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IRON AND STEEL PROJECTS IN DEVELOPING COUNTRIES

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Main results of the study work on industrial sectors are presented in the Sectoral Studies Series. In addition a series of Sectoral Working Papers is issued.

This document presents major results of work under the element Iron and Steel Industry in UNIDO's programme of Industrial Studies 1986/87.

Preface

In the preparatory work for the Third Consultation on the Iron and Steel Industry in 1982 a review of the expansion plans in the iron and steel industry in developing countries was undertaken. On the basis of this review several scenarios for the development of the industry up to 1990 were elaborated. The review and scenarios were presented in ID/WG.374/2 and ID/WG.374/2/Add.1.

In view of the turbulent development of the world economy and the iron and steel industry, both in industrialized and in developing countries since 1981/1982, it has been considered as interesting to make an update of the 1982 study and to see how the planning situation for 1990 has changed. That update is presented here. In an appendix detailed information about all projects covered in the present study is given.

Contents

Tables

EXPLANATORY NOTES

References to dollars ($) are to United States dollars, unless otherwise stated.

A comma (,) is used to distinguish thousands and millions.

A full stop (.) is used to indicate decimals.

A slash between dates (e.g., 1980/81) indicates a crop year, financial year or academic year.

Use of a hyphen between dates (e.g., 1960-1965) indicates the full period involved, including the beginning and end years.

Metric tons have been used throughout.

The following forms have been used in tables:

Three dots (...) indicate that data are not available or are not separately reported.

A dash (-) indicates that the amount is nil or negligible.

A blank indicates that the item is not applicable.

Totals may not add up precisely because of rounding.

Besides the common abbreviations, symbols and terms and those accepted by the International System of Units (SI), the following abbreviations and contractions have been used in this report:

Economic and technical abbreviations

BOF	Basic oxygen furnace
DR	Direct reduction or double reduced
DRI	Direct reduced iron
EOF	Energy optimizing furnace
EAF	Electric arc furnace
LD	Linz-Donawitz (oxygen steelmaking process)
mmtpy	Million metric tons per year
NIC	Newly industrialized countries
UHP	Ultra-high power

1. INTRODUCTION

The work which is presented here is based on the study of projects in developing countries and issued in document "1990 Scenarios for the Iron and Steel Industry", Addendum "The dossiers"[1/] on 28 July 1982. That study on projects in developing countries estimated how many steel mills would operate in various developing countries by 1990 if all projects that were known by then would have come on stream by 1990. The presentation of the project situation was made on the basis of the information available at the end of 1981 and the projects were classified as projects under study, in the negotiation phase and/or under construction.

When the above mentioned iron and steel project list for 1990 was made, 136 projects, of which 41 were direct reduction plant projects (DR), for new capacity or extension of old capacity in developing countries were included.

However, these projects were planned when steel demand in developing countries was increasing rapidly and increases in capacity were considered essential to provide for the increased demand. The steel self-sufficiency ratio in developing countries was very low in comparison with the increasing consumption. Many developing countries wanted to establish self-sufficiency in the iron and steel industry.

As a result of the economic recession starting in 1981, many projects have since then been either postponed, abandoned or reduced in capacity. A new review of the projects identified in the 1982 study has been undertaken in order to determine exactly the development of the planning situation and to give a revised picture for 1990.

The new project review is made on the basis of the information available at the end of 1985 in specialized magazines, professional journals and personal contacts with various institutes related to the iron and steel industry. The information available within UNIDO, notably in the Metallurgical Industries Section, the Industrial Planning Section and the Sectoral Studies Branch has also been utilized.

1/ ID/WG.374/2/Add.1.

This information is obviously not complete. No field work has been done and some of the information may have to be corrected. We expect to have a positive feedback from the readers to help to improve this report.

When the 1982 study was prepared it was not specified if the production capacities were for iron making, including direct reduction of iron (DRI), or for steel-making and/or for rolling. In this revision an attempt has been made to rectify this. For certain projects included in the 1982 report there were no names or locations identified. Some effort has been made here to identify the names and locations of those projects.

The present review covers modified information on most of the projects included in the 1982 study as well as on projects which should have been reported in the earlier study but were omitted for various reasons. Furthermore the present review covers also new projects for which information could be collected.

Some of the original projects were abandoned in 1982 and in 1983 but have been reactivated in 1985. Those projects are classified as active in this review. The present condition of these once-abandoned projects is evaluated with respect to the three stages of development introduced (see below).

The 1990 scenarios for the iron and steel industry anticipated, based on an analysis of the past development of the iron and steel industry in developing countries, that by 1990 some developing countries would be expected to have integrated steel plants which produce flat products, high grade and speciality steels in addition to the traditional non-flat products. These prospects will be examined closely in line with the recent development of the iron and steel industry in the developing countries concerned.

The progress towards the establishment of steel plants in the least developed countries is touched upon in a separate section.

There are three types of steel plants used in this study: mini-mills, integrated mini-mills and integrated steelworks. Mini-mill is defined as the process which involves the following stages: Scrap - EAF route → rolling

mills. Integrated mini-mill is defined as the process which has the following stages: DR - EAF route → rolling mills. Integrated steelworks is defined as the process which comprises the following stages: Blast furnace - LD converter (BOF) route → rolling mills.

The classification enables a distinction to be made among different routes of producing steel products, rather than by capacity size usually adapted to differentiate mini-mills from traditional large integrated steelworks. The mini-mill concept is based essentially on a small-scale enterprise philosophy, but the concept can be and has been applied in very different circumstances. New mini-mills will not necessarily bear much resemblance to the traditional mini-mill. Key attributes of mini-mills make the concept ideally suited to developing countries, which may be characterized by scarcity of capital, limited initial demand, a labour force with an agricultural tradition and a lack of basic infrastructure.

There are integrated mini-mills with the capacity of more than one million tons per year, while there are traditional integrated steelworks with a capacity of less than 0.2 million tons per year. Paraguay's Acepar illustrates the point. This plant is integrated in the traditional way with two charcoal blast furnaces and two 15-ton LD converters. It is not on a large scale but is classified as integrated steelworks because of the way that it produces the steel products.

For some projects in the 1982 study it is not indicated whether they are new projects or capacity expansions. In this new project review adjustments have been made.

Furthermore, rolling mill projects are listed only when the project is solely for building a rolling mill. A mini-mill means an EAF steel making process with a rolling mill to produce finished products while an integrated mini-mill means the combination of DR, EAF and rolling mill. Direct reduction also means a single project without EAF and rolling mill. This way of classification avoids double counting.

2. THE YEAR 1990 PICTURE OF IRON AND STEEL PROJECTS IN DEVELOPING COUNTRIES

2.1 The project review of 1982

In the 1982 publication 138 projects with a total capacity of about 117 million tons in steel equivalents, were identified. About 55.6 million tons related to projects under study while about 61.2 million tons related to projects under construction.

Of the 138 projects 38 were in Asia, 32 in Africa South of the Sahara, 26 in North Africa and the Middle East and 42 projects in Latin America.

As to the capacity, the following break-down can be derived:

	Mini-mills	Other plants ranging from 0.2 to 1 million tons per year
Asia (except Middle East)	6	32
Africa, South of Sahara	25	7
North Africa and Middle East	9	17
Latin America	8	34
Total	48	90

Unfortunately individual projects cannot be identified in the geographical or capacity break-down. Some smaller inconsistencies were also found. It was therefore decided to make an entirely new review of the 1982 project data, how many projects of different types were expected to have come on stream by 1990 as well as their capacity. This expectation from 1982 is then modified by later information.

2.2 An updated project review

This new project review is composed of the following three sections;

(a) Projects reported in the 1990 scenarios (section 2.2.1).

(b) Projects not reported in the 1990 scenarios, but which should have been counted at the time (section 2.2.2).

(c) New projects identified between 1982 and 1985 where project names or production capacity data are known (section 2.2.3).

2.2.1 Projects reported in the 1990 scenarios

In reviewing the projects lists of the 1990 scenarios,[2/] some plants which in reality had come on stream before 1980 were classified as "under construction". They should not have been included in the original report but for the sake of comparability they have been included also here as projects which have come on stream by 1985.

Of the 138 projects that were expected to be in production by 1990 in the 1982 review, 38 projects had come on stream as of 1985 as shown in table 1. Of those plants, 14 are integrated steelworks with a total capacity of 20 mmtpy, 10 integrated mini-mills with a total capacity of 9.72 mmtpy, 3 mini-mills with a total capacity of 1.20 mmtpy, 5 direct reduction plants with a total capacity of 1.37 mmtpy and 6 rolling mills with a total capacity of 1.4 mmtpy.

Furthermore there are 16 projects which now can be expected to come on stream between 1986 and 1990 as shown in table 2. These 16 projects have a total raw steel-making capacity of 20.21 mmtpy. There are 7 integrated mini-mills, 8 integrated steel works and 1 mini-mill.

Of the 54 projects which have been implemented or are expected to be so by 1990, most are in Asia and Latin America. For example, the Democratic People's Republic of Korea will, by 1990 have a capacity of 15 mmtpy. The People's Republic of China plans to produce at least 55 mmtpy of steel annually by 1990 in addition to producing 44 mmpty of rolled steel. All NICs also increase their capacity in Asia and Latin America.

2/ ID/WG.374/2 and Add.1.

Table 1. Projects included in the 1982 review which have started production by 1985

Country	Project name or location	Types of steelworks	Steel capacity (in million metric tons)
Africa			
Morocco	Nadar 1	Rolling mill	0.450
Nigeria	Unit 1.2. and 3	Rolling mill	0.600
	Delta Steel	Integrated mini-mill	1.000
Asia			
Burma	Maymyo Anisakan	Integrated mini-mill (2 units)	0.040
Indonesia	PT Krakatau	Integrated mini-mill	1.000
	PT Krakatau Extent	Integrated mini-mill	1.000
Republic of Korea	Posco 5, Pohang	Integrated steelworks	3.000
Taiwan Province of China	China Steel 2, Kaohsiung	Integrated steel works	3.250
Singapore	Nism Extention	Rolling mill	0.250
Malaysia	Amalga-Extention	Mini-mill (new EAF)	0.300
	Labuan	Direct teduction (hot briquette iron)	0.600
	Tregganu	Direct reduction (billets)	0.560
Pakistan	Pipri, Binqasim	Integrated steelworks	1.100
India	Bokaro Extention	Integrated steelworks	1.500
	Tisco	Integrated steelworks	1.100
	DR Unit, Orissa	Direct reduction (sponge iron)	0.150
	Three other unit, Parancha	Direct reduction (sponge iron) two units	0.061
Middle East			
Iran	Ahwaz	Integrated mini-mill	1.030
Saudi	Ju Bail, Aljubail	Integrated mini-mill	0.850
Arabia	Jeddah	Rolling mill	0.100
Iraq	Khor-El Zudel, Khor Al Zubair	Integrated mini-mill	Shut down after operation
Latin America			
Mexico	AHMSA, Monclova	Integrated steelworks	1.000
Trindad &	Iscot	Integrated mini-mill	0.600
Tobago	Iscot	Integrated mini-mill	0.600
Venezuela	Sidor	Integrated mini-mill	3.600
Peru	Laminadoras Del Pacifico	Mini-mill (new EAF)	0.180
Paraguay	Villa Hayes	Integrated steelworks (charcoal)	0.180
Cuba	Havana	Integrated steelworks	0.400
Columbia	Paz Del Rio	Integrated steelworks	0.380
Brazil	Mannesman Extention	Integrated steelworks (new LD converter)	0.520
	Mendez Junior Ext.	Mini-mill (new EAF)	0.720
	Usiminas Extention	Integrated steelworks	1.800
	Turabao	Integrated steelworks	3.100
	Alesita	Integrated steelworks	0.670
	Acominas	Integrated steelworks	2.000

Note: Full details of these and other projects referred to below are given in the appendix.

Table 2. Projects included in the 1982 review and now expected to start production 1986-1990

Country	Project name or location	Types of steelworks	Steel capacity (in million metric tons)
Libya	Mitsurata	Integrated mini-mill	1.100
Egypt	Dekkeila	Integrated mini-mill	0.840
Nigeria	Ajaokuta	Integrated steelworks	1.500
Uganda	Jinja works	Mini-mill	0,027
Republic of Korea	Kwangyang	Integrated steelworks	3.000
Iran	Eafahan, Mobarakeh	Integrated mini-mill	3.000
Argentina	Zapla Extention	Integrated steelworks	0.250
	Somisa	Integrated steelworks	1.400
Mexico	Sicartsa	Integrated mini-mill	3.250
	Tamsa	Integrated mini-mill	0.600
	Hylsa	Integrated mini-mill	1.600
Columbia	Small units, Medellin	Integrated mini-mill	0.150
Brazil	Small projects, Monlevade	Integrated steelworks	0.917
	Belgo-Mineira-Sid Extention	Integrated steelworks	0.380
	CSN Extention	Integrated steelworks	1.300
	Cosipa Extention	Integrated steelworks	0.900

These tendencies are already reflected in the fact that world crude steel output rose to 720 million metric tons in 1985 and that much of the increase came from developing countries where the 1985 production rose to an all-time high of more than 130 million metric tons. The developing countries as a whole had a share of 18 per cent in steel production on a crude steel basis in 1985, compared to 14 per cent in 1981.3/

Tables 3 and 4 give more details as to type of steelworks and geographical breakdown of projects identified in 1982 that either had come on stream by 1985 or are expected to do so by 1990.

3/ Crude steel production IISI 103, 17 March 1986.

Table 3. 1982 review. Projects on stream 1985 or 1990 by types of steelworks

	Capacity (million metric tons)	
	1985	1990
Integrated steelworks	20.000	9.647
Integrated mini-mills	9.720	10.540
Direct reduction plants	1.371	-
Rolling mills	1.400	-
Mini-mill (EAF)	1.200	0.027

Table 4. 1982 review. Regional breakdown of projects on stream 1985 or 1990

Region	Number of projects		
	1985	1990	Total
Asia	16	1	17
Middle East	3	1	4
Africa	5	4	9
Latin America	14	10	24
Total	38	16	54

Out of the 138 projects that were expected to come into the production stage by 1990 in the 1982 study only 54 are now expected to do so. The remaining 84 projects have been cancelled or postponed.

The 1982 review was not complete, however. In order to get a full picture it must also be considered that a number of projects were not included in the 1982 review although they should have been so, had information then been known to UNIDO. These cases are analyzed in the following section.

2.2.2 Projects not reported in the 1990 scenarios

In the 1982 study on 1990 scenarios, steel projects in the People's Republic of China and Democratic People's Republic of Korea were excluded. Nevertheless there were at the time plans for 2 projects in the Democratic People's Republic of Korea and 13 projects in the People's Republic of China. They were all expected to have come on stream by 1990.

In the People's Republic of China, 4 of those projects had come on stream already by 1985. Their total capacities are 7.57 mmtpy. In addition 9 projects with a total capacity of 15.10 mmtpy are expected to have come on stream by 1990. Also the two projects in the Democratic People's Republic of Korea, with a total capacity of 7.54 mmtpy are expected to be in production by then. All projects in the People's Republic of China and Democratic People's Republic of Korea are integrated steelworks.

In addition to these 15 projects in the People's Republic of China and the Democratic People's Republic of Korea there were 39 projects planned in 30 developing countries which were not reported in the 1982 review although they were planned already at the time. Twenty-two of these projects have come on stream by 1985 (table 5) and a further 17 projects are expected to start producing by 1990 (table 6). A further breakdown as to capacities and regions is given in tables 7 and 8.

The total picture for 1990 as reflected in the (corrected) project review from 1982 is summarized in tables 9 and 10. Out of 192 projects which were planned to come on stream only 108 can now be estimated to do so.

Table 5. Projects on stream 1985, not reported in 1982 review

Country	Project name or location	Types of steelworks	Steel capacity (in million metric tons)
Indonesia	PT Ispat indo	Mini-mill	0.200
	Toshan Murni	Mini-mill	0.150
Republic of Korea	Inchon Iron and Steel	Mini-mill	0.800
Taiwan Province of China	Ching San Iron works	Mini-mill	0.085
Singapore	Nism Expansion, Jurong	Mini-mill	0.500
Philippines	National Steel Co.	Mini-mill	0.300
Pakistan	Panjab steel	Mini-mill	0.030
India	Visvesvaraya Iron and Steel	Integrated steel works	0.135
	Jindal strip	Mini-mill	0.015
	Raipur Wires and Steels	Mini-mill	0.054
	Visvesvaraya Iron and Steel	Mini-mill	0.135
Saudi Arabia	National Pipe Co.	Pipe Mill	0.080
Mexico	Atlax Saco	Mini Mill	0.200
Ecuador	Funsa-Fundiciones NAC	Mini-mill	0.060
Brazil	Acopalma	Mini-mill	0.010
	Barra Mansa-Expansion	Mini-mill	0.200
	Cearense	Mini-mill	0.060
	Cofavi Expansion	Mini-mill	0.240
	Cosigua Expansion	Mini-mill	0.670
	Hime Expansion	Mini-mill	0.200
	Vibasa	Mini-mill	0.350
	Mendes Junior Grand Carajas	Blast furnace for pig iron	0.200
PR China	State Maanshan	Integrated steelworks	1.250
	State. Extenion, Shanghai	Integrated steelworks	2.700
	State, Baoshan	Integrated steelworks	3.120
	Jin Quan works	Integrated steelworks	0.500

Table 6. Projects on stream by 1990 not reported in 1982 review

Country	Project name or location	Types of steelworks	Steel capacity (in million metric tons)
Egypt	Fisco	Rolling mills	1.500
Morocco	Nadar	Integrated steelworks	0.955
Mauritius	Desbro	Mini-mill	0.050
Kenya	Mombasa	Integrated steelworks	0.300
	Mariakani	Rolling mill	0.865
Mozambique	Luanda	Integrated mini-mill	0.080
Burma	Insein	Mini-mill	0.012
Indonesia	Second State Mill	Integrated mini-mill (DR module)	2.000
Pakistan	Pepri	Integrated steelworks	1.000
India	Bokaro	Integrated steelworks	2.300
	Mamarashtra	Direct reduction	0.400
	Mukand Iron and Steel	Mini-mill	0.270
Iran	Ahwaz	Mini-mill	0.800
Argentina	Campana	Mini-mill	0.200
Mexico	Productora	Rolling mill	0.400
Cuba	Habana	Integrated steelworks	0.700
Brazil	Bareito Works	Integrated steelworks	1.000
DPR Korea	Kangton	Integrated steelworks	2.040
	Kimchaek	Integrated steelworks	5.500
PR China	Anshan Expansion	Integrated steelworks	1.000
	Taiyuan Expansion	Integrated steelworks	0.150
	Panzhihua	Integrated steelworks	1.000
	Benix	Pig iron	3.750
	Changzhi	Mini-mill	0.100
	Han Dan	Integrated steelworks	1.600
	Chongqing	Integrated steelworks	0.250
	Tianjin	Rolling mill	0.500
	Wuhan	Integrated steelworks	1.500

Table 7. Unreported projects in 1982 review, on stream 1985 or 1990 by types of steelworks

	Capacity (million metric tons)	
	1985	1990
Integrated steelworks	7.705	19.395
Integrated mini-mills	-	2.080
Mini-mills (EAF)	4.259	1.432
Rolling mills	0.080	3.265
Direct reduction	-	0.400
Pig iron plant	0.200	3.750

Table 8. Regional breakdown of projects on stream 1985 or 1990 unreported in 1982 review

Region	Number of projects		
	1985	1990	Total
Asia	15	17	32
Middle East	1	1	2
Africa	-	6	7
Latin America	10	4	14
Total	26	28	54

Table 9. Regional breakdown of projects on stream by 1990, comparison between (updated) 1982 review and present estimates

	Number of projects	
	192 projects planned in 1982	108 projects (1986 estimates)
Asia	70	49
Middle East	34	6
Africa	32	15
Latin America	56	38
Total	192	108

Table 10. Type of steelworks and capacity by 1990, comparison between 1982 review and present estimate

	Capacity (million metric tons)	
	192 projects planned in 1982[a/]	108 projects (1986 estimates)
Integrated steelworks	-	56.747
Integrated mini-mills	-	22.340
Mini-mills (EAF)	-	6.918
Rolling mills	-	4.745
Direct reduction	-	1.771
Pig iron plant	-	3.950

a/ Capacity breakdown not available. See however also section 2.2.4 below.

2.2.3 New projects planned between 1982 and 1985

Whereas sections 2.2.1 and 2.2.2 give the picture of what will have happened by 1990 to the projects that were planned in 1982, the present section aims at completing the picture of 1990 by adding such projects that have been planned only after 1982.

Thirty-one new projects in 13 countries are known to have been planned since 1982 all with a very low capacity. Of these six projects in four countries are expected to come on stream by 1990.

Zambia has plans to build a mini-mill, Pakistan has a plan for two rolling mills, India announced 2 mini-mill projects and Brazil will build a pig iron plant. Malaysia is building a 0.180 mmtpy bar/rod mill at Julan Perusahaan Dera, which will eventually form part of a mini-mill. To be completed by 1986, the works will be integrated backwards, with a 40-ton electric arc furnace, a ladle furnace and a continuous caster to be installed later. A breakdown of this group of projects is shown in tables 11 and 12.

Table 11. Projects planned after 1982, by types of steelworks and capacity (million metric tons)

	On stream	
	1990	After 1990
Integrated steelworks	-	1.450
Integrated mini-mills	-	0.025
Mini-mills (EAF)	0.487	0.605
Rolling mill	0.125	2.511
Pig iron	0.060	-
Direct reduction	-	0.560

Table 12. Regional breakdown of projects planned after 1982 (number of projects)

	On stream	
	1990	After 1990
Asia	4	14
Middle East	-	-
Africa	1	9
Latin America	1	2
Total	6	25

2.2.4 1990 - the complete picture

In the 1982 study of 1990 scenarios, as mentioned in the introduction, capacities were totalled regardless of whether they were calculated on the basis of crude steel or of product equivalent. This method is less suitable and, unfortunately, makes it impossible to compare the capacity figures for 1990 according to the 1982 and the 1986 reviews. In the 1982 study there is an estimate for the total capacity of the projects included amounting to 117 million metric tons for 138 projects. If the same method is used - although it is slightly dubious - more than 97.1 million metric tons of steel capacity for 192 projects would now be achieved by 1990. The reduction is relatively small since the cancellation of a large number of the 1982 projects is partly counterbalanced by the inclusion of projects omitted in 1982 and new projects, planned after 1982.

Another comparison that can be done is that out of the originally identified 138 projects in 1982 with an estimated capacity of 117 million metric tons, present estimates are that only 54 will have come on stream by 1990 with a total capacity (calculated in the same way) of 53.9 million metric tons. The planning level for 1990 is less than half in 1986 than it was in 1982!

The total number of projects identified in the 1982 study of 1990 scenarios were - as has been said - 138, modified to 192 in the present

project review. The regional breakdown of projects is given in table 13, together with present estimates for 1990.

Table 13. Regional breakdown of projects on stream by 1990, complete picture (number of projects)

	1. Comparison based on original data		2. Comparison based on adjusted data	
	1982 review	1986 review	1982 review[a]	1986 review
Asia	38	17	70	53
Middle East	11	4	34	6
Africa	47	9	32	16
Latin America	42	24	56	39
Total	138	54	192	114

a/ Includes projects that were omitted in the original 1982 review as well as projects planned between 1982 and 1985.

This table shows clearly the reduction in the level of planning for 1990, most notably in the Middle East and Africa, but also in other regions.

The new capacity picture for 1990 can be described as follows:

Table 14. Types of steelwork and capacity by 1990, complete picture (million metric tons)

	114 projects according to 1986 estimates
Integrated steelworks	56.747
Integrated mini-mills	22.367
Mini-mills (EAF)	7.378
Rolling mill	4.870
Direct reduction	1.771
Pig iron plant	4.010

The complete situation by 1990 is also summarized in table 15.

Table 15. Complete picture of projects on stream 1985 or 1990 (capacity in million metric tons)

A. Breakdown according to type of steel production

Type of project	Projects reported in 1982				Projects not reported in 1982				New projects planned 1982-1985		Total	
	1985		1990		1985		1990		1990			
	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
Integrated steelworks	14	20.000	8	9.647	5	7.705	14	19.395	-	-	41	56.747
Integrated mini-mills	10	9.720	7	10.540	-	-	2	2.080	1	0.027	20	22.367
Mini-mills	3	1.200	1	0.027	19	4.259	6	1.432	2	0.460	31	7.378
Direct reduction	5	1.371	-	-	-	-	1	0.400			6	1.771
Pig iron plants	-	-	-	-	1	0.200	1	3.750	1	0.060	3	4.010
Rolling mills	6	1.400	-	-	1	0.080	4	3.265	?	0.125	13	4.870
Total projects	38		16		26		28		6		114	

B. Regional breakdown (number of projects)

Asia	16	1	15	17	4	53
Middle East	3	1	1	1	-	6
Africa	5	4	-	6	1	16
Latin America	14	10	10	4	1	39
Total projects	38	16	26	28	6	114

2.3 Iron and steel projects by 1990 in the least developed countries

The following sections 2.3 - 2.5 will look at some special aspects of the results of the above analysis. The same aspects were also discussed in the 1982 scenarios for 1990.[4/] The 1982 review contained 10 projects in 8 least developed countries viz. in Bangladesh, Central African Republic, Democratic Yemen, Tanzania, Ethiopia, Somalia, Uganda and Malawi. Almost all projects were only at the study stages when the 1982 review was conducted.

In addition to the projects mentioned above, there are now projects planned in Burundi, Yemen Arab Republic and Nepal. These projects are still only in the study stages as are the 10 projects identified above.

2.4 Some prospects in developing countries for the production of high quality steels and for the adoption of integrated steel plants

The 1982 study on 1990 scenarios for the iron and steel industry predicted that by 1990 some developing countries may have new integrated steel plants, production capacity of flat products and production of high grade and specialty steels.

2.4.1 New integrated steel plants (including sponge iron and electric furnace integrated plants)

According to the 1982 study on 1990 scenarios, there were 12 countries which were expected to have either newly integrated steel works or integrated mini-mills by 1990. Those were Bangladesh, Ecuador, Libyan Arab Jamahiriya, Morocco, Nigeria, Oman, Pakistan, Philippines, Saudi Arabia, Syrian Arab Republic, Thailand and United Arab Emirates. All NICs have their own integrated steel plants already.

So far, projects on integrated steel plants in Saudi Arabia, Pakistan and Nigeria have been implemented. Hadded (Saudi Iron and Steel Co.) produced 1.1 million metric tons of raw steel in 1985 and 0.99 million metric tons of

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4/ ID/WG.374/2/Add.1.

direct reduced iron. Unlike Hadded in Saudi Arabia, which produces only non-flat products, Pakistan Steel Corporation in Pipri can produce a wide range of products such as flat and non flat. With an initial production capacity of 1.1 mmtpy of raw steel and a built-in potential to expand to over 2 mmtpy. Delta Steel in Nigeria is producing DRI, billets and rolled steel products but the melting shop operated at 18 per cent of full capacity and the light section mill at 23 per cent in 1984. Delta Steel expects to bring its second DRI plant into operation in 1986. Although both the company's Midlex 0.6 mmtpy capacity DRI plants have already been commissioned, recently only one has been in operation due mainl, to the low level of demand for DRI in the domestic market. Another four integrated steel plants are expected to be built by 1990 in Nigeria, Morocco and Libyan Arab Jamahiriya. Nigeria and Morocco will have an integrated steelworks while Libyan Arab Jamahiriya will have an integrated mini-mill.

2.4.2 Production of flat products

All countries which have integrated steelworks are capable to produce flat products. There were 8 countries which would produce flat products by 1990 in the 1990 scenarios. Indonesia, Iran, Libya, Nigeria, Pakistan, Philippines, Syria and Thailand belonged to this group. So far, only Pakistan has a wide range of flat capacity.

Nigeria and Libya will have the capacity of producing flat products by 1990. Two 1.4 mmtpy continuous slab casters are being installed by an Austrian company for slabs which will be rolled into plate and sheet in the Mitsurata steel works. They are due for completion in 1986. Nigeria has 7 steel making plants whose total capacity is 1.22 mmtpy. Fifteen rolling mills whose total capacity is 2.5 mmtpy, for bar, sections and wire rod exist but no steel plant produces flat products. Ajaokuta integrated steel works (1.5 mmtpy) will come on stream at the end of 1988. Two of the plant's rolling mills - the billet mill and the wire rod mill - are already operating on steel supplied from domestic and imported supplies. Since a feasibility study for the construction of a flat product mill has recently been conducted, they will produce flat products eventually (but not before 1990).

Syria will not have a mill for flat products by 1990. There is only one plant for basic iron and steel products and this plant consists of two 25-ton EAFs with two twin strand billet casters (0.11 mmtpy), a reinforcing steel mill and welded steel pipes plant. There is a plan to build a cold rolling mill (0.15 mmtpy) which will be expected to replace the present import of cold rolled strip but this will not be ready by 1990. In the near future there is only one expansion plan to build a 0.5 mmtpy bar mill by Geco Steel.

Indonesia and the Philippines have plants which produced flat products in 1982. In Indonesia, the country's first tin plate plant came on stream at Cilegon in 1985.

Thailand has two rolling mills which in 1982 produced flat products such as galvanized sheets and tinplate but has not had an integrated steelworks to produce a wide range of flats. It abandoned plans for a 1.6 mmtpy integrated steel works at Prachuab Khiri Khan because of too large financial requirements.

2.4.3 Production of high grade and special steels

In the 1982 study of 1990 scenarios production of high grade and special steels was expected in six countries or areas by 1990.

According to the review evaluation only Taiwan Province of China will produce high grade and special steels by 1990. As a matter of fact, the China Steel Corporation's construction plan is being implemented in four phases. The inital phase started commercial operations in 1977 with a capacity of 1.5 million metric tons of crude. Phase 3 is scheduled for completion in 1988, which will bring the total capacity to 5.65 mmtpy. This mill has 100 per cent continuous casting of its liquid steel production which guarantees better quality of products.

It can be expected that all NICs will produce high grade and special steels as a matter of course.

3. A SUMMARY ANALYSIS

This survey shows that 114 projects in developing countries are scheduled to operate by 1990. Of these 64 projects have already come on stream. By 1990 integrated steel works will have the capacity of 56.7 mmtpy, integrated mini-mills, 22.3 mmtpy, mini-mills, 7.3 mmtpy. Direct reduction plants will have the capacity of about 1.7 mmtpy while pig iron plants will have a capacity of 4 mmtpy.

Many new mini-mill projects including integrated mini-mills are expected to be built. Nevertheless the main capacity increase is expected to come from traditional integrated steelworks as table 14 shows. Mini-mills have several advantages over integrated steelworks and of the 114 projects, 51 are mini-mills. All least developed countries listed earlier plan to establish a mini-mill. Even integrated steelworks have set up electric steelmaking facilities to supplement or replace their existing oxygen steelmaking facilities.

However, the integrated steelworks, based on the blast furnace/oxygen converter route with continuous casting, will remain the major process for many years to come because of their capability to produce flat products and higher quality products.

Mini-mills have been very successful in capturing the traditional non-flat markets. The key market of the future for the mini-mill is, however, flat products. Attempts to produce flat products in mini-mills are hampered by the very high investment costs required for semi-continuous hot strip mills which raise the cost of production to levels where any advantage over integrated works would be lost. A plant based on DR which includes a strip or even a plate mill is, however, entirely possible due to the advent of viable thin strip casting.

The 1982 survey showed two scenarios for 1990, viz. a low growth scenario and a "normative" scenario. The low growth scenario was based on the assumption that all projects reported as being under construction (75 projects)[5/]

5/ ID/WG.374/2, category III, p. 96-99.

would be realized by 1990 while the normative scenario assumed that all 138 projects would be materialized by 1990. The low growth scenario was retained as a plausible one.

However, only projects with a capacity of 29.19 million metric tons out of 63.48 million metric tons came on stream by 1985. Furthermore only projects with a capacity of 20.64 million metric tons will - as it looks now - be materialized by 1990 despite the fact that all the 75 projects were at the last stage of construction already in 1981, and were thought to come on stream within a few years time. So far only 46 per cent of the planned capacity came on stream by 1985.

Nevertheless, there has been a great deal of iron and steel activity in developing countries since 1982 which has resulted in an increase in capacity and production in the 1980s.

Structural change in the world economy brought forth changes in the favour of developing countries in geographical distribution of steel production. Many developing countries, especially NICs, have increased their capacities tremendously. The developing countries were since 1974 the only area where growth in steel intensity has continued to take place (table 16).

The world recovery in steel production was particularly marked in developing countries. Steel output in developing countries shows larger increases in 1984 and 1985 than that in industrialized countries.

While restructuring and rationalization in industrialized countries mean modernization for new technology and better quality of products and capacity reduction along with cuts in employment in the steel industry, in developing countries the restructuring is identical to capacity expansion with the state-of-art technology but also a contribution to the industrialization process.

Despite that modest improvement which took place in 1984 and in 1985 the general consensus is that the world steel industry will have to continue an uphill battle to return to profitability and to dismantle the panoply of state assistance and protectionism in many countries which has delayed the recovery of the world steel industry.

Developing countries produced 130 million metric tons in 1985. Their additional capacity by 1990 can now be estimated at 47.8 million metric tons (of which 17 million metric tons in the People's Republic of China). If the average rate of utilization is assumed as 80 per cent of the capacity increase that would allow developing countries to increase their production over the 1985 level by at least 30 per cent.

Table 16. Crude steel production (million metric tons)

	1975	1979	1980	1982	1984	1985
World total	643.426	716.819	707.579	663.681	710.071	717.407
Total developing countries	59.642	85.185	100.067	103.450	120.220	130.734
Developing countries/ world total (per cent)	9	12	14	16	17	18
PR of China	23.9	31.7	37.1	37.1	43.4	46.5
Brazil	8.3	12.2	15.3	12.9	18.4	20.5
Republic of Korea	1.9	4.9	8.5	11.7	13.0	13.5
India	7.9	10.0	9.5	10.9	10.5	11.1
DPR of Korea	2.9	5.0	5.8	5.8	6.5	8.4
Mexico	5.2	6.7	7.1	7.0	7.5	7.3
Taiwan Province of China	0.6	3.4	3.4	4.1	5.0	5.1
Venezuela	1.1	0.8	1.9	2.2	2.8	3.0
Argentina	2.2	2.7	2.6	2.9	2.6	2.9
Iran	0.5	1.3	1.2	1.2	1.2	1.2
Indonesia	0.1	0.2	0.3	0.5	1.0	1.2
Saudi Arabia	-	-	-	-	0.4	1.1

Source: IISI, 1986.

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Appendix

DETAILED TABLES ON THE IRON AND STEEL PROJECT SITUATION IN DEVELOPING COUNTRIES

This appendix consists of the following three parts:

A. Project situation as reported in 1982

These tables list projects reported in the 1982 study of the 1990 scenarios.

B. Projects not reported in 1982

These tables give information on projects not reported in the 1982 study of the 1990 scenarios but which should have been considered at the time, had information been available to UNIDO.

C. New projects

These tables contain new projects which have been identified during the period 1982 to 1985.

Symbols used

(a) Project situation

Identification: Name of project

Location : Names of location or places near the location

Description : Mini-mill is defined as the process which involves the following stages: Scrap - EAF route → rolling mills

Integrated mini-mill is defined as the process which has the following stages: DR - EAF route → rolling mills

Integrated steelworks is defined as the process which comprises the following stages: Blast furnace - LD converter (BOF) route → rolling mills

(b) Stage of development (in 1982 study)

Study or "category I": Project concept and pre-feasibility study

Negot or "category II": Projects in the course of study and negotiations

Under construction or "category III": Projects under construction

(c) Present situation - stage of development (at the end of 1985)

Proj. op.: Project will be operational in (year)

Operat.: On stream at the end of 1985

Planned: Planned but no firm production date available

A. PROJECT SITUATION AS REPORTED IN 1982

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	COMMENTS
COUNTRY: ALGERIA													
JIJEL	JIJEL	INTEGRATED MINIMILL	UNDER CONSTR	DR		2 000	IRON	PROJ OP 1981	DR		1 100	IRON BILLET	CAPACITY CHANGED. RE-LOCATED TO BELLARA. OPERATED BY SCTE NATIONALE DE SIDERURGIE.
ORAN	LA MACTA, ORAN	INTEGRATED STEEL WORKS	UNDER CONSTR	OH		0.050		OPERAT 1979	OH BF		0 030	RAW STL	OPEN HEARTH FOR LONG PRODUCTS
COUNTRY: LIBYAN ARAB JAMAHIRYA													
MITSURATA STAGE 1	MITSURATA	INTEGRATED MINIMILL	UNDER CONSTR	DR		1 300		PROJ OP 1986	DR EAF	2 12	1 260 1 100	IRON RAW STL	MIDREX PROCESS TWO STEEL MAKING SHOPS.
STAGE 2								PLANNED	DR EAF		5 000	IRON RAW STL	CAPACITY INCREASE TO 6.0 MMTPY
COUNTRY: EGYPT													
DEKKEILA	EL DIKHEILA	INTEGRATED MINIMILL	UNDER CONSTR	DR	1	0 815	IRON	PROJ OP NOV 1986	DR EAF		0 716 0 840	RAW STL	MIDLEX PROCESS, BY ALEXANDRIA NATIONAL STEEL CO CAPACITY CHANGE. JOINT VENTURE PROJECT: EGYPT 87% JAPANESE CO 10% INTER. FINANCE CORP. 3%
COUNTRY: MOROCCO													
NADOR 1	NADOR	ROLLING MILL	UNDER CONSTR	RM		0 450	LONG PRODUCT	OPERAT 1984	RM		0 420	LONG PRODUCT	OPERATED BY SOCIETE NATIONALE DE SIDERURGIE
COUNTRY: TUNISIA													
EXTENSION	ELFOULADH	MINIMILL	UNDER CONSTR	EAF		0 225	RAW STL	UNDER CONSTR	EAF		0 200	RAW STL	SCRAP-BASED EAF ADJACENT TO EXISTING BF-BOF WORKS OPERATED BY SOCIETE TUNISIENNE DE SIDERURGIE
COUNTRY: CAMEROON													
	VIERLING (UNCERTAIN)		UNDER CONSTR	EF		0 038		POSTPNED					SCTE. DE LAMINAGE DE DOUALA (BASTOS GROUP) WAS PLANNING CONSTRUCTION OF A STEELWORKS PROJECT POSTPONED. NEW STUDY ON IRON ORE DEPOSITS, KRIBI & MBALAM HAS STARTED

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	COMMENTS
COUNTRY: NIGERIA													
AJAOKUTA STEEL COMPANY	AJAOKUTA	INTEGRATED STEEL WORKS	UNDER CONSTR	BF-BOF ROUTE	3	1 300	IRON & RAW STL	PROJ.OP 1988	BF BOF	3 1	1 500	RAW STL	STARTUP OF 1 BF UNIT PLANNED FOR 1988. TWO ROLLING MILLS WERE OPERATIONAL IN 1985
UNIT 1	OSHOGO (UNCERTAIN)	ROLLING MILL (UNCERTAIN)	UNDER CONSTR		1	0 200		OPERAT 1984	RM		0 210		UNITS 1, 2 AND 3 ARE ON STREAM BUT GIVEN THE NIL AVAILABILITY OF BILLETS FROM DELTA STEEL, THE UNITS ARE RUNNING AT 10% COMBINED CAPACITY
UNIT 2	JOS (UNCERTAIN)	ROLLING MILL (UNCERTAIN)	UNDER CONSTR		1	0 200		OPERAT 1984	RM		0 210		
UNIT 3	KATSINA (UNCERTAIN)	ROLLING MILL (UNCERTAIN)	UNDER CONSTR		1	0 200		OPERAT 1984	RM		0 210		
DELTA STEEL	OVWIN-ALADJA	INTEGRATED MINIMILL	UNDER CONSTR	DR-EAF ROUTE	2	1 300	IRON	COMPLETE 1982	DR EAF	2 4	1 200 1 000	IRON RAW STL	1 DR UNIT IS OPERATIONAL, 1 300 MMTPY DR CAP. INCORRECTLY REPORTED. PRESENT OUTPUT IS 0 250 MMTPY OF RAW STEEL.
COUNTRY: IVORY COAST													
			UNDER CONSTR			0 034		POSTPNED					ZINC COATING AND GALVANIZING ARE PLANNED. PLANS TO RESTART RM (OLD DANIELI PLANT).
COUNTRY: LIBERIA													
	BUCHANAN (UNCERTAIN)	DIRECT REDUCTION	STUDY	DR		0 500		STUDY	DR		0 500		WEST AFRICA IRON AND STEEL CO (WAISCOR) SHIPBREAKING PROJECT TO OBTAIN SCRAP FOR LOCAL USE + EXPORT. WB STUDY FOR NEW FE IRON MINES
COUNTRY: MALAWI													
		MINIMILL	STUDY			0 120		STUDY			0 120		ON COAL BASIS. COUNTRY HAS SUBSTANTIAL COAL RESERVES
COUNTRY: CENTRAL AFRICAN REPUBLIC													
		MINIMILL	STUDY			0 010	STEEL	STUDY			0 010	STEEL	DR ROUTE CHARCOAL AS REDUCTA
COUNTRY: TANZANIA U R													
		INTEGRATED MINIMILL	NEGOT	DR-EAF		0 080		NEGOT	DR EAF		0 080	RAW STL	INTEGRATED UNIDO PROJECT. IRON ORE NOT GOOD FOR STEEL PRODUCTION

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	UNITS	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	UNITS	OUTPUT	COMMENTS
COUNTRY ANGOLA													
		DIRECT REDUCTION	STUDY	DR				STUDY	DR		1 300	IRON	AUSTROMIM STUDY 1981
COUNTRY SOMALIA													
		INTEGRATED MINIMILL	STUDY	EAF		0 300	RAW STL	NEGOT	EAF		0.017	RAW STL	CAPACITY CHANGED. SCRAP + IMP SPONGE CONSIDERED.
COUNTRY ETHIOPIA													
	ASMARA	MINIMILL	STUDY	EAF		0 030		STUDY	EAF RM		0 013 0 034	RAW STL NO-FLAT	ECA/MJLPOC PROJECT. THIS IS PLANNED BY ETTOSTOER IRON AND STEEL FDY
COUNTRY KENYA													
		DIRECT REDUCTION	NEGOT	DR		0 350		ABANDONED					
COUNTRY UGANDA													
	JINJA WORKS	MINIMILL	NEGOT	EAF		0 055		PROJ.OP 1987	EAF		0 027		PLANS TO INCREASE CAPACITY TO 0.027 FROM 0 024 MMTPY. OPERATED BY EAST AFRICAN STEEL
COUNTRY BURMA													
MAYMYO ANISAKAN	MANDALAY	INTEGRATED MINIMILL	UNDER CONSTR	DR-EAF		0 020	RAW STL	OPERAT 1981	DR EAF		0 020	IRON RAW STL	KINGLOR METOR DR, STAGE ONE
MAYMYO ANISAKAN	MANDALAY	INTEGRATED MINIMILL	NEGOT	DR-EAF				OPERAT 1984	DR EAF		0 020	IRON RAW STL	KINGLOR METOR DR, STAGE TWO.
COUNTRY VIETNAM													
RECONSTRUCTION	THAI NGUYEN		UNDER CONSTR			0 250	RAW STL	OPERAT	DR EAF		0 030 0 100	IRON RAW STL	DR PILOT PLANT FOR SPONGE IRON PRODUCTION WAS SET UP AT THAI NGUYEN, BUT NOW SHUT. TECH. ASSIST. REQUESTED FROM UNIDO THERE IS OH-ROF ROUTE PLANT

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY: INDONESIA													
PT KRAKATAU	CILEGON	INTEGRATED MINIMILL	UNDER CONSTR	DR-EAF	2	1 000	IRON	OPERAT 1979	DR-EAF	6	1 000	IRON RAW STL	HYL PROCESS. FIRST STAGE: TWO 0.500M TPY
PT KRAKATAU EKENT	CILEGON	INTEGRATED MINIMILL	UNDER CONSTR.	DR-EAF		1 500	IRON & RAW STL	OPERAT 1982	DR-EAF		1.000	RAW STL	HYL PROCESS, SECOND STAGE, COLD ROLLING MILLS ARE PLANNED
COUNTRY: KOREA, REP.													
POSCOS	POHANG	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF	6	1 100	RAW STL	OPERAT 1985	BF BOF	6	0 900	RAW STL	THIS IS SATGE 5, BRINGING TOTAL CAPACITY TO 9 0 MMTPY
NEW UNITS	KWANGYANG	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF	2	3 000	RAW STL	PROJ.OP 1988	BF BOF	8	3 000	RAW STL	FIRST STAGE OF KWANGYANG WORKS (POSCO)
SMALL UNITS			UNDER CONSTR.			1 000							ROD MILL (0.80M) OR STAINLESS STEEL MILL OF SAMNI STEEL CO ?
COUNTRY: OTHER ASIA (TAIWAN, P C)													
CHINA STEEL ?	KAOHSIUNG	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF	1	1 725	RAW STL	OPERAT 1987	BF BOF	3	3 25	RAW STL	CAPACITY INCREASE FROM 1.75 MM TO 3 75 MM TPY. CHINA STEEL'S PLAN IS BEING IMPLEMENTED IN FOUR PHASES. THE INITIAL PHASE STARTED COMMERCIAL OPERATIONS IN 1977 WITH A CAPACITY OF 1.5 MM TPY OF CRUDE STEEL. THE SECOND PHASE WAS COMPLETED IN 1982 WITH A CAPACITY OF 1.75 MM TPY. PHASE 3 FOR AN ADDITIONAL 2.4 MM TPY IS SCHEDULED FOR COMPLETION IN 1987. AFTER PHASE 3 IS COMPLETED, THE TOTAL CAPACITY WILL BE 6 892 TPY OF CRUDE STEEL.
YANG ENG			UNDER CONSTR			0 270							IT HAS TWO PLANTS.
SMALL UNITS			UNDER CONSTR			? 000							THE NET PRODUCTION CAPABILITY OF STEEL PRODUCTS OF PHASE 3 IT INCLUDES RODS 0 085 MMTPY, PLATES 0 20 MMTPY, HOT ROLLED PRODUCTS 1 828 MM TPY COLD ROLLED PRODUCTS 0.740 MM TPY IS THIS RELATED TO THESE ROLLING MILLS?
COUNTRY: SINGAPORE													
NISM EXTENTION (NATIONAL I & S MILLS)	JURONG	ROLLING MILL	UNDER CONSTR			0 250	NON-FLT	OPERAT 1984	ROLL MILL		0 250	NON-FLT	ONE OF THREE ROLLING MILLS PRESENTLY IN OPERATION STARTED UP IN 1985

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOPMENT	PROCESS TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY: THAILAND													
SMALL UNITS (BANGKOK) (UNCERTAIN)	SAMROPRAKARN (UNCERTAIN)	MINIMILL	UNDER CONSTR	EAF		0.150			EAF	2	0.100	NON-FLT	
									RM	1			
		INTEGRATED MINIMILL	NEGOT.	DR-EAF		0.140	RAW STL						
COUNTRY: MALAYSIA													
MALAYAWATA EXTENSION	PRAI	SECTION MILL (UNCERTAIN)	UNDER CONSTR	BF-BOF		0.250					0.180	NO-FLAT	OPERATED BY MALAYAWATA STEEL BHD. CAPACITY OF 0.380 MMTPY
TRENGANNU	TRENGGANU	DR	NEGOT.	DR		0.800	DRI	NEGOT	DR		0.800	DRI	SECOND DR PLANT.
AMALGA-EXTENTION	SELANGOR, KELANG	EAF	UNDER CONSTR	EAF	1	0.230	RAW STL	OPERAT 1981	EAF	1	0.300	RAW STL	THIS HAS A 0.4 MM TPY ROLLING MILL AND OPERATED BY ASM.
LABUAN	LABUAN	DR	UNDER CONSTR.	DR		0.800	HOT BRI IRON	OPERAT 1984	DR		0.800	HOT BRI IRON	SABAH GAS INDUSTRIES. HOT BRIQUETTED IRON PLANT.
TREGANU	TRENGGANU	DR	UNDER CONSTR.	DR		0.800	DRI	OPERAT 1985	DR	1	0.660	IRON	MSC DR PROCESS. 0.66M FOR DRI AND 0.66M TPY FOR BILLETS. IT PLANS TO HAVE A SECTION MILL.
										3	0.660	BILLETS	
COUNTRY: PHILIPPINES													
PLATE MILL	ILIGAN	ROLLING MILL	UNDER CONSTR	PLATE		0.130	PLATE	UNDER CONSTR	CR-MILL		0.300	STRIP	OPERATED BY NATIONAL STEEL CO. THIS IS A TIN PLATE PLANT BASED ON CR MILL PLANNED
	ILIGAN	INTEGRATED MINIMILL	NEGOT	DR-EAF		1.000	RAW STL	ABANDON-ED			1.400	RAW STL	IN 1986, IT IS REACTIVATED FOR NSC DR PROCESS
SMALL UNITS			UNDER CONSTR			0.175	RAW STL						

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOPMENT	PROCESS TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY BANGLADESH													
	CHITTAGONG WORKS		UNDER CONSTR	OH		0.100	RAW STL	UNDER CONSTR	OH		0 100	RAW STL	OPERATED BY CHITTAGONG STEEL MILL CAPACITY OF 0 760 MMTPY
		DR	NEGOT	DR		0 500	DRI	STUDY	DR		0 600	DRI	NEGOT UNDER WAY WITH INDIA
COUNTRY PAKISTAN													
PIPRI	BIN QUASIM	INTEGRATED STEELWORKS	UNDER CONSTR	BF BOF	2 2	1 100	RAW STL	OPERAT 1984/88	BF BOF	2 2	1 100	RAW STL	PAKISTAN STEEL MILLS CORP. THIS IS THE PHASE I THERE ARE HR MILL(0 8 MMTPY) AND CR MILL(0.2 MMTPY)
PAKISTAN		DR	NEGOT	DR		0 500	DRI	NEGOT 1986	DR		0 500		
COUNTRY INDIA													
BOKARO EXTENTION	BOKARO	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF	3	1 800	RAW STL	OPERAT 1984/85	BF BOF	3	1 500	RAW STL	SAIL'S STEEL WORKS CAPACITY INCREASED FROM 2 5 T MTPY COMPLETION OF STAGE III
BHILAI	PARADEEP	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF		2 700	RAW STL	PROJ OP 1988	BF		1 500	RAW STL	CAPACITY INCREASE T MTPY
TISCO	JAMSHEDPUR	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF		1 000	RAW STL	OPERAT 1983	BF BOF		1 100	RAW STL	MODERNIZATION PROGRAMME TO 1 1 MMTPY BOF SHOP CAPACITY INCREASE TO 2 5 MMTPY BY 1988
VIZAKAPTNAM I	VIZAKHAPATNAM	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF		1 600	RAW STL	PROJ OP 1988	BF BOF		1 700	RAW STL	THIS IS PHASE I
VIJAYANAGAR	VIJAYANAGAR	INTEGRATED MINIMILL	UNDER CONSTR	DR-EAF		1 000	DRI/RAW STL	PROJ OP 1990	DR EAF		1 000	DRI	
DR UNIT	ORISSA	DR	UNDER CONSTR	DR		0 140	SPONGE IRON	OPERAT 1982	DR		0 150	SPONGE IRON	ORISSA SPONGE IRON(OSIL), GAS-AND ACCAR PROC
THREE OTHER UNITS	PARANCHA	DR	UNDER CONSTR	DR			DRI	OPERAT 1984	DR		0 081	DRI	PARANCHA SPONGE IRON, SL/RN PROCESS, 0 031 MMTPY IN 1980 AND 0 03 MMTPY IN 1984
II	ORISSA	DR	UNDER CONSTR	DR				PROJ OP 1988	DR		0 090	DRI	TISCO'S ORISSA PLANT IN ASSOC WITH INDUSTRIAL PROMOTION AND INVESTMENT CORP OF PRISSA?
III	BIHAR	DR	UNDER CONSTR	DR				PROJ OP 1987	DR		0 150	DRI	BIHAR SPONGE IRON LTD (SL/RN PROCESS)?
PARADIP		INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF		1 300	RAW STL						UNKOWN

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS CAPACITY	PROCESS OUTPUT	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS CAPACITY	PROCESS OUTPUT	COMMENTS
COUNTRY BAHRAIN													
AISCO (ARAB IRON & STEEL COMPANY)		DR	STUDY	DR		0 400	DRI	NEGOT	DR		0 400	DRI	THERE EXISTS A MERCHANT PELLETIZING PLANT CAPABLE OF MEETING THE NEEDS OF DR PLANT. AISCO HAS FOLLOWING ALTERNATIVES: 1) HOT STRIP MILL 2) SEAMLESS PIPE PLANT 3) HOT STRIP PLUS CR MILL 4) SPECIAL STEEL PLANT
COUNTRY IRAN													
ISFAHAN 2	ISFAHAN	INTEGRATED WORKS	UNDER CONSTR	BF BOF	1	1 400	RAW STL	UNDER CONSTR	BF BOF	1	1 300	RAW STL	NISC(NATIONAL IRANIAN STEEL CO.) WILL INCREASE CAPACITY FROM 0.8 TO 1.3 MMTPY
AHWAZ	AHWAZ	INTEGRATED MINIMILL	UNDER CONSTR	DR-EAF		2 800	DRI/RAW STL	OPERAT 1978	DR EAF		1 030	DRI	NISC HAS PLAN TO INSTALL 1.03M TPY DRI(HYL PROCESS). PUROFER DR WAS SHUT DOWN
ESFAHAN	MOBARAKEH	INTEGRATED MINIMILL	UNDER CONSTR	DR-EAF		3 200	DRI/RAW	PROJ OP 1990	DR EAF		3 000	RAW STL	DR PLANT WITH MIDREX. OPERATED BY NISIC
COUNTRY SAUDI ARABIA													
JUBAIL(HADEED)	AL JUBAIL	INTEGRATED MINIMILL	UNDER CONSTR	DR EAF	2 3	0 850	DRI	OPERAT 1983	DR EAF RM	2 1	0 800 0 850 0 800	DRI RAW STL NON-FLT	MIDREX 0.4M IN 1982, MIDREX 0.4M IN 1983. BOTH ARE OPERATING ABOVE CAPACITY
JEDDAH	JEDDAH	ROLLING MILL	UNDER CONSTR			0 100		OPERAT 1981			0 100	NON-FLT	JEDDAH STEEL ROLLING MILL CO
COUNTRY IRAQ													
KHOR-EL ZUBEI	KHOR AL ZUBAIR	INTEGRATED MINIMILL	NEGOT	DR EAF	2 4	2 000		OPERAT 1978	DR EAF	2 4	1 150 0 400	DRI RAW STL	STATE COMPANY FOR DR(HYL) PLANT CLOSED IN 1981
COUNTRY QATAR													
QASCO	UMM SAID	INTEGRATED MINIMILL	NEGOT	DR EAF		0 400 0 400	DRI RAW STL	NEGOT	DR EAF	1 2	0 400 0 400	DRI RAW STL	NKK(NIPPON KOKAN,JAPAN) MIDREX DR PLANT STARTED IN 1978 BUT COURLING PROJECT HAS NOT BEEN REALIZED

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOP-MENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	STAGE OF DEVELOP-MENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	COMMENTS
COUNTRY UNITED ARAB EMIRATES													
		DR	STUDY			0 400							
COUNTRY OMAN													
		DR	NEGOT			0 125		NEGOT	DR		0 100	DRI EAF	
COUNTRY YEMEN, DEM P													
		DR	NEGOT			0 100		NEGOT	EAF		0 020	RAW STL	INDIA'S DASTUR UNDERTOOK STUDY OF 0.02 MMTPY BAR & ROD MINI-MILL UNDER UNDO AUSPICES.

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY: ARGENTINA													
ZAPLA EXTENTION	PALPALA	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF	2	0 200	RAW STL	PROJ OP 1986	BF BOF	2	0 250	RAW STL	CAP INCREASE FROM 0 55 TO 0 75 MMTPY.
SMALL UNIT			UNDER CONSTR			0 250							COULD BE EXTENSION OF EITHER DALMITE SIDERCA, CAMPANA (DR MIDLEX) OR SIDINSA, BAHIA
SIDERSUR	SAN ANTONIO	DR	UNDER CONSTR			0 500		NEGOT.	DR		0 500	DRI(HOT BRIQU.)	PROJECT ABONDONED BUT REACTIVATED IN 1985 AS SUBSTITUTE FOR OLD HYL (IRON BRIQUETTE) PROJ.
SOMISA	SAN NICOLAS	INTEGRATED STEEL WORKS	UNDER CONSTR.	BF BOF	3	1 500	RAW STL	PROJ OP 1990	BF BOF	3	1 400	RAW STL	CAPACITY INCREASE FROM 2.5 TO 3 9 MMTPY
COUNTRY MEXICO													
AHMSA	MONCLOVA	INTEGRATED STEELWORKS	UNDER CONSTR.	BF BOF	1	0 750	RAW STL	OPERAT 1983	BF BOF	5 1	1 000	RAW STL	PRESENT CAPACITY IS 3 MMTPY. PLANS TO INCREASE TO 3 3 MMTPY BY 1988
FMSA (UNCERTAIN)			UNDER CONSTR			0 370							FUNDIDORA MONTERREY S A HAS 1 5 MM TPY CAPACITY OF RAW STEEL NOW. IS THIS A ROLLING MILL?
SICARTSA	LAZARO CARDENAS	INTEGRATED MINIMILL	UNDER CONSTR.	DR EAF		3 000 3 000	DRI RAW STL	PLANNED 1986	DR EAF	4	3 250	RAW STL	IF THIS IS SICARTSA II, IT REPRESENTS CAP INCREASE FROM 1 25 MMTPY(BF-BOF) TO 3 25 MMTPY (DR-EAF). 1.5 MMTPY PLATE MILL POSTOPONED BY 1988.
TAMSA	VERACRUZ	INTEGRATED MINIMILL	UNDER CONSTR	EAF		0 475	RAW STL	PROJ OP 1987	DR EAF RM		0 700 0 800	IRON RAW STL	EXPANSION TO 0 6M OF RAW STEEL PRESENT CAPACITY IS 0 35(DRI) AND 0.42 MMTPY OF RAW STEEL. RAW STL.
TAMPICO I			UNDER CONSTR			1 330							UNKNOWN
SMALL UNITS			UNDER CONSTR			0 250							IS THIS WORKS AT TLALNEPANTLA, EDO. DE MEXICO, 0 32M TPY RUN BY ANSA-ACEROS NACIONALES OR A PIPE MILL (0 30 MM TPY) BUILT BY PRODUCTORA MEXICANA DE TUBERIA(PMT)?
HYLSA	MONTERREY	INTEGRATED MINIMILL	UNDER CONSTR	DR EAF	5	1 500	DRI RAW STL	PROJ OP 1986	DR EAF	6	1 600	RAW STL	WORKS DELAYED EXPANSION PROD. OF 0 6 MMTPY DESIGNED TO RAISE FLAT CAPACITY TO 1 6 MMTPY. HYLSA III'S PRESENT CAPACITY IS 1 83 MMTPY
PREMEXA		DR	STUDY										UNKNOWN
SIDERMEX 2		DR	STUDY										DR-BASED 1 5 MMTPY PLATE MILL?

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1987								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY VENEZUELA													
SIDOR	PUERTO ORDAZ	INTEGRATED MINIMILL	UNDER CONSTR	DR EAF	4	3 800	[11	OPERAT 1982	DR EAF	4	3 800	RAW STL	MILL HAS FOUR HYL MODULES OF 2.5 MMTPY & FOUR MIDREX MODULES OF 1.8 MMTPY DR PROCESS INCREASED IN FOUR STAGES 1977, 79, 80 AND 81.
COUNTRY PERU													
LAMINADORAS DEL PACIFICO	PISCO	MINIMILL	UNDER CONSTR	EAF	2	0 150	RAW STL	OPERAT 1983	EAF		0 180	RAW STL	THIS IS A BILLET MINIMILL AND HAS A PLAN TO INSTALL DR MODU.
CHIMBOTE	CHIMBOTE	MINIMILL	NEGOT	EAF		0 400	RAW STL	UNDER CONSTR	EAF		0 250	RAW STL	SIDERPERU'S CHIBOTE PLAN FOR A $38M REHABILITATION PROGRAMME. THE FIRST STAGE OF THE PROGRAM AIMS TO ACHIEVE RELATIVELY EFFICIENT PRODUCTION OF 0 2 TO 0.25 MMTPY OF DRI AND EAF PRESENT CAPACITY IS : PIG IRON 0 32 MMTPY SPONGE IRON 0.110 MMTPY STEEL 0 55 MMTPY.
COUNTRY PARAGUAY													
	VILLA HAYES	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF	2	0 100	RAW STL	OPERAT 1985	BF BOF	2 [	0 175 0 180	PIG IRN RAW STL	ACEPAR (ACERO DEL PARAGUAY SA) VILLA HAYES MILL.
COUNTRY HONDURAS													
		INTEGRATED MINIMILL	UNDER CONSTR			0 100		ABONDON-ED					ACEROS DE HONDURAS, SAN-PEDRO ZULA HAD. IN 1979, 14 TON EAF OF 0 074 MMTPY CAPACITY.
COUNTRY ECUADOR													
	MACHALA	MINIMILL	UNDER CONSTR	EAF		0 430	RAW STL	UNDER CONSTR	EAF		0 400	RAW STL	CAPA. INCREASE TO 0 4M FROM 0 21M TPY
COUNTRY CUBA													
	HARANA	INTEGRATED STEEL WORKS	UNDER CONSTR	BF [illegible]		0 300	RAW STL	OPERAT 1983	BF [illegible]		0 400	RAW STL	

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS INPUT	PROCESS OUTPUT	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS INPUT	PROCESS OUTPUT	COMMENTS
COUNTRY COLUMBIA													
PAZ DEL RIO	BELINCINIO	INTEGRATED STEEL WORKS	UNDER CONSTR.	BF BOF	1 2	0.200	RAW STL	OPERAT 1981	BF BOF	1 2	0.370 0.380	PIG IRN RAW STL	THIS IS THE REPLACEMENT OF OH WITH BOF BY ACERIAS PAZ DEL RIO SA CO.
SMAL UNITS	MEDELLIN	INTEGRATED MINIMILL	UNDER CONSTR	EAF		0.250	RAW STL	PROJ.OP 1986	EAF		0.150	RAW STL	THE EXPANSION OF MELTING SHOP 0.15M FROM 0.10M TPY.
FERROMIERA		INTEGRATED MINIMILL	UNDER CONSTR	DR EAF		0.100		ABONDON-ED					
COUNTRY TRINIDAD AND TOBAGO													
ISCOTT	POINT LISA	INTEGRATED MINIMILL	UNDER CONSTR	DR EAF		0.400 0.600	DRI RAW STL	OPERAT 1981	DR EAF	1 2	0.420 0.800	DRI RAW STL	
ISCOTT	POINT LISA	INTEGRATED MINIMILL	UNDER CONSTR.	DR EAF		0.400 0.600	DRI RAW STL	OPERAT 1982	DR EAF	1 2	0.420 0.800	DRI RAW STL	

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION AS REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOP-MENT	TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOP-MENT	TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY: BRAZIL													
SMALL PROJECTS	MONLEVADE	INTEGRATED STEELWORKS	UNDER CONSTR	BF BOF		1 000	RAW STL	PROJ OP 1986	BF BOF CTC RM		0 817 0 400	RAW STL BILLETS	BELGO-MINEIRA IS INSTALLING A 1 0M TPY LD & AN OXYGEN PLANTS AT JOAO MONLEVADE,MINAS GERAIS WIRE ROD GALVANIZING UNIT IS PLANNED FOR EARLY 1987 AT SABARA WITH INITIAL CAP OF 2 6 MMTPY RISING TO 7 5 MMTPY
EXTENTION			CONSTR	BOF		0 300	RAW STL	PROJ.OP 1986	BOF	2	0 380	RAW STL	2 X100T LD BY BELGO-MINEIRA-SID
MANNESMAN EXTENT-ION	BELO HORIZONTE		UNDER CONSTR	BOF		0 650	RAW STL	OPERAT 1978	BOF		0 520	RAW STL	1T HAS 70 TON LD CONVERTER PRESENT CAPACITY IS 0 75 MMTPY
MENDEZ JUNIOR EXT	JUIZ DE FORA	MINIMILL	UNDER CONSTR	EAF		0 600		OPERAT 1985	EAF		0 720	RAW STL	ALMOST TREBLED OUTPUT TO 0.41B MMTPY OF ROLLED STEEL BRAZIL'S LARGEST EF BASED STEEL WORKS 49% OWNED BY SIDERBRAS 43% CONSTRUTORA MENDES JUNIOR 7% MINAS GERAIS STATE GOVERN. 1% JUIZ DE FORA LOCAL GOVERN.
GERDAU			UNDER CONSTR			0 400	RAW STL	OPERAT					GERDAU,AN INVESTMENT GROUP HAS CONTINUED EXPANDING ITS PLANTS AND HAS IN THE PERIOD 1982-84 INVESTED US$281M TO RAISE ITS TOTAL STEEL CAP. TO 2 0 MMTPY.
SIDERSUL			UNDER CONSTR			0 480							IS THIS SIDE RAMA(0 08M TPY)?
USIBA	SIMOES FILHO	INTEGRATED MINIMILL	UNDER CONSTR	DR-EAF		0 200		OPERAT			0 275	RAW STL	1T HAS ONE HYL(0 275M) AND ONE EAF(0 275M) CAPACITY INCREASE
CSN EXTENTION	USINA	INTEGRATED STEELWORKS	UNDER CONSTR	BF BOF		1 100	RAW STL	PROJ.OP 1986	BF BOF	1	1 300	RAW STL	CIA SIDERURGICA NACIONAL(GRUPO SIDERBRAS) PHASE III STARTED IN 1985 EXTENTION OF BF-BOF PLANT FROM 3 3 TO 4 6 MMTPY
USIMINAS EXTENTION	USINA	INTEGRATED STEELWORKS	UNDER CONSTR	BF BOF		1 100	RAW STL	OPERAT 1978	BF BOF	1	1 800	RAW STL	TWO 160 TON WITH PRESENT CAP OF 3 6 MMTPY PHASE III TO START IN 1988 TO DOUBLE CAP
	CUBATAO	INTEGRATED STEELWORKS	CONSTR CONSTR	BF BOF	2	1 000	RAW STL	PROJ OP 1986	BF BOF	2	0 800	RAW STL	COSIPA PRODUCED 2 64 MMTPY IN 1985 REACHED PROD POTENTIAL OF 3 4 MMTPY IN DECEMBER UPON COMPLETION OF STAGE III OUTPUT EXPECTED TO REACH 4 5 MMTPY.
ACOMINAS	OURO BRANCO	INTEGRATED STEELWORKS	UNDER CONSTR	BF BOF	2	2 000	RAW STL	OPERAT 1985	BF BOF	2	2 000	RAW STL	INGOT PRODUCTION OF 2 MMTPY SIDERBRAS NEW PLANT STAGE I INAUGURATED FOUR YEARS BEHIND SCHEDULE ON STREAM ONLY COKE OVENS AND A 1 7 MMTPY BILLET MILL STAGE II STEELMAKING TO START IN JUNE 1988
TUBARAO	TUBARAO	INTEGRATED STEELWORKS	UNDER CONSTR	BF BOF	2	3 000	RAW STL	OPERAT 1983	BF BOF	2	3 100	SEMIS	CIA SIDERURGICA DE TUBARAO (CST) OPERATED BY SIDERBRAS FULL PROD CAPACITY OF 3 MMTPY OF SLABS EXPECTED IN 1988
ACESITA	TIMTEO	INTEGRATED STEELWORKS	UNDER CONSTR	BF BOF	2	0 700	RAW STL	OPERAT 1979	BF BOF RM	1	0 670 0 080	RAW STL SPECIAL STEEL	ACESITA INVESTED US$700 MILLN IN EXPANSION PLAN, DESIGNED TO RAISE SPECIAL STEEL OUTPUT TO 0 67 FROM 0 24 MMTPY
COSIPA EXTENTION	CUBATAO	INTEGRATED STEELWORKS	UNDER CONSTR	BF BF		1 100	RAW STL	PROJ OP 1986	BF BOF		1 100	RAW STL	STAGE II EXPANSION PRODUCED 2 8 MMTPY OF RAW STEEL IN 1984 AND 2 64 MMTPY IN 1985 IT HAS A 3 4 MMTPY CAPAACITY COSIPA CONTINUED WITH STAGE III OF EXPANSION PROGRAMME 1 4 MMTPY

B. PROJECTS NOT REPORTED IN 1982

IRON AND STEEL PROJECT SITUATION

PROJECTS NOT REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY ALGERIA													
INTEGRATED PLANT STAGE 4 OF SNS PLANT	EL HADJAR												STAGE I, OPENED IN 1969 STAGE II, OPERATED IN 1977 RAW STEEL CAPACITY 0 5 MMTPY STAGE III, OPERATED IN 1981 RAW STEEL CAPACITY 2 0 MMTPY
		INTEGRATED STEELWORKS		BF BOF RM		4 000	RAW STL						CAPACITY OF 4.000 MMTPY WILL BE REACHED AFTER COMPLETION OF JIJEL PROJECT
COUNTRY EGYPT													
EISCO	HELWAN	ROLLING MILL FLAT PRODS		RM		0 800	FLAT	PROJ OP 1987			1 500		THE 98.3 MILLION DOLLAR PROJ. IS PART OF THE PLAN TO ALMOST DOUBLE PROD CAPACITY OF FLAT ROLLED PRODUCTS TO 1 5 MMTPY. PRESENT CAPACITY: PIG IRON 1 75 MMTPY RAW STEEL 1.5 MMTPY 3 LD CONVERTERS 1 2 MMTPY 2 EAF 0 3 MMTPY
		MINIMILL				0 400 0 200	BILLETS REBARS	ABANDONED					
COUNTRY MOROCCO													
NADOR	NADOR	INTEGRATED STEEL WORKS	NEGOT	BF-BOF	2	1 050	RAW STL	PROJ OP 1990	BF BOF		0 855	RAW STL	SONASID STE. NATIONALE DE SIDERURGIE IS HAVING 2 LD CONVERTERS OF 105 TONS EACH INSTALLED
COUNTRY ANGOLA													
SIDERURGIA NATL (SINA URF)	LUANDA	MINMILL	OPERAT			0 030		PLANNED			0 030	BILLETS	THERE IS ANOTHER PLAN UNDER IMPLEMENTION TO RE-EQUIP AND MODERNIZE THE PLANT WITH VOEST ALPINE PRESENT CAPACITY: RAW STEEL 0 03 MMTPY ROLL MILL 0 05 MMTPY
COUNTRY SOMALIA													
		MINIMILL	NEGOT	EAF	2	0 017	REBARS	PLANNED					EAF OF 5 TONS EACH

IRON AND STEEL PROJECT SITUATION

PROJECTS NOT REPORTED IN 1982								PRESENT SITUATION					
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	COMMENTS
COUNTRY MAURITIUS													
DESBRO INTERNATIONAL LTD		MINIMILL	STUDY	EAF		0 050	REBARS	PROJ OP 1990			0 050	REBARS	
COUNTRY KENYA													
INTEGRATED PLANT	MOMBASA	INTEGRATED STEEL WORKS											KENYA HAS THREE EAF PLANTS: 1) KUSCO 0.018 MMTPY 2) STEEL BILLET CASTINGS 0.02 MMTPY 3) STEEL RM 0.024 MMTPY
STAGE 1			NEGOT	BF-BOF		0 300	RAW STL	PROJ OP 1990	BF BOF		0 786 0 300	IRON RAW STL	
STAGE 2 MADATI ROLLING MILL	MARIAKANI			RM		0 411	FLAT	PROJ OP 1987			0 587 0 283	HOT ROLLED COLD ROLLED	A 0.10 MMTPY CR MILL WAS ON STREAM IN 1988.
STAGE 3						0 800	RAW STL	PROJ OP 2000	BF BOF		0 800		
COUNTRY MOZAMBIQUE													
CIA INDUSTRIAL DE FUNDICAO F LAMINA OEM SARL (CIFFL)	LHANDA	INTEGRATED MINIMILL	NEGOT	DR EAF	1 2	0 150 0 080	IRON RAW STL	PROJ OP 1990	DR EAF	1 2	0 150 0 080	IRON RAW STL	IT HAS A BESSEMER CONVERTER FOR FOUNDRY USE AND A ROLLING MILL(0 60MMTPY) FOR NON-FLAT PRODUCTS. POSSIBLE ANG-MOZ CO-OP. PROPOSED BY UNIDO 2 EAF OF 20 TONS EACH + BILLET CONT CASTER(0 080MMTPY)
COUNTRY UGANDA													
EAST AFRICAN STEEL CO	JINJA STEEL-WORKS	DR	NEGOT		DR EAF	0 024	RAW STL	PLANNED	DR EAF				REHABILITATION PLAN BY A $12M ITALIAN LOAN. IT IS BASED ON MUKE FE ORE DEPOSITS BUT IRON ORE HAS TOO HIGH CONTENT OF TITANIUM. THERE IS A ROLLING MILL(0 03MMTPY) FOR NON-FLAT

IRON AND STEEL PROJECT SITUATION

PROJECTS NOT REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY: CHINA													
STATE	MAANSHAN	INTEGRATED STEEL WORKS	UNDER CONSTR.	BF BOF	3	1 25	RAW STL SP STL	OPERAT 1981			1 25	RAW STL SP. STL	
STATE EXTENTION	SHANGHAI	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF	3		RAW STL	OPERAT 1983			2 7	RAW STL	
STATE REBUILT NO 3 WORKS	ANSHAN	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF	2	1.00	RAW STL	PROJ.OP 1988		2 2	2 5 2 5	RAW STL SP STL	CAPACITY INCREASE FROM 1.9 TO 2.5 MMTPY
STATE	BAOSHAN	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF	2	3 12	RAW STL	OPERAT 1985		3	3 12	RAW STL	PHASE 2: 6 MMTPY BY 1990 PHASE 3: 10 MMTPY BY 1995
STATE EXTENTION	TAIYUAN	INTEGRATED STEEL WORKS	NEGOT	EAF		0 150	RAW STL	PROJ.OP 1990			1 15	RAW STL	CAPACITY INCREASE FROM 1 0M TO 1.15MT.
STATE EXTENTION	CHANGZHI	MINIMILL	NEGOT	EAF	2		RAW STL	PROJ.OP 1988	EAF	2	0 100	RAW STL	SECOND HAND EAF FROM THE USA
STATE EXTENTION	PANZHIHUA	INTEGRATED STEEL WORKS	NEGOT	BF BOF		1 00	RAW STL	PROJ.OP 1988	BF BOF		1 00	RAW STL	STAGE II: CAPACITY INCREASE FROM 1.5 TO 2.5 MMTPY
STATE EXTENTION	HAN DAN	INTEGRATED STEEL WORKS	NEGOT	BF BOF			RAW STL	PROJ.OP 1990	BF BOF		2 100	RAW STL	CAPACITY INCREASE FROM 0.5 TO 2 1 MMTPY.
JIN QUAN WORKS	JIAYUGUAN	INTEGRATED STEEL WORKS	UNDER CONSTR	BF BOF			RAW STL	OPERAT 1985	BF BOF		0 500	RAW STL	
STATE	TIANJIN	SEAMLESS TUBE MILL	UNDER CONSTR				SEAMLES TUBE	PROJ.OP 1988			0.500	SEAMLES TUBE	THIS PLANT ALSO WILL PRODUCE STAINLESS STEEL SOON.
CHONGQING WORKS	CHONGQING	INTEGRATED STEEL WORKS	NEGOT	BF BOF		0 650	RAW STL	PROJ.OP 1990	BF OH		1 00	RAW STL	CAPACITY INCREASE FROM 0.65 TO 1.0 MMTPY YUAN MODERNIZATION PROGRAMME
BENXI WORKS	BENIX	PIG IRON PLANT	UNDER CONSTR			3 75	PIG IRO	PROJ.OP 1988	BF		3 75	PIG IRO	BOF WILL BE INSTALLED LATER
STATE EXTENTION	WUHAN	INTEGRATED STEEL WORKS	NEGOT	BF BOF		1 500	RAW STL	PROJ.OP 1990	BF BOF		3 000	RAW STL	CAPACITY INCREASE TO 3.0 MMTPY FROM 1 5 MMTPY.
STATE WUHSI WORKS	WUHSI	MINI MILL	NEGOT	EAF		0 120	RAW STL	PLANNED	EAF		0 120	RAW STL	MODERNIZATION OF WUHSI MINI MILL.

IRON AND STEEL PROJECT SITUATION

PROJECTS NOT REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	CAPACITY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	CAPACITY	OUTPUT	COMMENTS
COUNTRY BURMA													
YAWAMA WORKS	INSEIN	MINIMILL		EAF RM		0 010	RAW STL	PROJ OP 1987	EAF RM		0 012 0 034	RAW STL NONFLAT	CAPACITY INCREASE ANNOUNCED ROLLING MILL CAPACITY WILL BE 0 043 MMTPY
COUNTRY VIETNAM													
		INTEGRATED STEELWORKS	STUDY	BF BOF		2 000	RAW STL	NEGOT	BF BOF		2 000	RAW STL	FEASIBILITY STUDY WITH USSR ASSISTANCE
COUNTRY D R KOREA													
KANGTON PLANT EXPANSION	KANGTON	INTEGRATED STEELWORKS	NEGOT					PROJ OP 1990	BF BOF		3 000	RAW STL	PRESENT CAPA IS 0 980M TPY
KIMCHAEK PLANT EXPANSION	KIMCHAEK	INTEGRATED STEELWORKS	NEGOT					PROJ OP 1990	BF BOF		6 000	RAW STL	PRESENT CAPA IS 0 600M TPY 3 OTHER PLANTS PLAN TO EXPAND TOTAL RAW STEEL CAPACITY IN THIS COUNTRY WILL BE 15 0 MM BY 1990 OUTPUT IN 1984 WAS 6 3 MM TONS
COUNTRY KOREA, REP													
INCHON IRON & STEEL	INCHON	MINIMILL	UNDER CONSTR	EAF	4	0 800	RAW STL	OPERAT 1982	EAF	3	0 600	RAW STL	
COUNTRY OTHER ASIA (TAIWAN, P C)													
CHING SAN IRON WORKS	TAIPEI	MINIMILL	UNDER CONSTR	EAF	3	0 085	RAW STL	OPERAT 1982	EAF	3	0 085	RAW STL	
FENG HSIN IRON AND STEEL	TAICHUNG	INTEGRATED STEEL WORKS		OXYGEN PLANT	1	0 130	RAW STL						
HAI KWANG ENTERP	KAOHSIUNG	MINIMILL	UNDER CONSTR										

IRON AND STEEL PROJECT SITUATION

PROJECTS NOT REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	CAPACITY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	CAPACITY	OUTPUT	COMMENTS
COUNTRY: SINGAPORE													
NISM CAPA. EXPAN I	JURONG	MINIMILL	OPERAT 1984	EAF	2	0 100	RAW STL						
II	JURONG	MINIMILL	UNDER CONSTR.	EAF	3	0 900	RAW STL	OPERAT 1987	EAF RM	5	0 900 0 600	RAW STL NONFLAT	
COUNTRY: THAILAND													
NATIONAL DEVELOP	PRACHUAB KHIRI KHAN	INTEGRATED MINIMILL	STUDY	DR-EAF		1 600	RAW STL	NEGOT 1985	DR EAF		1 600	RAW STL	THIS PROJECT WAS ABANDONED IN 1986
COUNTRY: PHILIPPINES													
NATIONAL STEEL CO	ILIGAN	EAF						OPERAT 1985	EAF S CA	2 1	0 300 0 740	RAW STL BILLET	CONTINUOUS BILLET CASTER.
COUNTRY: INDONESIA													
PT ISPAT INDO	SURABAYA	MINIMILL	UNDER CONSTR	EAF		0 200	RAW STL	OPERAT 1987	EAF		0 200	RAW STL	
SECOND STATEMILL		INTEGRATED MINIMILL	NEGOT.	DR-EAF		2 000	RAW STL	PROJ.OP 1990	DR-EAF		2 000	RAW STL	
YOSHAN MURNI	UTAMA	MINIMILL	UNDER CONSTR.	EAF	2	0 150	RAW STL	OPERAT 1987	EAF	2	0 150	RAW STL	ONE NEW UNIT(0 100M) BY 1988

IRON AND STEEL PROJECT SITUATION

PROJECTS NOT REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY BANGLADESH													
NATIONAL IRON AND STEEL INDUSTRIES			STUDY	EAF	1	0.015	RAW STL	NEGOT 1986	EAF	1	0.015	RAW STL	
COUNTRY PAKISTAN													
PAKISTAN STEEL, EXPANSION II	PIPRI/BIN QASIM	INTEGRATED STEEL WORKS						PROJ.OP 1990	BF BOF		1 000	RAW STL	PHASE III TO 4 0 MMTPY
PANJAB STEEL	LAHORE	MINIMILL	UNDER CONSTR					OPERAT 1983	EAF	1	0 030	RAW STL	
COUNTRY INDIA													
SAIL'S BOKARO EXPANSION	BOKARO	INTEGRATED STEEL WORKS						PROJ.OP 1990	BF BOF		5 600 4 000	IRON RAW STL	STAGE IV CAPACITY INCREASE FROM 1.7 TO 4.0 MMTPY
VISVESVARAYA IRON AND STEEL	BHADRAVATI	INTEGRATED STEELWORKS	UNDER CONSTR					OPERAT 1983	BF BOF	2	0 135	BP	
MAHARASHTRA	GHAZIABAD	DR	UNDER CONST	DR		0 400	DRI	PROJ.OP 1988	DR		0 400	DRI	
SAIL' DURGAPUR MODERNIZING	DURGAPUR	INTEGRATED STEEL WORKS						PLANNED			2 00	RAW STL	CAPACITY INCREASE
SAIL'S ROURKELA MODERNIZING	ROURKELA	INTEGRATED STEEL WORKS						PLANNED			1 84	RAW STL	CAPACITY INCREASE FROM 1 37 TO 1 84 MMTPY
SAIL'S DAITARI	DAITARI	INTEGRATED STEELWORKS						UNDER CONSTR	BF BOF		1 500	STR STL WIRE-RD	
BIRLA JUTE & INDUSTRIES		DR						UNDER CONSTR	DR		0 040	DRI	KINLOR METTOR PROCESS
JINDAL STRIPS.	HISSAR	EAF						OPERAT 1983	EAF		0 015	STAINL-ESS STL	
RAIPUR WIRES & STEELS	RAIPUR	EAF						OPERAT 1983	EAF		0 054	RAW STL	
VISVESVARAYA IRON & STEEL	BHADRAVARI	EAF						OPERAT 1983	EAF		0 135	RAW STL	SPECIAL/ALLOY STEEL.
SUNFLAG INDUSTRIES	MAHARASHTRA	EAF						UNDER CONSTR	EAF		0 200	RAW STL	LONDON BASED GROUP, INDIAN INVESTOR FOR COAL-BASED DR PLANT FOR BARS & LONG PRODS
BIRLA GROUP	KONKAN	2 X DR						NEGOT	DR		0 400	DRI	
MUKAND IRON & STL	KURLA/THANA (UNCERTAIN)	EAF						PROJ.OP 1988	EAF UPH		0 270	RAW STL	PHASE I OF ITS PLAN TO DOUBLE CAPACITY
SANGHVI STEELS LTD	TALOJA	EAF						UNDER CONSTR	EAF		0 045	RAW STL	

IRON AND STEEL PROJECT SITUATION

PROJECTS NOT REPORTED IN 1982								PRESENT SITUATION					
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS UNITY	PROCESS OUTPUT	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS UNITY	PROCESS OUTPUT	COMMENTS
COUNTRY: IRAN													
NISIC: EXPANSION PHASE III	ESFAHAN	INTEGRATED STEEL WORKS						PROJ.OP 1985	BF BOF		4.00	RAW STL	
NISIC: NEW EAF	AHWAZ	EAF	UNDER CONSTR	EAF	6	1.800	RAW STL	PROJ.OP 1986	EAF	3	0.800	RAW STL	
COUNTRY: SAUDI ARABIA													
NATIONAL PIPE CO	DAMMAN	EAF FOR PIPE MILL	UNDER CONSTR			0.080	RAW STL	OPERAT 1980			0.080	RAW STL	
COUNTRY: UNITED ARAB EMIRATES													
AHLI STEEL/DUBAI	AL RAWOOL	EAF	UNDER CONSTR	EAF		0.150		OPERAT			0.036	RAW STL	CAPACITY INCREASE TO 0.036MM TPY
ABU DHABI STEEL WORKS	ABUDHABI	INTEGRATED MINIMILL	STUDY	OR EAF				STUDY					
COUNTRY: YEMEN, ARAB REP													
		MINIMILL						NEGOT	EAF	1	0.070	RAW STL	STUDY WAS PREPARED BY DASTUR UNDER UNIDO AUSPICES

IRON AND STEEL PROJECT SITUATION

PROJECTS NOT REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	MMTPY	OUTPUT	COMMENTS
COUNTRY: ARGENTINA													
DALMINE SIDERCA EXPANSION	CAMPANA	EAF	OPERAT 1980		1	0 415	RAW STL	PROJ.OP 1986	EAF	1	0 200	RAW STL	TOTAL CAPACITY WOULD BE 0 615 MMTPY IN 1986.
COUNTRY: MEXICO													
AHMSA-ALT HOR MEX EXPANSION	MONCLOVA	INTEGRATED STEELWORKS						PROJ.OP 1985	BF BOF		1 250	RAW STL	CAPACITY INCREASE FROM 3.0 TO 4 25 MMTPY
ATLIX SA CO	S-CISME	MINISTEEL	UNDER CONSTR	EAF	1	0 200	RAW STL	OPERAT 1982	EAF	1	0 200	RAW STL	
PRODUCTORA MEXICANA DE TUBERIA SA	ISLA DE CAYACAL	ROLLING MILL						PROJ.OP 1987		1	0 400	NON-FLAT	CAPACITY INCREASE FROM 0.29 TO 0 4 MMTPY
COUNTRY: VENEZUELA													
SIDELCA SID ZULIANA	CIUDAD OJEDA	MINIMILL	OPERAT 1979	EAF	2		RAW STL	SHUT-DOWN	EAF	2		RAW STL	
SIDERZULIA	MARACAIBO	EAF						PROJ.OP 1985	BF BOF		1 100	RAW STL	PHASE II PHASE I WILL HAVE A ROLLING MILL BY 1980.
COUNTRY: ECUADOR													
[illegible]-FUNDICIONES	GUAYAQUIL	ADDT EAF	UNDER CONSTR	NEW EAF	1	0 060	RAW STL	OPERAT 1981	EAF	1	0 060	RAW STL	
COUNTRY: CUBA													
MARTI WORKS EXPANSION	HABANA	INTEGRATED STEEL WORKS						PROJ OP 1990			1 05	RAW STL	CAPACITY INCREASE FROM 0.35 TO 1 05 MMTPY
COUNTRY: COLUMBIA													
SIMESA-SIDERURGICA DE MEDELLIN SA EXPANSION	MEDELLIN							PROJ OP 1988 1990 1995			0 008 0 400 0 700	F ALLO FLAT RAW STL	

IRON AND STEEL PROJECT SITUATION

PROJECTS NOT REPORTED IN 1982								PRESENT SITUATION					
				PROCESS					PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	CAPTY	OUTPUT	STAGE OF DEVELOPMENT	TYPE	UNITS	CAPTY	OUTPUT	COMMENTS
COUNTRY: BRAZIL													
MANNESMAN-BARREITO WORKS EXPANSION	BARREITO	INTEGRATED STEELWORKS						PROJ.OP 1988			1 000	RAW STL	
ACOPALMA	VARZEA DA PALMA							OPERAT 1978	EAF	1	0 010	RAW STL	10T DEMAG
BARRA MANSA-SIDERURGICA EXPANSION	BARRA MANSA		EAF					OPERAT 1980	EAF	2	0 200	RAW STL	2X DEMAG. CAPACITY INCREASE TO 0 200 MMTPY
CEARENSE-USITA SID	MARANGUAPE		EAF					OPERAT 1983	EAF	1	0 080	RAW STL	
COFAVI EXPANSION	CARIACIRA		EAF					OPERAT 1982	EAF	1	0 240	RAW STL	TOTAL CAPACITY NOW 0.4 MMTPY
COSIGUA EXPANSION	SANTA CRUZ		EAF					OPERAT 1980	EAF	1	0 870	RAW STL	120T DEMAG, REBUILD OF 1974 UNIT. CAPACITY INCREASE TO 0 87 MMTPY.
GUAIRA EXPANSION	CURITIBA		EAF					OPERAT 1983	EAF	1	0 168	RAW STL	UPRATING EAF 80T TO 0 168MMTPY
HIME EXPANSION	NOVA IGUACU		EAF					OPERAT 1982	EAF	1	0 200	RAW STL	55T(REPLACING OH WITH EAF) CAPACITY INCREASE TO 0.2 MMTPY
VIBASA	PINDAMONHAN-GABA		EAF					OPERAT. 1980/81	EAF	2	0 350	SP STL	DEMAG, LOW OPRATING RATES WERE RECORDED IN 1981, 82, AND 83
MENDES JUNIOR GRAND CARAJAS	CARAJAS	BLAST FURNACE	BF			0 200	PIG IRON	OPERAT 1984	BF		0 200	PIG IRON	

C. NEW PROJECTS 1982-1985

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION FROM 1982 TO 1985

IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	COMMENTS
COUNTRY ALGERIA								
SNS	AIN-M'LILA	BAR AND ROD MILLS	NEGOT			0 800	NON-FLT	BAR AND ROD MILL AND MEDIUM SECTION MILL ARE FOR ROLLING BLOOMS AND BILLETS PRODUCED AT BELLARA
	AIN M'SILA	MEDIUM SECTION	NEGOT			0.450	NON-FLT	
		WIRE PLANT	NEGOT			0 045	WIRE	DANIELI, ITALY WON TWO PLANTS CONTRACTS FOR LAMP POST TUBES AND WIRES
NATIONALE DES INDUSTRIES ELECTRO TECHNIQUES		LAMP POST TUBE	NEGOT			0 050	TUBE	
COUNTRY ZIMBABWE								
ZISCOSTEEL		MEDIUM AND LIGHT SECT MILLS	NEGOT					FIVE YEAR REHABILITATION PROGRAMME: INSTALLATION OF A SINTER PLANT AND A FOUR OR SIX STRAND CONTINUOUS BILLET CASTER AND UPGRADING OF THE MEDIUM AND LIGHT SECTION MILLS AND THE BAR/ROD MILL. THE POSSIBILITY OF A 0 100 -0 200MMTPY PLATE MILL.
		BAR/ROD MILL	NEGOT					
		PLATE MILL	NEGOT			0 200		
COUNTRY EGYPT								
ALEXANDRIA NATIONAL STEEL EXPANSION		INTEGRATED MINIMILL	UNDER CONSTR	EAF		0 841		CAPACITY UPRATING FROM 0 818 TO 0 841MMTPY.
EGYPTIAN IRON AND STEEL		BOF PLANT	UNDER CONSTR			1 600		BOF PLANT MODERNIZED TO RAISE CAPACITY FROM 1.2 TO 1.6MMTPY.
COUNTRY BURUNDI								
		BOF	STUDY			0 050		EXPLORATORY WORK ON ORE DEPOSITS NEEDED
COUNTRY MADAGASCAR								
		DR	STUDY			0 210	RAW STL	
COUNTRY ZAMBIA								
ZAMBIA STEEL	LUSAKA	INTEGRATED MINIMILL	PROJ OF 1988	EAF		0 077		
				ROL M		0 043		

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION FROM 1982 TO 1985

IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	PROCESS TYPE	PROCESS UNITS	PROCESS MMTPY	PROCESS OUTPUT	COMMENTS
COUNTRY D R KOREA								
SONGNIM PLANT	SONGNIM	OXGEN CONVE	UNDER CONSTR			1 000		CAPACITY INCREASE OF 1 0 MMTPY
COUNTRY NEPAL								
		MINIMILL	NEGOT	EAF		0 070	BAR	A BAR MILL
COUNTRY MALAYSIA								
MALAYSIA STEEL WORKS	JULAN PERUSA-HAAN DERA	BAR/ROD MILL	UNDER CONSTR			0 180	NON-FLT	
COUNTRY PAKISTAN								
METROPOLITAN STEEL CORP	LANDHI KARACHI	BAR MILL	PROJ OP 1990			0 100	BAR	
	NOORIABAD	TUBE MILL				0 150	TUBE	
CRESCENT GROUP	NOORIABAD	TUBE MILL	PROJ OP 1988			0 025	TUBE	THIS IS A SPIRAL WELD PIPE MILL
	PUNJAB	PIPE MILL				0 018	PIPE	THIS IS A SEAMLESS PIPE MILL
COUNTRY INDIA								
TATA IRON AND AND STEEL	JAMSHEDPUR	MINIMILL	NEGOT	EOF		0 175		A PILOT PLANT FOR EOF PROCESS.
MUKAND IRON AND STEEL		MINIMILL	UNDER CONSTR	UHP		0 270		CONVERTING 2X30T EAF'S TO UHP OPERATION TO DOUBLE CAPACITY TO 0 270MMTPY
SAIL ALLOY STEEL EXPANSION	DURGAPUR	MINIMILL	PLANNED 1990	EAF		0 280		NEW 5 YEAR PLAN INCLUDES EXPANSION TO CAPACITY OF 0 280MMTPY
SUNFLAG INDUSTRIES	BHANDARA	MINIMILL	PLANNED 1988	EAF		0 200		TO INSTALL 1X60T EAF FROM DEMAG
SAIL SALEM WORKS	SALEM	SENDZIMIR MILL	NEGOT			0 070		A SECOND SENDZIMIR MILL TO DOUBLE CAPACITY TO 0 07MMTPY
SIPTA COATED STEEL	NANDED	SHEET PLANT	UNDER CONSTR			0 035		A JOINT VENTURE BETWEEN GUPTA TUBES & PIPES AND STATE INDUSTRIAL & INVESTMENT CORP OF MAHARASHTRA FOR A GALVANIZED SHEET PLANT
UTTA GALVA STEELS	CALCUTTA	GALVA LINE	NEGOT			0 050		A DECISION TO INSTALL A 0 05MMTPY MINI-GALVANIZING LINE SUPPLIED BY BHP
ASTA STEEL & ALLOY	HIMACHAL PARADESH	MINI MILL	NEGOT	EAF		0 020		

IRON AND STEEL PROJECT SITUATION

PROJECT SITUATION FROM 1982 TO 1985								
				PROCESS				
IDENTIFICATION	LOCATION	DESCRIPTION	STAGE OF DEVELOPMENT	TYPE	UNITS	CAPACITY	OUTPUT	COMMENTS
COUNTRY: CHINA								
BAOJI WORKS	BAOJI	PIPE MILL	NEGOT			0.100		WELDED PIPE PLANT TO BE BUILT AS PART OF THE EXPANSION OF BAOJI WORKS
HONGDU STEELWORKS	NANCHANG	TUBE MILL	UNDER CONSTR.			0.080		THIS IS THE MODERNIZATION OF A SEAMLESS TUBE PLANT
ANSHAN WORKS	ANSHAN	ROD MILL	UNDER CONSTR.			0.450		US STEEL CORP SOLD A 18-YEAR-OLD ROD MILL FROM FAIRLESS, PENN. IT IS EXPECTED TO START UP IN 1988
COUNTRY: BRAZIL								
CVRD	ESPIRITO SANTO	MINI MILL	NEGOT	EAF		0.120	RENANS	A CHARCOAL-IRON BASED MINI MILL.
RIOPART INVESTMENT BANK GROUP	RIO DE JANEIRO	DR	NEGOT	DR		0.350		SOME 12 NEW PIG IRON PROJECTS WERE BEING STUDIED BY CVRD.
PLANTAR GROUP	MINAS GERAIS	PIG IRON PLANT	PROJ.OP 1988			0.080	PIG IRN	

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Q U E S T I O N N A I R E

Iron and steel projects in developing countries

		(please check appropriate box) yes	no
(1)	Were the data contained in the study useful?	☐	☐
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(3)	Was the information provided new?	☐	☐
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