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ECONOMIC COMMISSION FOR AFRICA

Second Intergovernmental Meeting of Experts
on the establishment of Iron and Steel
Industry in Eastern and Southern African
Subregion

Addis, Ababa, 30 November - 4 December 1981

MAURITIUS*

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I. INTRODUCTION

The government is aware that the Iron and Steel Industry is the engine of growth and development in an economy. Mineral ores constitute the basic raw material for building such core industries in a country. The raw materials required for starting an iron and steel industry are: iron ore, coal, fluxing materials (such as limestone, dolomite, fluorspar etc.) water and electricity. The manufacture, to put it simply, starts by freeing the metallic iron from the ore, using coal and its derivative coke as the primary source of energy and limestone, dolomite etc. as a source of flux to remove or slag off the impurities in the ore and coke.

II. RAW MATERIALS

(a) Iron ores

There are no known deposits of iron ore in Mauritius. Surveys carried out several times have concluded that the volcanic origin of the island has precluded any economic concentration of ore minerals.

(b) Fluxing materials

The only mineral material of any significance found in Mauritius is coral sand and coral limestone. A survey carried out in 1967 has put the extractable reserves at 14.9 million tons. Another expert in 1969 estimated the availability of 24 million tons of coral sand. Besides the above reserves coral detritus and live reef coral are considered to be available in unlimited quantities, though their extraction would present intractable problems.

(c) Scrap

As regards steel scrap, no estimate of its local availability has been made. However, the annual generation of scrap may not be high enough to justify the setting up of a unit to produce steel by melting scrap.

III. ENERGY

(a) Electricity

The manufacture of iron and steel requires plenty of electricity and water. In Mauritius the Central Electricity Board (CEB) is the sole producer of electricity. It has a total installed capacity of 146 megawatt, made up of:-

Thermal	-	123.3 Mw	-	(85%)
Hydro-electric	-	22.9 Mw	-	(15%)
		<hr/>		
		146.2		
		<hr/>		

Electricity is generated by three means in Mauritius:- (a) by thermal installations (b) by the use of hydro-electric power, and (c) by the burning of bagasse in sugar factories. In 1980, around 292 million kwh of electricity was generated by the CEB.

Although Mauritius enjoys good rainfall conditions, the hydro-electric source of electricity cannot be exploited fully because of small catchment areas; the unavailability of storage dams with an adequate head of water, and the absence of big rivers due to the nature of the island. Hydro-power is much cheaper than thermal power which depends upon imported fuel oil. With escalation in the price of oils, electricity has become very costly in Mauritius, since the major part of it is generated by thermal means.

Electricity is also produced by sugar factories by burning bagasse, a by-product of the sugar industry. However, the production is seasonal and the amount generated is not high.

(b) Renewable energy resources

Research work is being undertaken in the non-traditional forms of energy generation:- sea waves, geothermal, solar and wind energy. This research will take time and therefore is not of immediate economic importance.

The Central Water Authority (CWA) is responsible for the supply of water for industrial, agricultural and domestic purposes. In 1979, the CWA supplied 57.8 million gallons of water.

IV EXISTING PRODUCTION FACILITIES

(a) Planning rationale

Any possibility of creating an iron and steel industry could be conceived only if such an industry could be planned on imported ore, coal etc. Planning such an industry will be obviously beset with complex problems. On the other hand, producing steel from scrap may not be a meaningful economic proposition at present given the prohibitive cost of energy. Furthermore, the CWA, with its present production facilities, will not be able to entertain any proposal for the provision of sizeable volume of water.

(b) Imports of steel products

Billets and merchant mill products constitute the bulk of imports of direct steel products. The billets are imported for transforming into reinforcing bars by the local rolling mills. The building industry is the main end-user of the reinforcing bars and the import merchant mill products, which make up around 65 per cent of the total imports of iron and steel products. The plate mill products which are used by the construction industry and metal fabrication units represent around 16 per cent of the total imports. Pipes which are invariably used for infrastructural purposes are less than 1 per cent of the total imports. The imports, while indicating the size of our domestic market also reveals the level of development achieved in that sector. The per capita consumption of iron and steel products seems to be quite low.

(c) Existing rolling mills

There are four rolling mills in Mauritius. Three of the mills are organised and operate in a modern way, whereas one is a backyard unit. The three units are producing mild steel and high tensile reinforcing bars from billets imported from Zimbabwe at the moment. The backyard unit produces bars of limited sizes from off-cuts. The total installed capacity of the mills are around 40,000 tons annually. The total investment of the rolling mills in plant and equipment is around Rs 18 million and they employ around 400 workers.

(d) Other production facilities

Besides the rolling mills, there is one wire-drawing and compounding unit which draws rods from 2 to 10 mm. from coils. It has a capacity to draw 10,000 rods annually.

All the bars and rods go to meet the requirements of the local building industry and therefore the production of the mills depends wholly upon the level of activities in the building sector. With the general economic recession and its effect on the building industry, at the moment all the production units are operating at less than 50 per cent of their capacity. This is also evidenced by the quantity of billets and coils imported into the country.

A wide variety of articles consuming imported iron and steel products such as wires, angles, strips, plates etc. are being manufactured. They include weldmesh, wire nails, woodscrews, bolts and nuts, wire fencing, furniture, tubes for furniture, metal windows and doors, large diameter pipes, bus body, ships and tugs and other metal structures. One engineering workshop repairs and assembles machinery and equipment for the sugar factories. Most of the products are manufactured for the local market, although from time to time bus bodies, ships and sugar machinery and equipment have been exported.

Although ours is a mixed economy, the government is committed to a policy of free-enterprise. It encourages private initiative and entrepreneurs, as much as possible, to start industrial ventures, by offering them a generous package of incentives. Therefore no national plans, as such, exist for the iron and steel projects. However, the government does try to interest private enterprise to enter certain line of production and it induces them to come up with investment proposals.

V. MANPOWER

The basic skill requirements for the existing production facilities are easy to acquire and are usually provided on the job. Therefore no formal training institution existing for such types of skills, nor does the present training centres and institutions cater for such skill requirements. Furthermore, since at present there is no major plan for iron and steel projects, the future requirements for skills cannot be ascertained and hence a priori no training programmes can be initiated.

VI. CONSTRAINTS TO THE FUTURE DEVELOPMENT OF THE IRON AND STEEL INDUSTRY

The government recognises the strategic importance of iron and steel industry in industrial development. However, at present, there is not much we can do given the absence of essential mineral ores, limited capital resources, very restricted local market, lack of know-how, high cost of electricity which stand out as serious constraints for creating a core sector. Even if it may be possible to develop industries based on imported mineral ores, capital and know-how, the marketability would still present a formidable problem in the light of the competitive world market conditions. While we do agree that countries like Japan and South Korea, without any basic raw materials, are producing and exporting iron and steel, Mauritius, a country with hardly one million people cannot at present think of emulating such industrial giants.

We believe that there is a great potential for iron and steel industries in the countries of eastern and southern Africa region. The basic raw materials and cheap power are available. The market is also there. Capital, know-how and transport or infrastructure may be the main constraints but they are not insurmountable. Mauritius is not endowed with the essential raw materials. Transport and freight cost are two of the major factors affecting the location of an iron and steel industry. Mauritius would, however, be prepared to support measures aimed at regional economic integration.

Imports of Selected Commodities by S.I.T.C. (Revised) Groups

Jan-11th June

SITC (Rev. 1)	Group Description	Unit	Year 1978		Year 1979	
			Qty.	Qty.	Qty.	Qty.
<u>Division 69:- Manufactures of Metals, N.E.S.</u>						
691	Finished structural parts and structures, n.e.s.	M. Tons	2,745	1,500		
692	Metal containers for storage and transport	M. Tons	499	220		
693	Wire products (excluding electric) and fencing grills	M. Tons	664	161		
694	Nails, screws, nuts, bolts, rivets and similar articles of iron or steel or copper	M. Tons	663	282		
695	Tools for use in the hand or in machines	M. Tons	400	147		
696	Cutlery	{ M. Tons { Dozen	15 249,300	17 266,916		
697	Household equipment of base metals	pcs M. Tons	675	13,079 201		
698	Manufactures of metal, n.e.s.	{ M. Tons { No.	1,719 51,022,427	3,892 21,940,385		
<u>Division 71 :- Machinery Other than Electric</u>						
711	Power generating machinery, other than electric	M. Tons	1,840	918		
712	Agricultural machinery and implements	{ M. Tons { No.	251 376	1,330 2		
714	Office machines	{ M. Tons { No.	23 11,654	2 7		
715	Metal working machinery	M. Tons	125			
717	Textile and leather machinery	{ M. Tons { No.	515 9,440			
718	Machines for special industries	{ M. Tons { No.	1,270 3	0.235 73		
719	Machinery and appliances (other than electrical) and machine parts n.e.s.	{ M. Tons { No.	3,191 76,626			

Jan.-11th June

STTC	Group Description	Unit	Year 1978		1979	
			Qty.		Qty.	
<u>Division 72:- Electrical Machinery, Apparatus and Appliances</u>						
722	Electric power machinery and switchgear	pcs M. Tons	807		1	
723	Equipment for distributing electricity	pcs M. Tons	773		19	
724	Telecommunications apparatus	No. Tons No.	268	53		
			28,066	2,942		
725	Domestic electrical equipment	No. Tons No	594	16		
			5,499			
726	Electric apparatus for medical purposes and radiological apparatus	M. Tons	1	55		
729	Other electrical machinery and apparatus	M. Tons No. Dozen	578			
			2,841,143			
			38,262			
<u>Division 73:- Transport Equipment</u>						
751	Railway vehicles	M. Tons	0.0			
732	Road motor vehicles	M. Tons No.	809			
			14,411			
734	Aircraft	M. Tons No.	4			
			4,291			
735.	Ships and boats	M. Tons No.	1			
			108			

Imports of Selected Commodities by S.I.T.C. (Revised 2) Groups

12th June - 21st
December 1979 Year 1980
Qty. Qty.

SITC	Group Description	Unit	12th June - 21st December 1979	Year 1980
691	<u>Division 69: Manufacturers of Metal, N.E.S.</u> <u>Iron, steel, aluminium</u>	Tons	1,570	910
692	Metal containers for storage transport	-	383	583
693	Wire products and fencing grills	-	196	371
694	Nails, screws, nuts, bolts, rivets of iron, steel or copper	-	265	987
695	Tools for use in the hand or machines	-	192	283
696	Cutlery	{ DZ Tons	210,312 20	157,907 74
697	Household equipment of base metal N.E.S.	{ No Tons	48,386 243	27,265 350
698	Manufacture of base metal N.E.S.	{ No Tons	17,519,513 973	36,503,250 1,313
<u>Division 71 Power Generating Machinery and Equipment</u>				
711	Steam and other vapour generation boilers, superheated water boilers, auxiliary plant & parts	Tons	169	336
712	Steam and other vapour power units not incorporating boilers, steam engines with self contained boiler parts N.E.S.	{ No Tons	25 1	5 0.5
713	Internal combustion piston engines and parts, N.E.S.	{ No Tons	3,197 71	2,523 132
714	Engines and motors non-electric (other than those of 712,713, 718) parts n.e.s of the engine and motor group of 14 and item 718.88	-	5	0.5
715	Rotating electric plants and parts n.e.s	{ No Tons	2,336 10	19,146 3
718	Other power generating machinery and parts, N.E.S.	{ No Tons	19 0.5	67 3

12th June - 21st
December 1979

Year 1980

STIC	Group Description	Unit	Qty.	Qty.
(Rev. 1)	<u>Division 72: Machinery Specialized for Particular Industries</u>			
721	Agricultural machinery (excluding tractors) and parts, N.E.S.	(Tons) NO	28 123	26 1,199
722	Tractors (except 744.11, 783.2)	NO	23	54
723	Civil engineering and contractors Plant and equipment and parts, N.E.S.	(NO) {Tons	4 77	10 418
724	Textile and leather machinery and parts n.e.s.	(Tons) (NO)	9,797 36	17,903 120
725	Paper mill and pulp mill machinery, paper processing machines and parts, N.E.S.	Tons	15	38
726	Printing and bookbinding machinery and parts N.E.S.	Tons	43	80
727	Industrial food processing machinery and parts, N.E.S.	Tons	61	328
728	Other machinery and equipment specialised n.e.s	Tons	315	592
	<u>Division 73: Metal Working Machinery</u>			
736	Machine tools for metal working or metal carbides and part and accs. N.E.S.	(Tons) (NO)	24 903	65 1,047
737	Metal working machinery (other than machine tools) and parts, N.E.S.	Tons	169	92
	<u>Division 74: General Industrial Machinery and Equipment, N.E.S. and Parts N.E.S.</u>			
741	Heating and cooling equipment and parts, N.E.S	{NO {Tons	359 126	434 128
742	Pumps for liquids, liquid elevators and parts, N.E.S.	{Ton {NO	25,492	60 12,096

SITC	Group Description	12th June-21st December 1979		Year 1980	
		Unit	Qty.	Unit	Qty.
743	Pumps (other than for liquids), compressors fans, blowers, centrifuges, filtering apparatus and parts, N.E.S	{ No Tons	8,413 63	{ No Tons	14,775 150
744	Mechanical handling equipment and parts N.E.S	{ No Tons	39 277	{ No Tons	34 766
745	Other non electrical machinery, tools and mechanical apparatus and parts, N.E.S	{ No Tons	104 83	{ No Tons	251 112
749	Non-electric parts and accessories of machinery, N.E.S.	Tons	324	Tons	662
751	Office machines	{ Tons No.	4 3184	{ Tons No.	14 10,001
752	Automatic data processing equipment and units, magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, n.e.s	{ No. Tons	281 -	{ No. Tons	82 0.36
759.	Parts, n.e.s of and accessories (other than covers, carrying cases) suitable for use solely or principally with machines of heading 751, 752	Tons	2	Tons	4.4
<u>Division 77: Electrical Machinery, Apparatus and Appliances, N.E.S. and Parts</u>					
771	Electrical power machinery (other than the rotating electrical plant of heading 716) and parts, N.E.S.	{ Tons No.	0.76 24,012	{ Tons No.	37 32,916
772	Electrical apparatus for making and breaking electrical circuits, for the protection, and for making connection to or in electrical circuits, parts of apparatus.	Tons	165	Tons	352
773	Equipment for distributing electricity	Tons	467	Tons	874
774	Electrical apparatus for medical purposes and radiological apparatus				10
			2.3		

SITC	Group Description	12th June-21st December 1979		Year 1980	
		Unit	Qty.	Qty.	Qty.
775	Household type, electrical and non-electrical equipment, N.E.S.	{ Tons No.	12 69,178		15 61,115
776	Thyrionic, cold cathode and photo-cathode valves and tubes including C.R.T., television camera tubes, mercury arc rectifying valves or tubes) photocells: mounted piezo-electric crystals, diodes, transistors and similar, electronic microcircuits and parts, N.E.S.	Tons	19		23
778	Electrical machinery and apparatus, N.E.S.	{ Tons Dz. No.	312 13,898 1,216,916		278 67,116 1,855,208
<u>Division 78: Road Vehicles (Including Air-Cushion Vehicles)</u>					
781.	Passenger rotorcars (other than public-service type vehicles including vehicles designed for both passengers and goods	No.	467		658
782	Motor vehicles for transport of goods or materials and special purpose motor vehicles	No.	179		376
783	Road motor vehicles N.E.S.	No.	111		170
784	Parts and accessories, n.e.s. of vehicles falling within heading 722, 781, 782, 783	{ Tons No m ²	357 112 -		606 110 20
785	Motor cycles, scooters and other cycles motorised or not, invalid carriages	{ Tons No.	66 6,040		100 7,682
786	Non motorised Trailers and other vehicles n.e.s. and Specially designed and equiped transport containers	{ Tons No.	8 260		17 708
<u>Division 79: Other Transport Equipment</u>					
791	Railway vehicles (hovertains) and associated equipment	Tons	0.008		1.4
792	Aircraft and associated equipment, and parts, N.E.S.	{ Tons No.	0.596 -		0.73 1,902
793	Ships, boats, (hovercraft) and floating structures	{ Tons No.	0.83 55		0.17 55