Budget Sec.

REPORT

1971-72

GOVERNMENT OF INDIA
MINISTRY OF STEEL AND MINES
(DEPARTMENT OF STEEL)
NEW DELHI

CONTENTS

APPENDICES

N.B. Data for 1971-72 contained in the Report are provisional

THE YEAR AT A GLANCE

The Department of Steel deals with the Steel Plants in the public and private sectors, rerolling industry and ferro-alloys including their future development, development of captive ore mines and coal washeries; production, distribution, prices, imports and exports of iron and steel and ferro-alloys; and planning, development and control of and assistance to all iron and steel industries.

The office of Iron and Steel Controller, Calcutta, and the following public-sector undertakings function under the administrative control of this Department:

(i) Hindustan Steel Limited, Ranchi, (Bihar);

(ii) Bokaro Steel Limited, Bokaro Steel City, Bokaro (Bihar);

(iii) Hindustan Steelworks Construction Ltd., Calcutta (West Bengal);

(iv) Heavy Engineering Corporation Limited, Ranchi (Bihar);

(v) Mining and Allied Machinery Corporation Limited, Durgapur (West Bengal);

(vi) Triveni Structurals Limited, Naini, Allahabad (U.P.);

(vii) Bharat Heavy Plate and Vessels Limited, Visakhapatnam (Andhra Pradesh);

(viii) Tungabhadra Steel Products Limited, Tungabhadra Dam (Mysore); and

(ix) Engineering Projects (India) Limited, New Delhi.

The total investment in these undertakings, as on March 31, 1971 was Rs. 1922 crores comprising Rs. 1098 crores as equity

capital and Rs. 824 crores as loans, and accounted for 41 per cent of the total investment of Rs. 4682 crores in Central Government undertakings other than departmental projects. This included an investment of Rs. 1635 crores on public sector steel plants, representing 35 per cent of the total investment in Central undertakings. Hindustan Steel Limited, with an investment of Rs. 1066 crores is the biggest company not only in the public sector but in the country as a whole and accounts for 23 per cent of the total investment in the public sector. The total number of employees in these undertakings is about 2 lakhs.

Some important data relating to these undertakings is given in the following table:

Unit	*Year of incorporation*	*Capital expenditure upto 31-3-72*	*Equity Capital*	*Government loans as on 31-3-72*	***Cumulative net profit (+)/ loss (—)*	*Cumulative depreciation*	*Cumulative interest on Govt. loans*	*No. of Employees.*
Hindustan Steel Ltd.	1954	Rs. 1218 crores	Rs. 594 crores	Rs. 444 crores	*(—)Rs. 223 crores	Rs. 546 crores	Rs. 197 crores	1,25,538 as on 31-12-71
Hindustan Steel works Construction Limited.	1964		Rs. 50 lakhs	Rs. 100 lakhs	Rs. 362 lakhs	Rs. 165 lakhs	Rs. 25·5 lakhs	About 45,000 as on 29-2-72 (including contractor's labour)
Bokaro Steel Limited	1964	Rs. 653·46 crores	Rs. 600·00 crores	Rs. 53·46 crores	Nil	Nil	Nil (interest holiday up to 31-3-78	11,925 as on 29-2-72 (in regular establishments)
Heavy Engineering Corporation Limited.	1958	Rs. 192·99 crores	Rs. 159·50 crores	Rs. 96·01 crores	(—)Rs. 87·83 crores	Rs. 29·90 crores	Rs. 33·02 crores	15,854 as on 1-1-72

*Provisional.

**The amounts under this column indicate the position as on 31-3-1972 (estimated for the year 1971-72) in respect of the various Units except for Hindustan Steel works Construction Limited against which the figure given represents the position as on 31-3-1971.

Unit	Year of incorporation	Capital expenditure upto 31-3-72	Equity Capital	Government loans as on 31-3-72	**Cumulative profit net (+)/loss(—)	Cumulative depreciation	Cumulative interest on Govt. loans.	No. of Employees
Mining & Allied Machinery Corporation Limited.	1965	Rs. 35·60 crores	Rs. 20 crores	Rs. 42·72 crores	(—)Rs. 36·42 crores	Rs. 911·14 lakhs	Rs. 11·06 crores	6,066 as on 31-3-72
Triveni Structurals Limited	1965	Rs. 625·34@ lakhs	Rs. 153 lakhs	Rs. 439·40 lakhs	(—)Rs. 204·52 lakhs	Rs. 59·60 lakhs as on 31-3-71	Rs. 21·14 lakhs as on 31-1-71	1,829 as on 31-1-72
Bharat Heavy Plate & Vessels Limited.	1966	Rs. 1,747·52 lakhs	Rs. 817·97 lakhs	Rs. 1238·36 lakhs	(—)Rs. 340·18 lakhs	Rs. 55·41 lakhs	Rs. 74·00 lakhs as on 31-1-71	1,539 as on 29-2-72
Tungabhadra Steel Products Limited.	1960	%	Rs. 51·00 lakhs	Rs. 10·00 lakhs	(+)Rs. 32·98 lakhs	Rs. 18·64 lakhs	—	833 as on 31.1.72
Engineering Projects (India) Ltd.	1970	No. Govt. investment	—	—	—	—	—	
Total :		1384·22 crores	654·06 crores					208,584

@Govt. of India subscription

%The Company was originally started as a repair and maintenance shop in 1947 and was formed into a private Ltd Co. in 1960 with the Govts. of Mysore and Andhra Pradesh holding a share capital of Rs. 25 lakhs each. In Feb. 1967 Govt. of India acquired controlling interest by investing Rs. 51 lakhs.

The mild steel production in the country during 1971-72 is estimated at 6.3 million ingot tonnes. Production of finished steel was 4.6 million tonnes. Of this, the production of main steel plants aggregated to 5.8 million tonnes ingots, or to 4.5 million tonnes of saleable steel. Taking into account imports of about 0.8 million tonnes and exports of about 0.2 million tonnes, the total steel available for domestic consumption during the year was 5.2 million tonnes which was about the same as in the previous year. The production of tool alloy and special steels during the year was about 0.3 (0.3 in 1970-71) million tonnes and of saleable pig iron about 1.0 (1.3 in 1970-71) million tonnes. Among engineering units, the Heavy Engineering Corporation Limited, manufactured 30,468 tonnes of mechanical equipment and structurals (23,109 tonnes in 1970-71), 20,954 tonnes of Forgings (16,021 tonnes in 1970-71) and 20 numbers of Machine Tools (28 numbers in 1970-71) valued at about Rs. 39 crores as compared to about Rs. 28 crores in the previous year. The value of Machine Tools produced during 1971-72 was Rs. 126.26 lakhs as against Rs. 105.43 lakhs during 1970-71. At Mining and Allied Machinery Corporation Limited the production was 11,300 tonnes (7742 tonnes in 1970-71), at Bharat Heavy Plate and Vessels Limited 2480 tonnes (548 tonnes in 1970-71), at Tungabhadra Steel Products Limited 4191 tonnes (3587 tonnes in 1970-71) and at Triveni Structurals Limited 10,214 tonnes (8,908 tonnes in 1970-71).

The table below gives the value of output of the various undertakings since 1967-68:

(Rs. in lakhs)

Units	1967—68	1968—69	1969—70	1970—71	1971—72**
Hindustan Steel Limited	264,28	319,29	386,24	426,55	378,30
		(first Blast furnace to be commissioned in 1972)			
Bokaro Steel Ltd.					33,40
Hindustan* Steelworks Construction Limited	4,43	20,94	25,32	32,32	
Heavy Engineering Corporation Limited	7,73	14,03	21,96	28,03	38,81
Mining and Allied Machinery Corporation Limited	2,26	1,58	2,84	4,88	10,00
Triveni Structurals Limited	—	11	57	1,31	1,85
Bharat Heavy Plate & Vessels Ltd.	—	—	7	37	2,27
Tungabhadra Steel Products Ltd.	56	86	1,06	1,16	1,46

*Value of works.
**Provisional.

Some of the more important developments are given below:

1. Progress at Bokaro Steel Plant.

The work on the First Stage of Bokaro Steel Plant with a capacity of 1.7 million tonnes of steel ingots and 880,000 tonnes of pig iron progressed satisfactorily. Many of the units *e.g.*, Cooling Pond No. 1, 1st 55 MW Turbines in the Thermal Power Station, one Sinter Band, Mechanised Iron Ore Handling and Blending System, Structural Shop, Oxygen Plant and Aceteylene Plant have already been commissioned. The first coke oven Battery was lighted on March 6, 1972 and the first blast furnace is expected to be commissioned within the next few months.

Government have taken a decision to launch a crash programme for achieving a capacity of 2.5 million tonnes of steel ingots in between the first (1.7 million tonnes) and second (4.00 million tonnes) stages at Bokaro Steel Plant. The work on the 2.5 million tonnes stage is expected to be completed by the end of the Fourth Five Year Plan period. The work on the Second Stage of Bokaro Steel Plant, has commenced and the possibility of further expansion is under examination.

The Government have acquired M|s. Asian Refractories Limited—a private sector Company which was under liquidation, and have nominated Bokaro Steel Limited to manage it on behalf of the Central Government. This Company will cater to the requirements of fire clay bricks of Bokaro Steel Plant during the construction|operation stage.

2. Expansion of Bhilai Steel Plant.

At Bhilai Steel Plant the Sixth Blast Furnace and the Seventh Coke Oven Battery were commissioned in July 1971 and in January 1972 respectively.

The Plant is being expanded to about 4 million tonnes steel capacity. Action is in hand to develop the further supporting

facilities, including mechanisation of the captive Iron Ore Mines and the setting up of the Second Sintering Plant.

3. Expansion of Alloy Steels Plant, Durgapur.

To meet the increased domestic demand for tool, alloy and special steels, the Government have approved in principle, the expansion of Alloy Steels Plant, Durgapur, from the present capacity of 100,000 tonnes of ingots (60,000 tonnes finished steel) to 300,000 tonnes ingots (1,80,000 tonnes finished steel). The Central Engineering and Design Bureau of Hindustan Steel Limited have been entrusted with the work of preparing a detailed project report for this expansion.

4. New Steel Plants.

The preliminary work relating to the setting up of the new Steel Plants has made satisfactory progress. Feasibility Reports have been received for the three new Steel Plants to be set up at Salem, Visakhapatnam and Vijayanagar.

As it takes 7 to 8 years to commission large integrated steel-works after the sites are selected, action has been initiated on 'location studies' for new projects to be considered for inclusion in the Fifth and Sixth Plans, as well as on the expansions which may be possible at the existing locations.

5. Three-year Rolling Plan for spares, refractories and rolls.

To ensure timely availability of stores and sparas, rolls, raw materials, refractories, etc., as also to derive the advantage of more economical procurement as well to facilitate indigenous production through bulking of the orders, a three-year rolling plan for these items, has been formulated for the integrated steel plants in the country. Likewise a three-year maintenance programme for the integrated steel plants has also been finalised. These measures will result in a better and timely maintenance and utilisation of existing installed capacity, and will contribute towards large self-sufficiency.

6. Central Research and Development Board.

In order to strengthen and coordinate research and development in steel manufacture and in associated 'input' industries, the question of constituting an autonomous Central Research and Development Board for the Iron and Steel Industry, is under active consideration. To overcome the present inadequacies of feedback of information in regard to developments in the iron and steel technology in India and abroad, the Board will also establish a Documentation and Information Centre.

7. Pilot Plants for Manufacturing Sponge Iron.

Having regard to the potential role of sponge iron in the future steel development programme, the Government have decided to set up a pilot plant at the National Metallurgical Laboratory, Jamshedpur, with a capacity to manufacture 20 to 25 tonnes of sponge iron per day with comprehensive facilities for undertaking large scale tests. The plant will pre-reduce the iron ore with the help of non-coking coal or other fuels. The capital cost of the project is estimated to be Rs. 50 lakhs, which will be financed entirely by the Central Government. The Government have also cleared Andhra Pradesh Industrial Development Corporation's proposal for setting up a pilot plant with UNDP assistance for manufacturing sponge iron using locally available raw materials.

8. Holding Company for Steel.

A decision has been taken to set up a Holding Company for steel and associated input industries like coking coal, iron ore, manganese ore etc. The Holding Company will own all the shares in public sector corporations dealing with these projects and guide their work. It will also own all Government shares in the relevant joint sector companies and it is proposed that it should act as the nominee of public sector financial institutions which possess shares in private sector steel companies, mining companies, refractory units and smaller steel producing organisations.

The Holding Company will formulate long term programmes of development, arrange for effective channelling of surpluses into further expansion of the industry, finance necessary technological changes and innovations, and coordinate and supervise the operations of these companies in the connected sectors.

9. Equity participation in Mysore Iron and Steel Ltd.

The Central Government have increased its participation in the equity capital of Mysore Iron and Steel Limited from about 10 per cent to 40 per cent. The remaining shares are owned by the Mysore Government.

10. Modification of Capital Structure of Bokaro Steel Ltd., and The Heavy Engineering Corporation.

The capital structures of Bokaro Steel Limited and of the Heavy Engineering Corporation have been modified. In the case of Bokaro Steel Limited, the Authorised Capital has been raised from Rs. 500 crores to Rs. 600 crores and fully subscribed by converting loans amounting to Rs. 89.46 crores into 'equity' and the remaining Rs. 10.54 crores by fresh contribution.

In the case of the Heavy Engineering Corporation, the Authorised Capital of the company has been raised from Rs. 100 crores to Rs. 175 crores, and paid-up capital from Rs. 100 crores to Rs. 150.50 crores, by conversion of loans to the extent of Rs. 50.50 crores.

11. Task Forces.

In pursuance of Government decision, separate Task Forces have been set up for each steel plant in the Public Sector as also for each of the Heavy Engineering Units under the administrative control of this Department. The Task Forces meet once in every 2 to 3 months to review the performance of the concerned undertakings and to identify bottlenecks with a view to suggesting appropriate remedial measures.

The steel plants, both in public and private sectors as also the various engineering units are encouraged to use the good offices of the Department of Steel in resolving their problems with the Department of Steel and other Government Departments and for getting expeditiously indigenous clearance, foreign exchange allocations, import licences etc. These meetings have also proved very useful in resolving problems of supply of plant and equipment from the various engineering units to the Steel Plants and to each other.

12. Distribution Policy.

The distribution policy is being made more and more consumer-oriented, with the object of providing as much steel as possible to the actual consumers direct. The steel plants are now supplying over 90 per cent of production to actual consumers. The system of distribution to small scale industries has also been modified. The small scale units are no longer required to send individual idents. The responsibility for bulk procurement of steel and its distribution between the small-scale units now devolves on the Small Scale Industries Corporations in the various States. This has obviated the need for depositing earnest money by the small scale units.

13. Billet Re-rollers Committee.

A Billet Re-rollers Committee has been set up to regulate the supply of billets and the materials re-rolled therefrom and their prices. Prior to this the distribution and prices of the products of the re-rollers were not regulated.

14. Regulation of distribution of used rails.

Used rails are one of the most important raw materials for scrap re-rollers. For the last two years these rails were not available to the re-roller because of a Court injunction. Prior to the Court injunction these were sold by the Railways by auction. The injunction has since been vacated. It has been

decided to distribute these used rails to the scrap re-rollers in a regulated manner and after allowing a conversion charge to distribute the re-rolled products therefrom also in a regulated manner. This will increase the availability of bars and rods substantially and will help the construction activity, particularly in rural areas.

15. Committee to allocate Steel for House Building.

A Committee of Main Steel Prolucers has been constituted to coordinate and allocate steel materials for house building purposes in Delhi. In making the allocations, the Committee gives preference to the small house builder whose requirement is less than 3 tonnes and whose plot area is less than 250 square yards. The possibility of extending this scheme to other cities is under consideration.

16. Curbing Malpractices in the use of Steel.

Additional steps have been taken to check possible malpractices in the use of steel. The Iron and Steel (*Control*) Order has been amended and utilisation of steel for purposes other than those for which it is allocated or applied, has been made a penal offence. Four regional offices of Iron and Steel Controller have been set up at Delhi, Calcutta, Bombay and Madras and their functions, *inter alia* include detection of mis-use of steel. Action is in hand to set up two more offices at Kanpur and Hyderabad.

17. Steel Prices.

In December, 1971 the Excise Duty on all categories of steel was increased by 50 percent. Even so the prices of indigenous steel were lower than the landed cost of imported steel. The Budget proposals contain further increases by about 30 per cent with effect from 17th March, 1972. The ex-works prices of domestic steel are also generally lower than the domestic prices prevailing in other countries.

18. Steel Bank.

To eliminate the delays in the physical availability of some critical categories of steel, the Government have decided to set up a Steel Bank. The Bank will maintain stocks of various categories of steel to facilitate supply of materials to priority users ex-stock, and will thus reduce delays, now experienced in the availability of 'Matching Steel' to priority users and will serve as an insurance against costly delays. A small reserve of indigenously manufactured steel items is also being maintained by the Iron and Steel Controller. The Bank has since started functioning under the operational control of H.S.L.

19. Canalisation of Steel Imports.

The scope of the scheme of canalisation of imports, started in 1970-71, in pursuance of Government's policy to progressively nationalise the export-import trade has been further enlarged to cover all mild steel, high carbon and alloy steels, wire rods in coils, all mild steel and high carbon steel semis, including ingots, blooms, slabs and billets, CRGO electrical steel sheets, all mild steel sheets, strips and skelp in coils; all other steel sheets, strips and skelp in cut lengths for manufacture of drums, barrels and steel furniture, tinplate for manufacture of open-top sanitary cans. In addition, ferro-alloys like ferro molybdenum, ferro-tungsten, ferro-vanadium, ferro-silicon have also been canalised.

20. Schemes for electric furnaces-cum-continuous casting units.

Government have approved 17 schemes for setting up electric furnaces-*cum*-continus casting complexes in the country. These units will manufacture mild, high carbon alloy and spring steel billets which will be re-rolled into finished products. The total capacity of these units when commissioned will be about 9 lakh tonnes.

21. Workers Representation on the HSL Board.

Government have decided to appoint two representatives of the workers on the Board of Directors of Hindustan Steel

Limited. The Workers' representatives on the Joint Wage Negotiating Committee for the Steel Industry have been requested to send their suggestions for the implementation of this decision.

Having regard to its present capabilities and its emerging role in the context of future expansion of iron and steel industry, it has been decided that the Central Engineering and Design Bureau, established in 1959 under the Hindustan Steel Limited, should be converted into a separate company. Necessary action to set up the new company is in hand.

22. Restriction on the import of Tool Alloy and Special Steels.

In view of the increased availability of tool and alloy steels in the country and to ensure better utilization of the indigenous capacity, further restrictions have been imposed on the import of these items.

FUNCTIONS AND ORGANISATIONAL SET UP OF THE DEPARTMENT OF STEEL

The Department of Steel which, consequent on the re-organization of certain Ministries in May, 1971, forms part of the Ministry of Steel and Mines, is responsible for the steel industry both in the public and the private sectors including re-rolling mills, alloy steel and ferro-alloys industry, setting up of additional Steel making capacities, implementation of the Iron and Steel (Control) Order, 1956, and formulation of policies in respect of the distribution and imports|exports of iron and steel. Some of the Heavy Engineering units in the public sector, enumerated in Chapter 12, are also under the control of this Department.

The secretariat of the Department is headed by a Secretary. There are 5 posts of Joint Secretary, 2 posts of Director (incuding the post of Internal Financial Adviser), 4 posts of Deputy Secretary and 8 posts of Under Secretary. There are 3 posts of Project Officer—one for each of the three new steel Plants, *viz.*, Salem, Visakhapatnam and Vijayanagar. In addition, there are two Advisory Wings. The Technical Wing comprises a Senior Industrial Adviser, 2 Industrial Advisers, 5 Development Officers and 6 Assistant Development Officers who are posted in the Main Office, and 1 Industrial Adviser, 2 Development Officers and 2 Assistant Development Officers who are posted in the Branch Office attached to the Office of the Iron and Steel Controller at Calcutta. The Economic Wing comprises one Economic Adviser, three Assistant Economic Advisers, two Assistant Directors, one Analyst and one Artist. With the exception of two Assistant Economic Advisers and two Assistant Directors all other officers are in position. One Assistant Economic Adviser is expected to join by the end of April, 1972.

Attached and Subordinate Offices.

Office of the Iron and Steel Controller, Calcutta.—The Iron and Steel Controller implements the Iron and Steel (Control) Order, 1956, and formulates proposals for import/export policies. As Chairman of the Joint Plant Committee, he supervises the receipt and planned distribution of indents for supply of steel to consumers. In this work, he is guided by the Steel Priority Committee, of which the Secretary of the Department is the Chairman. The Iron and Steel Controller publishes a Quarterly bulletin namely "Iron and Steel Control" which contains information regarding production of iron and steel items and other matters of interest to the traders and consumers of iron and steel.

During the year, four Regional Offices under the Iron and Steel Controller have been set up at Calcutta, Madras, Bombay and New Delhi. Two more Regional Offices are being established at Hyderabad and Kanpur. These are small offices functioning in an officer-oriented manner. Their main functions are as follows:—

(i) To conduct inspections and take other necessary measures to ensure that the consumers who receive steel materials on a priority basis from Producers' Works and Stockyards do not misutilise the same.

(ii) To ensure that the Producers' Stockyards strictly adhere to the procedure laid down by the JPC for issue of steel materials from the Stockyards.

(iii) To exercise a check over the registered billet rollers to ensure that they follow the discipline laid down by the Billet Rerollers Committee with regard to the rolling programme and the allocations made by the Committee.

(iv) To ensure that the industrial units which are allowed import of raw materials etc., as per essentiality certificates issued by the Iron and Steel Controller, utilise them for the purpose for which they have been imported.

(v) To keep a watch over the market trends and open market prices of steel materials.

The inspections carried out and the vigilance exercised by these offices has already resulted in a decrease of abuses in the distribution and utilization of steel during the present period of scarcity.

Hindi Cell

There is a Hindi Cell in the Department under the charge of a full-time Hindi Officer. The Department is continuing to make efforts to implement the policy of the Government in regard to progressive use of Hindi. An official Language Implementation Committee set up in the Department, reviews the progress in the use of Hindi for official purposes, in the Department and its attached/subordinate offices, and decides on the measures to be taken to accelerate its use in Government work.

Special Cell

The Committee of Inquiry (Steel Transactions) headed by Shri A. K. Sarkar, former Chief Justice of India, submitted its report on February 29, 1968. Government has accepted the recommendations of the Committee and has decided to take departmental action against the persons who had been adversely commented upon by the Committee. Government has also decided that investigation of the remaining cases relating to the issue of large value licences/permits should be continued. This work has by and large been completed by the Special Cell created for this purpose. The Cell is expected to be wound up by 30th April, 1972.

PLANNING AND DEVELOPMENT

Over the last two decades the investment to augment the steel manufacturing capacity has been of a significant magnitude. From a total investment of Rs. 42 crores at the time of independence, it has now reachted Rs. 1876 crores. This investment has resulted in a five fold increase in the production of steel from the time of independence and has created substantial employment opportunities in the country.

Significant as these achievements may appear to be the per capita annual consumption of about 11 kilograms of steel is one of the lowest in the world and the total production is only 1 per cent of the world production. During the same period, some European countries and Japan have achieved a phenomenal growth in their steel making capacity. This indicates that we are far from the position which can be considered satisfactory. The expected consumption patterns of the future have dictated the need to double our steel manufacturing capacity during the seventies.

Persistent steel shortages in a growing economy would exert inflationary pressures. National security depends on an adequate supply of steel for armaments and other equipment. Steel capacity determines manufacture of capital goods, production of consumer goods, employment opportunities and most important, the growth of the economy as a whole.

Efforts must, therefore, be directed towards resource mobilisation to utilise our large and good quality iron ore reserves. Over the last few years, we have placed emphasis on the development of Indian equipment manufacturing capacity and technical skills. The result of these efforts will be reflected in the new steel plants which will have a sizeable indigenous content and will be established with a considerable proportion of Indian effort.

A provision of Rs. 1053.32 crores was made in the Fourth Five Year Plan for the Steel Development Programme. In the Mid-Term Appraisal, the outlay was revised to Rs. 1050.45 crores. Of this, a sum of Rs. 351.13 crores was spent in the first two years of the Plan *viz.*, 1969-70 and 1970-71. During 1971-72, the expenditure is estimated to be Rs. 180.63 crores. The expenditure planned for 1972-73 is Rs. 227.94 crores. The approved Fourth Plan outlay for each scheme, the actual expenditure in the first two years, the estimated expenditure during 1971-72 and the proposed outlay during 1972-73 are incorporated in the following statement:—

(Rs. in crores)

	Plan outlay	Actual Expenditure during 1969-70 and 1970-71	Revised outlay for 1971-72	Proposed outlay for 1972-73
1. Bokaro Steel Plant . .	558·00 (532·99)	292·00	143·00	93·70
2. Expansion of Rourkela Steel Plant Ist Stage . .				
Expansion of Durgapur Steel Plant Ist Stage . .				
Expansion of Bhilai Steel Plant 2nd Stage .				
Alloy Tool & Stainless Steel Plant . .	51·00 (61·60)	32·63	13·55	10·66
Central Engineering and Design Bureau of H.S.L. . . .				
Coal washeries . .				
Township . . .				
3. Mysore Iron & Steel works	5·90 (8·90)	5·90	..	1·00
4. Dalli Mines for Bhilai .	18·92 (15·36)	0·02	1·29	7·55
TOTAL C/o . .	633·82 (618.85)	330·55	157·84	112·91

	Plan outlay	Actual Expenditure during 1969-70 and 1970-71	Estimated outlay for 1971-72	Proposed outlay for 1972-73
B/F	633·82 (618·85)	330·55	157·84	112·91
5. Expansion of Bhilai Steel Plant from 2·5 to 4 million tonnes including a Plate Mill and a Second Sintering Plant	111·00 (69·60)	—	1·20	9·40
6. Expansion of capacity of Bokaro Steel Plant from 1·7 million tonnes of ingots.	122·00 (241·00)	1·00	11·00	74·30
7. Technological Improvements, balancing equipment and finishing facilities in the existing steel plants of H.S.L.	45·00 (45·00)	5·59	6·79	11·71
8. Advance action on additional capacity for the Fifth Plan (New Steel Plants)	110·00 (44·50)	0·09	1·28	15·00
9. Cold rolled grain oriented sheets Plant.	20·00 (20·00)	—	0·29	2·55
10. Refractory Plant				
11. Expansion of Drugapur Alloy Steels Plant				
12. Mysore Iron and Steel Works (Expansion)				
13. Tenughat Dam (for water supply to Bokaro)	3·00 (3·00)	3·00	—	1·00
	8·50 (8·50)	10·90	2·23	1·07
	1053·32 (1050·45)	351·13	180·63	227·94

NOTE.—Figures shown in brackets are as provided in the Mid-Term Appraisal.

For the Heavy Engineering Units under the Administrative control of this Department, a provision of Rs. 67.35 crores was made in the Fourth Plan. In the Mid-Term Appraisal the provision was reduced to Rs. 55.79 crores. Against this, in the first two years the expenditure incurred was Rs. 18.21 crores. In 1971-72 and 1972-73, the expenditure planned is Rs. 7.53 crores and Rs. 8.77 crores respectively. The scheme-wise details are given below:—

(Rs. in crores)

	Plan outlay	Actual Expenditure during 1969-70 & 1970-71	Revised outlay for 1971-72	Proposed outlay for 1972-73
1. Heavy Engineering Units.				
(a) Heavy Machine Building Plant	2·47 (—)	0·29	0·15	0·39
(b) Heavy Machine Tools Plant	5·96	1·10	0·37	0·36
(c) Foundry Forge	26·15	7·31	2·60	2·79
(d) Township	1·60 (24·59)	0·66	0·50	1·00
Common Charges		0·10	0·18	0·19
(e) Continuous Casting Plant at H.E.C.	2·00 (4·61)	—	—	0·44
(f) Crank shaft Project.	—	—	0·41	0·80
2. Bharat Heavy Plate and Vessels Limited	13·08 (13·08)	7·44	2·50	1·50
3. Triveni Structurals Ltd.	0·85 (2·36)	0·70	0·37	—

	Plan outlay	Actual Expenditure during 1969-70 & 1970-71	Revised outlay for 1971-72	Proposed outlay for 1972-73
4. Mining and Allied Machinery Corporation .	2·49 (2·49)	0·61	0·30	0·50
5. Tungabhadra Steel Products Diversification . .	1·00 (1·00)	—	0·15	0·60
6. Seamless Tube Plant .	9·50 (7·41)	—	—	0·20
7. Heavy Engineering Units (New Projects)	2·00	—	—	—
8. Consortium for Industrial Products . . .	0·25 (0·25)	—	—	—
TOTAL .	67·35 (55·79)	18·21	7·53	8·77

The long gestation periods involved in the development of steel manufacturing capacity impel advanced thinking and planning for creation of new capacity. The first step in this direction is projection of demand over a period of time. In order to assess future requirements, the National Council of Applied Economic Research were commissioned to make a projection study of steel demand for various categories of steel during the period 1975-80. The study undertaken by the Council reflects that whereas in 1975 the estimated demand for steel would be 7.6 million tonnes, by 1980 it would have increased to 12.9 million tonnes. It has been decided that while planning future steel manufacturing capacity a provision of 1.8 million tonnes of steel for export by the end of the Fifth or the early years of the Sixth Plan should also be made. This would also provide a cushion for any unexpected demands within the country.

The steel manufacturing capacity at the end of Fourth Plan period hopefully will be of the order of 12 million ingot tonnes. In the Fifth Plan period, this capacity will be further augmented, by expansion of the Bhilai Steel Plant and the Bokaro Steel Plant to about 4 million tonnes each and by establishing two new mild steel plants at Visakhapatnam and Vijayanagar. The implementation of these schemes by the end of the Fifth Plan period should create a capacity to manufacture approximately 19 million ingot tonnes of steel. To meet the growth in demand during the Sixth Plan period and thereafter, additional capacity would require to be created by expansion of existing plants or by establishing new plants at green field sites. The economics of the alternatives available are presently being studied and preliminary work on location studies for new steel plants to be included in future plans has commenced.

Alloy Steels

Till the beginning of the Fourth Plan, the production of alloy steels in the country was very limited and was confined to simpler grades of low value. With the setting up of the Alloy Steels Plant at Durgapur with a production capacity of 60,000 tonnes of finished steel, conversion of Mysore Iron and Steel Limited into an alloy steels plant with a production capacity of 77,000 tonnes and with the setting up of Mahindra Ugine Limited, a Company in the private sector, with a production capacity of 24,000 tonnes, the indigenous alloy steel production capacity has been substantially augmented. In the year 1968-69, the indigenous production of alloy steels was about 200,000 tonnes. This included silico Manganese spring steels; spring steel containing vaanadium and other alloy elements, alloy constructional steel; high speed steels, high carbon alloy tool and die steels; die blocks; stainless and heat resisting steels; free cutting steels; electrical steel sheets; high corbon steel other than carbon tool steel; other types of alloy and special steels. In the subsequent years. There has been a gradual increase in production and in 1971-72, it is likely to be

over 350,000 tonnes. Concomitant with the increase in production, the range of products has been diversified to include, construction steels, high carbon steels, free cutting steels etc. The alloy steel industry has now developed the potential to meet the bulk of the domestic demand.

In respect to the Alloy Steel Industry also, Government have formulated a long term development programme. The product-mix for the expansion of Alloy Steels Plant Durgapur and the new Steel Plant is under consideration keeping in view the likely demand for various categories in 1980. The Mysore Iron and Steel Limited are examining the feasibility of setting up a Forge Plant to produce high speed steel, tool steel, die block etc. The Government have sanctioned the setting up of an Alloy Steels Plant in the private sector in Bihar with a capacity of 40,000 tonnes. The work on this Project has commenced. In addition, the simpler grades of special steels will be produced at various electric furnaces under installation.

In order to have the benefit of larger batch production and improved productivity, standardisation of more categories of alloy steels is being pursued. Connected with the production of alloy and special steels, is the question of utilisation of scrap. A working Group was constituted to study this matter and suggest measures for improving collection and availability of scrap. The Report of the Group has been received and is under examination.

Shortages of graphite electrodes in the short term have been overcome by imports. Steps are also being taken to develop indigenous manufacturing capacity for graphite electrodes commensurate with the growing requirements of this industry.

As a result of these measures, it is expected that the demand for alloy and special steels will continue to be met to a substantial extent from indigenous production.

NEW STEEL PLANTS

Location of New Steel Plants

Government's decision on the setting up of a special steels plant at Salem in Tamil Nadu, and two integrated steel plants, near Hospet in Mysore and Visakhapatnam in Andhra Pradesh, was announced by the Prime Minister in the Lok Sabha on April 17, 1970. Following this decision, a number of Committees were constituted, for the selection of the project sites and for the identification of sources of raw materials for each of these projects. The Site Selection Committee, which included representatives of the concerned Central Ministries and Departments of the State Governments, and the two Consultants to Government, visited all the three regions in June and July, 1970.

On the recommendations of the Site Selection Committee, the project areas were provisionally demarcated in the last quarter of 1970. The site selected for the Salem Special Steels Project is about 14 km. west of Salem town, in the northern flank of Kanjamalai iron ore deposit, on which this project is based. In the case of the project near Hospet in Mysore (since renamed as Vijayanagar Steel Plant), the project site is located at Tornagallu, midway between Hospet and Bellary. For the Visakhapatnam Steel Plant, the site is at Balacheruvu, about 25 km. south of Visakhapatnam town, near the coast.

Appointment of Consultants

Consultants were appointed by Government in February, 1971, for the preparation of Techno-Economic Feasibility Reports on each of these projects. The assignment in respect of the Salem Special Steels Plant and the Visakhapatnam Steel

Plant was awarded to M/s. M. N. Dastur & Co. (P) Ltd. The Central Engineering and Design Bureau of Hindustan Steel Ltd. was commissioned for the preparation of the Report on the Vijayanagar Steel Plant.

Sources of Raw Materials

The Committees appointed by Government, for identifying the sources of raw materials for these new projects, have submitted their reports and have recommended the following linkages for the major items:—

	Visakhapatnam	*Vijayanagar*	*Salem*
Iron Ore .	Bailadila	Bellary-Hospet area	Kanjamalai
Coking Coal .	Bengal-Bihar fields	Bengal-Bihar fields	Coke to be purchased from main steel plants.
Limestone			
(a) Steel Melting Grade	Bagalkot (Mysore) pending further investigation for high grade limestone in the vicinity of Visakhapatnam	Bagalkot (Mysore)	Bagalkot (Mysore)
(b) Blast Furnace Grade	Jaggayapeta (AP)	Bagalkot	Jaggayapeta (AP)
Dolomite .	Khammam (AP)	Bagalkot	Bagalkot pending further investigation for availability in nearby area.

Steering Committee for the New Steel Plants.

For reviewing, coordinating and keeping a close watch on the progress of work on these projects, a Steering Committee was set up on March 1, 1971, with the Secretary, Department

of Steel, as Chairman. The other members of this Committee are:—

(i) Chairman, Hindustan Steel Ltd.

(ii) Chairman and Managing Director, Bokaro Steel Limited.

(iii) Joint Secretary, Ministry of Finance (Steel and Heavy Engineering Division).

(iv) Joint Secretary, Department of Steel (New Steel Plants Division).

The Committee has upto end of March, 1972 held seven meetings. The representatives of the Consultants and of the concerned State Governments are invited to participate in these discussions as necessary.

Product-Mix.

A Special Study Group was constituted by the Steering Committee at its meeting held on April 20, 1971, to advise Government on the alternatives for the product-mix for each of these new steel plants, keeping in view the expected demand for steel, based on the forecast by the National Council of Applied Economic Research for the period ending 1980. On consideration of their recommendations, tentative alternatives for the product-mix were suggested to the Consultants for the three Plants.

Progress on Setting Up New Steel Plants.

Before receipt of the Feasibility Reports from the Consultants, advance action was initiated on preliminary items of work. The progress thereon is indicated below:—

(i) *Land Acquisition* :

Out of a total area of about 2,750 acres required for the Salem Steel Plant, priority has been accorded for finalising the acquisition of a composite block of approximately 1,372 acres.

covering the main plant area. A sum of Rs. 40 lakhs has been placed at the disposal of the State Government for payment of compensation during 1971-72. The balance of the land would be acquired in 1972-73.

In the case of the Vijayanagar Steel Plant, the plant area covering about 6,000 acres has been demarcated and, in the first instance, it is proposed to acquire about 4,500 acres. To meet the cost of land acquisition in 1971-72 an amount of Rs. 50 lakhs has been placed at the disposal of the State Government.

In respect of the Visakhapatnam Steel Plant, the initial notifications have been issued by the State Government and further action to acquire the land will be taken during 1972-73.

(ii) *Preliminary Site Studies*

Hindustan Steelworks Construction Limited were entrusted with the work of site investigations at all the three project sites. Soil tests, plate-bearing tests, etc., have been completed for the three sites.

In the case of Salem Steel Plant, HSCL have been commissioned for collection of iron ore samples from Kanjamalai after drilling deep bore holes. These samples have been collected and despatched for tests.

HSCL have opened site offices at Salem, Visakhapatnam and Tornagallu (for the Vijayanagar Steel Plant). They are formulating their programme for commencement of preliminary work, *e.g.*, temporary site offices, godowns, approach roads, drainage system, site levelling, etc.

(iii) *Contour Mapping*

The Survey of India have completed the topographical surveys of the three plant sites. Printed copies of the contour maps prepared by them have been furnished to the Consultants and HSCL for their use.

(iv) *Excnange Yards, Sidings, etc.*

Preliminary survey for the construction of exchange yards, sidings, etc., for the three new steel plants has been completed by the Railways.

(v) *Water Supply*

The State Governments were requested to draw up water supply schemes to meet the requirements of water during the construction stage as well as for the operation stage of these projects and also for the townships. These schemes have been received from the State Governments and are being finalised on the basis of the comments given by the Central Water and Power Commission. It is proposed to have the water supply schemes executed by the State Governments concerned, with Central loan assistance to the extent necessary and possible. Water charges, at agreed rates, would be paid to the State authorities for the supplies to the steel plants and townships.

(vi) *Testing of Raw Materials*

Tests on iron ore samples are being conducted by the National Metallurgical Laboratory, Jamshedpur. Arrangements have also been made with Lurgis of West Germany for conducting bench scale tests on Kanjamalai iron ore, and for assessing the suitability of Donimalai iron ore for production of pre-reduced pellets. A contract has been entered into with M/s. Tiajpromexport of USSR, for conducting tests for the production of super-fluxed pellets with Donimalai iron ore.

(vii) *Economics of Using Imported Coking Coals.*

The Consultants were asked to work out the economics of using low ash coking coals, which could be imported and blended with indigenous coking coals for the Vijayanagar and Visakhapatnam Steel Plants. Their finding is that appreciable economies are not likely to accrue with the use of imported coking

coals. Bharat Coking Coals Limited, are preparing a long-term programme for meeting the requirements of coking coals of these two steel plants.

(viii) *Port facilities for the Visakhapatnam Steel Project.*

M/s. Engineers India Limited have been commissioned for the preparation of a Feasibility Report for developing port facilities near Balacheruvu. On their advice, model experiments are being conducted at the Central Water and Power Research Station, Poona. The results of these model studies are expected to be available by April, 1972. Thereafter, M/s. Engineers India Limited will finalise the Feasibility Report.

(ix) *Standardisation of Equipment.*

A Panel of Experts was constituted in June, 1971, to examine the possibility of standardising major items of plant and equipment for the new steel plants. The use of standardised items of equipment will not only facilitate indigenous manufacture and commissioning of the equipment but also its maintenance. With standardized spares, inventory holding can also be reduced.

The Panel has completed its work and suggested standardisation of a number of items of plant and equipment. The representatives of leading machinery manufacturers and those producing castings/forgings were invited for discussions at Ranchi on January 10, 1972, with a view to ascertain their production capacity and maximisation of indigenous contribution for meeting the requirements of plant and equipment for the new steel plants by coordinated and joint efforts of Indian manufacturers. While most of the larger and more difficult items of plant and machinery will be manufactured by the Heavy Engineering Corporation, Ranchi, the capacity available with other leading machinery manufacturers, both in the public and private sectors, is proposed to be utilised, for items which are either not within the production line of HEC or for items which could be off-loaded by HEC. The response from the

representatives of machinery manufacturers has been encouraging and a comprehensive survey is being made to plan the placement of orders.

(x) *Manpower Requirements*

A study group was set up on December 27, 1971, for assessing the requirements of manpower during the construction stage as well as during the operation and maintenance stages of the three new steel plants. Their report is expected by the end of June, 1972.

Techno-Economic Feasibility Reports.

The Techno-Economic Feasibility Report in respect of the Salem Steel Plant was submitted by M/s. M. N. Dastur & Co. on December 10, 1971.

The Consultants have recommended that at Salem, stainless steel may be produced from pedigree scrap in electric are furnaces. For production of other steels the magnetite ore from Kanjamalai would be concentrated, pelletised and smelted in electric pig iron furnaces. Small size coke (nut coke, pearl coke and coke breeze) to be obtained from the main steel plants would be used as reductant in the electric smelters. The hot metal thus obtained would be blown in basic oxygen convertors.

As the Salem project will be power intensive, the Government of Tamilnadu who were requested to consider a special tariff, have agreed to supply power at the rate of five paise per kwh.

The CEDB submitted the techno-economic feasibility report on Vijayanagar Steel Plant at the end of January, 1972. The report on the Visakhapatnam Steel Plant was submitted by M/s. M. N. Dastur & Co. in the middle of February, 1972.

All the three Feasibility Reports are under examination.

Provision of Funds

In 1971-72, a provision of 3.5 crores was made for the three new steel plants, the plant-wise break-up being as follows:—

Salem Steel Plant	Rs. 73 lakhs
Vijayanagar Steel Plant.	Rs. 138·5 lakhs.
Visakhapatnam Steel Plant.	Rs. 138·5 lakhs.

As there was some delay in the receipt of the Feasibility Reports from the Consultants, the plant layout could not be finalised as anticipated in the case of the Visakhapatnam and Vijayanagar Steel Plants and the progress of expenditure has, therefore, been behind schedule. The expenditure on the three new steel plants during the current year is expected to be about Rs. 1.28 crores.

Construction Schedule

According to the schedule of construction as indicated by the Consultants in the Feasibility Reports, the Salem Steel Plant would be commissioned in seven years while the commissioning of the Vijayanagar and Visakhapatnam Steel Plants would take about eight years from now.

PRODUCTION, PRICES AND DISTRIBUTION

Production.—Production of Steel in 1971-72 which was earlier expected to record a substantial improvement over that in 1970-71, was unfortunately affected by some mishaps and other reasons explained elsewhere in the Report. It is estimated to be about the same as in 1970-71, *i.e.*, about 6 million tonnes of ingots—as per details indicated below:—

(in thousand tonnes)

	1970-71			1971-72	
	Rated Capacity	Production	% of rated capacity	Production	% of rated capacity.
1. *Hindustan Steel Ltd.*					
(a) Bhilai Steel Plant	2,500	1,940	77·6%	1,954	78·2%
(b) Rourkela Steel Plant	1,800	1,038	57·6%	823	45·7%
(c) Durgapur Steel Plant	1,600	634	39·6%	700	43·8%
Total HSL :	5,900	3,612	61·2%	3,477	58·9%
2. Tata Iron and Steel Co. Ltd.	2,000	1,715	85·8%	1,709	85·5%
3. Indian Iron & Steel Co.	1,000	627	62·7%	617	61·7%
4. Main Plants (1+2+3)	8,900	5,954	66·9%	5,803	65·2%
5. Others including Mysore Iron and Steel Ltd.		184		497	
Grand Total :		6,138		6,300	

Details of year-wise production of steel ingots, saleable pig iron, saleable steel, tool, alloy and special steers, and finished steel are shown in Appendices I to VI.

Prices.—There was no general increase in Joint Plant Committee prices of pig iron and steel. However, on account of the increase in excise duty on different categories of steel on two occasions, *viz.*, in December, 1971 and March 1972, the prices had to be revised upwards.

Open market prices were reported to be showing a downward trend till the end of 1971. With the hostilities in December, 1971 and consequent pressure on steel availability as well as restrictions in Railway movement, this trend was reversed in some cases in January 1972. However, since over 90 percent of the production of the main steel producers is being distributed direct to the actual consumes, the actual transactions at open market prices are comparatively small. The measures taken to prevent leakages from some of the so called actual users to the open market are described later in this chapter.

Distribution.—In the report for the year 1970-17, the salient features of the new distribution procedure introduced from May 1970 were explained in some detail. Indentors have now become familiar with this procedure and it is working smoothly and without difficulty. The Iron and Steel Controller and the Ministry have been in constant touch with different classes of indentors and some improvements have been incorporated in the procedure as a result of such contacts. The exemption limit, upto which an indentor could place indents without having to pay earnest money, has been substantially liberalised. This limit was formerly equal to the best year's despatches in the preceding three years plus 10 per cent thereof. The extra margin of 10 percent has now been increased to 100 percent. Some representations had been received that the earnest money paid was locked up till the entire despatches were completed. Arrangements

were accordingly made for the refund of the earnest money in instalments with progressive despatches. In the matter of processing of indents in the office of the Joint Plant Committee also, the procedure has been simplified and streamlined. Scrutiny and check are now being exercised with specific reference to a few prescribed check points only and a definite time limit has been prescribed by which the indents have to be processed and finalised by the Joint Plant Committee. Similarly, a time limit has also been fixed for the issue of sale orders by the producers. An Appraisal Cell has been set up in the Office of the Iron and Steel Controller, among other things, to ensure that these time limits are observed in practice.

In February 1971, Government's Resolution of May, 1970 explaining the new procedure was quashed by a judgement of the Allahabad High Court, primarily on the ground that the procedure could not be announced in the form of a Resolution. Accordingly, the Iron and Steel (Control) Order was suitably amended in March, 1971 and revised Notifications explaining the distribution procedure were issued under the revised Iron and Steel (Control) Order. In revising the Control Order, the opportunity was taken to effect a few other modifications which were considered necessary. One of the important modifications makes the use of steel for any purpose other than that for which it is applied for or allotted a violation of the Control Order and, consequently, punishable under the Essential Commodities Act. In March 1972 a slight further modification has been made authorising suspension of supplies of iron and steel from stockyards etc., to parties against whom there is reason to believe that they have misutilised steel material allocated to them.

A Billet Rerollers Committee was set up in April 1971 to regulate the distribution of billets to the Billet Rerollers and to regulate the distribution of the rerolled products. Previously, while billets were supplied to the Billet Rerollers at JPC prices, there was no regulation on the price or distribution of the rerolled products. The price and distribution is now regulated

by the B.R.C., which allows a reasonable conversion charge to the rerollers. The prices fixed by the Billet Rerollers Committee are subject to Government's approval. In addition to the indigenous availability of billets, additional quantities of billets are also being imported and distributed along with the indigenous billets at a pooled price by the B.R.C.

The Qureshi Committee constituted to review the question of allocations to be made to the trade and other allied matters submitted its report in July 1971. In respect of allocations to the trade, their main recommendation was that the present system by which the Steel Priority Committee determines the quantities to be earmarked for release to trade, from time to time, may continue. As regards the liquidation of the huge backlog of trade orders on the books of the producers, they recommended that, to offer an incentive for conversion of those orders to new orders, the quantum allowed for trade may be earmarked separately for new and old orders and facilities may be given to traders to book new orders for reduced quantities, without payment of earnest money, if such orders were in cancellation of old orders. These recommendations have been accepted and are being implemented.

With regard to supply of Steel to Small Scale Industries, Government have accepted the recommendation of the Balachandran Committee set up by the Ministry of Industrial Development, to channel all supplies through the State Small Scale Industries Corporations. This recommendation is being implemented, though direct allocations and supplies to units in some areas and sectors are being continued to avoid dislocations during the transitional period.

The main functions of the Regional Offices of the Iron and Steel Controller (which started functioning from about the middle of 1971) are given in the Chapter 'Functions and Organisational Set Up Of The Department Of Steel'.

In all, there are 32 stockyards of the Main Producers. The Regional Officers have already inspected 21 stockyards of which 5 have been inspected more than once. The irregularities noticed in the stockyards operations have been brought to the notice of the Main Producers. The Main Producers have taken appropriate corrective steps in respect of the defects and irregularities brought out by such inspections. These checks on the working of the stockyards have contributed towards improvement in their functioning to a large extent.

The Regional Controllers and the inspecting staff have so far checked 209 scrap rerollers, 24 billet rerollers and 135 other units (including actual consumers). A number of scrap rerolling units were found to be closed. A few of them were non-existent. Allocations of raw material have been suspended in respect of about 40 such units. Show-cause notices have been issued to some others. With regard to billet rerollers also, show cause notices have been issued for not adhering to the rolling programme and scheduled supply of material to the allottees of the Billet Rerollers Committee. Billet supplies have been suspended in the case of two Rerollers.

As a result of preliminary probes, 23 cases have been forwarded to the C.B.I. for further investigation. These cases mostly relate to the use of forged essentiality certificates and misuse of materials received for fabrication.

A large number of complaints used to be received from house builders, particularly in Delhi, about the difficulties they had to undergo, not only because of the inadequacy of the allocations but also because of the procedural formalities they had to observe. This was discussed at a high level with representatives of the main steel producers and, as a result, a new scheme was introduced in Delhi for house-builders with effect from the 1st October, 1971. According to this scheme, an applicant can submit his application to the office of any of the three main steel producers in Delhi, and all such applications

would be considered jointly by a Committee of the main producers who would make allocations in a co-ordinated manner, after pooling the availability in the stockyards of all the three main producers. The procedure was also simplified and streamlined to reduce inconvenience to the indentors. A special provision was made that applications from the small-house builders—i.e., those whose requirement is less than 3 tonnes and whose plot area does not exceed 250 sq yds., would be given preference. This scheme has worked fairly satisfactorily as the number of complaints has since decreased considerably. The question of extending the scheme to other Metropolitan Areas is under consideration.

Another difficulty, about which frequent representations used to be received, was in respect of "matching steel". In other words, because of non-availability of comparatively small quantities of specific categories of steel, several units which had been able to get substantial quantities of other categories were unable to make effective use of the same. In order to take care of such cases as far as possible, two measures have been introduced. While making the quarterly allocations the Steel Priority Committee now sets apart some quantities of critical categories of steel to be held by some of the principal stockyards in India. Allocation out of the same is made by the Iron and Steel Controller to those units who require "matching steel" in small quantities.

A similar measure to assist in the availability of critical sections of imported steel has been the constitution of a Steel Bank, which is described in the Chapter under Imports.

Several representations for the opening of more stockyards continue to be received. As a stockyard should have a minimum turn-over to be economically viable, it has not been possible for the Producers to agree in all such cases. It is only when the overall production improves and the turn-over in the stockyards also goes up that it would be possible to increase the number of stockyards to any substantial extent. However, during the

year, HSL have opened four more stockyards at Kota (Rajasthan), Allahabad (U.P.), Coimbatore (Tamil Nadu) and Srinagar (J. & K). Preparations are under way to open a stockyard at Bhilai (Madhya Pradesh).

The various measures for streamlining the distribution system, along with a fairly liberal import policy in respect of items in short-supply, coupled with a regulatory policy in respect of exports, contributed to a large extent in bridging the gap between supply and demand. At the time of the hostilities, several measures had to be taken to meet the emergency. Overriding priority in movement of steel was given, whether against demands already given List 'A' priority or against special requests from defence authorities and fabricators executing defence orders. Similar advice was given to the stockyards also. A special Defence Co-ordination Committee was set up in the Office of the Iron & Steel Controller which during the hostilities met thrice a week. Where necessary, the main producers were advised to revise the rolling programme to meet some urgent defence demands. Special stocks of adequate quantities of important categories of steel were moved to stockyards at certain strategic points, to meet the urgent requirements of local defence formations. The Regional Iron and Steel Controllers were instructed to assist the local defence formations in obtaining their urgent requirements from other sources as well by exercising the powers under the Iron and Steel (Control) Order. While the above measures were necessary in the national interest and had to be introduced, they affected the availability for the other consumers to some extent.

IMPORTS AND EXPORTS OF IRON AND STEEL

Imports

The year 1971-72 witnessed a further increase in the demand for steel and its products. To keep pace with the rising demand, and the shortfall in indigenous production, Government arranged bulk imports through HSL and MMTC, for small scale industries, export oriented engineering industries, and for other actual users. Imports of steel sheets, plates, drums, barrels and steel for furniture industries, and tinplate for manufacture of Open Top Sanitary Cans, were also arranged through HSL.

In the wake of the mishap at Rourkela Steel Plant, HSL imported Tinplate/H.R. coils for conversion to Tinplate at Rourkela, and sizeable quantities of steel materials like ship building quality plates, boiler quality plates, Tested plates, H.R. coils for tube making, H.R. sheets and C.R. sheets. Against Public Notice 140, HSL imported one lakh tonnes of billets. Imports under Public Notice 140 relating to all permissible categories of mild steel and high carbon steel excluding stainless, tool and alloy steels also materialized to a large extent during 1971-72.

MMTC imported 3,600 tonnes of stainless steel sheets/strips, plates, and 40,000 M/T. of M.S. plates during the current year. MMTC have also placed orders for 64,550 M/T of steel billets of which 22,500 tonnes have arrived and the balance is expected by May 1972. In addition, orders have been placed for 20,000 tonnes of billets and negotiations are being finalized for import of another 17,000 tonnes of billets.

The imported materials substantially helped the industries to get over the shortages of steel. A close watch is being maintained on the indigenous availability to ensure that industrial activities do not suffer for want of this basic raw material.

Whenever circumstances warrant, within the constraint of foreign exchange availability, imports are allowed even on an ad hoc basis to sustain industrial activity in the country.

To protect the interests of indigenous alloy, special and tool steel producers who have sizeable inventories of stocks but have suffered from lack of orders, import policy for alloy and special steels has been made restrictive.

This year also the admissibility for import of steel items, has been confined to items which are not produced in the country or where the quantities and qualities produced are inadequate to meet the indigenous requirements. In framing the import policy, efforts are made to ensure that whereas industries do not suffer for want of essential raw material like steel and ferro-alloys, the producers of steel including secondary producers and re-rollers do not suffer from want of adequate orders.

A significant development in the field of import trade during this period has been the scheme of canalisation. Consistent with Government's policy to progressively nationalise the export and import trade, and to streamline the availability of steel to various consuming sectors, the import of various items of steel has been canalised through specialised agencies, mainly HSL and MMTC. The present scheme of canalisation which was started in 1970-71 was initially restricted to ferro-alloys and three categories of steel. In 1971-72, its scope was enlarged to cover items like :

(i) ferro-molybdenum;

(ii) ferro-tungsten;

(iii) ferro-vanadium;

(iv) ferro-silicon;

(v) All mild steel high carbon and alloy steel (other than stainless steel) wire rods in coils;

(vi) All mild steel and high carbon steel semis including ingots, blooms, slabs, and billets;

(vii) Stainless steel sheets, plates and strips cut length or in coils;

(viii) Cold rolled grain oriented electrical steel sheets;

(ix) All Mildsteel sheets, strips and skelp in cut length or in coils both hot and cold rolled;

(x) Heavy melting scarp, sponge iron and metallised iron ore and pellets for electric arc furnaces;

As the completion of some of the projects in the past had been delayed, partly on account of non-availability in time of steel of the required specifications, Government have decided to set up a 'Steel Bank', which would maintain the requisite levels of stocks of specified critical categories of steel so that the critical requirements of priority users are met ex-stock. HSL has been nominated to operate the Bank on behalf of Government.

To watch the utilisation of import licences issued for Iron and Steel items, a Public Notice was issued on the 7th October, 1971 directing the project authorities, actual users and exporters holding import licences for Iron and Steel Items (including those issued under the Import Policy for Registered exporters as well as combined import licences issued in favour of IDA beneficiary industries) to send monthly returns regarding placement of orders, actual shipment etc. Import licences to those parties w.e.f. 1st April 1970 were issued subject to the condition that such licence holders shall submit the return as prescribed in this Public Notice. It was specifically mentioned that the defaulters in this regard would be deemed to have contravened the provision of I.T.C. order 1955 and would be liable to non-revalidation of existing licences and also non-issue of further licences. These steps should help in keeping an effective watch over the demand for and availability of iron and steel items and the actual arrival of imports into the country.

A statement showing imports of various items of steel and ferro-alloys in 1968-69, 1969-70, 1970-71 and during April—September, 1971 is given at Appendix VII.

EXPORTS

During the financial year 1971-72, export policy continued to be regulatory in view of the shortage experienced in the country. Only limited exports were permitted so as to make more steel available for meeting the internal growing demand of Engineering and other industries. However, an effort was made to fulfil the past commitments and maintain foreign markets with a view to stabilising trade relations with friendly countries. Special consideration in the allocation of steel is given in cases sponsored by the Engineering Export Promotion Council and similar agencies where the steel is required for the manufacture of goods for export.

Iron and Steel

The export earnings during 1970-71 from export of iron and steel were Rs. 66.92 crores and for the period April, 71—February, 72, these were of the order of Rs. 24.13 crores. HSL being the largest producer of steel in the country, exported material of the value of Rs. 21.02 crores during April, 71—February '72.

The prinicpal items exported during the current financial year are basic grade pig iron, bars and rods, rails and structurals. During 1971-72 exports were made to 17 countries, namely: Argentina, Burma, Hong Kong, Indonesia, Iran, Iraq, Japan, Kenya, Kuwait, Muscat, Singapore, South Korea, Sudan, U.A.R., U.S.A. U.S.S.R, Yugoslavia.

The following table incorporates the export of iron and steel during 1970-71 and 1971-72 (April—February 1972) and

	Quantity (Tonnes)	Approximate value (Rs. crores)
1969-70	13,48,563	75·71
1970-71	9,98,039	66·92
1971-72 (upto February '72)	3,93,005	24·13

Statements showing categorywise exports of Iron and Steel during 1970-71 and 1971-72 (April—February 1972) and countrywise/categorywise exports of Iron and Steel during the 11 months period ended February, 1972 are at Appendices VIII and IX.

Scrap

The export of ferrous scrap is canalised through the Metal Scrap Trade Corporation Limited, Calcutta. With the increase in demand in the home market, Government have imposed greater restrictions in the export of those varieties which can be consumed in domestic industries. As a result, the export of ferrous scrap has been going down. During the years 1969-70, 1970-71 and 1971-72, the following quantities of scrap were exported:

	Quantity (Tonnes)	Approximate value (Rs. crores)
1969-70	4,20,374	8·94
1970-71	2,60,905	6 95
1971-72 (upto September '71)	82,374	1 21

A statement showing the export of iron and steel scrap during 1970-71 and 1971-72 (April—September, 1971) may be seen at Appendix X.

Ferro-Alloys

The export of ferro-alloys has been put in three broad categories, namely, Ferro Manganese, Ferro Chrome, Silicon Chrome and others. While the export of Ferro Manganese is canalised through MMTC, the export of other Ferro-alloys is permitted

on a restricted basis. The export of Ferro-alloys during the last three years is given below:—

	Quantity (Tonnes)	Approximate value (Rs. crores)
1969-70	1,26,978	9·67
1970-71	98,617	11 39
1971-72 (upto September '71) . . .	17,504	2 28

A statement showing categorywise exports of Ferro-alloys during 1971-72 (April to September, 1971) is given at Appendix XI.

HINDUSTAN STEEL LIMITED

Investment

The authorised capital of Hindustan Steel Limited is Rs. 600 crores. On 31st March 1971, the paid up capital was Rs. 557 crores. Government have also advanced long-term loans to HSL from time to time and these amounted to Rs. 466.98 crores at the end of 1970-71. Accordingly, the total investment of Government funds in HSL as on 31st March 1971 was Rs. 1025.98 crores.

To enable the Company to finance capital expenditure on new schemes and on township expansion, equity participation of Government has been raised by Rs. 5.07 crores during 1971-72. In addition, in pursuance of the Government's decision that capital expenditure on townships should be met out of equity and that the capital structure of public enterprises should be recast on this basis, loans amounting to Rs. 32.3 crores have been converted into equity with effect from 1st April, 1971. Thus, at the end of 1971-72, the paid-up capital of the Company has risen to Rs. 594.37 crores. Government propose to sanction an amount of Rs. 21.60 crores as equity during 1972-73 for financing further capital expenditure on new schemes and expansion of townships.

No long-term loans have been advanced to the Company after 1968-69 nor is it proposed to do so in 1972-73. The Company, on the other hand, has repaid Rs. 85.49 crores of these loans upto 1971-72. A further repayment of Rs. 37.4 crores is expected during 1972-73.

A short-term loan of Rs. 17 crores has, however, been advanced to the Company during 1971-72 to meet its cash requirements.

Production

The following table indicates the production in the various units of the Company during the years 1970-71 and 1971-72 (provisional):—

(in '000 tonnes).

Unit	*Ingots*	*Saleable Steel*
Bhilai Steel Plant :		
1970-71	1,940	1,549
1971-72	1,953·7	1,568·1
Rourkela Steel Plant :		
1970-71	1,038	684
1971-72	822·7	597·5
Durgapur Steel Plant :		
1970-71	634	413
1971-72	699·8	432·1
TOTAL : 1970-71	3,612	2,646
1971-72	3,476·2	2,597·7
Alloy Steels Plant :		
1970-71	50·6	38·6
1971-72	56·1	35·0
Fertilizer Plant, Rourkela	*Calcium Ammonium Nitrate (25% N2)*	
1970-71	94·2	
1971-72	185·4	

[N.B. Data for 1971-72 are provisional]

According to the original programme formulated by HSL, a production of 4.75 million tonnes of ingots and 3.59 million tonnes of saleable steel was expected from the three integrated steel plants. Unfortunately, these expectations have not materialised. It should, however, be stated that the production of 1.954 million tonnes of ingots at Bhilai is the highest in that plant so far and is 14,000 tonnes more than last year's production while the production at Durgapur has exceeded last year's production by 66,000 tonnes of ingots.

The following were the main factors responsible for the shortfall in production this year as compared to the targets:

A major break-down in some of the Coke Oven Batteries in the Bhilai Steel Plant in May, 1971 resulted in shortage of coke for the Blast Furnaces and inadequate availability of gas for the Steel Melting Shop and the Mills.

A serious mishap, which proved deterimental to the entire operation of the plant, was the collapse of the complete roof structure of the L.D. Section of the Steel Melting Shop of the Rourkela Steel Plant, which occurred on 11th July, 1971. An additional constraint in this plant was the poor performance of the Coke Oven Batteries in general, which resulted in a reduction in the supply of coke and gas.

Continuing distrubed industrial relations affected production in most of the units in the Durgapur Steel Plant.

Disturbed industrial relations in the unit as well as poor and irregular availability of gas from Durgapur Steel Plant contributed to shortfalls in production at the Alloy Steels Plant.

Occasional power failures have also contributed, to a limited extent, to the shortfall in production.

The production at the Fertilizer Plant at Rourkela was adversely affected on account of the shortage of coke oven gas from the Rourkela Steel Plant.

The performance of coke oven batteries in general in practically all the steel plants both in the public and private sectors has been found to be unsatisfactory. Two special groups of experts were appointed by HSL to look into this problem one each for Bhilai and Rourkela. The services of a leading Soviet Specialist were also availed of. He also inspected the coke ovens in TISCO and IISCO. As suggested by the groups, special repairs to the coke ovens have been undertaken in the Bhilai and Rourkela Steel Plants and appropriate regimes for the operation and maintenance of ovens have been drawn up. Changes have been made in the organisational set up to ensure greater attention to maintenance and technological discipline. A special group was also constituted by the Government to suggest the most cost-effective measures for increasing the output of coke. The report of the group has been received and its suggestions are under implementation. It has been decided to instal an additional half battery at Rourkela on a high priority basis. It is proposed to instal an additional battery at Bhilai. TISCO have taken up a phased programme of replacement of all their old coke oven batteries over a period of 5 years and a new battery is alreary under erection. IISCO are trying to revive 2 batteries which had been blanked off a few years ago. In the context of the need to rebuild a large number of coke oven batteries in the country, it is proposed to adopt an integrated approach to the problem of rebuliding batteries and for this purpose to pool the expertise available in the country.

The poor condition of the batteries resulted in shortage of coke for the blast furnaces and inadequate availablity of gas for the steel melting shop and the rolling mills. To minimise the effect of shortage of coke oven gas on steel production, use of supplementary fuels like pitch creosote mixture and benzene has been resorted to in Bhilai. With the commissioning of the 7th Coke Oven Battery on 25th January, 1972, the problem of coke shortage in Bhilai would be alleviated substantially. Proposals have also been formulated for the introduction of

oil firing in the Open Hearth Furnaces, and replacement of benzene in the gas stream by naphtha. These steps will result in the release of benzene, pitch and creosote mixture oil for other uses. It is also intended to increase the percentage of sinter in the blast furnace burden in stages. This is expected to reduce the rate of consumption of coke.

To augment fuel resources at Rourkela, oil firing has been introduced in 2 of the 4 reheating furnaces in the Hot Strip Mill. Oil firing is planned to be introduced in the remaining two furnaces in the next few months.

The reconstruction of the roof of the steel melting shop at Rourkela was completed in record time and in advance of schedule. The reconstruction operations were carried out round the clock and were completed in 4½ months as against the original estimate of 6 months. Production had picked up to a good level by February, 1972.

In order to ensure trouble free operations of the plants at maximum efficiency free from breakdowns and unplanned shutdown, a number of steps have been and are being taken to clear the backlog of maintenance and repairs, to ensure preventive maintenance according to prescribed schedules, and to arrange for advance planning for spares to facilitate timely replacement of worn-out parts. The maintenance organisations in the plants have been strengthened and Capital Repair Groups have been set up to take care of all major repair programmes. Regular maintenance plans are drawn up for routine and preventive repairs and these are being followed regularly. Capital repair schedules are worked out on a 3 year basis and work on major and capital repairs is carried out according to these schedules. Inspection Groups have been set up to carry out inspection of the different units regularly and to draw up repair programmes on the basis of such inspections. In order to improve planning and availability of spare parts for maintenance jobs, Spare Parts **Planning and Procurement Groups** are working in all the plants. A 3-year Rolling Plan for procurement of spare parts, refractories.

rolls and other essential materials for capital repairs and maintenance has been drawn up so that the required items, whether imported or indigenous, are properly planned for and secured in time and are available when required. The proposal is that, once the rolling plan is approved, foreign exchange required for a year will be allocated in advance. This will considerably reduce procedural delays in providing foreign exchange and obtaining import licences. Bulking of demands would not only save money in procurement but would also help in import substitution.

Hindustan Steel Ltd. have in hand a number of schemes involving additions, modifications, balancing facilities, technological improvements and replacement of assets of the plants. These are intended to overcome existing imbalances in the main production units, improve overall performance and to gear up the various units technically to attain production at rated capacity.

HSL has evolved new production incentive schemes designed to motivate labour productivity and discourage absenteeism and reduce over-time payments. These schemes have already been introduced in the Bhilai Steel Plant, the Fertilizer Plant at Rourkela, a few Departments of the Durgapur Steel Plant and in the Iron Ore and Limestone Mines and Repair Shops of the Rourkela Steel Plant. The question of introduction of these schemes in other units is under negotiation with the labour unions.

In the field of industrial relations, efforts continue to be made to ensure that industrial disputes are settled by negotiation and that the co-operation and participation of workers in the production effort are made more effective. In the Rourkela Steel Plant, joint consultation has been revitalised by the formation of Joint Production Committees through a tripartite agreement with the recognised union. These Committees have already started functioning in some of the Departments. In the Durgapur Steel Plant and the Alloy Steels Plant, Joint Forums have been formed comprising representatives from the Management and the Labour Trade Union with a view to preventing sudden stoppages of

work and shop-floor indiscipline. The emphasis at all levels is on a participative approach to the solution of problems.

Government are also keeping a constant watch on the performance of the units and the Company through periodical Task Force meetings and reviews. The Ministry also renders all the assistance that is required. There have been five meetings this year of the Task Forces for the Rourkela, Bhilai and Durgapur plants and four meetings of the Task Forces for the Alloy Steels Plant. It is expected that as a result of all these measures the production in the coming year would show a significant improvement.

Despatches:

The table below shows the despatches during the year 1970-71 and 1971-72:—

(Qty: in '000 tonnes)

Plant	Finished Steel Primes.		Semis (including Ingots) Primes		Pig Iron	
	70—71 (Actual)	71—72 (Estimated)	70—71 (Actual)	71—72 (Estimated)	70—71 (Actual)	71—72 (Estimated)
Bhilai	1237	932	272	500	545	470
Rourkela	638	550	42·2	23	92	106
Durgapur	347	330	183	152	324	273
TOTAL	2222	1812	497·2	675	961	849
Alloy Steels	33·5	32	2 (Ingots)	4	..	..

Lower production, railway route restrictions and shortage of wagons especially during December, 1971 and January, 1972, had the effect of reduction in despatches. Although the total sales volume will be lower than that of the previous year, domestic supplies of iron and steel are expected to be more due to a cutback in exports.

The export earnings of HSL in terms of FOB value were Rs. 53 crores during 1970-71. During 1971-72 they are expected to be about Rs. 22 crores. The fall is due to the increase in domestic demand and the restrictions imposed on the export of certain categories of finished steel. Exports are now mainly confined to the surplus Pig Iron. The statement below incorporates the comparative figures of export of iron and steel during 1970-71 and 1971-72 (estimated):

(Quantity in '000 tonnes)
(Value: FOB Rs. in crores)

Item	1970-71 Quantity	1970-71 Value	1971-72 (Provisional) Quantity	1971-72 (Provisional) Value
1. Pig Iron	427·0	19·1	218·3	7·38
2. Steel Ingots	40·1	1·8	..	..
3. Billets	22·2	1·1	..	..
4. Rounds/Flats/Wire Rods	24·3	1·8	0·5	0·02
5. Structurals	247·1	24·9	88·0	8·00
6. Rails	63·0	4·3	65·8	6·29
7. Galvanised sheets	..	..	0·8	0·09
TOTAL :	823·7	53·0	373·4	21·78

To supplement the indigenous supply of steel, HSL has been entrusted by Government with the import of certain steel items, the bulk of which will comprise flat products. The imports made by HSL during 1970-71 and 1971-72 are reflected in the following statement:

(Qty. : '000 tonnes)
Value : (cif) Rs. in crores.

Year	Quantity	Value
1970—71 (actual)	124	15·7
1971—72 (estimated)	550	56·0

Working Results:

The gross surplus secured by HSL after meeting all expenditure, but exclusive of the provisions for depreciation and interest on Government loans, amounted to Rs. 87.3 crores in 1970-71 as against Rs. 82.8 crores in 1969-70. However, after making a provision of about 26.1 crores for interest on Govt. loans and Rs. 66.8 crores for depreciation, and taking into account adjustments for earlier periods, the Company sustained a net loss of Rs. 5.4 crores in 1970-71 as against a loss of Rs. 10.47 crores in the preceding year. The working results of the various units during 1969-70 and 1970-71 were as under:—

Profit = +
(Rs. in crores) Loss = —

	1969-70	1970-71
Rourkela Steel Plant	+7·830	+10·198
Bhilai Steel Plant	(+)3·646	(+)11·043
Durgapur Steel Plant	(—)15·505	(—)20·401
Fertilizer Plant at Rourkela	(—)1·680	(—)2·596
Alloy Steels Plant	(—)5·776	(—)3·833
Coal Washeries	(+)0·374	(+)0·020
Adjustments	(+)0·638	(+)0·163
TOTAL :	(—)10·473	(—)5·406

The cumulative loss of the Company from its inception upto 31st March, 1971 is Rs. 178.2 crores.

During the current year the financial position of the Company has been adversely affected due to production being lower than envisaged earlier and, in particular, by the production loss at Rourkela Steel Plant due to SMS roof collapse. Certain escalatory factors such as the full impact of the Wage Agreement (Rs. 6.6 crores), incidence of higher consumption of stores and spares on account of increased maintenance requirements arising out of the ageing of the plants and price escalations (Rs. 6.6

crores), War Risk Insurance (Rs. 0.91 crore), Revaluation of the D.M. (Rs. 1.0 crore), higher liability due to additional ad-hoc bonus (Rs. 1.5 crores) etc., have also affected the position substantially.

Industrial Relations

A reference to the efforts which are being made to resolve disputes and to improve labour relations has been made earlier. The Joint Wage Negotiating Committee for the Steel Industry which reached an agreement on wages and allied matters in October, 1970 has also been requested to continue to function as a Joint Negotiating Committee for the industry. It has specially been asked to consider how best to solve the problem of stoppages of work. The Committee has appointed a Standardisation Committee to standardise scales of pay and job nomenclatures in the Steel Industry and to bring about uniformity in amenities of leave, holidays, medical benefits and age of retirement. One of the major tasks completed by this Committee is the preparation of draft job evaluation manuals for the Blast Furnace Department of all the integrated Steel Plants in the country. The Committee is also seized of the question of bringing about uniformity in the matter of amenities. This should help to resolve disputes in these areas.

Capital Schemes:

At Bhilai, the sixth Blast Furnace was commissioned on 30th July 1971. The 7th Coke Oven Battery forming part of the Sixth Blast Furnace Complex was commissioned on 25th January, 1972. The Detailed Project Report for the expansion of the Bhilai Steel Plant from 2.5 to about 4.0 million ingot tonnes is expected from the Central Engineering and Design Bureau by May or June, 1972. The work relating to the mechanisation of Delhi Mines and the installation of the Second Sintering Plant at Bhilai is in progress. The final Detailed Project Report of the Refractories Plant at Bhilia is expected to be ready by May/

June, 1972. The details of the product-mix, capacity, and source of knowhow for the establishment of CRGO Electrical Sheet Plant at Rourkela are presently under consideration and orders for the preparation of the DPR are likely to be placed on the consultants during the coming year.

The preparation of DPR for the expansion of the capacity of the Alloy Steels Plant at Durgapur from 1,00,000 to 3,00,000 ingot tonnes has been taken up. The determination of product-mix is under consideration.

The feasibility report for the setting up of a Seamless Tube Plant is also under consideration and the work for the preparation of a DPR is likely to be taken in hand in 1972-73.

Central Engineering and Design Bureau

The Central Engineering and Design Bureau continue to function as Technical Advisers to the Department of Steel on matters connected with the iron and steel industry. The Bureau also continue to be the principal consultants for the expansion of the Bokaro Steel Plant from the first stage of 1.7 to 4.0 million ingot tonnes. The Bureau are acting as Consultants to the Mysore Iron and Steel Limited, Bhadravati, for optimisation of their Plant's performance. The Bharat Aluminium Company have appointed the Bureau as their prime Indian Consultant for the design and engineering of the Smelter and the Fabrication Complex of the Korba Aluminium Project. The Bureau have prepared a number of feasibility reports and detailed project reports, including a techno-economic feasibility report for the Vijayanagar Steel Plant and for a Special Alloy Steels Plant at Kanpur. They have also been entrusted with the detailed engineering work connected with the latter. Having regard to their present competence, the assignments which they have already undertaken and their emerging role in the context of the future expansion of the Steel Industry, it has been decided to convert the Bureau into a separate company. This company will be one of the subsidiaries of the Holding Company being set up for Steel and associated input industries.

MYSORE IRON AND STEEL LIMITED, BHADRAVATI

Mysore Iron and Steel Limited, Bhadravati was incorporated under the Indian Companies Act, 1956, on April 1, 1962. This Company is a joint undertaking of the Government of Mysore and the Government of India. Its paid-up equity capital (including share application deposits) as on 31st March 1971 was about Rs. 21.72 crores, out which the Government of India's share was Rs. 1.968 crores. The accumulated losses of the Company up to 31st March 1971 were Rs. 8.89 crores.

With the heavy losses sustained by the Company in the past, the burden of interest charges on loans and overdraft was having a crippling effect on the working of the Company. At the request of the Government of Mysore, the Government of India agreed to convert, with effect from April 1, 1971, Rs. 11.232 crores out of the Central loans amounting to Rs. 11.357 crores advanced direct to Mysore Iron and Steel Limited, into equity, thereby raising the Government of India's participation in the paid-up equity capital of the Company from about 10 per cent to 40 per cent. This step has been taken to bring the debt equity ratio to 1:1. It will also help to provide a relief of about Rs. 75 lakhs annually in interest charges. The paid-up capital as on 1st April 1971 thus became Rs. 33 crores. The increased participation of the Government of India in the equity capital of the Company was subject to the condition that the Government of India would have the right to nominate Directors on the Board of the Company in proportion to its investment and senior appointments would be made with the approved of the Government of India.

A Committee was set up by the Ministry of Steel and Mines (Department of Steel) on August 5, 1971 to report on the steps

to be taken to improve the working and profitability of Mysore Iron and Steel Limited. It submitted its report in February, 1972 and its recommendations have been examined and are being implemented.

The Administrative Staff College, Hyderabad was commissioned in August, 1971 for undertaking a techno-economic study to establish the viability of the capital invested so far and to recommend the scope for future investments to improve profitability. Its report which is expected by July 1972 will be comprehensive and will cover, *inter alia*, production planning and control, inventory management, costing system, steps to ensure the growth of the Company on profitable lines, Management Information System and introduction of a system of Management by Objectives.

The Task Force on Mysore Iron and Steel Limited met thrice during the year 1971-72 under the Chairmanship of the Steel Secretary, to review the performance of the Company, identify bottlenecks and suggest remedial action.

Attention is being concentrated on increasing production with due regard to the need for efficient maintenance of the plant and equipment. A three-year rolling plan has also been introduced for procurement of raw materials, spares etc.

With the various measures taken during 1971-72 the working of the Company has shown significant improvement which is reflected in the following table:

(in tonnes)

Product	Production in 1970-71	Anticipated production in 1971-72	Target for 1972-73
Mild Steel (Saleable)	46,533	40,000	60,000
Special Steel (Saleable)	37,037	50,000	65,000
Ferro Silicon	20,693	20,447	21,640
Cement	82,095	96,000	100,000
Castings	13,977	11,500	16,100

The working of the Company has also shown improvement in 1971-72 as will be seen from the following table:

Year	Profit/Loss	
	(in lakhs of Rs.)	
1967-68	Loss	206·66
1968-69	,,	268·32
1969-70	,,	239·37
1970-71	,,	175·08
1971-72	Anticipated Profit	100·00

Mysore Iron and Steel Limited propose to take up for implementation two new schemes in 1972-73, namely (i) the setting up of an additional capacity of 15,000 tonnes of Ferro Silicon involving an outlay of about Rs. 4.14 crores and (ii) a Forge Plant estimated to cost Rs. 5.88 crores. These schemes will help to improve the profitability of Mysore Iron and Steel Limited.

STEEL INDUSTRY IN THE PRIVATE SECTOR

Tata Iron and Steel Company

Tata Iron and SteelCompany Limited owns, in addition to the integrated steel plant at Jamshedpur, captive Collieries at Sijua and Jamadoba and an iron ore mine at Noamundi. The Steel Plant at Jamshedpur is the oldest integrated steel plant in the country. It commenced production in 1911 and its present installed capacity is 2 million tonnes steel ingots per annum. This capacity was achieved as a result of introduction of modernisation and expansion programmes which were aided by the Government of India and the World Bank through loans. The plant produces a variety of semi-finished and finished steel items like blooms, bilets, tin bars, skelp, rails, structurals, plates, sheets etc.

Against the installed capacity of 2 million tonnes steel ingots, production in 1970-71 was 1.716 million tonnes ingots. During 1971-72 the production was 1.709 million tonnes ingots. Saleable steel production during 1970-71 was 1.375 million tonnes. During 1971-72 the production was 1.386 million tonnes.

The company is implementing a scheme of replacement and modernisation including rebuilding the old Coke Oven Batteries, replacement of Boilers and renovation of Blast Furnace, Colliery expansion etc. The total estimated cost of these schemes is Rs. 76 crores. The actual expenditure incurred by the company upto the end of March, 1972 was about Rs. 25 crores. This

is a part of the total plan for new schemes involving an outlay of Rs. 190.45 crores.

A new Coke Oven Battery which is under installation (to make up the shortfall of coke during the rebuilding of the existing Coke Oven Batteries) is expected to start pushing coke in the first quarter of 1973. The rebuilding of three more batteries will be completed by the middle of 1973.

The company proposes to increase the production of clean coal from its captive collieries by 0.3 million tonnes a year. The scheme has been approved in principle and details are being worked out.

A pelletisation Plant has recently been installed by the company at its Noamundi Iron Ore Mine for utilising iron ore fines and blue dust generated in the course of mining operations. The plant consists of two units of a total capacity of 850,000 tonnes of pellets per annum.

Indian Iron and Steel Company Limited

The Indian Iron and Steel Company Limited owns, in addition to the integrated steel plant at Burnpur, an Iron Foundry at Kulti (which is also making spun pipes) and captive Collieries at Chasnala, Jitpur, and Ramnagar near Burnpur, and an Iron Ore Mine at Gua. The steel plant has at present a rated capacity of 1 million tonnes of ingot steel. This capacity was achieved consequent on two expansions undertaken in 1953 and 1955. The various items manufactured by IISCO include billets, bars, rods, rails, structurals and sheets.

The company's Colliery at Chasnala is being expanded at a cost of about Rs. 35 crores, in order to supply the coal requirements of the company amounting to about 66,000 tonnes per day. A rope way has also been laid from Chasnala to Burnpur for the transport of coal. This scheme has been financed by a loan from the World Bank.

Against the installed capacity of 1 million tonnes of steel ingots, production in 1970-71 aggregated 0.627 million tonnes and in 1971-72 0.617 million tonnes. Saleable Steel production was 0.523 million tonnes in 1970-71 and 0.493 million tonnes in 1971-72.

For 1972-73 the plant has fixed a target of 700,000 tonnes of steel ingots and this is expected to yield 546,000 tonnes of finished steel. The plant has been advised by Government to aim at a production of 800,000 tonnes of ingots in 1972-73.

The production in the plant has been going down primarily because of problems of maintenance. A scheme has been worked out to instal balancing facilities, with a view to enabling the plant to achieve the rated capacity of 1 million tonnes of ingots per year.

The Company has been permitted by the Government to effect further expansion in its steel ingot manufacturing capacity by 0.3 million tonnes. In 1966 the World Bank had, with Government approval, advanced a loan of 30 million dollars to IISCO for effecting this expansion. In 1969 the World Bank stopped further drawals on this loan. In 1970 the loan was cancelled by the World Bank. Subsequently the Government decided that the expansion should be financed from internal resources. IISCO has submitted a detailed scheme for expansion to 1.3 million tonnes of steel ingots. This scheme is under detailed examination.

Re-Rolling Industry

The Steel re-rolling mills, which are a complement to the basic steel producers, roll steel into bars, rods, flats, hoops, strips, light structurals, railway equipment, etc. They have been broadly classified as 'billet based' and 'scrap based'. The Technical Committee appointed by Government in its report in 1965 had assessed the annual capacity of billet re-rollers at 2.78 million tonnes of scrap re-rollers at 0.73 million tonnes and of other mills at 1.20 million tonnes.

The capacity utilisation of re-rollers depends on the demand (domestic and for export), and the availability of billets as well as re-rollable scrap. With increased demand for bars and rods in the domestic market and for export, the re-rolling industry faced shortage of billets during the year. The average availability of billets for re-rolling was around 6 lakh tonnes per annum including about 1 lakh tonnes of imported material as re-rollable scrap. With increased demand for bars and rods on double shift basis. A part of the shortage is being met by import of billets and through the production of billet size ingots from electric furnaces.

Production of additional quantities of billets by the main producers is being encouraged. However, billets for sale can be made available only to the extent they are not utilised for further processing in the finishing mills of the plant. Measures for augmenting billet production in smaller units comprising scrap based electric furnaces and continuous casting machines are in hand. The new units are expected to go on stream from the end of 1972 onwards. The capacity of each unit has by and large been fixed at 50,000 tonnes per annum in the interest of standardisation of plant and machinery.

So far 17 letters of intent have been issued. These schemes when fully implemented would create an additional capacity of about 9,00,000 tonnes. Five of these have been sponsored by State Governments through their State Industrial Corporations. Two other schemes have been sanctioned on the specific condition that they would be implemented in the joint sector. In the other schemes in which letters of intent have been issued, it is expected that the public financial institutions will have a substantial participation.

Billets are the main raw material for the re-rolling mills. These are in short supply. The present shortage is estimated to be of the order of 500,000 tonnes per annum. As the billets produced by the main steel plants are intended to be used within the plant for being rolled into finished products, the scarcity is not likely to ease without the development of some

other sources of supply of billets. One of the methods would be the setting up of scrap based electric furnace-cum-continuous casting billet making units in the country. In this connection this Department has been examining the present as well as projected availability of scrap in the country.

Wire Rods

Currenly there is a shortage of mild steel wire rods to the extent of about 100,000 tonnes. There is also a shortage of high carbon and other special categories of steel to the same extent. The production of mild steel wire rods during 1970-71 was about 4 lakh tonnes. The shortage is being made up partly by imports.

In the case of high carbon and other special steel wire rods relief to the extent of about 40-50,000 tonnes is expected from the second furnace of M/s. Mukand Iron and Steel Works Ltd., and a slight improvement at Bhilai of about 5,000 tonnes. The position is likely to improve substantially when the 4/5 continuous casting plants, for which electric furnaces have already been ordered out and are due for delivery this year or early next year, go into production in 1972-73.

Letters of Intent for a capacity of 60,000 tonnes have been issued to some parties. The supply position of wire rods will improve after some of the units go into production.

Wire Drawing Industry

There are at present 15 comparatively large units, licensed under the Industries (Development & Regulation) Act, 1951, engaged in the manufacture of different types of wires. Against the annual indigenous production of this industry of 1.8 lakhs tonnes in 1969-70 production during 1970-71 was 1.4 lakh tonnes The production during 1971-72 is expected to be about 2 lakh tonnes. These units, by and large, manufacture mild steel wires

Letters of Intent have recently been issued to a number of firms for the manufacture of wires thinner than 18G, and other special wires, to cater to the needs of engineering industries. The availability of high carbon wire rods despite substantial production by Bhilai, and increase in the production of M/s. Mukand Iron and Steel Ltd., is still short of requirements. To the extent necessary, imports of special categories of wire rods, and to a small extent of wires are being permitted to industry.

Pig Iron/Sponge Iron

The present licensed capacity to manufacture pig iron and sponge iron is 7,16,000 tonnes and 1,00,000 tonnes per annum respectively. In view of the excess availability of pig iron from the main plants with the exception of one unit, not much progress has been made in setting up additional capacity for manufacture of pig iron. Sponge iron can substitute scrap and can serve as a raw material for the electric furnace industry. Possibilities of exports either in the form of sponge iron, or pre-reduced pellets also exist.

To meet the shortage of scrap, and the need to utilise low grade iron ore and non metallurgical grade coal available in large quantities in the country, Government are keen to develop sponge iron manufacturing capacity based on solid reductant. The Industrial Development Corporation of Orissa hold a Letter of Intent to manufacture 100,000 tonnes of sponge iron per annum.

APIDC's proposal to have a demonstration plant for the manufacture of sponge iron with UNDP assistance for a total capacity of 30,000 tonnes per annum has been agreed to in principle by the Government. The TIDCO, SICOM of Maharashtra Government, Haryana State Industrial Corporation, RIDCO's are also evincing interest in the production of sponge iron.

Tinplates

The present installed capacity in the private sector is 150,000 tonnes per annum. Actual production of tinplate during 1971-72 is estimated at about 1 lakh tonnes.

The Tinplate Company of India has been issued an Industrial Licence for expanding their capacity by 90,000 tonnes of electrolytic plates per annum. This scheme is likely to materialise during 1974-75.

Cold Rolled Strips

There is an increasing demand for cold rolled strips in view of its large uses, especially by Engineering Industries. The anticipated demand in 1973-74 for C.R. strips is about 120,000 tonnes. The various fields of applications of C.R. Strips include manufacture of wheel rims, bicycles, brackets, hacksaw blades, instrument panels, etc. In the context of these end uses, the availability of cold rolled strips can considerably help small employment oriented units. Encouraging installation of C. R. Mills in the country and manufacture of C. R. strips is more economical than importing C. R. strips. A number of Letters of Intent have accordingly been issued by the Government for additional/new capacity.

Alloy Steels

The present installed capacity in the private sector is about 100,000 tonnes per annum. Messrs. Mahindra Ugine Steel Company, Guest Keen Williams and Globe Steels have installed capacity of 30,000 tonnes, 45,000 tonnes and 20,000 tonnes per annum respectively. Additional capacity of about 40,000 tonnes per annum is under installation by Messrs Bihar Alloy Steels Ltd. Some of the units also hold either industrial licences or Letters of Intent for installation of new/additional capacity for the manufacture of alloy steels.

Ferro Alloys

Rapid expansion of steel industry in India warrants a well developed ferro-alloys industry *viz.* ferro-manganese, ferro-silicon, ferro-chrome, ferro-tungsten and ferro-titanium etc. The estimated production of ferro-silicon and ferro-manganese in the country is 26,962 tonnes and 1,71,000 tonnes respectively. Recently Letters of Intent have been issued to some parties for establishing an additional capacity of about 45,000 tonnes of ferro-silicon per annum. Apart from meeting the growing indigenous demand the ferro alloys have an attractive export potential. Ferro-manganese, roughly of the order of 15,143 tonnes valued at Rs. 1.62 crores was exported during April 1971 to September, 1971. To meet the increasing domestic demand and to maintain the level of exports, larger capacity, is being encouraged to come up. With the commissioning of the ferro-chrome unit of the Orissa Industrial Development Corporation the installed capacity would be about 25,000 tonnes of ferro-chrome/silico-chrome. There is a surplus of ferro-chrome which is currently being exported to Japan. During 1971-72, upto August, 2361 tonnes of ferro-chrome valued at Rs. 66.44 lakhs was exported from India.

Letters of Intent for the production of ferro-vanadium have been issued to M/s. Industrial Development Corporation of Orissa and to a private sector unit to manufacture 480 tonnes and 350 tonnes per annum respectively.

BOKARO STEEL LIMITED

Bokaro, the fourth integrated steel plant to be built in the Public Sector, is the biggest industrial project undertaken in the country so far, both in terms of the magnitude of work and the investment involved. Of the total investment on steel development under the Fourth Plan, Bokaro alone will account for about 65 per cent, *i.e.* Rs. 680 crores out of a total provision of Rs. 1,053 crores. Bokaro will make a decisive contribution to the economic development of the country by substantially meeting the demands for flat products. The gap in the domestic supply and demand of finished flat products estimated at 1 million tonnes in 1974-75, will be filled by the production of 1.2 million tonnes from Bokaro in the first stage.

The Detailed Project Report prepared by the Soviet Consultants and approved by the Government in March, 1966 envisaged Bokaro as a 4 million tonnes plant of which 1.7 million tonnes is an intermediary stage of construction. A significant portion of the work for the 4 million tonne plant is, therefore, being incorporated in the construction of the first stage. Approximately 84 per cent of earthwork, 74 per cent of concreting, 84 per cent of underground communications, 73 per cent of structural steelwork and 64 per cent of equipment erection for the 4 million tonnes stage would be completed during the first stage.

Indigenous Effort:

Whereas the three earlier steel plants in the Public Sector were "turn key" projects, where the bulk equipment, technological structures and refractories were imported, Bokaro is in a sense India's first 'swadeshi' steel plant. Besides participation

of Indian organisations in design and engineering of the project in a significant way, about 90 per cent of building structures, 100 per cent of technological structures, 65 per cent of mechanical equipment, 48 per cent of electrical equipment, 80 per cent of instruments and 77 per cent of refractories are being procured indigenously for the construction of the First Stage. Apart from savings in foreign exchange, this has acted as a catalyst to engineering and refractory industries in the country. Much of the equipment ordered from indigenous industries for Bokaro is being manufactured for the first time in the country. Manufacturing specifications for as much as 90,000 tonnes of equipment have been obtained from the Soviet Union to enable the engineering industries in India to undertake manufacture of these items. This has significantly contributed towards the development of machine building know-how and technology. The requirements of sophisticated varieties of refractories for Bokaro are now being met to a sizeable extent indigenously. Besides, a variety of skills in steel plant construction are being acquired by Indian technicians and workers.

Contribution of Public Sector

Hindustan Steelworks Construction Limited has taken up the entire civil works for the plant estimated at Rs. 107 crores. It has also undertaken fabrication and erection of structural steelworks at an estimated cost of Rs. 36 crores. Over the last two years, the erection of sophisticated equipment in certain areas has also been entrusted to this Public Sector Undertaking. The machine building and heavy electrical industries have undertaken supply of about 55 per cent of the equipment valued at Rs. 122 crores. These include Heavy Engineering Corporation, Mining and Allied Machinery Corporation, Heavy Electricals, Bharat Heavy Electricals, Garden Reach Workshops, etc.

Expansion of the Plant

Initially the intention was to go straight from the 1st Stage (1.7 million tonnes) to the 2nd Stage (4 million tonnes). To

meet the increased demands for steel it was decided at the beginning of 1971 to have an intermediate stage of 2.5 million tonnes. This expansion is now being undertaken so as to achieve a capacity of 2.5 million tonnes as a "crash" programme by March, 1974.

A feasibility report on the further expansion of the plant to fully utilise the built-in capacities of the primary mills is under preparation by the Principal Consultants-CEDB.

Significant Achievements during 1971-72:

The construction work on Stage I has made progress at a rapid pace during the year. The civil work on the first blast furnace complex is complete, except for some minor finishing items. For Stage I as a whole, 99.3 per cent of the earthwork excavation, 85.8 per cent of RCC and concrete, 83.7 per cent of the underground communications have been completed. The quantity of steel structures erected during 1971 was more than 71,000 tonnes; this is one and a half times of what was done during 1970. About 39,000 tonnes of equipment have been erected during 1971; this is double the quantity erected during 1970. In fact, the monthly rate of erection of structures and equipment has more than doubled from about 5,500 tonnes in October 1970 to more than 11,000 tonnes per month towards the end of 1971. The refractory lining work increased five times, i.e., from 5,568 tonnes in 1970 to 34,026 tonnes in 1971.

In preparation for the commissioning of the first blast furnace complex various units are now being tried out and commissioned as they are ready. Arrangements for the supply of service water from the Tenughat Dam on the Damodar river for the operation of the plant have been completed. A 43 k.m. long gravity canal from the Tenughat reservoir brings the water to the first cooling reservoir which has a surface area of nearly 3.3 sq k.m. Similarly, the arrangement for the supply of power

from DVC grid has been completed with the energising of Main Step-down Sub-station No. 1 and extension of 132KV lines to the other main units. In the plant's own Thermal Power Station, the erection of the first of the two 55,000 MW turbines has been completed. The chemical flushing of the first boiler is over and this boiler will shortly start generating steam. The erection of the first Turbo Generator and the Turbo Blower is also over and these will be tried out as soon as steam becomes available. The mechanised Coal Handling Plant is expected to be ready soon, when it will be possible to start receiving the supplies of coal. The first Sinter Band has been tried out and its auxiliaries are in the final stage of completion. The mechanised iron ore handling and blending systems are also ready and the supply of ore from Kiriburu mines has already commenced. The blast furnace is in an advanced stage of completion and its various charging and other systems are being tested in trial runs. The erection of the first coke oven battery has been completed; the heating up of this battery, which commenced on 6th March this year, was a major step in bringing the plant to an operational stage.

Another significant achievement of the year was the commencement of the work on the second stage of the plant. The civil work on blast furnaces No. 4 and 5, coke oven battery No. 5, Converter No. 5 and Cooling Pond No. 2 is already in progress. Bulk of the orders for equipment and refractories for 2.5 million tonne crash programme have been placed.

Project Cost Estimates

The Government sanctioned in November 1966 an estimate amounting to Rs. 620 crores for the construction of the first stage of the plant. The cost for off-site facilities viz., township, ores, mines and quarries, Tenu Canal, etc., was estimated at Rs. 51 crores, making a total of Rs. 671 crores. These estimates have since undergone revision mainly because of the increase in the cost of indigenous equipment and due to escalation in the rates of wages and materials like steel, cement, etc. The in-

crease in the cost estimates of the supplies from indigenous sources is about Rs. 60 crores, of which supplies from HEC alone account for Rs. 45 crores. The increase on account of escalation in materials and labour is estimated at Rs. 20 crores. The revised cost estimate of the plant including off site facilities is Rs. 758 crores. The estimates for the Second Stage will be prepared as soon as the Principal Consultants have updated the Project Report.

Financial Structure

The authorised capital of the Company of Rs. 500 crores has been fully subscribed. Investment on the plant in excess of this amount is being made in the shape of loan capital. The total expenditure on the project till the end of January 1972 was Rs. 594 crores. This included a sum of Rs. 94 crores drawn from the Government towards loan capital. This will be converted into equity capital, as the Govt. have already taken a decision to raise the equity capital to Rs. 600 crores. Government have also decided to allow an interest holiday on the loan capital till the 31st March, 1978.

The budgetary estimate of expenditure for the year 1971-72 is Rs. 154 crores, including Rs. 11 crores for the expansion programme. This amount is expected to be fully utilised during the year. The provision for the year 1972-73 is Rs. 163 crores inclusive of Rs. 74 crores for the expansion programme.

BOKARO STAGE I (1.7 MILLION TONNES)

The detailed Project Report prepared by the Soviet Consultants, M/s. Tiajpromexport was accepted in March, 1966 and orders for equipment to be supplied from the USSR were placed in May 1966. M|s. M. N. Dastur and Company were appointed as the Indian Consulting Engineers in February 1967. The civil and structural steelworks were awarded to M|s. Hindustan Steelworks Construction Limited, a public sector undertaking. The work on Stage I commenced in October 1967.

Progress of Civil Works

The progress of civil work on Stage I of the Project till February 1972 was as follows:—

	Unit	Total Quantity	Progress	Percentage to total
Excavation	cbm	12,794,612	12,699,911	99·3
Concrete	cbm	1,883,715	1,616,799	85·8
Underground communications	Metres	286,906	240,103	83·7
Permanent railway tracks	Metres	131,301	55,992	42·6

The controlled earth filling work has been completed. The civil work on the first blast furnace complex is nearly complete, the progress at the end of January 1972 being 100 per cent of earthwork, 99.95 per cent of RCC and concrete and 95.4 per cent of underground communications.

Supply of Steel Structures

Of the total 263,864 tonnes of building and technological structural steel work involved on Stage I 214,738 tonnes, being 81 per cent of the total requirement, had been received till February 1972 as shown in the statement below:—

Sources	Total quantity	Supplied
HSCL	163,205	129,889
HEC	28,780	27,233
USSR	16,476	16,036
BSL	55,403	41,580

Erection of Steel Structures

The progress of erection of structurals as at the end of February 1972 was as follows—

	Total quantity	Erected
Technological	84,183	43,685
Building	179,681	103,731
	263,864	147,416

Thus, nearly 69 percent of what has been received was ereced by the end of February 1972. On the first blast furnace complex, almost the entire building structures and 93 per cent of technological structures have been erected. As against 47,377 tonnes of structures erected during 1970, the tonnage erected during 1971 was 71,148. There has been a further rise in the tempo of structural erection recently.

Supply of equipment including cranes

The quantity of equipment required for Stage I is 275,594 tonnes. The sources of supplies, the supplies due and the actual receipts till February 1972 were as follows:—

Sources	Total quantity	Supplies due	Actual receipts
USSR	102,265	102,265	97,610
Czechoslovakia	1,400	1,400	1,400
HEC	72,242	72,242	41,995
MAMC	10,522	10,522	8,132
Other public Sector sources	9,367	9,367	6,452
Private Sector Sources	79,798	48,420	34,888
	275,594	245,614	190,477

The supplies from indigenous sources still remain considerably behind schedule even though there has been a general improvement in the flow of supplies during 1971-72. Delay in the supply of cranes is posing a serious problem. Against 460 cranes ordered for Stage I, only 258 have been received so far. Against 96 cranes ordered on HEC, most of which are of heavier type and are required for erection, only 26 were despacthed till the end of February, 1972.

Erection of Equiment

So far 70,597 tonnes of mechanical equipment and 12,292 tonnes of electrical equipment has been erected. During the year 1971, 47,007 tonnes of equipment was erected against 22,152 tonnes during the year 1970.

The rate of erection could have been still higher but for delays in the supplies of steel structures and equipment, shortage of gases and recurrent labour troubles.

Supply of Refractories

Though the supply of refractories posed a very serious problem in the past, the position has considerably improved now. Out of the total requirement of 200,784 tonnes of refractories, 119,591 tonnes are being obtained indigenousiy and 81,193 tonnes are being imported. About 140,458 tonnes of refractories were received upto the end of February 1972 out of which 85,881 tonnes are from indigenous sources and 54,577 tonnes were imported.

Refractory Lining

Against only 5,568 tonnes of refractories erected till December 1970, the total quantity erected till January 1972 came to 41,820 tonnes. The refractory lining on the 1st Coke Oven Battery has already been completed and the heating of the battery has started. Similarly the lining of the refracories in

the 1st Blast Furnace and the stoves is nearing completion. Refractory work on the second coke oven battery is about 50 per cent complete.

Captive Refractory Unit

In view of the difficulties experienced in the procurement of refractories indigenously, it was considered necessary to develop a captive source of supply. The Government have, therefore, acquired the Asian Refractories Plant, which was lying closed since 1969, by an Act of Parliament passed in December, 1971. A company subsidiary to Bokaro Steel Limited is being formed for managing this plant. It is planned to produce 12,000 tonnes of fire clay bricks during the first year of production i.e., 1972-73.

Remedial Measures taken to improve the tempo of construction

Though rapid progress on the construction of the plant has been made during the course of the last one or two years, the pace has to be further increased to keep to the schedule. Efforts are constantly being made to remove the bottlenecks and accelerate the pace of work. Though the civil work is in an advanced stage for the project as a whole, the concreting in the hot rolling mills is behind the schedule. The work on underground communications is also lagging behind in the steel melting shop, refractory materials plant and the hot rolling mills. HSCL are making every effort to augment their resources in men and materials to liquidate the backlog.

With the increase in the volume of structural fabrication and erection work, the requirement of acetylene and oxygen gases for Bokaro went up sharply. Even after mobilising the resources of the entire Eastern region, it has not been possible to meet the full requirements of these gases. This has become a serious impediment in the way of pushing the erection programme further. Besides tapping other sources, a temporary filling station has been installed in the plant itself by buying

liquid oxygen from outside. Along with the procurement of additional cylinders, which are of imported origin, the supply of oxygen will improve. Efforts are also being made to commission the plant's own acetylene plant on a priority basis.

The critical position created by the default of indigenous refractory manufacturers some time back, has been overcome by importing refractories from USSR and Poland on a much larger scale than was originally envisaged and also by providing suitable technical assistance to such of the indigenous manufacturers as are keen about fulfilling their obligations. The deliveries of refractories from indigenous sources appear now more assured and stable.

Closer watch on the progress of supplies from indigenous manufacturers continues to be exercised both at the plant level and at the Ministry level. Periodical review meetings are being held under the Chairmanship of the Steel Secretary with HEC, MAMC, GRW and major suppliers of equipment in the private sector. The Inspection and Progress Organisation with Cells at Ranchi, Durgapur, Calcutta and Bombay continue to closely follow up the supplies from all Undertakings in and around these places.

Departmental erection of structures and equipment has been resorted to where the contractors have either abandoned the work or failed to keep to the schedule. This measure has helped to fill the gap created by the withdrawal of some contractors, and has significantly boosted the pace of erection work. At present, there are about 4,500 departmental persons engaged on erection of mechanical and electrical items; this number may increase by another 4,000 when erection in the rolling mills areas is taken up.

The Industrial Relations Department has been strengthened to improve the industrial climate at Bokaro particularly in the establishments of some of the contractors and their labour. Close

liaison is maintained with the labour department of the State Government.

Raw Materials

The annual requirements of the major raw materials for the first stage are as follows:—

(a) Iron Ore	..	4.17	million tonnes
(b) Coal	..	4.3	million tonnes
(c) Limestone	..	1.145	million tonnes

According to the original planning, the entire requirement of iron ore was to be met from Kiriburu mines of NDMC. However, due to the delay in the expansion of the Kiriburu Mines, it became necessary at a late stage to make alternative arrangements, specially for the supply of fines. Arrangements have now been made for movement of one rake per day of "washed" fines from Noamundi mines; this would be supplemented by supplies from Bolani mines. The supplies of lump ore have already started from Kiriburu. The requirement of coal for the first Coke Oven Battery will be met from the coal washeries at Kargali and Dugda; later when the second Coke Oven Battery is commissioned, these supplies will have to be supplemented by some quantity of washed coal from Kathara. The requirements of lime stone for the Blast Furnace and steel melting shop will be met from the captive mines being developed at Bhavanathpur and Kuteshwar respectively.

To consider the whole question of supply of raw materials, in depth, particularly for the expansion of Bokaro to its full capacity, Government have recently appointed a Governmental Committee to review the arrangements for the supply of iron ore, lump and fines, as an interim measure and on a long term basis, and also to review and make recommendations regarding the linkages of coal washeries for the supply of coal to Bokaro for the various stages of expansion.

Construction Schedule

According to the present schedule, the erection of different units of Stage I is to be completed in a phased manner by March 1973. The commissioning of the different units would take another three to six months after the erection is completed. According to this schedule, a period of about 5½ years has been provided to complete the first stage of 1.7 million tonnes of ingot steel and 0.88 million tonnes of pig iron from the commencement of the work in October 1967. This schedule is extremely tight having regard to the fact that a substantial portion of the work related to the 4 million tonne capacity is included in construction of the Stage I.

Concerted efforts are being made to complete the remaining work on the first blast furnace complex. The completion of erection of this complex was envisaged by December 1971 and its commissioning by March-June 1972 on the assumption that all the structures and equipment would be supplied by June, 1971. The supplies have not been fully completed as scheduled and deliveries of certain items are still outstanding. The delays in supplies have considerably dislocated the erection programme. Nevertheless, all resources have been mobilised to procure the remaining supplies expeditiously and to complete the erection in an endeavour to commission the first blast furnace as near to the set schedule as possible.

BOKARO STAGE II

The expansion of Bokaro from 1.7 million tonnes to 4 million tonnes in the second stage has been taken up. The Central Engineering and Design Bureau are the Principal Consultants for this expansion programme, a role performed by the Soviet Consultants in the first stage, and Messrs M. N. Dastur & Company have similar consultancy functions as during the first stage. Under the expansion programme, 3 Coke Oven Batteries and 2 Blast Furnaces similar to those in the first stage are to be added. In addition to one more 100 tonne LD Converter, 2 Converters of 250-tonnes capacity will be installed. The CEDB

have already updated the Project Report in respect of these units. No change is envisaged in the Soviet DPR in respect of Thermal Power Plant and Turbo Blower Station and the Hot Rolling Mills. It has, however, been decided to instal a 5-stand 1400 mm tandem mill to meet the requirements of cold rolled sheets to a thickness of 0.15 mm for tin plating, in place of 4-stand 1,700 mm tandem mill provided in the Soviet DPR. The Soviet Union has agreed to design and supply the equipment for this mill as well as for the finishing lines. The implementation of this expansion programme depends primarily on the completion of the second steel melting shop. Every endeavour is being made to work to a target of completing the Second Steel Melting Shop by December 1975 so as to commission the 4 M.T. capacity by the middle of 1976. As far as the cold rolling mill complex is concerned, the equipment is expected to be delivered from the USSR during the period 1975-76 and the erection will be completed by 1978.

HSCL have been awarded the civil engineering work for the expansion programme also. They have commenced the work on the coke ovens, the blast furnaces, the cooling pond No. 2 and the steel melting shop. Out of 132,000 tonnes of equipment required for Stage II, 113,000 tonnes would be indigenous. Letters of intent have already been issued for the supply of this equipment to the principal public sector undertakings whose share in the supplies will be about 52,500 tonnes. The specifications for the balance quantities to be obtained against open tenders are being prepared. For the expansion programme, it is planned to utilise the production facilities already developed at Bokaro for items such as ingot moulds, bottom plates and hot tops.

2.5 million tonnes Crash Programme

This expansion is proceeding on a crash programme basis and is expected to be completed by March 1974. Besides improving the availability of hot rolled sheets and coils, this would

substantially improve the economic viability of the plant. This would involv eaccelerating instaliation of one additional coke oven bettery, the 5th 100-tonne LD Converter, an additional oxygen plant and other auxiliary facilities included in the second stage expansion programme.

The total quantity of equipment required for this programme is about 26,416 tonnes, out of which 4,495 tonnes including equipment for the 5th LD Converter, are being imported from the USSR. HEC and other public sector industries will meet the requirements amounting to 10,110 tonnes. Production from the foundry of BSL and other units will be 7,350 tonnes. The remaining requirements will be obtained from private sector sources According to present indications, 18 cranes are required for this programme, out of which 4 have been ordered from the USSR and the rest have been ordered indigenously. Besides the equipment, about 12,331 tonnes of building and technological structures are required. These will be fabricated in the plants own Structural Shop. Advance action has already been taken for procurement of steel for this expansion programme.

Feasibility Report for 5.5 million tonne Stage

Since the primary mills and some other facilities would have built-in additional capacities even after the plant has reached the 4 million tonne stage, the CEDB have been asked to prepare a feasibility report for further expansion of the plant. The report is expected by April, 1972.

Network Planning

An important feature of Bokaro is the computerised network planning for construction management. To ensure that targets for completion of different phases of the project are maintained, the technique of "Management by Exception" has been developed using the critical path method. Detailed network for the individual construction zones have been prepared and are being

processed on a computer to high-light the critical areas of work, which require immediate remedial action. The network reports are being used for advance planning of the work in likely critical areas. The computer is also being used for the follow up of equipment supplies. Besides these, other major systems, *i.e.* inventory control, ordering and procurement of maintenance spares are also being developed.

An Operation Research Department is also being set up at Bokaro which along with the computer set up, will develop into a full-fledged management information system.

Industrial Relations

The industrial relations between the management and the employees of BSL have been very cordial. However, the industrial relations in the establishments of the contractors have not been entirely satisfactory. Mainly due to inter-union and intra-union rivalries, stoppages of work have been frequent. A 56 days strike by the muster roll workers of HSCL during the year seriously impeded the progress of work. BSL management has taken active interest in the settlement of these disputes with the assistance of the State authorities.

Commissioning and Operation

The commissioning and operation of a complex and sophisticated plant like Bokaro demands a high degree of forward planning for procurement of raw materials, spares, consumable stores, etc. besides selection and training of a large force of technicians and workers. The nucleus of the Operation Department was set up some time back for which the services of an experienced General Superintendent were obtained from Hindustan Steel Ltd. A team of experienced personnel has also since been built up at different levels. Since most of the units being installed at Bokaro are of a much larger capacity than those set up in the country so far and some are being installed for the first

time here in India, it has been found necessary to obtain the services of some Soviet Specialists with actual experience of operating such units in order to render technical assistance in their commissioning and initial operation.

Training and Development

To meet the large requirement of the operating personnel at different levels, which could not entirely be met by the existing plants, the recruitment and training of engineers and workers for different levels was started some years ago. 190 Graduate Engineers have since been trained in the steel plants of Hindustan Steel and 97 more are under training. 400 senior operatives and 325 junior operative trainees are under training, besides 400 artisan trainees. This is in addition to 333 displaced artisan workers already absorbed after training and 105 who are at present under training. To provide suitable training to the Indian personnel in operation and maintenance, training of 244 Indian specialists in the USSR has been arranged. Experienced construction personnel are also being transferred to the operation side on a selective basis. A Management Development Programme to cover the requirements for the next 3 years has been finalised in consultation with the Institute of Management, Calcutta and is now being implemented.

Production Control

One of the special features of Bokaro is its centralised production control. This unit will function from a control room rendering all the important data on the operation of the plant and distribution of power, fuel, gas, water and oxygen, despatching sets and announcement systems will give extensive communication-*cum*-conference facilities. A television net work will provide visual aid to control areas like the L.D. Convertor Shop. Arrangements have been finalised for the installation of a 3rd generation computer system for process control.

Finally it can be stated that the year 1971 has been of great significance in the completion of this mighty Project. During this period great progress has been achieved and the day in now not too far away when hot metal will start flowing from the 1st Blast Furnace at Bokaro paving the way for the speedy completion and commissioning of the other units of the Steel Plant Complex.

HINDUSTAN STEELWORKS CONSTRUCTION LIMITED

Hindustan Steelworks Construction Limited was incorporated in June, 1964, with the object of taking up the construction of Steelworks and to utilize its spare capacity for other Construction jobs. The Company undertook construction at Bokaro in the first instance and is at present mainly engaged on the Bokaro Steel Plant.

The authorised capital of the Company is Rs. 1 crore, out of which Rs. 50 lakhs has so far been paid up. The Company was given a loan of Rs. 100 lakhs during 1971-72. The budget for 1972-73 includes a provision of Rs. 100 lakhs towards loan contribution by Government to the Company.

In 1970-71, the net profit, after providing for depreciation, interest, and taxation, was Rs. 23.65 lakhs against Rs. 10.59 lakhs during the previous year. The Company had created reserves and surplus totalling Rs. 93.57 lakhs at the end of the year as against Rs. 83.62 lakhs at the end of the 1969-70. The Company has consistently been declaring a dividend every year since 1965-66, the figures upto 1967-68 being 15 per cent, and 20 per cent thereafter. The value of work done for the last six years and the net profits earned after providing for depreciation. interest, and taxation by the Company are given below:

Year	Value of work done (Rs. in lakhs)	Net profit after taxation (Rs. in lakhs)
1965—66	478·95	56·41
1966—67	364. 66	17·50
1967—68	442·77	2·93
1968—69	20,93·09	13·03
1969—70	28,31. 04	10·59
1970—71.	32,32.20	23·65

The HSCL has entered into contracts of the value of Rs. 158.50 crores with Bokaro Steel Limited for Stage-I of Bokaro Steel Plant. In addition, the following works have been awarded to the Company by Bokaro Steel Limited during the period 1971-72:

	Description of work	Amount in crores of Rs. (approx.)
1	Stage II Expansion works of Bokaro Steel Plant—Civil Engineering	40·00
2	Stage II Expansion works of Bokaro Steel Plant—Steel Structural Works.	22·50
3	Construction of 2, 984 quarters 'E' and 'F' type for Bokaro Township	2·70
4	Construction of 712 quarters of 'E' category and 360 quarters of 'F' category including internal water supply and sanitary works.	0. 90
5	Supply and installation of Electrical Equipment o 1250mm Slabbing Mill.	0·78
6	Erection of equipment in Hot coil Finishing Section of Cold Rolling Mill.	0·70
7	Refractory works of Blast Furnace and Coke Oven	0·45
8	Construction of 60 quarters of B—16 type and 100 units of C—17 type quarters including internal water supply and sanitary works including area development	0·39
	TOTAL : Rs.	68·42 crores

Initially, HSCL took up civil engineering works and fabrication and erection of structurals for the First Stage of Bokaro.

Subsequently, its scope of work was extended to include the lining of refractories in the Blast Furnace and the erection of equipment in the Steel Melting Shop and the Hot Rolling Mills. HSCL has proved to be very useful in the construction of the steel plant. Wherever the progress by the contractors was not satisfactory, HSCL was able to step in and take over the work. Many of these works are being executed by the Company on a departmental basis. With the expansion of the scope of activities of HSCL and execution of many items of work on a departmental basis, the Company has been developing specialisations in various fields, in particular, the erection of Steel Melting Complex, Rolling Mills including Electrical Installations, erection of Blast Furnace and other Technological Structures including Outdoor Pipe-lines, Lining of Refractories in the Blast Furnace and Coke Ovens. The scope of work and activities of the Company are being gradually expanded to enable it to undertake the construction of new steel plants and the expansion of the existing ones.

In the field of Civil Engineering also the Company has been able to organize departmentally mass concrete pours in large Equipment Foundations of over 5,000 cu. m. each, the largest one was approximately 10,000 cu. m. in one continuous pour.

First Blast Furnace Complex:

All the civil engineering works in connection with the first Blast Furnace have been completed. By the end of January 1972, the erection of building structures was completed to the extent of 99.24 per cent for the 1st blast furnace complex. The structural fabrication work done upto January, 1972, is 1,25,50[illegible] tonnes, out of which 1,00,610 tonnes have been erected, which are about 77 per cent and 56 per cent respectively of the total work. In equipment erection the Company completed 19,7[illegible] tonnes of work till the end of January, 1972. The tempo of erection work has increased to almost double as compared

what it was a year ago. The following table broadly indicates the progress achieved in the civil engineering works:

	Total quantity involved	Upto December 1969	Upto December 1970	Upto January 1972	% on total
Earthwork excavation (cbm)	12,794,612	7,904,531	10,500,140	12,625,186	98·7%
Concrete (cbm)	1,883,715	683,208	1,183,307	1,592,565	84·5%
Underground Communications: (M)	286,906	28,838	128,028	234,293	81·7%
Permanent Railway Tracks (M)	131,301	23,096	35,100	52,252	40·6%

New Steel Plants:

The Company has been associated with the three New Steel Plants from the site selection stage. It has been entrusted with the work of preliminary investigations, surveys and boring etc. for these Plants. Site investigation work on the New Steel Plants is practically over except for Vijayanagar Steel Plant in which case at the end of January, 1972, some borings remained to be completed.

Expansion of Steel Plants:

The under-noted works at Bhilai Steel Plant have been awarded to the company:

	Amount in crores of Rs. (approx)
(i) Mechanisation of Delhi Iron ore Mines of Bhilai Steel Plant	5·43
(ii) Second Sintering Plant of Bhilai Steel Plant	3·63
(iii) 8th Coke Oven Battery	0·75
(iv) Steel Structural Works for the above including Misc. Civil Engineering Works.	2·75
TOTAL	12·56 crores

The award of other works relating to the expansion of Bhilai Steel Plant from 2.5 M.T. to 4.00 M.T. (Ingots) is under discussion.

Works Outside Steel Plants:

In addition to the works of the total value of about Rs. 574 lakhs undertaken upto 1970-71 in respect of other public sector enterprises, the HSCL has secured the following works during 1971-72:

	Amount in crores of Rs. (approx)
(i) Civil Works of Bailadila Iron ore Deposit No. 5	3·48
(ii) Srtuctural Works for Bailadila Iron ore Project Deposit No.5	1·62
(iii) Approaches to Second Hoogly Bridge including Inter-changes & Viaducts	12·50
(iv) Construction of Telephone Instrument Factory, Naini	1·58
(v) Construction of Factory building of Hindustan Cable Ltd., Hyderbad	1·40
(vi) RCC Silos Project at Naraina.	0·40
(vii) Site Levelling including for Smelter Fabrication Complex of Korba Aluminium Co.Ltd.	0·42
TOTAL Rs.	21·40

Hindustan Steelworks Construction Ltd. is developing its specialised expertise in the field of Steel Plant construction to enable it to undertake the construction of more than one Steel Plant simultaneously. At the same time, it is also diversifying into other fields of Heavy construction so as to ensure the optimum utilisation of its man-power and resources on a continuing basis.

HEAVY ENGINEERING UNDERTAKINGS

Five of the Heavy Engineering Units in the public sector, *viz.*, Heavy Engineering Corporation Limited, Ranchi, Mining and Allied Machinery Corporation Limited, Durgapur, Triveni Structurals Limited, Naini-Allahabad, Bharat Heavy Plate & Vessels Limited, Visakhapatnam, and Tungabhadra Steel Products Limited, Tungabhadra Dam were transferred to the Ministry of Steel & Heavy Engineering from the Ministry of Industrial Development and Company Affairs in February, 1969. A new undertaking under the name of the Engineering Projects (India) Limited was incorporated in April, 1970. This undertaking is a consortium of eight public sector undertakings specialising in heavy construction, heavy engineering products and heavy electrical equipment. Its main objective is to undertake, on a turn-key basis, the construction of various units of the steel plants and other industrial units both at home and abroad.

As on 31.3.72, the total investment of Government in these companies was Rs. 189.72 crores in the form of equity participation and Rs. 155.60 crores by way of loans. It is estimated that their total value of production will amount to Rs. 54.33 crores in 1971-72.

Both HEC and MAMC are capital intensive undertakings with a sophisticated and complex product-mix. Their products are complicated and custom made items of equipment, which are not repetitive in nature. These undertakings, therefore, required a long gestation period. MAMC as its name suggests, was equipped to manufacture mining machinery. Expansion in the coal-mining industry did not, however, take place as had been expected. This unit did not, therefore, get adequate orders for

the type of equipment for which it was designed. However, even having regard to these factors, the build-up of production in these two units in the initial years had not been satisfactory and consequently heavy losses were being incurred by them. TSL and BHPV commenced commercial production only recently and have not yet reached a profitable stage. Tungabhadra Steel Products Limited, a relatively small unit, has been making profits from the very start but of late the margin of profit has been shrinking year by year primarily as a result of severe competition.

It has been one of the important objectives of this Department to bring about a rapid improvement in the working of these units. It is with this objective that separate Task Forces for individual units were constituted in the Department in April 1971 with a view to making a closer appraisal of the problems and prospects of these undertakings, formulating realistic plans of action and evolving suitable programmes and procedures for achieving the desired results. These Task Forces have had a series of meetings, at frequent intervals, during 1971-72. The basic approach in these review meetings has been to identify bottlenecks, devise suitable measures to overcome them and to extend the full assistance of the Department to the undertakings in speeding up the procurement of import licences and scarce raw materials, recovery of pending bills, early allocations of foreign exchange where justified, intervention on their behalf for getting timely deliveries from sub-contractors in India and abroad and in securing adequate workload. As a result of this combined and cooperative approach, considerable improvement has already taken place in the working of these units. During the year production has shown a significant increase in all these undertakings and the overall quantum of losses has been reduced, paving the way towards reaching a break-even stage in the near future. In certain specific areas of financial management, such as reduction in over drafts, balanced and realistic levels of inventories, faster recovery of pending bills and reduction in overtime expenditure, notable improvement has been achieved. The

methods and procedures of planning and production control have been systematised and further improvements in this direction are continuing. Special attention has been given to the integration of effort and sharing of workload between individual undertakings with a view to achieving fuller utilisation of capacity and improving all-round performance.

With the experience gained in 1971-72 and with the availability of adequate workload, improved methods of production and planning and continuing emphasis on eradicating areas of weakness, it is hoped that these heavy engineering units will have reached or nearly reached the break-even stage at least by the end of 1972-73.

HEAVY ENGINEERING CORPORATION LIMITED

Heavy Engineering Corporation Limited, Ranchi was incorporated on the 31st December, 1958. It has three engineering plants:

(i) A Heavy Machine Building Plant, with an installed capacity to manufacture 105,000 tonnes of heavy machinery and structurals per year; this includes a Steel Structural Shop, with a capacity to manufacture 25,000 tonnes of fabricated structurals per year;

(ii) A Foundry Forge Plant, with an installed capacity of 180,000 tonnes per year; and

(iii) A Heavy Machine Tools Plant, with an installed capacity of 10,000 tonnes a year.

The Heavy Machine Building Plant was set up with Soviet assistance while the Foundry Forge Plant and the Heavy Machine Tools Plant were set up with Czech assistance.

The total investment in the company as on the 31st March, 1972 is Rs. 255.51 crores of which Rs. 159.50 crores is in the form of equity investment and the balance of Rs. 96.01 crores in the form of loans. With effect from 1st April, 1971 a sum of Rs. 50 crores of the loans advanced to HEC was converted into equity. An expenditure of approximately Rs. 9.5 crores, from the loans granted to the company, was incurred on the development of the township. In conformity with a recent Government decision this amount has also been converted into equity.

HEC incurred a loss of Rs. 18.18 crores in 1969-70 and a loss of Rs. 14.43 crores in 1970-71. As on 31st March, 1971 the cumulative loss was Rs. 73.33 crores. The loss in 1971-72 is estimated at about Rs. 14.50 crores. Excluding the depreciation and interest payable to Government, there will be a profit of Rs. 1.01 crores. The loss in 1971-72 is comparatively high on account of certain adjustments relating to the earlier period.

The overlap of constructional activities with the operational phase in the initial year of operation, and the long gestation period needed to build up production in a project of this size and type are two reasons for the losses. To a certain extent, the losses incurred are also attributable to an unduly slow build up of production due to a combination of factors including deficiencies in management over these years as well as unsatisfactory industrial relations. The heavy burden of interest, depreciation and over-heads have also contributed to these losses.

The production in the three plants of the company during the last three years and this year has been as under:

Year	Quantity (tonnes)	Value (Rs. in lakhs)
I. Heavy Machine Building Plant		
1968-69	23,852·50	10,66·79
1969-70	24,462·00	14,18·48
1970-71	23,109·00	19,97·00
1971-72	30,468·00	28,24·63
II. Foundry Forge Plant		
1968-69	8,400·40	210·50
1969-70	11,634·50	381·50
1970-71	16,020·50	723·84
1971-72	20,954·00	929·85
	(Quantity in terms of saleable production)	
III Heavy Machine Tools Plant		
1968-69	8 Nos.	21·97
1969-70	27 Nos.	*78·64
1970-71	28 Nos.	*105·43
1971-72	20 Nos.	*126·26

* Includes the value of accessories and job works.

Heavy Machine Building Plant

Initial production in the plant commenced in November, 1963 with partly installed machinery. The plant is now complete and production has commenced in all the shops.

Many important items of equipment were manufactured for the first time in the country during the year under report, *e.g.*, Wagon Tippler, Seven Roller Screen, Bell Control Winch, 180 Tonne EOA Crane, Hot Blast Valve, Ten Roller Screen, Roll Crasher, Coke Pusher, Door Extractor, Seperating Valve, Lime Mixing Tanks, Auto Dump Car, 140 tonne Iron Ladle Car, Roller Tables for Bokaro Steel Limited and Skip.

Foundry Forge Plant

The construction of the Plant has been completed except for the 6,000 Tonnes Press. The Press is expected to be commissioned by the end of May, 1972.

Heavy Machine Tools Plant

The construction of this plant has been completed. To utilise the present capacity better, certain additional models of machine tools like Wheel Turning Lathes, Deep Hole Boring Machine, Roll Turning Lathes etc. have been taken up for manufacture in the plant in collaboration with reputed European machine builders.

Supplies to Bokaro

The main work load of the company at present relates to supplies for the first stage of the Bokaro Steel Plant. Most of the equipment required for the erection of the first Blast Furnace Complex has been supplied. Of a total of 99,579 tonnes of equipment, 67,544 tonnes of equipment was supplied by 1st

January, 1972. Supplies made during April-December 1971 against the first stage contract are as under:

Mechanical equipment . .	12,547 tonnes
Steel structurals . . .	1,015 tonnes
	13,562 tonnes

During this year, order for the Second Stage of Bokaro amounting to 32,480 tonnes of mechanical equipment and 16,758 tonnes of structurals valued at Rs. 4.3 crores have been received.

Besides this, during the period April 1971 to January 1972 orders of aggregate value of Rs. 1,684.71 lakhs have been received. A letter of intent for the convertor shop and second sintering plant of Bhilai Steel Plant was received in January, 1972.

Inventories

The company has been able to steadily reduce the inventory holdings as the following figures will show:

(Rs. in lakhs)

	As on 31-3-71	As on 31-12-71	As on 31-3-72 (Budgeted)
(i) Raw materials and components for production (imported indigenous spares etc. and stores in transit)	27,38	22,64	18,91
(ii) Work in progress . . .	12,56	905	990
(iii) Finished goods . .	223	262	133
TOTAL .	42,17	34,31	30,14

Foreign Collaboration Agreement during 1971-72

(i) The agreement for the strengthening of the design bureau of HMBP was signed on 17th December, 1971 with Prommashexport of USSR. This would go a long way in achieving self-sufficiency in the design of new equipment.

(ii) An agreement for technical know-how for the manufacture of railway machine tools has been signed with M/s. Heqenscheidt of West Germany.

(iii) An addendum to the existing agreement for obtaining know-how for radial and curvrlinear types of continuous casting machine has been signed with M/s. Licensintorg of USSR.

(iv) A Collaboration agreement with M/s. National Forge of USA and M/s. Crusote Loire of France has been signed for know-how for the manufacture of crank shafts for Diesel Locomotives Works.

(v) A Collaboration agreement for the manufacture and supply of Deep Hole Boring Machines and Heavy Duty Centre Lathes has been signed with M/s. Strojimport of Czechoslovakia.

Production Programme for 1972-73

The targets of production for the year 1972-73 have been further raised as compared with the production during 1971-72 as will be seen from the following figures:

(in tonnes)

	Actual Production	Targets
	1971-72	1972-73
Heavy Machine Building Plant	30,468	51,000
Foundry Forge Plant	20,954	32,230
Heavy Machine Tools Plant	20 Nos. of machines	40 Nos. of machines 12; Nos. CLW Traction gears (WAG—4); 36 Nos. CLW Traction gears (WAM—4) in sets.

Steps for improvement

The Task Force had seven meetings to review the performance of the Corporation. This significantly contributed towards identification of the problems and bottlenecks impeding production in the plants. In addition, the following measures have been implemented in order to raise production:

(i) A system of time keeping with the aid of time recording clocks has been successfully introduced. As a second step, a proper time booking system is also being introduced.

(ii) Improvements are being introduced in (a) production control (b) material management through modern feed back methods involving use of computers. In this respect, training of officers in programming has already commenced.

(iii) Efforts are being made to frame uniform personnel policies and procedures in the three plants.

(iv) Incentive schemes have been introduced in some sections which will be extended progressively to other departments.

(v) Double shifts have been introduced in some sections and will be extended progressively to other sections also.

(vi) Maintenance work is being given greater attention.

(vii) Methods of quality control and inspection are being improved.

(viii) The top management of the company has been reorganised and streamlined to make it production oriented. Full time posts of Managing Director and Director (Technical) have been created and filled.

(ix) The key to improving the production of HEC lies in the efficient operation of the Foundry Forge Plant. The operations of this plant were examined by a team of the Administrative Staff College, Hyderabad. Areas where improvements can be effected are being progressively identified.

Government of India had set up a committee on 29th June, 1971 under the Chairmanship of the late Shri S. S. Jagota for standardisation of steel plant equipment. This was done with a view to making maximum use of the available designs and know-how in the country and also to help in cutting down the lead time for procurement of equipments for the steel development programme. The report of the committee has been finalised. At the same time an assessment has been made of the equipment within HEC's scope of supply for the steel development programme with a view to maximising indigenous contribution to this programme.

MINING AND ALLIED MACHINERY CORPORATION

Mining and Allied Machinery Corporation Limited (MAMC) was incorporated on 1st April, 1965, to take over the assets and liabilities of the Coal Mining Corporation at Ranchi. It is designed to manufacture various items of underground coal mining equipments including conveyors, coal cutters, loaders, pumps, fans, locomotives with an installed capacity of about 45,000 tonnes per year.

The capital expenditure incurred upto 31st March, 1971 amounted to Rs. 35.48 crores including Rs. 4.97 crores spent on the township. However, the aggregate investment by government, including loans and advances for providing working capital and meeting losses, amounted to Rs. 60.45 crores by 31st March, 1971. This included Rs. 20.00 crores by way of equity capital. During 1971-72 the Corporation was given further loans to the tune of Rs. 2.27 crores.

Report of the Committee on Public Undertakings

In its 65th Report presented to Parliament in April, 1970 the Committee on Public Undertakings recommended the winding up of Mining and Allied Machinery Corporation Limited in view of the huge losses incurred by it and the seemingly unpromising prospects in future. This recommendation was carefully examined by Government in the light of the following considerations :

(i) The Company employs about 6500 persons. Winding up of the company and consequent unemployment of such a large number of persons was an important factor;

(ii) The machinery and equipment installed in the company are very good and if properly utilised, there

was no reason why the company should continue to incur losses;

(iii) The company at present produces sophisticated equipment and has recently taken up production of a number of new items which would have had to be imported at considerable cost. Closing of the company would result in a serious set-back to some of the important projects;

(iv) The consequences of winding up the company have been fully explained to the Labour Unions and their leaders and it is expected that Labour relations would continue to improve; and

(v) There has been a perceptible improvement in the production and performance of the company during the last one year and the trend is likely to be maintained in future.

On these considerations, it has been decided not to wind up the company.

Financial Results

Ever since MAMC went into production in 1964-65, it has been incurring losses. To the end of 1970-71 the aggregate cash loss (including interest charges) amounted to Rs. 24.28 crores out of a total accounting loss of Rs. 33.01 crores. The trend of losses over the last five years is indicated below :

(Rupees in crores)

	Cash Loss	Total Accounting Loss (including depreciation)
1967-68	4·58	14·00
1968-69	4·63	20·16
1969-70	5·08	26·47
1970-71	5·21	33·01
1971-72 (estimated)	2·15	36·42

The reason why MAMC has been ncurring continuing losses are :

(a) serious shortfalls in the anticipated demand of coal mining equipment;

(b) long gestation period for engineering projects of this nature manufacturing highly sophisticated equipment;

(c) mounting burden of interest on loans taken from Government to meet cash losses; and

(d) slow build up of production due to labour problems and managerial deficiencies.

With a view to provide financial relief to the company from the excessive burden of interest and repayment of loans, Government have sanctioned the following changes in the terms and conditions of the loans granted to the company :

(a) Out of the total loans advanced by Government, a sum amounting to Rs. 24 crores, which is equivalent to the existing accummulated cash losses, will not attract interest for a period of five years with effect from 1st April, 1971.

(b) A moratorium on the repayment of loans for a period of four years *i.e.* upto and including 1974-75 has been allowed.

The reduced incidence of interest has helped the Company in reducing its loss during 1971-72.

As a result of a series of remedial measures undertaken, the production picked up from the latter half of 1970-71 and

Production and sales during the past five years have been as under :—

Year	Production (tonnes)	Value (Rs. in lakhs)	Sales (Rs. in lakhs)
1967-68	5,076	226	90
1968-69	4,099	158	110
1969-70	5,764	284	184
1970-71	7,742	488	475
1971-72 (estimated)	11,300	1,000	508

The production this year has been significantly better than in previous years and included a number of sophisticated and complex items supplied to Bokaro Steel Limited, Haldia Port, National Coal Development Corporation Limited, Hindustan Copper Limited and other public sector undertakings.

Production per man-year of direct workers has gone up from Rs. 17,000 during 1970-71 to Rs. 30,000 (estimated) during 1971-72. The overall monthly productivity which was 30.2% during 1970-71 has increased to 46% (estimated) during 1971-72.

After taking into consideration the production trend in recent months a production programme of 18,500 tonnes at an estimated value of Rs. 18 crores has been planned for the year 1972-73.

In order to introduce an effective system of control over costs and materials and to ensure regular flow of useful managerial information, it has been decided that the present IBM Data processing machines should be replaced by an IBM Computer.

inmproved considerably in 1971-72. The table below reflects the progressive reduction in losses in each quarters of 1971-72;

(Rs. in lakhs)

	Operating cash loss	Deferred Revenue Written off	Interest on Govt. loan	Depreciation	Total Loss
1st quarter	31	10	28	31	100
2nd quarter	24	10	29	31	94
3rd quarter	6	11	29	32	73
4th quarter	(—) 3*	11	29	32	69
	58	42	115	126	341

*Cash gain

Production

In the last two years, and particularly during 1971-72 a number of measures have been taken to improve production planning and control so as to systematise the work of materials planning, development of design and technology tooling, procurement of raw materials and bought out components and evaluation of the progress of major orders. The top management of MAMC has been strengthened during the current year to equip it better to deal with its increasing responsibilities and to ensure rapid improvement in production.

The company is progressively implementing the programme of diversification, which was adopted during 1969-70 in view of inadequate orders for the original product-mix. As a result of this, MAMC has initiated the manufacture of bulk handling equipment for major ports of India including conveyors, stackers, reclaimers and ship loaders.

Industrial Relations

During the first half of the year, labour unrest in the plant took the form of strikes, bundhs, work to rule, noisy demonstrations and go-slow tactics. During the second half of the year, however, the industrial relations improved.

Workload Prospects

The total orders including letters of intent in hand as on 31st March, 1972 are expected to be of a value of Rs. 34 crores. During the year, the company received orders from Madras and Marmugao Ports for supply of sophisticated material handling equipments including stackers, reclaimers, ship loaders, conveyors etc. in addition to orders from Haldia and Paradip Ports which were received earlier. The company is at present negotiating further orders for similar equipments with the Visakhapatnam and Tuticorin Port authorities. The total value of orders for the Port equipments is expected to be about Rs. 28 crores, including the potential orders from Visakhapatnam and Tuticorin Ports. In the field of bulk materials handling equipment, MAMC has now emerged as the leading manufacturer in India. It has plans to specialise also in the manufacture of bulk handling equipment for Power Plants, Steel Plants and Fertilizer Projects.

MAMC has been nominated as a Member of the Standardisation Committee, constituted by Government, to decide on the Standardisation of handling systems at Steel Plants in India. This Committee has recommended certain standard conveying systems, pumps, technological structures and other miscellaneous equipment which fall within the purview of manufacture of MAMC. It is expected that with adequate standardisation and technical know-how, which MAMC has developed, it would be possible for it to meet all the future requirements of handling equipment in Steel Plants.

Development of Ancilliary Industries

A new Ancillary Industries Development Department, has been started to facilitate development of small-scale industries in Calcutta—Durgapur industrial area. This will enable MAMC to place orders on them for various types of small components, castings, forgings and steel fabrication.

TRIVENI STRUCTURALS LIMITED, NAINI

In June, 1965, the Government of India entered into an agreement with M/s. Voest of Austria for setting up a structural shop to meet the shortfall in the steel fabrication capacity of the country in the Fourth Five Year Plan. Triveni Structurals Limited, Naini, was established as a result of this agreement with 49 per cent participation in the equity capital of the company by M/s. Voest of Austria, the Government of India holding the balance of 51 per cent. The product-mix of the plant was to consist of steel building structures, hydraulic gates, penstocks, storage tanks, pressure vessels, steel bridges, LD converters, heavy duty cranes, hoists etc. The Plant was to achieve an installed capacity of 25,000 tonnes per annum in the fifth year of production.

The subscribed capital of the company is Rs. 300 lakhs, the Government of India's subscription being Rs 153 lakhs and that of M/s. Voest Rs. 147 lakhs. As on the 31st March, 1972, Government have invested Rs. 592.40 lakhs in the company of which Rs. 153 lakhs is in the form of equity participation and the balance of Rs. 439.40 lakhs is in the form of loans. Out of the amount of Rs. 439.40 lakhs invested as loans, Rs. 127 lakhs represents short-term loans for meeting cash losses of the company.

Initial production in the Plant commenced in August 1968. The production during the last three years has been as below:—

1969-70	5,560 tonnes
1970-71	8,908 tonnes
1971-72 (anticipated)	10,700 tonnes

A production of 15,000 tonnes is planned for the year 1972-

During the last three years TSL incurred the following losses:—

	(Rs. in lakhs)
1969-70	61·50
1970-71	69·03
1971-72 (anticipated)	56·00

The total cumulative loss as on 31st March, 1972 is Rs. 204.52 lakhs.

During the year 1971-72 the company was able to procure orders for supply of sophistitcated items from different parts of the country. The tallest tower in the country, the 300 meter high Television Tower in Bombay, was designed and fabricated by the Company and its erection is nearing completion. The company has also designed, fabricated and erected a 100 meter high Television Tower in Amritsar in a record time of about 2 months.

The company's production and performance has been improving and it is expected to break-even during 1972-73.

BHARAT HEAVY PLATE AND VESSELS LIMITED, VISAKHAPATNAM

Bharat Heavy Plate and Vessels Limited, Visakhapatnam —a Company wholly owned by the Government of India— was incorporated in June, 1966 with the objective of manufacturing heat exchangers, pressure vessels, digesters, columns, ammonia feed condensers, Dished Ends, Storage Vessels, Technological Structures etc. required by the Petrochemical and other heavy chemical and allied industries. The Plant was set up in technical collaboration with M/s. Skoda Export of Czechoslovakia. The installed capacity of the plant is approx. 23,000 tonnes per year valued at about Rs. 14 crores.

BHPV has entered into a collaboration agreement with M/s. Air Liquide of France, for the manufacture of air and gas separation plants and with M/s. Nooter Corporation of the USA for the manufacture of high pressure vessels. The former will enable the Company to offer complete air and gas separation plants required by the process industry on a turnkey basis and the latter will provide the know-how for the manufacture of high pressure multi-layer vessels required for synthesis of ammonia, urea, methanol and other organic products.

The capital cost of the Project, as approved by Government, is Rs. 20.12 crores, including Rs. 0.74 crores on account of interest capitalised during construction, and Rs. 2.78 crores for development of a township. As against this, the capital expenditure incurred upto the end of December, 1971 is Rs. 18.43 crores including Rs. 1.09 crores on the township.

Government's financial contribution upto end of March, 1972 was Rs. 21.07 crores, of which Rs. 7 crores was towards

equity and the balance Rs. 14.07 crores was advanced as loans. The proportion of equity relative to the loans will be revised and raised shortly in line with debt-equity ratio of 1:1.

A decision has recently been taken by Government to finance the entire township from equity. By the end of March, 1972 an expenditure of Rs. 1.18 crores will be incurred on the township. The equity of the Company will further be raised to this extent.

The gross production at the project increased from 548 tonnes valued at Rs. 37.39 lakhs in 1970-71 to about 2,500 tonnes valued at about Rs. 227 lakhs in 1971-72. The more important orders executed by the Company during the year were the supply of Digesters and Pressure Vessels to Bharat Aluminium Company, and Heat Exchangers and Pressure Vessels to Gujarat Aromatic Project of the Indian Petrochemical Corporation. The table below summarises the operating results of the Company for the last three years:

Years	Gross output in tonnes	Gross output value (Rs. in crores)	Depreciation (Rs. in crores)	Interest (Rs. in crores)	Profit (+)	Loss (—)	Cumulative loss (Rs. in crores)
1969-70	240	0·065	0·05	—	—	0·27	0·2
1970-71	548	0·374	0·32	—	—	0·84	1·11
1971-72	2500	1·675	0·63	0·61	—	2·29	3·4

The higher loss during 1971-72 as compared to the previous year is primarily attributable to the higher capital related charges *i.e.* depreciation and interest. It should also be stated that in 1970-71, a sum of Rs. 84.85 lakhs being the interest charges during construction were capitalised resulting in a reduction in the loss.

The production plan of the Company for 1972-73, visualizes a production target of 7,000 tonnes of completed equipment valued at Rs. 7 crores.

The total value of orders received by the Company upto March 31, 1971 was Rs. 5 crores. During April-December, 1971 it received orders of the value of Rs. 14 crores. These include orders for two Oxygen Plants from Bokaro Steel Plant at an estimated cost of Rs. 10 crores. The new Fertilizer and Petrochemical Projects to be set up in the country, will further improve the order book position of the Company.

TUNGABHADRA STEEL PRODUCTS LIMITED
TUNGABHADRA DAM

Tungabhadra Steel Products Limited was established in April, 1960 as a joint venture of the Governments of Mysore and Andhra Pradesh, each holding a share capital of Rs. 25 lakhs, for the manufacture of hydraulic gates, hoists and penstocks for river valley projects. In February, 1967, the Government of India acquired a controlling interest in the company by investing Rs. 51 lakhs as share capital while the investment by the Governments of Andhra Pradesh and Mysore remained unchanged. There has been no further investment in the company either in the form of equity or loans.

As the present site, where the workshops of the company are located, offers no scope for expansion, it has been decided to shift the workshops to a new site where the company intends to expand its activities and diversify its production. With this in view, the company has acquired 87 acres of land at a distance of about one mile from its existing workshops. The expansion scheme, estimated to cost Rs. 104 lakhs, contemplates setting up a new structural shop with an area of 6,000 sq. metres (the present area of the structural shop is 3,350 sq. metres). The machinery in the present structural shop will be shifted to the structural shop at the new site and the other shops (machine shop, foundry etc.) will be shifted progressively to the new site. When the proposed expansion scheme is completed, it would be possible to increase production of hydraulic and other structurals by 2,000 tonnes per year. Additional machinery for diversification of production is also proposed to be installed during the current Plan period. It is expected that the shifting of the workshops and the expansion of the production facilities would be completed by the end of 1973.

The principal items of production are gates, hoists and penstocks for river valley projects and transmission towers, building structurals, pressure vessels, tanks, gantry cranes, and EOT cranes. The company has a collaboration agreement with M/s. Neyrpic. Grenoble, France for the manufacture of gates and other hydraulic structurals.

There has been a steady increase in the value of production during the years, and the largest during the current year, as shown below:—

Year	Quantity in tonnes	Value in Rs. lakhs
1967-68	1,050	64·01
1968-69	2,305	72·50
1969-70	3,892	106·00
1970-71	3,587	116·00
1971-72 (anticipated)	4,393	144·30

Some of the more important projects that are under cution are gates and hoists for the Ukai projects in Gujarat, the Malaprabha project in Mysore, the Balimela project in Orissa and the Beas project in Punjab. Work on Narayanpur Dam Project in Mysore is expected to start shortly.

The net profits earned by the company before the payment of income tax have been as under:—

	(Rs in lakhs)
1967-68	15·28
1968-69	9·64
1969-70	4·49
1970-71	1·17
1971-72	2·4

The profits steadily declined from year to year but the trend has begun to be reversed from the current year.

The orders in hand as on 1st January, 1972 were of the value of Rs. 800 lakhs. The order for Narayanpur Dam is the biggest secured by the company so far. The order position for transmission line towers has been gradually improving and the value of orders in hand is Rs. 40 lakhs. An order for 1,700 tonnes (Rs. 30.77 lakhs) of transmission towers was secured from the Kerala State Electricity Board. The company has also quoted for major works for the Hemavathy Project and for the Monmanahalli Dam of Kalinadi Project in Mysore.

A scheme for construction of 200 tenements for workmen under the subsidised Industrial Housing Scheme of the Mysore State Housing Board has been taken up for execution. When the tenements are completed, the housing problems of employees will be mitigated to a considerable extent.

ENGINEERING PROJECTS (INDIA) LIMITED NEW DELHI

In April, 1970 a consortium of selected public sector undertakings was constituted with the intention of taking up business connected with the supply of equipment for steel plants, mines, fertilizer factories and other industrial projects by entering into contracts for design, manufacture, inspection, supply, erection and commissioning of equipment on a turn key basis or oherwise by utilizing the facilities available with the member companies.

The new company was incorporated under the name and style "The Indian Consortium of Industrial Projects Limited". Its name was subsequently changed to "Engineering Projects (India) Ltd."

The public undertakings which are participating in the share capital of the Consortium and the percentage of their share holdings are as under:—

	Percent
(i) Heavy Engineering Corporation Ltd., Ranchi.*	51
(ii) Bharat Heavy Electricals Ltd., New Delhi.	10
(iii) Heavy Electricals (India) Ltd., Bhopal.	10
(iv) Mining & Allied Machinery Corpn. Ltd., Durgapore.*	7
(v) Bharat Heavy Plate & Vessels Ltd., Visakhapatnam.*	7
(vi) Triveni Structurals Ltd., Naini.*	7
(vii) Instrumentation Ltd., Kota	5
(viii) Hindustan Steelworks Construction Ltd., Calcutta.*	3

*Companies under the administrative control of Department of Steel

The initial authorised capital of the company is Rs. 30 lakhs and the initial subscribed capital Rs. 10 lakhs.

During 1970-71, which was the first year of its functioning, the company incurred a revenue expenditure of Rs. 2.45 lakhs. During 1971-72 it is expected that the excess of expenditure over income would be Rs. 7.62 lakhs. During 1972-73, according to present estimates, the income of the company should suffice to meet the revenue expenditure and also give a small surplus.

The company has already secured an order for the construction of Silos valued at Rs. 60 lakhs for the Food Corporation of India. The work is under execution. The Company has also secured an order worth Rs. 20.20 lakhs from NMDC for the Bailadilla Iron Ore Mines. A letter of intent has been received by the company recently for a contract of the total value of Rs. 12.20 crores for the approaches relating to Second Hooghly Bridge, Calcutta.

The company has so far submitted quotations of the value of Rs. 51.63 crores including the second Hooghly Bridge and the Kandla Fertilizer Handling Project. It is also processing some tenders submitted in the past by its member companies direct.

APPENDIX I

PRODUCTION OF STEEL INGOTS

(In '000 onnes)

Year	Bhilai	Durgapur	Rourkela	TISCO	IISCO	Total (1-5)	MISL	Others	Grand Total
	1	2	3	4	5	6	7	8	9
1961-62	789	462	354	1,643	934	4,182	49	54	4,285
1962-63	1,060	731	700	1,799	1,002	5,292	46	57	5,395
1963-64	1,143	972	800	1,892	1,027	5,834	48	63	5,945
1964-65	1,131	1,006	979	1,956	950	6,012	47	69	6,138
1965-66	1,371	1,001	1,065	1,979	970	6,386	69	72	6,527
1966-67	1,852	754	943	2,001	897	6,447	75	75	6,597
1967-68	1,785	738	924	1,933	791	6,171	91	70	6,332
1968-69	1,735	823	1,162	1,816	777	6,313	120	73	6,506
1969-70	1,876	818	1,104	1,708	700	6,206	136	92	6,434
1970-71	1,940	634	1,038	1,715	627	5,954	91	94	6,139
1971-72*	1,954	700	823	1,709	617	5,803	133	364	6,300

*Provisional.

Sources : (i) Statistics for Iron and Steel Industry in India (issued by HSL).

(ii) Iron and Steel Control Bulletin.

APPENDIX II

PRODUCTION OF SALEABLE PIG IRON

(In '000 tonnes)

Year	Bhilai	Durgapur	Rourkela	TISCO	IISCO	Total (1-5)	MISL	Others	Grand Total
	1	2	3	4	5		7	8	9
1963-64	407	418	98	0	203	1,132	—	31	1,163
1964-65	349	385	779	23	207	1,043	—	42	1,085
1965-66	509	336	68	18	219	1,150	—	26	1,176
1966-67	550	201	59	3	172	985	—	28	1,013
1967-68	656	278	64	1	197	1,196	—	22	1,218
1968-69	591	375	147	2	346	1,461	13	31	1,505
1969-70	649	376	113	1	322	1,461	4	74	1,535
1970-71	554	330	96	1	253	1,234	30	56	1,320
1971-72*	476	269	127	—	46	918	38	68	1,024

*Provisional.

Source : 1953-64 to 1970-71—Iron and Steel Control Bulletin.

APPENDIX III

PRODUCTION OF SALEABLE STEEL BY MAIN PRODUCERS

(In thousand tonnes)

Year	Bhilai	Durgapur	Rourkela	TISCO	IISCO	Total
1961-62	551	362	186	1,318	737	3,154
1962-63	803	486	421	1,413	795	3,918
1963-64	884	731	566	1,507	810	4,498
1964-65	916	721	689	1,568	755	4,649
1965-66	1,028	684	782	1,568	723	4,785
1966-67	1,328	550	683	1,568	709	4,838
1967-68	1,252	527	640	1,534	613	4,566
1968-69	1,344	500	773	1,465	640	4,722
1969-70	1,496	494	796	1,440	568	4,794
1970-71	1,549	413	683	1,375	523	4,543
1971-72*	1,568	432	598	1,386	493	4,477

*Provisional.

Sources : 1961-62 to 1969-70—Statistics for Iron & Steel Industry in India—issued by HSL-1970,
1970-71—Plants concerned.

APPENDIX IV

PRODUCTION OF TOOL, ALLOY AND SPECIAL STEEL

(In tonnes)

Producers	1968-69	1969-70	1970-71	1971-72*
1. Canara Workshops Ltd., Mysore	1,834	2,163	3,801	3,650
2. Firth Sterling Steel Co. of India Ltd., Maharashtra	135	533	921	942
3. Globe Motors (P) Ltd., New Delhi	945	..	7,816	6,400
4. Guest Keen, Williams Ltd., West Bengal	31,022	24,619	29,686	33,100
5. Alloy Steel Project, Durgapur	24,046	41,189	38,621	38,621
6. Hindustan Steel Ltd. (Bhilai, Rourkela & Durgapur Steel Plants)	42,142	37,383	113,964	130,814
7. Indian Iron & Steel Co., West Bengal	1,784	1,664	Nil	Nil
8. Lasco Steel Ltd., Madras	..	..	..	Nil
9. Mahindra Ugine Steel Co. Ltd., Maharashtra	17,963	19,679	18,174	31,710
10. Mysore Iron & Steel Ltd., Mysore	16,318	46,362	18,527	62,210
11. Singh Engg. Works Ltd., (U.P.)	..	..	467	Nil
12. Tata Iron & Steel Co. Ltd., Bihar	64,157	66,926	71,427	9,970
13. J. K. Iron & Steel Co. Ltd., Kanpur	..	..	67	120

*Provisional.

Production	1968-69	1969-70	1970-71	1971-72
14. Krishna Steel Industries (P) Ltd., Bombay	..	..	Nil.	Nil.
15. Mukand Iron & Steel Works Ltd., Bombay	..	19,318	,241	3,166
16. The National Iron & Steel Co. Ltd., Calcutta	..	1,225	657	Nil.
17. Textool Co. Ltd., Coimbatore	..	..	63	395
18. Himmat Steel Foundry (M.P.)	..	..	..	800
TOTAL	200,346	261,061	350,037	322,898

*Data received from Iron and Steel Controller. Calcutta.

Source : I. & S. Control Bulletin.

APPENDIX V

PRODUCTION OF FINISHED STEEL—PRODUCER-WISE

(In '000 tonnes)

Year	Bhilai	Durga-pur	Rour-kela	TISCO	IISCO	Total (1-5)	MISL	Others	Grand Total
	1	2	3	4	5	6	7	8	9
1961-62	354	81	178	886	557	2,056	39	844	2,939
1962-63	555	234	427	977	632	2,852	39	1,000	3,864
1963-64	658	374	527	1,035	652	3,246	41	1,009	4,296
1964-65	654	493	626	1,108	637	3,518	39	876	4,433
1965-66	726	511	717	1084	623	3,661	49	800	4,510
1966-67	722	391	638	1,062	576	3,389	60	1,042	4,491
1967-68	690	342	602	1,002	451	3,087	70	896	4,053
1968-69	903	383	738	1,048	512	3,584	77	1,241	4,902
1969-70	1,134	395	758	1,002	460	3,749	40	1,259	5,048
1970-71	1,215	337	593	983	464	3,592	24	1,213	4,829
1971-72	948	337	531	950	436	3,202	32	1,398	4,632

*Provisional.

Sources

(i) 1961-62 to 1962-63 . . . Statistics for Iron and Steel Industry in India 1966 is sued by HSL.

(ii) 1963-64 to 1970-71 . . . Iron and Steel Control Bulletin.

APPENDIX VI

PRODUCTION OF FINISHED STEEL—CATEGORY-WISE

(Figures in '000 tonnes)

Category	1969-70	1970-71	1971-72 (Provisional)
A. Mild Steel			
Light and Medium Structurals	612.9	641.7	494 0
Heavy Structurals	243·0	238 3	201·7
Heavy Rails (i) Ist Class	247.7	243.7	234·5
(ii) 2nd Class	170.4	145 4	110·3
Light Rails	7 0	5·5	6.2
Black Sheet (Corr.)	..	..	0·7
Black Sheet (Plain)— (i) Hot Rolled	205·7	212·4	225 0
(ii) Cold Rolled	83·5	85.2	88·5
G. P. Sheets	74·9	72·9	54·0
G. C. Sheets	119·7	117 2	109.2
Plates	321·3	271·4	278·0
Bars	1,151.6	1,055·7	1,090.0
ods	575·6	517.6	533·2

Steel—6	*Wires :—* (i) *Black*	72.5	48.5	80.5
	(ii) *Galvd.*	46.7	34.8	47.0
	(iii) *Others*	63.6	52.3	71.5
	Hoops	2.3	6.6	8.0
	Strips :— (i) Hot Rolled	244.8	91.6	67.0
	(ii) Cold Rolled	81.2	100.1	104.0
	Box Strappings	6.8	6.7	5.2
	Steel Sleepers	49.7	58.8	67.5
	Tinplates	94.5	133.4	100.2
	Skelp	240.6	242.6	236.0
	Slit Coils	..	..	..
	Wheel, Tyres & Axles	33.9	37.5	31.5
	Special Sections	36.5	57.5	65.0
	Total Mild Steel	4,786.4	4,477.4	4,308.7
	B. Total, Alloy & Special Steel	261.1	350.0	322.9
	Grand Total (A+B)	5,047.5	4,827·4	4,631.6

Source : Iron and Steel Control Bulletin for 1969-70 and 1970-71.

APPENDIX VII

IMPORTS OF IRON AND STEEL

(Quantity in tonnes and value in Rs. lakhs)

Items	1968-69		1969-70		1970-71		1971-72 (April-Sept.)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Pig Iron/Ferro Alloys	1,858	136	2,399	123	1,609	200	4,644	177
Cast Iron	3,306	162	1,454	80	1,626	72	661	52
Mild Steel	366,492	58,25	345,282	58,10	551,132	100,10	505,104	77,48
High Carbon Steels	36,088	658	31,836	588	71,454	15,45	82,268	16,33
Alloy Steels	35,874	15,90	28,286	12,16	64,824	25,81	51,272	17,78
Steel Castings & Forgings	8,349	383	7,231	393	8,015	434	3,602	201
Iron & Steel Scrap	13,469	122	6,599	91	7,428	76	8,009	85
TOTAL	465,436	88,76	423,087	83,01	706,088	149,18	655,560	116,74

APPENDIX VIII

CATEGORY-WISE EXPORTS OF IRON AND STEEL DURING 1970-71 AND 1971-72 (April-Feb. '72)

(Quantity in Thousand tonnes)
(Value in Rs. lakhs)

Category	1970-71		1971-72 (April-Feb. '72)	
	Quantity	Value	Quantity	Value
(1) Pig Iron	464.8	21,02.4	200·7	6,91.4
(2) Ingots	40.1	1,83.3	..	—
(3) Billets	22.9	1,15.0	..	..
(4) Rails	87.6	6,03.6	87.6	7,81.9
(5) Structurals	281·2	28,23·3	100·5	9,04·5
(6) Bars & Rods including light structurals rolled by re-rollers	101·4	8,64.0	4·3	35·3
TOTAL	998·0	86,91·6	393·1	24,13·1

APPENDIX IX

STATEMENT SHOWING COUNTRYWISE, CATEGORYWISE EXPORTS OF IRON AND STEEL DURING THE 11 MONTHS PERIOD ENDED 29-2-1972

Country	Rounds/Flats (Tonnes)	Structurals (Tonnes)	Rails (Tonnes)	Pig Iron (Tonnes)	Billets/ Ingots (Tonnes)
1. Argentina	..	..	9,700	..	..
2. Burma	..	..	21,754	..	..
3. Hong Kong	..	231	..	..	..
4. Indonesia	..	383	..	..	..
5. Iran	..	13,644	..	..	..
6. Iraq	..	435	..	..	..
7. Japan	..	..	..	1,39.623	..
8. Kenya	..	164	..	..	..
9. Kuwait	592	199	..	..	..
10. Muscat	73	..	..	..	..
11. Singapore	..	43	..	32,399	..
12. South Korea	..	..	40,598	6,573	..
13. Sudan	2,446	395	..	..	..
14. U. A. R.	649	..	15,502	..	..
15. U. S. A.	510	1,527	..	..	..
16. U. S. S. R.	..	83,438	..	..	..
17. Yugoslavia	..	..	..	22,129	..
TOTAL	4,270	100,459	87,552	2,00,724	..

Total exports of Iron & Steel during the 11 months period ended 29-2-1972: 3,93,005 tonnes F.O.B.Value Rs. 24.13 crores

APPENDIX X

EXPORT OF IRON AND STEEL SCRAP

	1970-71		1971-72 (Apr-Sept., 1971)	
	Quantity (Tonnes)	Value (Rs. lakhs)	Quantity (Tonnes)	Value (Rs. lakhs)
Iron and Steel Scrap for re-smelting Reforging.				
Filing etc.	64,867	1,47.64	17,015	22·66
Wornout articles	673	2.35	..	..
Others	164,816	4,53·39	50,236	72·87
Sub-Total	230,356	6,03.38	67,251	95.53
Iron and Steel Scrap used as Prime varieties.				
Bars ends etc.	1,321	3.38	..	..
Sheet Cuttings (Uncoated)	23,508	68·70	8,107	18·82
Sheet Cuttings (Coated)	922	3.18	..	..
Other Remnants	4,798	16.32	7,016	6.17
Sub-Total	30,549	91.58	15,123	24.99
GRAND TOTAL	260,905	6,94.96	82,374	120.52

APPENDIX XI

CATEGORYWISE EXPORT OF FERRO-ALLOYS FOR THE PERIOD APRIL TO SEPTEMBER, 1971.

	(Quantity) (Tonnes)	Value (Rs. lakhs)
Ferro Alloys		
Ferro Manganese below 3% carbon	720	7.64
Ferro Manganese over 3% carbon	14,423	154·40
Ferro Chrome	2,361	66.44
Others	..	1
	1,7504	228.49

GMGIPND—M—1 Steel and Mines—28-4-72—2,700