	-	-
Khetri	130	80	93	69
Kolihan	26	6	4	4
<b>Metreage drilled</b>				
Chandmari	-	-	-	-
Khetri	11,984	6,287	8,267	6,966
Kolihan	2,708	476	566	902
<b>Shaft sinking</b>				
No. of shafts	-	-	-	-
Volume in M3	-	-	-	-
<b>Levels</b>				
( in metres)	1,741	1,763	1,409	888
<b>Raises/winzes</b>				
( in metres)	1,063	906	840	667
<b>Stope preparation</b>				
( in M3 )	59,117	37,833	39,728	46,036
<b>Overburden removed</b>				
(in M3 )	6,100	5,480	50	-

Particulars	1992-93	1993-94	1994-95	1995-96
Recoverable reserves (inclusive of all categories at the end of year)				
Quantity (million tonnes)				
Chandmari	0.29	0.11	2.38 *	-
Khetri	36.34	33.27	47.18	-
Kolihan	26.01	25.13	24.66	-
Grade(% of metal content)				
Chandmari	1.12% Cu	1.12% Cu	1.16% Cu	-
Khetri	0.99% Cu	1.01% Cu	1.06% Cu	-
Kolihan	1.21% Cu	1.21% Cu	1.20% Cu	-



Table :1.2.4 MINERAL EXPLORATION AND DEVELOPMENT : COPPER

Hindustan Copper Limited, (MCP)

Particulars	1986-87	1987-88	1988-89
Area/ Name of deposit	Malanjkhand	Malanjkhand	Malanjkhand
State	Madhya Pradesh	Madhya Pradesh	Madhya Pradesh
District	Balaghat	Balaghat	Balaghat
Mapping			
Area(Sq. km)	30 Hect.	-	-
Scale	-	-	-
Sampling			
No.of samples collected	3,541	2,279	2,265
No.of samples analysed	-	-	-
Drilling			
No.of boreholes	24	21	21
Metreage drilled	10,783	8,715	9,323
Overburden removed (million M3)	3.279	4.851	3.506
Reserves estimated (based on explorat- ion & inclusive of all categories)			
Quantity (million tonnes)	201.37	-	260.33
Grade (% of metal content)	1.40% Cu	-	1.46% Cu
Recoverable reserves (inclusive of all categories at the end of year)			
Quantity (million tonnes)	54.75 *	52.90 *	51.23 *
Grade(% of metal content)	1.2% Cu	1.2% Cu	1.2% Cu

\* Upto 376 MRL of the open cast mine.

## Annexure: 1.2.5 MINERAL EXPLORATION AND DEVELOPMENT : COPPER

## Hindustan Copper Limited, (ICC)

Particulars	1992-93	1993-94
Area/ Name of deposit	Mosaboni, Pathargora, Surda, Kendadih & Rakha	Mosaboni, Pathargora, Surda, Kendadih & Rakha
State	Bihar	Bihar
District	East Singhbhum	East Singhbhum
Sampling		
No. of samples collected	92,070	96,539
No. of samples analysed	92,020	96,539
Drilling		
No. of boreholes		
Surface	30	12
Underground	350	329
Metreage drilled		
Surface	12,076.0	7,265.0
Underground	3,814.0	3,624.5
Levels (In meters)		
Mosaboni	2,716.5	2,566.5
Pathargora	635.1	792.8
Surda	1,120.1	1,058.2
Kendadih	449.5	556.8
Rakha	1,338.6	1,129.5
Raises & Winzes (In meters)		
Mosaboni	3,375.5	2,728.5
Pathargora	323.1	384.2
Surda	744.1	598.8
Kendadih	614.0	478.2
Rakha	310.6	213.2
Stope preparation (In Cu. meters)		
Mosaboni	194,492	170,835
Pathargora	45,477	50,202
Surda	103,671	95,306
Kendadih	12,389	11,653

Particulars	1994-95	1995-96
Area/ Name of deposit	Mosabani, Pathargora, Surda, Kendadih & Rakha	Mosabani, Pathargora, Surda, Kendadih & Rakha
State	Bihar	Bihar
District	East Singhbhum	East Singhbhum
Sampling		
No. of samples collected	88,513	93,927
No. of samples analysed	88,513	93,927
Drilling		
No. of boreholes		
Surface	9	1
Underground	274	171
Metreage drilled		
Surface	2,132.6	330.4
Underground	2,047.2	2,091.3
Levels (In meters)		
Mosabani	2,378.8	1,204.8
Pathargora	901.5	849.7
Surda	861.0	987.8
Kendadih	442.4	987.6
Rakha	775.0	617.8
Raises & Winzes (In meters)		
Mosabani	1,892.2	1,802.6
Pathargora	237.6	248.7
Surda	697.0	665.0
Kendadih	326.7	726.6
Rakha	242.2	118.3
Stope preparation (In Cu. meters)		
Mosabani	135,424	109,619
Pathargora	39,832	42,682
Surda	107,498	111,074
Kendadih	15,524	15,027

Particulars		1992-93		1993-94	
Reserves computed		Quantity (mill.tonnes)	grade (% Cu)	Quantity (mill.tonnes)	grade (% Cu)
a) Proved	Mosaboni	6.30	1.60	5.56	1.59
	Pathargora	1.50	1.31	1.48	1.30
	Surda	5.56	1.24	5.47	1.24
	Kendadih	0.56	1.82	0.54	1.78
	Rakha	6.39	1.19	6.27	1.18
b) Probable	Mosaboni	4.10	1.71	4.20	1.70
	Pathargora	2.00	1.41	1.91	1.43
	Surda	2.72	1.26	2.93	1.24
	Rakha	-	-	-	-
c) Possible	Mosaboni	2.27	1.74	2.40	1.71
	Pathargora	0.85	1.37	0.85	1.37
	Surda	6.62	1.22	6.60	1.22
	Kendadih	-	-	-	-

Particulars		1994-95		1995-96	
Reserves computed		Quantity (mill.tonnes)	grade (% Cu)	Quantity (mill.tonnes)	grade (% Cu)
a) Proved	Mosaboni	4.79	1.66	4.63	1.61
	Pathargora	1.92	1.35	2.21	1.31
	Surda	5.58	1.28	5.77	1.24
	Kendadih	0.50	1.80	0.61	1.80
	Rakha	6.26	1.28	6.06	1.19
b) Probable	Mosaboni	3.94	1.65	3.93	1.65
	Pathargora	1.30	1.42	1.38	1.35
	Surda	2.77	1.25	2.34	1.26
	Rakha	-	-	1.82	1.20
c) Possible	Mosaboni	2.37	1.69	2.06	1.68
	Pathargora	0.85	1.37	1.00	1.30
	Surda	6.67	1.22	13.45	1.14
	Kendadih	-	-	0.07	1.44

## Annexure : 1.2.6 MINERAL EXPLORATION AND DEVELOPMENT : COPPER

## The Huttu Gold Mine Co. Limited (Chitradurga Copper Unit)

Particulars		1986-87	1987-88	1988-89
Area/Name of deposit		Ingaldhal	Ingaldhal	Ingaldhal
State		Karnataka	Karnataka	Karnataka
District		Chitradurga	Chitradurga	Chitradurga
Sampling	No. of samples collected & analysed	8,348	9,081	8,195
		8,348	9,081	8,195
Drilling	No. of boreholes	5	5	18
	Metreage drilled	1,452	1,144	3,514
Development				
Shaft sinking (Volume in M3)		42	46	11
Levels (In meter)		583	672	510
Raises/winzes (In meters)		191	268	145
Stope preparation (In M3)		26	25	138
Reserves estimated category wise (million tonnes)				
Proved		0.23	0.28	0.30
Probable		1.50	1.50	1.50
Grade (% of metal content)				
Proved		1.03% Cu	1.03% Cu	0.98% Cu
Probable		1.00% Cu	1.00% Cu	1.00% Cu
Possible				

Particulars		1989-90	1990-91	1991-92
Area/Name of deposit		Ingaldhal	Ingaldhal	Ingaldhal
State		Karnataka	Karnataka	Karnataka
District		Chitradurga	Chitradurga	Chitradurga
Sampling	No. of samples collected & analysed	10,083	9,723	9,206
		10,083	9,723	9,206
Drilling	No. of borehole	12	11	9
	Metreage drill	2,356	2,023	1,919
Development				
Shaft sinking (Volume in M3)	28	18	82	
Levels (In meter)	260	436	778	
Raises/winzes (In meters)	118	158	152	
Stope preparation (In M3)	80	79	60	
Reserves estimated category wise (million tonnes)				
Proved	0.26	0.24	0.25	
Probable	1.50	1.50	1.50	
Grade (% of metal content)				
Proved	0.96% Cu	0.90% Cu	0.85% Cu	
Probable	1.00% Cu	1.00% Cu	1.00% Cu	
Possible				

Particulars	1992-93	1993-94	1994-95	1995-96
Area/Name of deposit	Ingaldhal	Ingaldhal	Ingaldhal	Ingaldhal
State	Karnataka	Karnataka	Karnataka	Karnataka
District	Chitradurga	Chitradurga	Chitradurga	Chitradurga
Sampling				
No. of samples collected & analysed	19	15	47	--
	19	15	47	--
Drilling				
No. of boreholes	8	7	3	3
Metreage drilled	1,131.20	1,112.55	449.40	432.82
Development				
Shaft sinking (Volume in M3)	28.00	44.40	26.70	1.00
Levels (In meter)	1,015.80	1,246.20	771.70	69.70
Raises/winzes (In meters)	108.20	231.40	210.60	--
Stope preparation (In M3)	16,435	8,834	--	--
Reserves estimated category wise (lakh tonnes)				
Proved	2.53	2.93	3.63	--
Probable	6.03	16.03	16.05	--
Possible	7.64	7.64	7.64	--

**Annexure : 1.2.7 MINERAL EXPLORATION AND DEVELOPMENT : COPPER  
The Hutt1 Gold Mine Co. Limited (Kalyadi Copper Unit)**

Particulars	1986-87	1987-88	1988-89
Area/Name of deposit	Kalyadi	Kalyadi	Kalyadi
State	Karnataka	Karnataka	Karnataka
District	Hassan	Hassan	Hassan
Mapping Area(Sq. km)	0.39	0.39	0.39
Development			
Shaft sinking(Volume in M3)	41.20	-	-
Levels(In meter)	32.70	26.80	287.20
Raises/winzes (In meters)	4.00	-	49.60
Stope preparatation(In M3)	355.90	369.00	724.30
Reserves estimated inclusive of all grades(million tonnes)	2.027	1.890	2.250
Grade(% of metal content)	0.81	0.79	0.78
Particulars	1989-90	1990-91	1991-92
Area/Name of deposit	Kalyadi	Kalyadi	Kalyadi
State	Karnataka	Karnataka	Karnataka
District	Hassan	Hassan	Hassan
Mapping Area(Sq. km)	0.39	0.39	0.39
Development			
Shaft sinking(Volume in M3)	-	5.50	-
Levels(In meter)	-	53.70	150.60
Raises/winzes (In meters)	4.10	11.00	15.40
Stope preparatation(In M3)	335.90	92.80	208.00
Reserves estimated inclusive of all grades(million tonnes)	2.493	2.450	2.240
Grade(% of metal content)	0.73	0.72	0.71



Particulars	1992-93	1993-94	1994-95	1995-96
Area/Name of deposit	Kalyadi	Kalyadi	Kalyadi	Kalyadi
State	Karnataka	Karnataka	Karnataka	Karnataka
District	Hassan	Hassan	Hassan	Hassan
Levels (In meter)	111.40	143.10	117.40	25.60
Raises/winzes (In meters)	59.00	10.90	-	41.60
Stope preparation (In M3)	553.00	1,038.00	472.00	308.00
Reserves estimated category wise (million tonnes)				
a) Proved	1.010	0.970	1.076	1.036
b) Probable	0.876	0.874	0.677	0.677
c) Possible	0.284	0.284	0.284	0.284

Table :1.3.1 MINERAL EXPLORATION AND DEVELOPMENT : LEAD AND ZINC  
Mineral Exploration Corporation Limited

Particulars		1986-87	1989-90
Area/Name of deposit		Zangamarajupalli	Devpura
State		Andhra Pradesh	Rajasthan
District		Cuddapah	Bhilwara
Mapping	Area(Sq. km)	0.50	1.00 1,850 m.(u/g)
Pitting/Trenching		-	222(M3)
Sampling	No.of samples collected & analysed	115	8,010
Drilling	No.of boreholes Metreage drilled	8 883	26 4,445
Development			
Shaft sinking (M)		-	114
Levels (M)		-	-
Raises/winzes		-	-
Portal making( M3 )		-	-
Reserves estimated (In million tonnes)		2.42 <sup>1/2</sup>	
Proved		-	2.257
Probable		-	6.429
Possible		-	2.812
Grade(% of metal content)			
Average gr. (%)		4.11	0.48 Pb 2.50 Zn
Cut-off gr. (%)		-	2.00 Zn

Particulars		1990-91			
Area/Name of deposit	Dheukonda	Devpura Centenary Block	Ghugraa <sup>2/</sup>	Chandmari <sup>2/</sup> Intervening I	
State	Andhra Pradesh	Rajasthan	Rajasthan	Rajasthan	
District	Guntur	Bhilwara	Ajmer	Jhunjhunu	
Mapping Area(Sq. km)	-	-	-	0.09	
Pitting/Trenching	8,200 (Excavation)	1,555(M3)	-	-	
Sampling No.of samples collected & analysed	1,018	2,891	80	2,340	
Drilling No.of boreholes - Metreage drilled	121.60(U/G)	6 2,365.55	6 1,318.35	32 11,607.75	
Development					
Shaft sinking (M)	100.50	-	-	-	
Levels (M)	379.50	-	-	-	
Raises/winzes	14.50	-	-	-	
Portal making( M3 )	-	-	-	-	
Reserves estimated (In million tonnes)		-	-	-	
Proved	-	-	-	-	
Probable	-	-	-	-	
Possible	-	-	-	-	
Grade(% of metal content)					
Average gr. (%)	-	-	-	-	
Cut-off gr. (%)	-	-	-	-	

1/ : Inclusive of previous estimations.

2/ : Contractual Project on behalf of H.C.L.

Particulars		1991-92		
Area/Name of deposit		Chandmari <sup>2/</sup> Intervening II Area	Khetri Mine <sup>2/</sup>	Banwas <sup>2/</sup>
State		Rajasthan	Rajasthan	Rajasthan
District		Jhunjhunu	Jhunjhunu	Jhunjhunu
Mapping	Area(Sq. km)	0.10	-	-
Sampling	No.of samples collected & analysed	-	1,809	-
Drilling	No.of boreholes Metreage drilled	- 510.20	15 9,345.00	- 12,704.25

Particulars		1991-92			
Area/Name of deposit		Banwas <sup>2/</sup> Extention	Pathargora	Surda	Malanjkhanda
State		Rajasthan	Bihar	Bihar	M.P.
District		Jhunjhunu	Singhbhum	Singhbhum	Dalaghat
Mapping	Area(Sq. km)	-	-	-	-
Sampling	No.of samples collected & analysed	4,931	-	-	-
Drilling	No.of boreholes Metreage drilled	- 21,695.05	- 354.50	- 416.10	- 638.95

2/ : Contractual Project on behalf of H.C.L.

Particulars		1991-92		
Area/Name of deposit		Dhukonda <sup>1/</sup>	Ghugra	Banwas <sup>2/</sup>
State		Andhra Pradesh	Rajasthan	Rajasthan
District		Guntur	Ajmer	Jhunjhunu
Mapping	Area(Sq. km)	0.50 59.00(U/G)	0.50	-
Pitting/Trenching		-	-	-
Sampling	No. of samples collected & analysed	1,970	2,132	-
Drilling	No. of boreholes	-	18	-
Development	Metreage drilled	1,021.60(U/G)	3,536.40	12,704.25
Shaft sinking (M)		100.50	-	-
Levels (M)		491.50	-	-
Raises/winzes		-	-	-
Portal making( M3 )		-	-	-
Reserves estimated (In million tonnes)		-	-	-
	Proved	-	-	-
	Probable	-	-	-
	Possible	-	-	-
Grade(% of metal content)				
	Average gr. (%)	-	-	-
	Cut-off gr. (%)	-	-	-

Particulars	1991-92			
Area/Name of deposit	Banwas <sup>2</sup> / Extention	Pathargora	Surda	Malanjkhanda
State	Rajasthan	Bihar	Bihar	M.P.
District	Jhunjhunu	Singhbhum	Singhbhum	Balaghat
Mapping Area(Sq. km)	-	-	-	-
Pitting/Trenching	-	-	-	-
Sampling No. of samples collected & analysed	4,931	-	-	-
Drilling No. of boreholes	-	-	-	-
Metreage drilled	21,695.05	354.50	416.10	638.95
Development				
Shaft sinking (M)	-	-	-	-
Levels (M)	-	-	-	-
Raises/winzes	-	-	-	-
Portal making( M3 )	-	-	-	-
Reserves estimated (In million tonnes)	-	-	-	-
Proved	-	-	-	-
Probable	-	-	-	-
Possible	-	-	-	-
Grade(% of metal content)				
Average gr. (%)	-	-	-	-
Cut-off gr. (%)	-	-	-	-

1/ : promotional project converted into contractual with H.Z.L.

Particulars		1993-94	
Mineral		Lead	Lead & Zinc
Area/Name of deposit		Dhukonda	Ghugra
State		Andhra Pradesh	Rajasthan
District		Guntur	Ajmer
Mapping Area(Sq. km)		708.7 m(u/g)	0.60
Pitting/Trenching		-	NIL
Sampling	No. of samples collected & analysed	5,347	4,111
Drilling	No. of boreholes	4+30(u/g)	25
	Metreage drilled	1,574.30	4,453.35
Development			
Shaft sinking		100.50 m	NIL
Driving		239.70 m	,,
Raises		61.50 m	,,
Cross cuts		287.05 m	,,
Excavation		200.00 M3	,,
Reserves estimated (million tonnes)		0.175	5.520
Proved:		0.093	-
Probable:		0.032	5.520
Possible		0.050	-
Grade(% of metal content)			
Average gr. (%)		5.48 Pb	1.88 Pb 3.35 Zn
Cut-off grade (%)		+3.0	+3.0

## Annexure : 1.3.2 MINERAL EXPLORATION : LEAD AND ZINC

## Geological Survey of India

Particulars	1986		
	Bhuwapur(Bhaoneri)	Bhivapur(Kolar1)	Kolar1-Bhaomi
Area/Name of deposit	Maharashtra	Maharashtra	Maharashtra
State	Nagpur	Nagpur	Nagpur
District			
Mapping			
Area(Sq. km)	-	-	1
Scale	-	-	1:2000
Pitting			
Nos.	N. A.	N.A.	N.A.
Volume in M3	24.80	-	-
Trenching			
Nos.	-	-	N.A.
Volume in M3	-	-	202
Sampling			
No.of samples collected	128(soil), 340 (cores)	100(cores)	N.A.
No of samples analysed	340 (cores)	100	574
Drilling			
No.of boreholes	4	2	3
Metreage drilled	969.80	577.85	468
Reserves estimated (In million tonnes)	2,759	Zinc mineralisation was not inter- sected	
Grade(% of metal content)			
Average gr.(%)	3.18 Zn	-	-
Remarks	-	-	Work may continue depending on results of investigation



Particulars	1986	
Area/Name of deposit	Dariba Bethurmi	Gangwara
State	Rajasthan	Rajasthan
District	Sawaimadhopur	Sawaimadhopur
Mapping		
Area (Sq. km)	30	30 0.90
Scale	1:25,000	1:25,000 (Plantable mapping)
Pitting		
Nos.	-	-
Volume in M3	-	-
Trenching		
Nos.	-	-
Volume in M3	-	-
Sampling		
No. of samples collected	485 (Cores)	295 (Geochem.) 129 & 59 (Cores) (minero graphic)
No of samples analysed	-	-
Drilling		
No. of boreholes	4	2
Metreage drilled	974.40	354.35
Reserves estimated (In million tonnes)	Investigation to continue	Not computed
Grade (% of metal content)	Lead Zinc mineralisation of 4% to 5% Pb + Zn has been proved over a strike length of 400 m. for a width of 4-6 m.	In addition geophysical survey was conducted over 6.2 sq. Km. in this area.
Average gr. (%)		
Remarks		

Particulars		1986		
Area/Name of deposit		Parasoli	Punagarh	Mankasas
State		Rajasthan	Rajasthan	Rajasthan
District		Jaipur	Pali	Jhunjhunu
Mapping	Area(Sq. km) Scale	N.A. -	93 1:25,000	0.35 1:2000
Pitting	Nos. Volume in M3	32 32	- -	- -
Trenching	Nos. Volume in M3	3 30	- -	- -
Sampling	No. of samples collected	522 (Geochem.) 139 (cores)	291	30
	No of samples analysed	522	N.A.	N.A.
Drilling	No. of boreholes Metreage drilled	2 462.65	- -	- -
Reserves estimated (In million tonnes)		Not computed	Investigation to continue	Investigation to continue. In addition, 11.5 line Km. area was covered for ground Geophysical survey.
Grade(% of metal content) Average gr. (%)		-	-	-
Remarks		-	-	-

Particulars		1987		
Area/Name of deposit		Bethunmi	Manaksar (Southern Khetri)	Gangwara
State		Rajasthan	Rajasthan	Rajasthan
District		Udaipur	Jhunjhunu	Sawaimadhopur
Mapping	Area(Sq. km) Scale	0.87 1:2,000	1 & 1.55(Geo- 1:2,000 phy.)	95 & 1.3 1:25000 & 1:2000
Pitting	Nos. Volume in M3	N.A. 51	N.A. -	- -
Trenching	Nos. Volume in M3	- -	- -	- -
Sampling	No. of samples collected	425 (Geochem.)	35 (Geochem.)	685 (Geochem.)
	No of samples analysed	N.A.	35	N.A.
Drilling	No. of boreholes Metreage drilled	5 1,062.4	- -	3 684.55
Reserves estimated (In million tonnes)		-	Pb- Zn rich gossan	No future plan
Grade(% of metal content) Average gr. (%)		-	-	-
Remarks		To continue	-	-

Particulars		1987	:	1988-89
Area/Name of deposit		Bharak		Dariba-Bethunmi Dariba-Bethunmi (N.Sindesar Bl.)(Bethunmi area)
State		Rajasthan		Rajasthan Rajasthan
District		Bhilwara		Udaipur Udaipur
Mapping	Area(Sq. km)	3or2311ne Km		1.2
	Scale	Geoph. Suvey		1:2000
Sampling	No.of samples collected	-		1,621
	No of samples analysed	-		-
Drilling	No.of boreholes	-		15
	Metreage drilled	-		3,813
Reserves estimated (In million tonnes)		-		-
Grade(% of metal content) Average gr. (%)		-		-
Remarks		-		-

Particulars		1989-90		
Area/Name of deposit		Shergaon	Zawar Extn.	Dariba-Bethunmi (N.Sindesar Block)
State		Arunachal Pradesh	Rajasthan	Rajasthan
District		West Kameng	Udaipur	Rajsamand
Mapping	Area(Sq. km)	-	150	1.3
	Scale	-	1:25000	N.A.
Sampling	No.of samples collected	130	16	233
	No of samples analysed	130	16	-
Drilling	No.of borehole	-	-	18
	Metreage drill	-	-	5,875
Reserves estimated (In million tonnes)		-	-	12.67
Grade(% of metal content) Average gr. (%)		-	-	2%
Remarks		-	-	-

Particulars		1989-90	1990-91 ;	
Area/Name of deposit		Kayar	Dariba-Bethunmi (N.Sindesar Block)	Dariba-Bethunmi (Bethunmi area)
State		Rajasthan	Rajasthan	Rajasthan
District		Ajmer	Rajsamand	Rajsamand
Mapping	Area(Sq. km)	1.5	0.65	0.65
	Scale	1 : 2,000	-	-
Sampling	No.of samples collected	348	75(Core)	342
	No of samples analysed	-	-	-
Drilling	No.of boreholes	5	2	10
	Metreage drilled	939.4	496.8	2,891.15
Reserves estimated (In million tonnes)		-	-	4.1
Grade(% of metal content) Average gr. (%)		-	-	2%
Remarks		-	-	-

Particulars		1990-91	1991-92	
Area/Name of deposit		Kayar	Kayar-Ghugra (Inter. Block)	Dariba-Bethunmi (S.Sindesar Block)
State		Rajasthan	Rajasthan	Rajasthan
District		Ajmer	Ajmer	Rajsamand
Mapping	Area(Sq. km)	0.5	-	1.20
	Scale	1 : 2,500	-	-
Sampling	No.of samples collected	1,005	-	103(Core)
	No of samples analysed	-	-	161
Drilling	No.of boreholes	4	2	2
	Metreage drilled	668.5	253.3	701.8
Reserves estimated (In million tonnes)		-	-	-
Grade(% of metal content) Average gr. (%)		-	-	-
Remarks		-	-	-

Particulars		1991-92		
Area/Name of deposit		Dariba-Bethunmi (N.Sindesar Block)	Kayar	Kayar-Ghugra (Intervening Block)
State		Rajasthan	Rajasthan	Rajasthan
District		Rajsamand	Ajmer	Ajmer
Mapping	Area(Sq. km)	-	1	-
	Scale	-	1 : 2,000	-
Sampling	No. of samples collected	343	-	-
	No of samples analysed	-	-	-
Drilling	No. of boreholes	8	4	4
	Metreage drilled	2,164.95	769.75	595.0
Reserves estimated (In million tonnes)		-	7.5	-
Grade(% of metal content) Average gr. (%)		-	12% Zn & 1.2% Pb	-
Remarks		-	-	Investigation closed

Particulars		1994-95			
Area/Name of deposit		Lohakhan (East Block)	Kekri	Railmagra	Railmagra
State		Rajasthan	Rajasthan	Rajasthan	Rajasthan
District		Ajmer	Ajmer	Rajsamand	Rajsamand
Mapping	Area(Sq. km)	-	0.70	-	-
	Scale	-	1:2,000	-	-
Sampling	No. of samples collected	-	756 & 496	35, 6, 36, 631 ?	597, 96, 36 ?
	No of samples analysed	-	482	35. 6, 32, 691 ?	597, 96, 96 ?
Drilling	No. of boreholes	1	22	13	9
	Metreage drilled	164.8	757.6	5091.85	2380.9
Reserves estimated (In million tonnes)		-	-	-	-
Grade(% of metal content) Average gr. (%)		-	-	-	-
Remarks		To continue -	-	-	-

## Annexure :1.3.3 MINERAL EXPLORATION AND DEVELOPMENT : LEAD AND ZINC

## Hindustan Zinc Ltd.

Particulars		1986-87		
Area/Name of deposit		Zawar	Rajpura Dariba	Agnigundala
State		Rajasthan	Rajasthan	A.P.
District		Udaipur	Udaipur	Guntur
Sampling	No. of samples collected	11,063	-	5,658
	No of samples analysed	-	-	-
Drilling	No. of boreholes	215 (U\G)	-	84
	Metreage drilled	14,941	2,748	3,112.80.
Shaft sinking	No. of shafts.	-	N.A.	-
	Volume in M3	-	42	-
Levels	No. of levels cut	-	-	-
	Volume in M3	-	2,291 m	587.60 <sup>1/</sup>
Raises\ Winzes	No. cut	-	-	-
	Volume in M3	-	360 m	-
Stope preparation in metres		7,385.6	-	-
Reserves estimated (In million tonnes)		54.84	21.40	2.602
Grade (% of metal content)		-	-	5.05% Pb
Remarks		-	-	-

Particulars		1986-87	1987-88
Area/Name of deposit		Sargipali	Zawar Rajpura Dariba
State		Orissa	Rajasthan Rajasthan
District		Sundergarh	Udaipur Udaipur
Sampling	No. of samples collected	245	10,709 -
	No of samples analysed	-	-
Drilling	No. of boreholes	10	222 (U\G) -
	Metreage drilled	361.84	13,489 4,076
Shaft sinking	No. of shafts	-	- N.A.
	Volume in M3	-	- 131
Levels	No. of levels cut	-	-
	Volume in M3	83.65	2,378 m
Raises\ Winzes	No. cut	-	-
	Volume in M3	254.7 m.	- 255 m
Stope preparation in metres		737.81	5,792.9 -
Reserves estimated (In million tonnes)		1.187	53.75 20.192
Grade (% of metal content)		N.A.	-
Remarks		-	-

1/ : Development work includes levels, raises/winzes



Particulars		1987-88	1988-89
Area/Name of deposit		Agnigundala	Sargipalli Zawar
State		Andhra Pradesh	Orissa Rajasthan
District		Guntur	Sundergarh Udaipur
Mapping	Area(Sq. km) Scale	-	-
Trenching	No. of trenches	-	-
Sampling	No. of samples collected	4,569	1,020 8,891
	No of samples analysed	N.A.	N.A. -
Drilling	No. of boreholes Metreage drilled	61 2,506.70.	38 411.74 169(U\G) 12,319
Shaft sinking	No. of shafts Volume in M3	-	-
Levels	No. of levels cut Volume in M3	-	-
		579.201/	363.05
Raises\ Winzes	No. cut Volume in M3	-	-
		-	233.31 m. -
Stope preparation in metres		-	585.89 7,438
Reserves estimated (In million tonnes)		N.A.	1.092 51.37
Grade (% of metal content)		N.A.	N.A. -
Remarks		-	-

Particulars		1988-89		
Area/Name of deposit		Rajpura Dariba	Agnigundala	Sargipali
State		Rajasthan	Andhra Pradesh	Orissa
District		Udaipur	Guntur	Sundergarh
Mapping	Area(Sq. km)	-	-	-
	Scale	-	-	-
Trenching	No. of trenches	-	-	-
Sampling	No. of samples collected	3,394	4,571	794
	No of samples analysed	-	N.A.	N.A.
Drilling	No. of boreholes	-	76	33
	Metreage drilled	3,924.75	2,879.80	461.53
Shaft sinking	No. of shafts	N.A.	-	-
	Volume in M3	1080	-	-
Levels	No. of levels cut	-	-	-
	Volume in M3	1,642.65 m.	519.60 <sup>1/</sup>	591.35
Raises\ Winzes	No. cut	-	-	-
	Volume in M3	384.16 m.	-	50 m.
Stope preparation in metres		-	-	378.25
Reserves estimated (In million tonnes)		28.39	2.612	0.988
Grade (% of metal content)		2.20% Pb 7.13% Zn 0.10% Cu	5.07% Pb	N.A.
Remarks		-	-	-

1/ : Development work includes levels, raises/winzes

Particulars		1988-89	
Area/Name of deposit		Rampura-Agucha	Bamnia Kalan
State		Rajasthan	Rajasthan
District		Bhilwara	Udaipur
Mapping	Area(Sq. km) Scale	-	-
Trenching	No.of trenches	-	-
Sampling	No.of samples collected	63	1,857
	No of samples analysed	63	1,523
Drilling	No.of boreholes Metreage drilled	-	12 2,802
Shaft sinking	No.of shafts Volume in M3	-	-
Levels	No. of levels cut Volume in M3	-	-
Raises\ Winzes	No. cut Volume in M3	-	-
Stope preparation in metres		-	-
Reserves estimated (In million tonnes)		63.63	0.83
Grade (% of metal content)		1.96% Pb 13.53% Zn	3.73% Pb 3.73% Zn 89 ppm Ag
Remarks		-	-

Particulars		1989-90		
Area/Name of deposit		Rajpura Dariba	Rampura-Agucha	Bamnia Kalan
State		Rajasthan	Rajasthan	Rajasthan
District		Udaipur	Bhilwara	Udaipur
Mapping	Area(Sq. km)	-	-	-
	Scale	-	-	-
Trenching	No. of trenches	-	-	-
Sampling	No. of samples collected	2,908	2,517	1,118
	No. of samples analysed	-	948	1,378
Drilling	No. of boreholes	-	-	10
	Metreage drilled	3,645.28	-	1,812
Shaft sinking	No. of shafts	N.A.	-	-
	Volume in M3	296	-	-
Levels	No. of levels cu	-	-	-
	Volume in M3	2,475.50 m.	-	-
Raises\ Winzes	No. cut	-	-	-
	Volume in M3	408.03 m.	-	-
Slope preparation in metres		-	-	-
Reserves estimated (In million tonnes)		28.08	63.13	-
Grade (% of metal content)		2.17% Pb 7.04% Zn 0.10% Cu	1.96% Pb 13.56% Zn	-
Remarks		-	-	-

1/ : Development work includes levels, raises/winzes

Particulars		1990-91	
Area/Name of deposit		Rajpura Dariba	Rampura-Agucha
State		Rajasthan	Rajasthan
District		Udaipur	Bhilwara
Mapping	Area(Sq. km)	-	-
	Scale	-	-
Trenching	No. of trenches	-	-
Sampling	No. of samples collected	5,059	2,000
	No of samples analysed	-	2,000
Drilling	No. of boreholes	-	-
	Metreage drilled	4,921.85	-
Shaft sinking	No. of shafts	N.A.	-
	Volume in M3	206	-
Levels	No. of levels cut	-	-
	Volume in M3	3,939.69 m.	-
Raises\ Winzes	No. cut	-	-
	Volume in M3	-	-
Stope preparation in metres		-	-
Reserves estimated (In million tonnes)		11.24 <sup>1/</sup>	62.88
Grade (% of metal content)		2.49% Pb	1.96% Pb
		7.99% Zn	13.56% Zn
Remarks		-	-

Particulars		1991-92		
Area/Name of deposit		Bamnia Kalan	Bondalamottu	Sargipali
State		Rajasthan	Andhra Pradesh	Orissa
District		Rajsamand	Guntur	Sundergarh
Mapping	Area(Sq. km)	-	-	-
	Scale	-	-	-
Trenching	No. of trenches	-	-	-
Sampling	No. of samples collected	995	5,353	-
	No of samples analysed	1,315	5,353	-
Drilling	No. of boreholes	-	-	-
	Metreage drilled	1,920	2,259	-
Shaft sinking	No. of shafts	-	-	-
	Volume in M3	1.5 m.	-	-
Levels	No. of levels cut	-	-	-
	Volume in M3	-	788.2 m.	705.35 m
Raises\ Winzes	No. cut	-	-	-
	Volume in M3	-	-	-
Stope preparation in metres		-	-	-
Reserves estimated (In million tonnes)		1.04	2.24	2.665
Grade (% of metal content)		2.33% Pb 5.42% Zn	5.28% Pb	5.94% Pb
Remarks		-	-	-

1/ : Possible category.

Particulars		1991-92		
Area/Name of deposit		Rajpura Dariba	Rampura-Agucha	Bamnia Kalan
State		Rajasthan	Rajasthan	Rajasthan
District		Udaipur	Bhilwara	Rajsamand
Mapping	Area(Sq. km)	-	-	-
	Scale	-	-	-
Trenching	No. of trenches	-	-	-
Sampling	No. of samples collected	4,964	3,036	1,107
	No. of samples analysed	-	2,981	1,124
Drilling	No. of boreholes	-	-	-
	Metreage drilled	3,486.25	-	1,354.05
Shaft sinking	No. of shafts	N.A.	-	-
	Volume in M3	24	-	-
Levels	No. of levels cut	-	-	-
	Volume in M3	4,405.62 m.	-	-
Raises\ Winzes	No. cut	-	-	-
	Volume in M3	-	-	5.2 m.
Stope preparation in metres		-	-	-
Overburden removal		-	-	-
Reserves estimated (In million tonnes)		11.36 <sup>1/</sup>	63.08	0.99
Grade (% of metal content)		2.46% Pb	1.94% Pb	2.49% Pb
		8.07% Zn	13.50% Zn	5.69% Zn

Particulars		1991-92	:	1992-93	
Area/Name of deposit		Bondalamottu	Sargipalli	Zawar	Rajpura Dariba
State		A.P.	Orissa	Rajasthan	Rajasthan
District		Guntur	Sundergarh	Udaipur	Udaipur
Mapping	Area(Sq. km)	-	-	-	-
	Scale	-	-	-	-
Trenching	No.of trenches	-	-	-	-
Sampling	No.of samples collected	6,152	-	-	-
	No of samples analysed	6,152	-	-	-
Drilling	No.of boreholes	-	-	-	-
	Metreage drilled	1,750.3	-	-	-
Shaft sinking	No.of shafts	-	-	-	-
	Volume in M3	-	-	421.24	1,992
Levels	No. of levels cut-	-	-	-	-
	Volume in M3	831.2 m.	1,257.8 m.	8,128.1 m	3,878 m.
Raises\ Winzes	No. cut	-	-	-	-
	Volume in M3	-	-	1,134.2 m	201 m.
Stope preparation	in metres	-	-	-	10,502
Overburden removal					36,480
Reserves estimated (In million tonnes)		2.20	2.656	-	-
Grade (% of metal content)		5.30% Pb	5.89% Pb	-	-

1/ : Possible category.



Particulars		1992-93		
Area/Name of deposit		Rapura- Agucha	Agnigundala	Sargipali
State		Rajasthan	Andhra Pradesh	Orissa
District		Bhilwara	Guntur	Sundergarh
Mapping	Area(Sq. km) Scale	-	-	-
Trenching	No. of trenches	-	-	-
Sampling	No. of samples collected	-	-	-
	No. of samples analysed	-	-	-
Drilling	No. of boreholes Metreage drilled	-	-	-
Shaft sinking in cubic meters		-	-	-
Levels	in meters	-	721	793
Raises\ Winzes	in meters	-	414	24
Stope preparation in cubic metres		-	3435	4712
Overburden removal in cubic meters		3968462 (t)-	-	-
Reserves estimated (In million tonnes)		-	-	-
Grade (% of metal content)		-	-	-

Particulars		1993-94		
Area/Name of deposit		Zawar	Rajpura Dariba	Rampura-Agucha
State		Rajasthan	Rajasthan	Rajasthan
District		Udaipur	Udaipur	Bhilwara
Mapping	Area(Sq. km) Scale	-	-	-
Trenching	No. of trenches	-	-	-
Sampling	No. of samples collected	-	-	-
	No of samples analysed	-	-	-
Drilling	No. of boreholes	-	-	-
	Metreage drilled	-	-	-
Shaft sinking in cubic meters		196.95	1,043	-
Levels	in meters	5306.60	2,398	-
Raises\ Winzes in meters		593.20	444	-
Stope preparation in cubic metres		-	5821	-
Overburden removal in cubic meters		-	32468	3787391 (t)
Reserves estimated (In million tonnes)		-	-	-
Grade (% of metal content)		-	-	-

Particulars		1993-94		
Area/Name of deposit		Agnigundala	Sargipalli	Zawar
State		Andhra Pradesh	Orissa	Rajasthan
District		Guntur	Sundergarh	Udaipur
Mapping	Area(Sq. km)	-	-	-
	Scale	-	-	-
Trenching	No.of trenches	-	-	-
Sampling	No.of samples collected	-	-	-
	No of samples analysed	-	-	-
Drilling	No.of boreholes	-	-	-
	Metreage drilled	-	-	-
Shaft sinking in cubic meters		-	-	44.85
Levels	in meters	474	340	3,685.60
Raises\ Winzes in meters		202	43	593.20
Stope preparation in cubic metres		2,987	4,317	-
Overburden removal in cubic meters		-	-	-
Reserves estimated (In million tonnes)		-	-	-
Grade (% of metal content)		-	-	-

Particulars		1994-95			
Area/Name of deposit		Rajpura Dariba Rajasthan	Rampura- Agucha Rajasthan	Agnigundala A.P.	Sargipali Orissa
State		Udaipur	Bhilwara	Guntur	Sundergarh
Mapping	Area(Sq. km)	-	-	-	-
	Scale	-	-	-	-
Trenching	No.of trenches	-	-	-	-
Sampling	No.of samples collected	-	-	-	-
	No of samples analysed	-	-	-	-
Drilling	No.of boreholes	-	-	-	-
	Metreage drilled	-	-	-	-
Shaft sinking in cubic meters		742	-	-	-
Levels	in meters.	1,751	-	260	98
Raises\ Winzes in meters		411	-	32	11
Stope preparation in m3		3756	-	1,160	2,805
Overburden removal in m3		17342	2741385 (t)	-	-
Reserves estimated (In million tonnes)		-	-	-	-
Grade (% of metal content)		-	-	-	-

Particulars		1995-96		
Area/Name of deposit		Zawar	Rajpura Dariba	Rampura- Agucha
State		Rajasthan	Rajasthan	Rajasthan
District		Udaipur	Udaipur	Bhilwara
Mapping	Area(Sq. km)	-	-	-
	Scale	-	-	-
Trenching	No.of trenches	-	-	-
Sampling	No.of samples collected	-	-	-
	No of samples analysed	-	-	-
Drilling	No.of boreholes	-	-	-
	Metreage drilled	-	-	-
Shaft sinking in cubic meters		-	486	-
Levels	in meters	4,955.90	2,270	-
Raises\ Winzes in meters		501.90	465	-
Stope preparation in cubic metres		-	2,959	-
Overburden removed in cubic meters		-	25730	2856947 (t)
Reserves estimated (In million tonnes)		-	-	-
Grade (% of metal content)		-	-	-

Particulars		1995-96	
Area/Name of deposit		Agnigundala	Sargipalli
State		Andhra Pradesh	Orissa
District		Guntur	Sundargarh
Mapping	Area(Sq. km) Scale	-	-
Trenching	No.of trenches	-	-
Sampling	No.of samples collected	-	-
	No of samples analysed	-	-
Drilling	No.of boreholes	-	-
	Metreage drilled	-	-
Shaft sinking in cubic meters		-	-
Levels	in meters	52	195
Raises\ Winzes in meters		28	16
Stope preparation in cubic metres		130	60
Overburden removal in cubic meters		-	-
Reserves estimated (In million tonnes)		-	-
Grade (% of metal content)		-	-

## Annexure : 1.4.1 MINERAL EXPLORATION : COPPER, LEAD &amp; ZINC

## Geological Survey of India

Particulars		1987		
Area/Name of deposit	Dhargaon Manegaon	Pahungaon Nisti	Kasamtandin, Danoni-Milijunge, Garasa, Maharashtra	
State	MaHarashtra	Mahrashtra	Maharashtra	
District	Bhandara	Nagpur	Bhandara	
Mapping Area(Sq. km) Scale	503 (Geochem.) 1: 25,000		22 1:2,000	
Pitting No.of pits Volume in M3	- -		N,A, 75.05	
Sampling No.of samples collected No.of samples analysed	1,166 1,166		1,344 (Geochem.) -	
Drilling No.of boreholes Metreage drilled	- -		- -	
Reserves Quantity (million tonnes)	Work to continue next field season		Work to continue next field season	
Grade(% of metal content)	-	-	-	
Remarks	-	-	-	

Particulars		1987	
Area/Name of deposit		Bhawra Tekra	Sawar
State		Madhya Pradesh	Rajasthan
District		Betul	Ajmer
Mapping	Area(Sq. km)	0.12	0.92
	Scale	1:1,000	1:2,000
Pitting	No.of pits	-	-
	Volume in M3	-	-
Sampling	No.of samples collected	461	386(Geochem.)
	No.of samples analysed	461	-
Drilling	No.of boreholes	7	9
	Metreage drilled	92.45	1,873.4
Reserves	Quantity (million tonnes)	Work to continue next field season	3.07
Grade (% of metal content)		-	0.4 to 0.5% Cu with 0.3 to 0.4 gm./ tonne of gold.
Remarks		-	In addition, ground geophysical survey of airborne Geophysical anomaly was conducted covering 19.48 line Km & 50.12 line Km. in Raji- awas- Bewar area.



Particulars		1987		
Area/Name of deposit		Bharak	Siramuagar- Parasoli	Punagarh
State		Rajasthan	Rajasthan	Rajasthan
District		Bhilwara	Jaipur	Pali
Mapping	Area(Sq. km) Scale	1.1 1:2,000	0.18 1 : 2,000	28 line Km 1 : 25,000
Pitting	No.of pits Volume in M3	N.A. 15	N.A. 55	N.A. -
Sampling	No.of samples collected No.of samples analysed	847(Geochem.) -	431( Cores) -	168 Geoch. 168
Drilling	No.of boreholes Metreage drilled	5 1,033.45	3 666.15	- -
Reserves	Quantity (million tonnes)	Work to continue next field season	-	-
Grade (% of metal content)		-	-	-
Remarks		Also conducted Geophysical investigation in Chabbaria- Pachanpura 5.23 sq.km.to delineate sulphide zones	Concluded & closed	Low priority area for next field season due to small strike len- gth & dis- couraging results of drilling.

Particulars		1987	
Area/Name of deposit	Biranthia Khurd	Manakdas(South. exten.of Khetri belt)	
State	Rajasthan	Rajasthan	
District	Pali	Jhunjhunu	
Mapping	Area(Sq. km) Scale	0.84 1:1,000	1.4 sq. Km area was covered by Geophysical surveys to delineate the strike extension & depth persistence of mineralised zone near Mankasas.
Pitting	No.of pits Volume in M3	- -	
Sampling	No.of samples collected No.of samples analysed	421(Geochem.) 421	
Drilling	No.of boreholes Metreage drilled	- 615.15	
Reserves	Quantity (million tonnes)	0.045	Anomalies located
Grade (% of metal content)		4.6% Cu 5.15% Pb 10.6% Zn	
Remarks		Work completed. In the Biranthiya Khurd extension area ground follow up for delineating anomaly zones was done and will be continued in next field season. Area of 10.71 sq. Km was covered.	

Particulars		1987		
Area/Name of deposit		Pindwara Watera	Trilonia, Rajosi, Sangarwala, Kishnengarh	Ghugaa
State		Rajasthan	Rajasthan	Rajasthan
District		Sirohi	Ajmer	Ajmer
Mapping	Area(Sq. km)	0.92	0.5	-
	Scale	1:1,000	1 : 2,500	-
Pitting	No.of pits	N.A.	-	-
	Volume in M3	-	-	-
Sampling	No.of samples collected	469(Cores)	231( Geochem.)	-
	No.of samples analysed	-	-	-
Drilling	No.of boreholes	7	7	33
	Metreage drilled	1,185	930.85	4,904.85
Reserves	Quantity	-	1.52	14.27
	(million tonnes)	-	(Infered)	(2%cut off)
Grade (% of metal content)		-	0.51% Cu	-
Remarks		So far no deposit of significance has been proved. In addition, 51.64 line Km area of Golia Goderela mineralised zone was covered under geophysical survey to deliniate base metal zone		

Particulars		1987	
Area/Name of deposit	Kankariya, Madarpura, Kayar, Gala	Bedwai-Kipal, Jambura, Padwa, Chari	
State	Rajasthan	Rajasthan	
District	Ajmer	Udaipur	
Mapping	Area(Sq. km) Scale	- -	1 & 0.3 1 : 2,000 & 1: 1,000
Pitting	No. of pits Volume in M3	- -	- -
Sampling	No. of samples collected No. of samples analysed	202 -	2,837(Geochem.) 35 (Core)
Drilling	No. of boreholes Metreage drilled	11 1,631.60	9 1,212.10
Reserves	Quantity (million tonnes)	3 to 6 meters mineralised zones were found	1 13 meters mineralised zone with 0.5% to 2% Copper by visual estimates
Grade (% of metal content)	3% Pb & Zn		
Remarks			

Particulars		1986	1987	
Area/Name of deposit		Bengal Pari, Rawatiya	Mando-Ki-Pal	Sanganer, Milkhera
State		Rajasthan	Rajasthan	Rajasthan
District		Chittorgarh Udaipur	Dungarpur	Bhilwara
Mapping	Area(Sq. km)	1	1	2
	Scale	1:1,000	1 : 1,000	1:2,000
Trenching	No.of trenches	N.A.	-	-
	Volume in M3	14	-	-
Sampling	No.of samples collected	1,366(Geochem.)	1,338(Geochem)	743(Gech.)
	No.of samples analysed	-	-	-
Drilling	No.of boreholes	13	-	14
	Metreage drilled	2,558.35	-	1,807.65
Reserves	Quantity (million tonnes)	19.50	N.A.	Drilling in progress
Grade (% of metal content)		0.47% Cu at 0.2% cut off	N.A.	-
Remarks		-	-	-

Particulars		1987	
Area/Name of deposit		Sapuraguda	Marripadu
State		Rajasthan	Andhra Pradesh
District		Bhilwara	Nellore
Mapping	Area(Sq. km)	-	-
	Scale	-	-
Trenching	No.of trenches	-	-
	Volume in M3	-	-
Sampling	No.of samples collected	114(Geochem.)	-
	No.of samples analysed	73	-
Drilling	No.of boreholes	-	N.A.
	Metreage drilled	-	.5
Reserves	Quantity (million tonnes)	-	1239.83
Grade (% of metal content)		-	Copper values range from 0.12% to 5.30%.
Remark		-	-

Particulars		1987		
<b>Area/Name of deposit</b>		Manapur Kurkuripahar	Chapri	Dikchu
<b>State</b>		Bihar	Bihar	Sikkim
<b>District</b>		Giridih	Singhbhum	East Sikkim
<b>Mapping</b>	Area(Sq. km) Scale	-	0.15 1 : 2,000	2 & 0.17 1:2,000 1:1,000
<b>Trenching</b>	No. of trenches Volume in M3	-	-	-
<b>Sampling</b>	No. of samples collected No. of samples analysed	-	385(Cores)	-
<b>Drilling</b>	No. of boreholes Metreage drilled	N.A. 3	N.A. 4	54 -
<b>Reserves</b>	Quantity (million tonnes)	259.35	604	To continue for strike extension of Dikchu mine
<b>Grade (% of metal content)</b>	Drilling in progress	-	-	-
<b>Remarks</b>		-	-	-

Particulars		1988	:	1988-89
Area/Name of deposit		Hamandur, Kallakurichi		Ladera-Sakun Agucha & Man- otia Exten.
State		Tamilnadu		Rajasthan
District		South Arcot		Bhilwara & Ajmer
Mapping	Area(Sq. km) Scale	350 1: 5,000		0.64 1: 2,000
Trenching	No. of trenches Volume in M3	- -		- -
Sampling	No. of samples collected No. of samples analysed	- - -		- - -
Drilling	No. of boreholes Metreage drilled	N.A. 2,111		150 478
Reserves	Quantity (million tonnes)	-		185
Grade (% of metal content)		-		379
Remarks		-		-

Particulars		1968-89		
Area/Name of deposit		Bharak Area <sup>†</sup>	Sawar	Pratapgarh
<b>State</b>		Rajasthan	Rajasthan	Rajasthan
<b>District</b>		Bhilwara	Ajmer	Jaipur & Alwar
<b>Mapping</b>	Area(Sq. km) Scale	0.80 1: 2,000	0.42 1: 2,000	1.73 1: 1,000
<b>Trenching</b>	No. of trenches Volume in M3	- -	- -	- -
<b>Sampling</b>	No. of samples collected No. of samples analysed	- -	- -	- -
<b>Drilling</b>	No. of boreholes Metreage drilled	- 1,254	- 142	- 128
<b>Reserves</b>	Quantity (million tonnes)	9.6 <sup>1/2</sup>	-	-
<b>Grade (% of metal content)</b>		-	-	-
<b>Remarks</b>		-	-	-



Particulars		1988-89		
Area/Name of deposit		Pindwara-Watera belt	Kalabar	Bagiboki
State		Rajasthan	Rajasthan	Arunachal Pradesh
District		Sirohi	Pali	West Siang
Mapping	Area(Sq. km) Scale	2.0 1: 4,000	0.75 1: 1,000	45 & 5 1: 25,000 1:5,000
Trenching	No.of trenches Volume in M3	- -	- -	- -
Sampling	No.of samples collected No.of samples analysed	- -	- -	219 46
Drilling	No.of boreholes Metreage drilled	- 228	- 192	- -
Reserves	Quantity (million tonnes)	-	-	-
Grade (% of metal content)		-	-	-
Remarks		-	-	-

\* | Silver mineralisation  
1/ : Thousand tones

Particulars		1989-90		
Area/Name of deposit		Tekhi extn.block (N. Sawar)	Aladahalli Extn.	Vontimitta
State		Rajasthan	Karnataka	Andhra Pradesh
District		Ajmer	Hassan	Cuddapah
Mapping	Area(Sq. km)	0.48	0.69	-
	Scale	1: 2,000	1: 1,000	-
Trenching	No.of trenches	-	-	-
	Volume in M3	-	-	-
Sampling	No.of samples collected	250( Core)	-	-
	No.of samples analysed	250	-	-
Drilling	No.of boreholes	8	4	9
	Metreage drilled	1,954.7	801.70	1,186.75
Reserves	Quantity (million tonnes)	1.30	-	-
Grade (% of metal content)		0.69% Cu, 3.93% Pb & Zn	-	-
Remarks		-	-	-

Particulars		1989-90	:	1990-91
Area/Name of deposit		Bishanpur		Chitar Tekhi extension Watera belt (S. Sawar)
State		Biharthan		Rajasthan Rajasthan
District		Girdih		Sirohi Ajmer
Mapping	Area(Sq. km) Scale	-		2.0 1: 4,000 -
Trenching	No. of trenches Volume in M3	-		-
Sampling	No. of samples collected No. of samples analysed	150 -		94 ( Core) 94
Drilling	No. of boreholes Metreage drilled	8 1,039.1		8 228 1,360.7
Reserves	Quantity (million tonnes)	Not estimated.		Investiga- 2.37 tion in closed progress
Grade (% of metal content)		-		6.0% Pb
Remarks		-		-

Particulars		1990-91		
Area/Name of deposit		Aladahalli Extn.	Vontimitta	Aladahalli Extn.
State		Karnataka	Andhra Pradesh	Karnataka
District		Hassan	Cuddapah	Hassan
Mapping	Area(Sq. km) Scale	16.8 1: 5,000	-	0.52 1: 1,000
Trenching	No. of trenches Volume in M3	-	-	-
Sampling	No. of samples collected No. of samples analysed	884	171	-
Drilling	No. of boreholes Metreage drilled	-	6 741.45	2 493.85
Reserves	Quantity (million tonnes)	-	Not estimated. Investigation closed	Not estimated. Investigation closed
Grade (% of metal content)		-	-	-
Remarks		-	-	-

Particulars		1991-92		
Area/Name of deposit		Chitar	Tekhi extension Aladahalli (S. Sawar)	
State		Rajasthan	Rajasthan	Karnataka
District		Pali	Ajmer	Hassan
Mapping	Area(Sq. km)	0.5	0.3	12.8
	Scale	-	1 : 2,000	1: 5,000
Trenching	No.of trenches	-	-	-
	Volume in M3	-	-	-
Sampling	No.of samples collected	127	183( Core)	496
	No.of samples analysed	71	183	-
Drilling	No.of boreholes	4	9	-
	Metreage drilled	639.45	1,760.75	-
Reserves	Quantity (million tonnes)	Investiga- tion in progress	Not estimated	-
Grade (% of metal content)		-	-	-
Remarks		-	-	-

Particulars		1994-95	
Area/Name of deposit		Chashipahari	Pindwara-Ajari
State		Bihar	Rajasthan
District		Deoghar	Sirohi
Mapping	Area(Sq. km)	1.2	7.1
	Scale	1: 1,000	1 : 4,000
Trenching	No.of trenches	2	-
	Volume in M3	-	-
Sampling	No.of samples collected	-	-
	No.of samples analysed	-	-
Drilling	No.of boreholes	4	5
	Metreage drilled	471.5	687.2
Reserves	Quantity (million tonnes)	-	-
Grade (% of metal content)		-	-
Remarks		-	-

Particulars		1994-95	1991-92
Area/Name of deposit		Pindwara-Denwa	Pindara
State		Rajasthan	Bihar
District		Sirohi	Banki?
Mapping	Area(Sq. km)	-	0.88
	Scale	-	1 : 2,000
Trenching	No. of trenches	-	-
	Volume in M3	-	-
Sampling	No. of samples collected	2,117	600
	No. of samples analysed	-	600
Drilling	No. of boreholes	4	12
	Metreage drilled	1,821.75	1,813.4
Reserves	Quantity	-	-
	(million tonnes)	-	-
Grade (% of metal content)		-	-
Remarks		-	-

## Annexure : 1.4.2 MINERAL EXPLORATION : COPPER, LEAD AND ZINC

## Sikkim Mining Corporation

Particulars		1986-87	1987-88	1988-89	1989-90
Area/Name of deposit		Bhotang	Bhotang	Bhotang	Bhotang
State		Sikkim	Sikkim	Sikkim	Sikkim
District		East	East	East	East
		Sikkim	Sikkim	Sikkim	Sikkim
Sampling	No. of samples collected	315	407	1,112	869
	No. of samples analysed	315	407	1,112	869
Shaft sinking	Volume in M3	-	7.50	8.94	10.47
Levels Cut	in meters	128.41	131.02	206.40	391.10
Raises & Winzes	in meters	28.90	44.93	54.06	138.68
Cross cuts	in metres	58.90	63.07	140.50	198.03
Reserves estimated	(in million tonnes)	-	-	-	-
Grade ( % of metal content)		-	-	-	-

Particulars		1990-91	1991-92	1992-93
Area/Name of deposit		Bhotang	Bhotang	Bhotang
State		Sikkim	Sikkim	Sikkim
District		East Sikkim	East Sikkim	East Sikkim
Sampling	No. of samples collected	397	655	232
	No. of samples analysed	397	655	232
Shaft sinking	Volume in M3	5.08	7.05	58
Levels Cut	in meters	192.52	308.59	385
Raises & Winzes	in meters	46.43	48.62	107
Cross cuts	in metres	93.32	104.03	-
Reserves estimated	(in million tonnes)	0.351*	-	6.20
Grade ( % of metal content)		2.35% Cu 1.17% Pb 2.30% Zn	-	1.96 Cu 2.15 Pb 3.00Zn

\* : Recoverable reserves as on 1.4.1990



Particulars		1993-94	1994-95	1985-86
Area/Name of deposit		Bhotang	Bhotang	Bhotang
State		Sikkim	Sikkim	Sikkim
District		East Sikkim	East Sikkim	East Sikkim
Sampling	No. of samples collected	292	60	121
	No. of samples analysed	292	60	121
Shaft sinking	Volume in M3	-	-	-
Levels Cut	in meters	293	133	212
Raises & Winzes	in meters	155	62	57
Cross cuts	in metres	-	-	-
Reserves estimated	(in million tonnes)	6.77	6.59	6.51
Grade ( % of metal content)		1.94% Cu	1.94% Cu	1.94% Cu
		1.67% Pb	1.67% Pb	1.75% Pb
		3.12% Zn	3.12% Zn	3.27% Zn

**Annexure : 1.5.1 MINERAL EXPLORATION : BASE METALS**  
**Geological Survey of India**

Particulars		1986		
Area/Name of deposit	Sakoli	Khapri	Ranmangli	
State	Maharashtra	Maharashtra	Maharashtra	
District	Bhandara	Bhandara	Nagpur	
Mapping	Area(Sq. km)	342 (Prospecting)	-	-
	Scale	-	-	-
Trenching	No. of trenches	-	-	-
	Volume in M3	8	-	-
Sampling	No. of samples collected	1,455	70(Cores)	75(Cores)
	No. of samples analysed	N.A.	N.A.	N.A.
Drilling	No. of boreholes	-	4	6
	Metreage drilled	-	813.30	1,637.37
Reserves	Quantity (million tonnes)	Prospecting in progress	Work in progress	0.5
Grade (% of metal content)	-	-	-	1.23% Cu at cut off grade of 1%Cu & 1 m. width over a strike length of 9.28 m.
Remarks	-	-	-	-

Particulars		1986	
Area/Name of deposit	Bhavar Tekra-Bargaon	Mallapuram-Umareddipalle	
State	Madhya Pradesh	Andhra Pradesh	
District	Betul	Prakasam	
Mapping	Area(Sq. km)	11	5.71
	Scale	1: 2,000	(Geophysical)
Trenching	No. of trenches	-	-
	Volume in M3	-	-
Sampling	No. of samples collected	380 (Cores)	561
	No. of samples analysed	221	N.A.
Drilling	No. of boreholes	3	5
	Metreage drilled	560.25	958.7
Reserves	Quantity (million tonnes)	Not yet estimated	No sizeable deposit found.
Grade (% of metal content)	-	-	-
Remarks	-	-	-

Particulars		1986		
Area/Name of deposit	Marripadu(Pada-sulabharie)	Sawar- Bajta	Bharak	
State	Andhra Pradesh	Rajasthan	Rajasthan	
District	Nellore	Ajmer	Bhilwara	
Mapping	Area(Sq. km)	0.5 ,8 line km	-	1.5
	Scale	1: 5,000	-	1:2,000
Trenching	No. of trenches	-	-	1
	Volume in M3	-	-	5
Sampling	No.of samples collected	98	N.A.	-
	No.of samples analysed	N.A.	223.	-
Drilling	No.of boreholes	4	12	-
	Metreage drilled	992.45	1,974.6	-
Reserves	Quantity (million tonnes)	Work to continue	Work to continue	Work to continue
Grade (% of metal content)		-	-	-
Remarks		-	-	-

Particulars		1986			
Area/Name of deposit	Sangner	Chabaria- Prachanpura	Birantia- Kurd-Giri	Kodarle- Swaroopganj	
State	Rajasthan	Rajasthan	Rajasthan	Rajasthan	
District	Bhilwara	Bhilwara	Pali	Sirohi	
Mapping	Area(Sq. km)	13.2	1.85	0.87	112.34 line
	Scale	(Geophysical Survey)	(Geophy. Survey)	1:1,000	km.Geophy. Survey
Trenching	No. of trenches	1	-	-	-
	Volume in M3	5	-	-	-
Sampling	No.of samples collected	-	-	513	-
	No.of samples analysed	-	-	513	-
Drilling	No.of boreholes	-	-	11	-
	Metreage drilled	-	-	641.75	-
Reserves	Quantity (million tonnes)	S.P.& Magnetic anomalies associated with	Survey is in progress.	Work to be discontinued.	Investigation contd.
Grade (% of metal content)		Cu-Pb mineralisation were detected.	-	In addition 68.56 linekm area covered under geophy - survey	-
Remarks		-	-	-	-

Particulars		1988		
Area/Name of deposit		Dighori-Lakhandur	Garara-Nalik-ajhari Nawegaon	Bhwra-Tekra hillock
State		Maharashtra	Maharashtra	M.P.
District		Bhandara	Bhandara	Betul
Mapping	Area(Sq. km)	275	18	0.42
	Scale	1:50,000	1:2,000	1:1,000
Trenching	No. of trenches	-	-	-
	Volume in M3	-	-	-
Sampling	No. of samples collected	668(Geochem.)	1,165(Geochem.)	291Geochem.
	No. of samples analysed	668	1,165	291
Drilling	No. of boreholes	-	-	7
	Metreage drilled	-	-	1,041
Reserves	Quantity (million tonnes)	-	-	-
Grade (% of metal content)		-	-	-
Remarks		-	-	-

Particulars		1988		
Area/Name of deposit		Bhewar Tekra-Bargaon	Mallapuram-Umareddipalle	
State			Andhra Pradesh	
District			kasam	
Mapping	Area(Sq. km)	-	11	5.71
	Scale	-	1: 2,000	(Geophysical)
Trenching	No. of trenches	-	-	-
	Volume in M3	-	-	-
Sampling	No. of samples collected		380 (Cores)	561
	No. of samples analysed	221		N.A.
Drilling	No. of boreholes	7		5
	Metreage drilled	1,041		958.7
Reserves	Quantity (million tonnes)	Not yet		No sizeable deposit
Grade (% of metal content)		-		-
Remarks		-		-