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Agenda item 4

THE STEEL OUTLOOK  
AND THE DEVELOPING COUNTRIES<sup>1/</sup>

by

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## SUMMARY

At the outset the primary aims of the International Iron and Steel Institute are described: to provide its members with an effective forum for exchanges of information on all matters of common interest and to promote mutual understanding of each other's problems. The Institute and its membership now total 121 regular and associate members in 30 countries producing 67% of the world's 1972 crude steel. An example of IISI's work is the recent VIIIth Annual Conference where the subjects discussed were direct reduction of iron ore, the financing of the steel industry's growth, and the motivation of people in the steel industry.

After relating some of the UNIDO Symposium themes to IISI's work, past world steel production and consumption and international steel trade are discussed. World steel production more than tripled between 1950 and 1972, from 192 to 629 million metric tons. The IISI study, Projection '85, showed that for the world as a whole, steel consumption growth rates in 1955-1960, 1960-1965 and 1965-1970 were 5.0%, 5.6% and 5.4% respectively. Taking one area of the developing world, Latin America, the report showed that similar figures were 4.5%, 7.4%, and 7.9% respectively. Steel consumption in most developing countries has been growing faster than in the industrialised nations.

In recent years a new pattern of international trade has appeared; thus traditional currents of imports and exports are likely to change accordingly. Post-war, too, international trade in steel has developed even faster than steel production, increasing six-fold from 20 million metric tons in 1950 to 124 million tons of raw steel equivalent in 1971. The share of total steel production which moves across international borders has grown continuously from 10.7% in 1950 to 21.4% in 1971.

Turning to the current steel demand situation, the upswing in demand in the context of the increasing economic interdependence of the manufacturing countries is characterised by the growing volume of raw materials, food, and industrial products moving across borders and oceans. Currency uncertainties have brought new problems and dangers to the steel industry in this present period of apparent prosperity. Steel may today be more vulnerable to the stop-go movements of economic cycles than in the past.

ISI's 1973 forecast for world steel consumption, made in October, 1972, was between 660 and 670 million metric tons. However, the strengthening world market situation prompted a further survey in the Spring of 1973 and the figure is revised to a total of 685 million metric tons. Against this background, export prices have been soaring since the beginning of 1973. Past experience has shown that demand and prices are subject to wider fluctuations in international trade than in home markets. For an industry which needs a stable rate of operation to achieve production efficiency, there is a natural but disturbing trend to use exports as a buffer against variations in domestic demand, while imports are generally only solicited in times of exceptionally high demand, as at present.

Despite some apprehension that economic growth in some industrialised countries is moving at too fast a pace and that inflation and social unrest, among several factors, may slow down the rate of growth, world steel consumption is back on the expected growth rate of 4.5% annually. This, according to ISI projections, would mean prospects of 750 million metric tons in 1975, 939 million in 1980 and 1,144 million metric tons in 1985. Breaking these figures down into areas, the developing countries are expected to out-perform the industrialised countries. For Latin America, ISI projects a growth in apparent steel consumption of 6.7% to 1985, faster than in the past and faster than any industrialised country except Japan.

Latin America has recently begun to contribute to international steel trade. From 1964 to 1969 trade between Latin American countries almost doubled from 174,000 to 338,000 metric tons, while worldwide growth was a little over 50%.

In addition to the high potential demand in developing countries to meet growing population, other factors contribute to the good prospects of the steel industry in these countries. In some industrialised countries, high costs, scarcity of quality raw materials, manpower shortages, and siting difficulties for new steelworks are stimulating interest in building new steel plants outside the traditional areas. The growing interest in the possibilities of producing semis for exports in developing countries, rich in raw materials, is a scheme with attractions and drawbacks which are discussed.

The importance of the criteria for evaluating consumption trends is emphasised with particular reference to developing countries, where planning and forecasting is more difficult than in industrialised countries. In the former, background data needed by forecasters is not usually so readily available, growth rates in many sectors of an economy may suddenly accelerate tremendously. Sometimes, if the infra-structure of an economy does not develop as fast as planned, demand for steel will grow less rapidly than anticipated.

Looking, therefore, at the factors affecting facility planning for steel-making to meet future demand, the following important steps are listed: forecast of expected overall national economic growth; forecasts of future requirements for each major sector of the economy; analysis of infra-structure requirements; demand from each sector for the different types of steel product and their distribution; estimates of facilities required, raw-materials costs and sources, and personnel requirements. The part that indirect trade - steel contained in imports and exports - plays in the assessment of steel demand is also detailed.

Future trade currents could be profoundly changed over the coming years where traditional exchanges between developing countries which export raw materials and industrialised countries supplying manufactured goods are becoming obsolete.

Finally, it is appropriate to mention the promotion and marketing of steel, on the Symposium's Agenda. With the advancement of the world economy, more recognition is being given to the fact that product development, changes in the product requirements, methods of using or distributing them, are important factors in marketing strategy. ISI could serve as a communications channel in the field of marketing and promotion, between developing steel industries and those that are older-established.

I have accepted with pleasure the gracious invitation from UNIDO to contribute to its Third International Steel Symposium and I regret very much not to be able to attend this meeting in person due to the fact that the International Iron and Steel Institute is holding its VIIIth Annual Conference in Johannesburg during this period.

No better place could have been chosen for this Third International Symposium than here in Brazil, a country which has a fast-growing steel industry based on vast mineral resources and international cooperation and with impressive plans for expansion.

The primary aim of our Institute, IISI, is to provide its members with an effective forum for international exchanges of information on all matters of common interest to steel producers worldwide and to promote among them mutual understanding of each other's problems. It is obvious that some of the themes of your program here are also within the scope of our preoccupations. This is to be expected since on the one hand the United Nations Industrial Development Organisation aims to promote industrial development by encouraging the mobilisation of national and international resources; to assist in, promote and accelerate the industrialisation of the developing countries with particular emphasis on the manufacturing sector. On the other hand, steel has been, and remains, the backbone of economic development in the industrialised countries and in the developing countries as well and it is vital both to economic growth and to improving standards of living.

In our organisation, at the VIth Annual Conference in London in 1972, Mr. Yoshihiro Inayama, Chairman of Nippon Steel Corporation and Chairman of IISI, spoke of the strong underlying ties of interdependence between countries in the present-day world: "In the developing countries which together comprise close to two-thirds of the world's population, there will be massive and ever-increasing demand for steel products as well as steel-making equipment and technology as they progress further towards development and industrialisation. The steelmakers of developed countries must be prepared to offer a helping and friendly hand by making the utmost use of these accumulated experiences, knowledge, and technology and offering them, as needed, to the less developed countries".

Last week IISI held its VIIIth Annual Conference for the first time in the Southern hemisphere - an indication that the centre of gravity of the world's steel industry is beginning to move away from the traditional producing and exporting countries. There we discussed various topics including the direct reduction of iron ore. This is a subject which is of particular interest for mini-mills and medium-size mills which rely on scrap as an essential raw material which may become scarcer in the future. Another principal theme of our Conference was the financing of steel industry

growth, taking as one particular example the financing of the large new integrated plant at Fos under construction on a coastal site in the Southern part of France, in an area which up to now has had very few manufacturing industries. For, even in industrialised countries, there are less developed areas where the problems in some aspects are not very different from those of countries in the process of industrialisation.

The third theme of our recent Conference was Motivation of People in the Steel Industry, an important factor in the steel industry's development everywhere. We must never forget that, no matter how high the potential of steel technology, whether it be the creativity that leads to more efficient processes or better and more reliable products, the workmanship that turns out consistently better quality from raw materials to finished products, the knowledge of the market research or the skill of the salesmen, all depend upon the attitudes of people.

Proceedings of the Johannesburg Conference will be published early next year and will be available for sale to those who may be interested.

The main theme of discussion for this Third International Steel Symposium is the preparation of realistic plans for the steel industry and the means for putting them into effect. Among other items that have been mentioned in the Symposium Aide-Mémoire are the exchange of experiences on the so-called "Mini-mills", collection of data on the market prospects, the possibilities developing countries have for marketing their production at regional and international levels and also, last but not least, the financing of projects.

It is indeed appropriate that such themes should be discussed here as well as elsewhere for it is a time of great change in the order of world economy and technology. Before commenting on the main theme of your meeting, it might be of interest to say a few more words about our Institute. This will be followed with some thoughts on (1) past trends in the world's iron and steel industry, including the importance of world steel trade; (2) the current demand situation; (3) future prospects for world steel consumption; (4) criteria for evaluating future consumption trends in developing countries and factors affecting feasibility studies for iron and steel facilities and (5) planning for, and promotion of, the use of steel.

#### The International Iron and Steel Institute

ISI is a non-government international organisation of steel producing companies. Its membership includes companies from many of the countries represented at this Symposium. Founded originally in July, 1967 by the main steel-producing companies of 11 industrialised countries, ISI counts today, as regular



members or associate members, 121 companies in 30 countries, which produced 67% of the world's 1972 crude steel.

Ten of the 30 are considered developing countries. Furthermore, most of the technical institutes, steel information centres, and associations of steel producers of these countries have direct links with IISI as affiliated members.

IISI offers wide opportunities to its members to discuss the many aspects of the steel industry on a worldwide basis. In addition to its Annual Conference which is the high point of each year's activities, much work is done throughout the year in the framework of its nine standing committees: Statistics, Promotion and Market Development, Technology, Economic Studies, Public Relations and Public Affairs, Legal Questions, Industrial Relations, Raw Materials and Environmental Affairs. Each of these committees has developed a work program for which particular working groups are organized. This is all done on a voluntary basis with the experts being provided by the personnel of the IISI members while the small permanent staff in Brussels serves as the Secretariat.

Examples of work done or in process include the following: under the sponsorship of the Committee on Statistics, IISI circulates monthly raw steel production figures for 24 countries within two weeks after the end of a month. The Committee on Economic Studies has completed and published "Projection '85", a forecast of world steel demand divided into 16 areas in the years 1975, 1980 and 1985 (this report is for sale). The Committee on Environmental Affairs is sponsoring a Symposium on Environmental Control in the Steel Industry in Tokyo in February, 1974. The Committee on Raw Materials has projected the iron-ore and coking-coal demand and supply situation in the future and the reports are available for sale. The Committee on Industrial Relations reviews periodically the industrial relations, personnel training and development, and compensation practices in member countries.

## Past World Steel Trends

### a. Production and Consumption

World steel production more than tripled between 1950 and 1972, from 192 to 629 million metric tons. In our projection of world steel consumption to 1985, past world steel-consumption growth rates were projected in three five-year periods from 1955 to 1970 for sixteen areas and countries. \*

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\* Apparent consumption = steel production + imports - exports (crude steel equivalent); for the world, apparent consumption is assumed to equal crude steel production.

The table shows that, for the world as a whole, steel consumption growth rates in 1955-1960, 1960-1965, and 1965-1970 were 5.0%, 5.8% and 5.4% respectively. For Latin America they were 4.5%, 7.4%, and 7.9% respectively. Further, and not unexpectedly, steel consumption in most developing countries has been growing faster than in the industrialised nations.

### STEEL CONSUMPTION GROWTH RATES 1955-1970

(Per cent per annum)

	<u>1955-60</u>	<u>1960-65</u>	<u>1965-70</u>
U. S. A.	- 2.6	7.4	- 0.3
Canada	1.8	13.8	1.0
Latin America	4.5	7.4	7.9
Oceania	5.6	7.8	7.9
ECSC	6.3	2.9	7.7
United Kingdom	3.6	0.7	1.9
Other Western Europe	7.3	8.9	7.4
USSR	7.8	6.4	5.0
Eastern Europe	10.8	5.0	5.8
Japan	22.1	8.2	19.6
India	10.8	8.6	- 3.5
China and North Korea	36.2	- 5.0	9.3
Other Asia	8.4	11.5	9.3
South Africa	1.7	14.6	2.7
Other Africa	3.7	3.3	9.9
Middle East	6.0	8.5	7.6
<b>WORLD</b>	<b>5.0</b>	<b>5.8</b>	<b>5.4</b>

Obviously, this great increase in steel production was made possible only by a correspondingly large increase in the development and production of iron ore and other steel-making raw materials which is of special importance to this Symposium.

#### b. International Steel Trade

In recent years a new pattern of international trade has appeared, and traditional currents of imports and exports are likely to change accordingly.

During the post-war period international trade in steel has developed even faster than steel production (Table 1). This was accomplished in the main areas of the free world by liberalisation of trade and a multilateral system of payments. Whereas world steel production, as previously noted, has more than tripled during the last 20 years, increasing from 192 million metric tons in 1950 to 629 million metric tons in 1972, exports of steel products have increased sixfold, from 20 million tons in 1950 to 124 million tons of raw steel equivalent in 1971 (1972 data not yet available).

**TABLE 1**

**World Steel Trade as Proportion of World Steel Production**

	<u>Exports</u> (million metric tons) <u>Raw steel equivalent</u>	<u>World Steel Production</u> (million metric tons) <u>Raw Steel</u>	<u>Export Ratio</u> (%)
1950	20.5	192.0	10.7
1951	20.3	208.8	9.7
1952	24.3	211.6	11.5
1953	24.1	233.3	10.3
1954	26.4	222.8	11.8
1955	34.0	270.5	12.6
1956	35.8	284.3	13.6
1957	40.0	293.8	13.6
1958	38.0	274.8	13.8
1959	42.1	308.3	13.7
1960	52.7	345.8	15.3
1961	52.3	354.3	14.8
1962	56.0	358.7	15.6
1963	60.0	384.7	15.6
1964	69.3	434.2	16.0
1965	78.5	486.9	17.2
1966	77.6	473.1	16.4
1967	85.0	497.2	17.1
1968	98.5	529.9	18.6
1969	110.1	574.2	19.2
1970	116.1	595.3	19.5
1971	124.3	582.0	21.4

The share of the total steel production which moves across the international borders has grown continuously from 10.7% in 1950 to 21.4% in 1971. If intra-trade of the original six countries of the European Community and that of the Comecon countries is excluded from this computation, the international markets where competitive forces exert their full pressure have enlarged from 13.5 million tons in 1950 to 60.8 million tons in 1970 and 66.6 million tons in 1971 (Table 2).

### Current Demand Situation

Recent crises in the national balances of payments with disturbing consequences for the rates of exchange and the very basis of the international monetary system itself have shown how difficult it is for the world economy to retain its equilibrium.

However, after a period of recession of about 18 months, in late 1972 the world steel industry again moved rapidly to a new boom phase in the steel cycle. Surprisingly, despite the monetary crisis, the major producing countries are now experiencing parallel up and down swings in the demand cycle and this, in turn, influences the production cycle. It was not always so.

This parallelism reflects the increasing economic interdependence of the manufacturing countries, characterized by the growing volume of raw materials, food, and industrial products moving across borders and oceans. It is also quite normal that both producers and steel users everywhere try to anticipate the changes in both the demand and availability in the steel market and to protect themselves against depreciation of money and possible increases in prices. Currency uncertainties have brought new problems and dangers to the steel industry in this period of apparent prosperity. The counterpart of this is that such a basic industry as steel may be today more vulnerable to the stop-go movements of economic cycles than in the past.

Just last October, at the time of our Conference in London, the world's steel producers were moderately optimistic about prospects for demand. However, the upsurge in demand since the turn of the year has resulted in concern about how to meet current orders.

In 1972 world steel production amounted to 629 million metric tons, an increase of 8% over the preceding year. This was a very strong return from the low level of 1971. In most countries the previous records were broken with the notable exceptions of the United Kingdom, the Federal Republic of Germany, Sweden, Australia, and the United States (Table 3).

TABLE 2

## World Trade in Steel Products 1971

Million metric tons	1960	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Gross	15.8	16.7	16.5	20.3	26.1	27.5	30.8	29.2	32.1	40.5	
Intra ECSC	1.8	1.9	2.6	3.0	3.1	4.0	5.4	5.3	7.1	9.7	
Intra Comecon	0.5	0.9	0.9	1.0	1.2	1.5	2.1	2.3	2.6	3.2	
Net Total	13.5	15.9	15.0	15.4	19.8	21.2	25.3	21.6	22.5	27.8	
Million metric tons	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Gross	40.2	43.1	46.1	53.3	60.4	59.7	65.4	75.8	84.7	89.3	95.6
Intra ECSC	9.7	10.3	11.3	13.3	12.0	14.2	15.2	17.1	19.6	20.1	20.5
Intra Comecon	3.7	4.8	5.0	5.6	6.6	5.9	6.5	6.7	8.1	8.1	8.5
Net Total	26.8	28.0	29.7	34.4	40.9	39.6	43.7	52.0	57.0	60.8	66.6

TABLE 3

World Raw Steel Production 1972

Million metric tons	<u>1972</u> preliminary	<u>1971</u>	<u>1970</u>
USSR	126	120.64	115.89
USA	120.8	109.26	119.31
Japan	96.9	88.56	93.32
Fed. Rep. of Germany	43.7	40.31	45.04
UK	25.4	24.24	27.86
France	24.1	22.86	23.77
China	23	21.00	18.50
Italy	19.8	17.45	17.38
Belgium	14.5	12.45	12.61
Poland	13.5	12.69	11.75
Czechoslovakia	12.7	12.07	11.48
Canada	11.8	11.04	11.20
Spain	9.5	8.03	7.39
Rumania	7.2	6.80	6.52
Australia	6.8	6.75	6.64
India	6.9	6.10	6.28
Brazil	6.6	6.00	5.39
German Dem. Rep.	5.7	5.35	5.05
Netherlands	5.6	5.08	5.03
Luxembourg	5.5	5.24	5.46
South Africa	5.3	4.88	4.76
Sweden	5.2	5.27	5.50
Mexico	4.4	3.82	3.88
Austria	4.1	3.96	4.08
Hungary	3.3	3.11	3.11
Yugoslavia	2.6	2.45	2.23
Bulgaria	2.2	1.95	1.80
Argentina	2.1	1.91	1.83
North Korea	2	1.80	1.70
Others (rounded off)	12	11	10
<b>Total (rounded off)</b>	<b>629</b>	<b>582</b>	<b>595</b>

Based principally on the annual survey of short range market demand among countries represented in the IISI membership, in October, 1972, we made an overall world steel consumption forecast of 660 to 670 million metric tons - iron equivalent - for 1973. However, the strengthening of the market situation suggested that this year would be even stronger than anticipated and this prompted a new check on the principal areas. A round-up late last Spring shows a net upward revision to a total of 685 million metric tons for the world (Table 4).

This increase is mainly attributable to Japan with an addition of 7.5 million metric tons, to the United States with an addition of 6.4 million metric tons, to the Federal Republic of Germany with 1.5 million metric tons extra, and to Italy with 0.5 million metric tons more. Increases of 0.3 million tons each are expected for the United Kingdom and Canada with small adjustments for Austria, Spain, and Australia. As of the time this is written, it looks as though production in most major and developing countries will set new records in 1973.

As far as the forecasts for capital expenditure during 1973 are concerned, latest IISI estimates confirm that the very high level of expenditure in the Community of Six has passed its peak but may shortly enter into a new upswing; that expenditure in the United Kingdom and Japan will be maintained at about the 1972 level; but that expenditure in the United States will recover from the low 1972 figure of some 1,250 million U.S. dollars to just under 1,600 million US dollars (Table 5).

With better operation and marketing conditions, financial results, which last year were below earlier expectations, will improve this year and in some cases it will be a substantial improvement.

Export prices have been soaring since the beginning of the year. Past experience has shown that demand and prices are subject to wider fluctuations in international trade than in home markets. Also periods of falling demand have tended to last relatively longer than those of boom. For an industry which needs a stable rate of production in order to achieve good production efficiency there is a natural but disturbing trend to use exports as a buffer against variations in domestic demand, whereas imports are generally solicited only in times of exceptionally high demand as at present.

### Future Prospects for World Steel Demand

While the general economic environment remains favourable to a further worldwide expansion of steel production and international trade, there is some apprehension that economic growth in some industrialised countries is moving at too fast a pace. Capacity

**TABLE 4**

**Apparent World Steel Consumption**

<b>Million metric tons (ingot equivalent)</b>	<b>1970 Actual</b>	<b>1971 Actual</b>	<b>1972 Actual</b>	<b>1973 Forecast (Oct. 1972)</b>	<b>1973 Revised Forecast (May 1973)</b>
<b>Community of Six</b>	<b>93.95</b>	<b>85.08</b>	<b>95.27</b>	<b>101.42</b>	<b>103.42</b>
<b>United Kingdom</b>	<b>25.00</b>	<b>21.25</b>	<b>22.20</b>	<b>25.70</b>	<b>26.00</b>
<b>Other Western Europe</b>	<b>33.58</b>	<b>31.32</b>	<b>34.20</b>	<b>36.48</b>	<b>36.68</b>
<b>E. Europe &amp; USSR</b>	<b>152.00</b>	<b>158.50</b>	<b>163.50</b>	<b>173.00</b>	<b>173.00</b>
<b>North America</b>	<b>139.22</b>	<b>141.16</b>	<b>152.63</b>	<b>158.08</b>	<b>164.80</b>
<b>Japan</b>	<b>69.79</b>	<b>57.60</b>	<b>68.72</b>	<b>72.50</b>	<b>80.00</b>
<b>China &amp; N. Korea</b>	<b>23.15</b>	<b>25.80</b>	<b>29.00</b>	<b>32.00</b>	<b>32.00</b>
<b>All others</b>	<b>58.62</b>	<b>60.54</b>	<b>63.79</b>	<b>67.01</b>	<b>69.10</b>
<b>World total (rounded off)</b>	<b>595</b>	<b>581</b>	<b>627</b>	<b>660/ 670</b>	<b>685</b>



**TABLE 5****Capital Investment Expenditure**

Million US \$	1970 Actual	1971 Actual	1972 Actual	1973 Forecast (Oct. 1972)	1973 Revised Forecast (May 1973)
Community of Six	1,706	2,300	2,581	1,915	2,216
United Kingdom	370	590	600	810	650
Other Western Europe	521	413	539	585	599
North America	1,925	1,801	1,646	1,787	2,018
Japan	1,902	2,267	2,223	2,200	2,200
Others*	..	..	1,458	1,801	1,764

\*Argentina, Australia, Brazil, India, Mexico, South Africa, Taiwan

constraints, social unrest, cooling off measures prompted by inflation, and currency considerations may slow down the tempo towards the end of this year and in early 1974.

Upsurges of demand in steel are always cyclical phenomena. No one expects the current strong upswing to continue for ever. However, world steel production is back again on the expected long-term track of an average healthy growth rate of 4.5% annually. This would mean prospects of some 750 million metric tons by 1975, 929 million metric tons by 1980, and 1,144 million metric tons by 1985, according to USI projections.

Table 6 shows apparent steel consumption by area in million metric tons for 1955-1970 and the IISI projections for 1975, 1980, and 1985; Table 7 shows the 1970-1985 steel consumption growth rates in five-year increments as well as the annual growth 1955-70. Again not unexpectedly, the developing countries are expected to out-perform the industrialised countries. For Latin America, for instance, IISI forecasts a growth in apparent consumption of steel at a rate of 6.7% to 1985 - a faster growth rate than in the past and faster than in any industrialised country except Japan. Within the area, of course, steel consumption will grow faster in some countries than in others, depending upon the stage of development of the particular economy.

Furthermore, it is also interesting to note that the regional grouping in Latin America has begun recently to make a significant contribution to international trade in steel. The figures indicate that over the five-year period from 1964 to 1969, the intra-regional trade almost doubled, growing from 174,000 to 338,000 metric tons while worldwide it grew by a little over 50%.

There is reason to believe that Latin American regional trade will grow rapidly to satisfy a greater proportion of its requirements for steel from its own production. In addition to the high potential demand in developing countries to meet the needs of a growing population, there are other factors justifying an optimistic view on the prospects of the steel industries in these countries. In some of the industrialised countries, higher costs, the progressive exhaustion of high-quality raw materials, plus the growing shortage of available manpower, combine with the difficulty of finding suitable sites for new steelworks to stimulate interest in building new steel-plants outside of traditional producing areas.

Some steel producers in industrialised countries have begun to think of moving overseas to produce semis for export. For those countries, rich in raw materials, where these plants might be located, there is strong economic appeal for such a program because the foreign exchange earned by exporting steel products, even semis, would be greater than that secured by exporting iron ore. However, progress in this direction has been slow. Heavy capital investments are required for such plants and, because of various uncertainties, potential investors have been hesitant to go

**TABLE 6****Steel Consumption Growth Rates 1970-1985**

<b>Percent per annum</b>	<b><u>1970-1975</u></b>	<b><u>1975-1980</u></b>	<b><u>1980-1985</u></b>
<b>USA</b>	<b>3.8</b>	<b>2.2</b>	<b>2.3</b>
<b>Canada</b>	<b>4.0</b>	<b>4.1</b>	<b>3.9</b>
<b>Latin America</b>	<b>6.5</b>	<b>7.0</b>	<b>6.5</b>
<b>Oceania</b>	<b>5.3</b>	<b>4.7</b>	<b>4.6</b>
<b>ECSC</b>	<b>2.2</b>	<b>3.7</b>	<b>3.5</b>
<b>United Kingdom</b>	<b>1.7</b>	<b>3.4</b>	<b>1.8</b>
<b>Other Western Europe</b>	<b>4.2</b>	<b>6.0</b>	<b>5.7</b>
<b>USSR</b>	<b>5.7</b>	<b>4.9</b>	<b>3.2</b>
<b>Eastern Europe</b>	<b>6.1</b>	<b>5.6</b>	<b>4.2</b>
<b>Japan</b>	<b>5.3</b>	<b>4.3</b>	<b>3.5</b>
<b>India</b>	<b>10.6</b>	<b>7.1</b>	<b>6.8</b>
<b>China &amp; North Korea</b>	<b>9.7</b>	<b>8.5</b>	<b>8.3</b>
<b>Other Asia</b>	<b>12.0</b>	<b>9.1</b>	<b>6.9</b>
<b>South Africa</b>	<b>4.6</b>	<b>6.1</b>	<b>5.7</b>
<b>Other Africa</b>	<b>6.5</b>	<b>4.3</b>	<b>4.2</b>
<b>Middle East</b>	<b>9.4</b>	<b>7.7</b>	<b>8.4</b>
<b>WORLD</b>	<b>4.8</b>	<b>4.6</b>	<b>4.0</b>

**TABLE 7**

**Apparent Steel Consumption by Area**

Million metric tons

Years	World		U.S.A.	Canada	Latin America	Oceania	EEEC	U.K.	Other Western Europe
1955	270.49		162.26	5.03	7.01	3.51	42.65	18.99	11.55
1956	281.28		166.95	7.26	7.37	3.30	44.31	19.58	11.46
1957	293.51		171.18	5.79	8.72	3.52	47.32	19.21	12.33
1958	274.50		175.70	5.41	8.22	3.47	44.83	16.81	11.77
1959	306.33		187.27	6.20	8.59	3.52	49.23	17.35	13.90
1960	345.50		189.78	5.50	8.73	4.62	57.90	22.41	16.40
1961	354.35		189.90	5.76	9.61	4.61	58.64	18.83	17.65
1962	359.71		191.36	6.41	9.27	4.05	60.42	17.54	18.35
1963	384.07		192.40	7.12	9.92	5.13	62.10	19.79	19.08
1964	434.16		118.45	8.71	11.65	5.60	69.95	23.45	23.16
1965	456.92		124.39	10.51	12.47	6.72	66.62	23.25	25.10
1966	472.64		131.64	9.85	13.04	6.25	68.81	21.23	24.89
1967	497.15		126.30	9.24	13.23	5.52	71.17	21.26	25.54
1968	529.93		136.34	10.09	14.95	6.61	79.13	23.35	26.51
1969	574.24		137.18	10.72	17.30	6.90	92.09	24.16	32.26
1970	594.31		126.50	11.97	18.27	7.48	96.71	25.52	35.79
1975	750.70		152.50	13.50	25.00	9.70	107.60	27.60	44.00
1980	939.20		170.00	16.50	35.00	12.20	128.80	32.90	58.80
1985	1144.40		190.00	20.00	48.00	15.30	153.20	35.00	77.70
Years	USSR	Eastern Europe	Japan	India	Mainland China & N. Korea	Other Asia	South Africa	Other Africa	Middle East
1956	43.21	14.77	7.18	2.91	3.92	2.03	1.99	1.85	1.71
1956	46.75	16.23	9.03	3.85	5.57	2.02	2.07	1.85	1.51
1957	49.25	17.95	12.67	3.79	6.31	2.52	2.33	2.05	1.70
1958	52.63	19.56	16.25	3.75	13.56	2.03	2.32	2.16	2.63
1959	57.52	21.76	15.06	3.61	14.81	2.35	2.07	2.04	1.95
1960	63.03	24.71	15.46	4.87	18.38	3.04	2.16	2.22	2.29
1961	67.67	26.57	25.77	5.48	13.09	3.58	2.38	2.11	2.39
1962	73.54	27.99	22.92	6.50	9.32	3.81	2.38	2.09	2.69
1963	77.14	28.03	24.68	7.27	10.35	4.26	2.67	2.00	2.70
1964	79.82	30.45	31.34	7.32	11.64	4.74	3.41	2.29	2.82
1965	86.13	31.58	28.81	7.34	14.23	5.24	4.27	2.61	3.45
1966	91.06	33.81	33.59	6.90	15.00	5.14	3.31	2.34	3.89
1967	96.81	35.39	51.22	6.39	17.59	6.41	3.85	2.51	4.32
1968	101.60	36.99	50.39	5.85	18.73	7.19	4.02	2.91	5.27
1969	104.59	38.94	62.17	6.06	19.92	8.09	4.19	3.60	5.06
1970	109.89	41.95	70.57	6.15	22.20	8.17	4.87	4.19	4.98
1975	144.80	56.40	91.30	10.20	35.30	14.40	6.10	4.30	7.80
1980	183.90	73.10	112.50	14.40	53.00	22.30	8.20	5.30	11.30
1985	215.00	91.20	133.80	20.00	79.00	31.10	10.80	6.50	16.00

All quantities expressed in raw steel equivalent

ahead. Risks for investors located at a great distance from their vital source of supply have to be taken into account. Some ambitious international joint ventures have been reduced in size or shifted to finishing plant which requires less capital. For industrialised countries, importing iron ore and coal may offer a better way of spreading the risk of supply interruption than being bound to a single source of semi-finished products. Also, in the long term, such primary plants may be under pressure from local governments to add finishing facilities and convert to integrated operations in order to supply home markets and to export higher-value products. The concept of such a semi-finished plant may work only for a relatively short period if it is not based on new types of trans-national joint ventures giving reciprocal guarantees to partners from the quantitative as well as the price point of view.

Several such joint-venture projects for the construction of new plants overseas remain under study. An example of the way such an idea could be realised was the conclusion last year of a long-term contract between steel companies in Australia and Germany. Particular circumstances certainly favoured this deal, which was intended to match a surplus of semi capacity in Australia at a time when there was a corresponding deficit in the German market.

**Criteria for evaluating future consumption trends in developing countries and factors affecting feasibility studies for iron and steel**

It is when one considers figures such as those cited above for growth of steel consumption in the world and in Latin America that preparation of realistic plans for the steel industry and finding the means of putting them into effect assumes such importance.

What are the criteria for evaluating future consumption trends? They are easier to establish for the industrialised countries because there is usually available an abundance of historical data for all sectors of the economy which it is possible to project into the future. To take automobiles as an example: in Western Europe production, home, and export sales data are available for past years. Correlations can be made between automobile purchases and population growth, growth in disposable income, the share of income spent on automobiles, the trend to two-car families etc.

Projections of automotive demand can then be made for the future, which in turn must be translated into materials required to produce the vehicles. Steel, of course, is the main material used in the production of an automobile. But it is not enough simply to forecast overall steel consumption by the automobile industry of a particular country. Intelligent planning also requires (1) forecasting the required steel-product mix - in terms of hot-rolled sheets, cold-rolled sheets, bars etc., (2) an analysis of steel facilities which exist or will have to be built in order to produce the many different steel products used in automobile manufacture, and (3) evaluation of the present or anticipated technological changes which may affect the kind and quantity of the materials used.

In the developing countries, this planning and forecasting job is much more difficult. The background data needed by the forecasters may not be so readily available. The growth rates in many sectors of an economy - as demonstrated so well here in Brazil - may suddenly accelerate tremendously. Or, if the infra-structure of an economy does not develop as fast as planned, demand for steel will grow less rapidly than anticipated.

Therefore, when looking at the factors which affect facility planning for steel-making to meet future demand, the following successive steps are most important in making realistic assessments:

1. forecast of expected overall national economic growth
2. forecasts of future requirements for each major sector of the economy
3. analysis and projection of infra-structure required to support growth of each sector
4. translation of the needs of each sector into demand for the different types of steel products and planning for their efficient distribution
5. estimates of the size and type of steel equipment which must be built, the cost and source of the equipment, raw material needs, and personnel requirements.

All of these factors need to be considered carefully to ensure balanced development of the steel industry in each country.

One of the serious problems which confront the steel industry is that of environmental control. It is clear that in the years ahead, increasing amounts of scarce capital resources will have to be devoted to controlling environmental pollution, not only in the steel industry but throughout the economy. This fact emphasizes the crucial role of technology, for it is only through technological development that solutions will be found for controlling this pollution in a more effective and economical way. This is true not only at national level but also at regional and international level. Exporting pollution would be a short-sighted policy.

Another important fact to be noted in preparing realistic assessments of future steel facility requirements is the impact of what we describe as Indirect Trade - that is to say, the steel which is contained in the imports and exports of manufactured goods. Machinery and automobiles are probably the best examples of the impact of such trade on steel production. Imports of these products by developing countries means that the contained steel is imported instead of produced at home because such countries do not manufacture the particular machine or vehicle.

However, with the development of the industrial base, more and more steel is needed to meet the growing needs of local industry. If such local products can be exported, there is a further stimulus to local steel production. In certain stages of

economic development, however, growth in demand may outpace the ability to build new manufacturing capacity, thus stimulating imports until industrial development can catch up.

Finally, it is also clear that future trade currents may be profoundly affected by the discussions now taking place in world political, trade, and monetary arrangements. The traditional exchanges between less developed countries which export raw materials to industrialised countries which, in turn, supply manufactured goods, is becoming obsolete. The developing countries are naturally trying to improve their terms of exchange and diversify their exports. On the other side, the developed world is becoming more dependent on imports of primary commodities and in turn on stimulating exports in order to pay for them.

### Planning for, and Promotion of, the Use of Steel

Having to concentrate on production to meet their urgent local needs, developing countries have generally paid little attention to the promotion and marketing of steel. It is timely that this subject be on your Agenda. With the advancement of the world economy and progressive industrialisation, more recognition is being given to the fact that product development, changes in the product requirements, methods of using or distributing them, are important factors in marketing strategy.

In good marketing it is essential that each steel customer be able to buy what he needs when he needs it in the quality and quantities required. With industrialisation, the number, size, and chemistry of products which must be stocked increases enormously. This, of course, presents ever greater problems in production scheduling and inventory control.

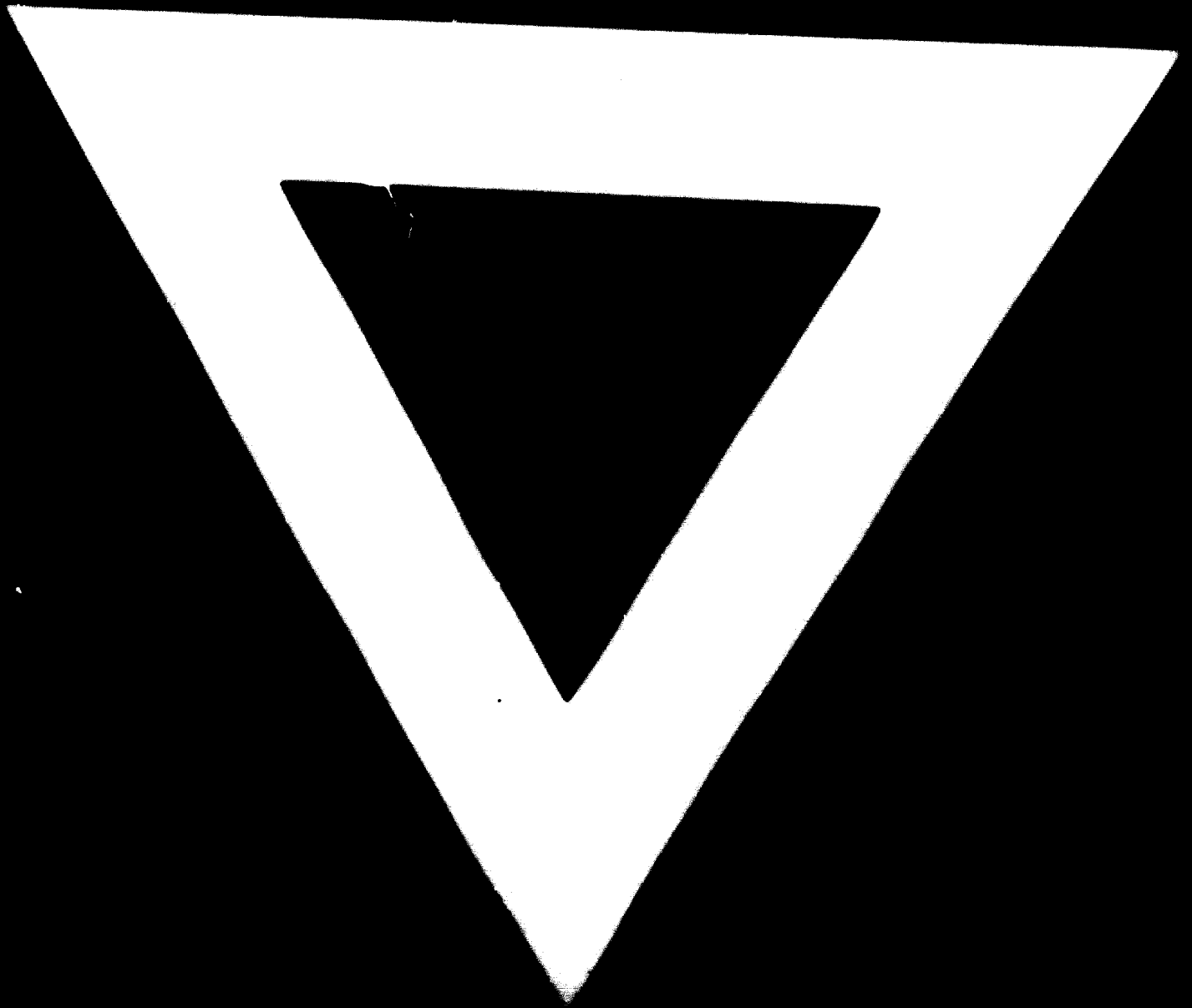
It is also at this stage that it becomes necessary to advertise and sell the advantages of steel over other products which may be available in the market for use in a particular application. For example, if tinsplate production is expanded, the advantages of tinsplate in certain uses over glass or plastic containers should be made known to the trade through advertising.

For many years the developing countries have looked to the industrialised world for technological assistance in the steel sector. In the field of marketing and promotion of the use of steel, too, the long experience and well organised programs of the larger steel producers and their affiliated organisations can be of direct and substantial assistance to developing steel industries. We at ISI may be able to serve as a communications channel in this field and would be glad to receive enquiries from interested organisations.

In this paper an attempt has been made to describe briefly the kind of work we are doing at IISI, to comment on the important problems facing world steel producers, and to show the mutual interests which exist between our respective organisations. We sincerely hope that IISI, with the cooperation of its members, may help to contribute to finding sound and constructive solutions for the welfare and growth of the whole steel industry in a world-wide framework.







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