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15972-E

Distr.
LIMITED

UNIDO/PC.127
18 November 1985

ORIGINAL: ENGLISH

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Ad-Hoc Expert Group Meeting on Strategies
for more Integrated Development between
the Iron and Steel and Capital Goods Sectors

Vienna, Austria, 16-18 October 1985

REPORT *

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V.85-36290

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INTRODUCTION

1. The Ad-Hoc Expert Group Meeting on strategies for more integrated development between the iron and steel and capital goods sectors was convened at Vienna, Austria, from 16 to 18 October 1985. The meeting was attended by 8 participants.

Background

2. The Lima and New Delhi Declarations emphasize that developing countries should lend support to the concept of an integrated and multi-sectoral approach to industrial development, whereby the technological and socio-economic implications of the process are fully taken into account at both the planning and implementation stages.

3. The Lima Plan of Action stresses the importance for developing countries to establish basic industries, such as the iron and steel and the capital goods (mechanical and electrical engineering) and to provide the necessary link between them and the different industrial sectors.

4. The three Consultations on the iron and steel industry so far convened have stressed the need for an integrated development between the iron and steel and the capital goods sectors. The First Consultation had as one of its conclusions, the need to promote local production of steel and a growing range of capital goods. The Second Consultation recommended that account be taken of the up and down-stream aspects of the steel industry's development projects, especially the infrastructure and manufacture of capital goods. At the Third Consultation, it was pointed out that it was impossible to envisage any development in the iron and steel industry without considering its links (both present and future) with the engineering industry and, in particular, with the capital goods industry. ^{1/}

5. The Industrial Development Board, at its nineteenth session decided that the Fourth Consultation on the Iron and Steel Industry be held during the 1986 - 1987 biennium. ^{2/}

^{1/} ID/WG.374/2 Add.1 Dossiers 1990 IV Para.24

^{2/} ID/B/350, para 89. 3(e).

Objectives

6. The objectives of the meeting were:

(a) To analyse the present situation and prospects of development of the iron and steel industry;

(b) To analyse the possibilities of promoting more integrated development of the iron and steel industry with other sectors of the economy, especially with capital goods and agricultural machinery;

(c) To identify possible models of an integrated approach to the development of the iron and steel industry and other sectors of the economy;

(d) To identify main aspects to be considered in planning the integrated development of the iron and steel and capital goods sectors and other sectors of the economy;

(e) To analyse possibilities of co-operation to achieve a more integrated development of the iron and steel and the capital goods sectors at the regional and subregional levels.

Documentation

7. Each participant was requested to write a paper on the situation of the iron and steel industry in his/her country, from the viewpoint of the interrelations between the iron and steel industry and the other sectors of the economy, in order to provide the meeting with further background information on which to base its discussions and help to achieve its objectives. The documents issued for the Ad-Hoc Expert Group Meeting are listed in Annex II.

I. AGREED CONCLUSIONS AND RECOMMENDATIONS

8. In the light of the objectives and themes examined by the Ad-Hoc Expert Group Meeting on Strategies for more integrated development between the iron and steel and capital goods sectors, the following conclusions and recommendations were reached:

(a) There is an important need for developing countries to develop an integrated approach between the iron and steel industry and the capital goods sector as a basis for a more independent and self-reliant economic and social development. Such a strategy, to be successful, will have to be anchored on the specific conditions and possibilities of each region and the national economies of the region, namely: raw materials availability, levels of technical development and training of manpower, choice of appropriate technologies, and the satisfaction of the basic needs of the population.

(b) According to the economic and social conditions of the majority of the developing countries, the iron and steel industry of these countries has to be oriented towards providing the basic inputs to the following main sectors:

- i) Building and construction activities;
- ii) Manufacturing of agricultural and agro-industry machinery;
- iii) Manufacturing of transport equipment mainly railways;
- iv) Manufacturing of mining equipment;
- v) Machine tools;
- vi) Manufacturing of essential spare parts for the functioning of the industrial sector.

(c) The linkage between the iron and steel industry and the capital goods and other sectors of the economy is not an automatic process; therefore, this linkage needs to be planned on a long term basis in order to achieve integrated development of these industries.

(d) There is not one single model for planning an integrated approach between the iron and steel sector and other sectors of the economy. There are two possibilities for planning: a) demand-pull, i.e. integration considered from the point of view of capital goods or dominant sectors of the economy; and b) demand-push, i.e. starting from the iron and steel industry and expanding and diversifying to the capital goods and/or other sectors. Generally, however, there will be an interplay between the demand-pull/demand-push processes which have to be adjusted as the industry develops.

(e) The iron and steel industry produces a less diversified product mix which strongly contrasts with the required varieties of inputs associated with the development of the capital goods sector. National planning and policies must therefore emphasize on regional facilities in co-ordinating future activities in order to meet the diversified demand of the capital goods sector.

(f) To complement the iron and steel industry, facilities for core industries such as foundry, forging, heat treatment and metal forming, have to be planned and implemented in order to create the appropriate links with the capital goods sectors.

(g) It is necessary that the process of planning in developing countries favours the development of integration between iron and steel facilities on the one side, and the iron and steel industry with capital goods activities on the other. In order to achieve this, a strong political will is needed.

(h) Co-operation between developing countries and also between developing and developed countries has to be seen within the framework of achieving a more integrated development between the iron and steel industry and the capital goods sectors at the national, regional and subregional levels. Such co-operation should be based mainly on long-term arrangements of mutual advantages and benefits. An important feature of these arrangements should be the increasing use of the buy-back principle. UNIDO should play an important role in assisting developing countries in strengthening the co-operation between them at the regional and subregional levels as well as increasing their negotiating capacity.

(i) In order to achieve successful results in the integrated development of the iron and steel and the capital goods sectors in the majority of the developing countries and in the least developing countries in particular, it is of great importance that special emphasis be given to the technological and training aspects as a basis to master this integrated development. Emphasis should also be given to the standardization of the capital goods sectors avoiding in this way an unnecessary diversification which might cause difficulties in planning the iron and steel industry to answer the needs of the capital goods sectors.

(j) Due to the size and important financial constraints of most developing countries, when selecting appropriate technological alternatives, special attention should be given to the mini-plant route. In the case of small countries mini-plants are a good means of entry into the iron and steel sector. However, mini-plants can not substitute other routes in the supply of a large variety of steel products needed for a diversified capital goods sector. Therefore, the blast furnace route should also be considered in the selection of the most appropriate technology in developing countries.

(k) It is recognized that an integrated and self-reliant development can only be achieved through educational and training programmes which could enable the mastering of the whole subsystem of production conformed by the iron and steel and mainly the capital goods sectors. It is suggested that well-defined educational and training courses should be formulated before the implementation of the projects. These programmes should be oriented not only towards the personnel of operation and maintenance, but also towards the managers, planners and policy makers.

(l) It is recommended that UNIDO should continue to develop studies, hold consultations and technical assistance at the regional and subregional levels that will contribute to increase the linkages between the iron and steel and the capital goods sectors.

II. ORGANIZATION OF THE MEETING

Opening of the meeting

9. The Ad-Hoc Expert Group Meeting was opened by the Head of the Negotiations Branch of UNIDO. He pointed out that the outcome of the discussions would serve as a main input to the Fourth Consultation on the Iron and Steel Industry, which will be held at Vienna, from 9 to 13 June 1986.

10. He indicated that in 1982, UNIDO organized the Third Consultation on the Iron and Steel Industry in Caracas, Venezuela. He pointed out that the consultation meeting stressed the basic problems of training, finance and the entry of newcomers into the steel sector through the mini-steel plant technological route.

11. He emphasized that for the Fourth Consultation one of the issues to be presented is related to the analysis of the possibilities and strategies to develop an integrated approach to increase the links between the iron and steel industry and the capital goods sectors and other sectors of the economy. He stressed that the selection of this key issue was based on the need to reduce the external vulnerability of the developing countries, due to the great fluctuations of the world market of steel and to the need to build a more coherent national productive system in developing countries.

Election of officers

12. Drafting groups were elected among the participants to prepare the different draft conclusions and recommendations. For the drafting of the conclusions and recommendations related to aspects of strategies and policies, C.H. Cabrera (Peru) and D. Ndlela (Zimbabwe) were elected. For the conclusions and recommendations referred to planning, P. Judet (France) and O.Vera Gil (Cuba). For technology and training, A.K. Mitra (India) and K. Antlinger (Austria) and, for industrial co-operation, M. Scherb (Austria) and O. Mesaros (Czechoslovakia).

Adoption of the agenda

13. The following agenda was adopted:

- 1) Address by Mr. G. Latortue, Head of the Negotiations Branch, to the Ad-Hoc Expert Group Meeting.
- 2) Presentation of the discussion paper by the secretariat.
- 3) Presentation of the present situation of the iron and steel industry by Mr. B.R. Nijhawan, Chairman of the Iron and Steel Task Force.
- 4) Presentation of the relations between the iron and steel and the capital goods industries at the world wide level by Mr. P. Judet, Director of Research Institute, IREP, University of Grenoble.
- 5) Presentation of the different country-case studies by the participants.
- 6) Discussion of the different presentations.
- 7) Conclusions and recommendations oriented to promote more self-reliant and integrated development of the iron and steel industry with the capital goods industries in developing countries.

Adoption of the conclusions and recommendations

14. The conclusions and recommendations of the Ad-Hoc Expert Group Meeting were adopted by consensus at the closing session on 18 October 1985.

III SUMMARY OF DISCUSSIONS

Presentation of the discussion paper

15 A member of the UNIDO secretariat presented the discussion paper prepared by the secretariat. He pointed out that the economic growth of developing countries in the last two decades can be attributed mainly to the process of industrialization. However, industrialization had not been able to contribute, in a decisive way to the solution of the problem of unemployment, nor to the improvement of income distribution in those countries. He stressed that many models of industrialization in developing countries had proved incapable of creating a coherent national productive system.

16. He emphasized that the present crisis, the restructuring which is taking place at the world-wide level and the protectionist practices of developed countries, created an urgent need for new orientation in the development of the industrial sector in developing countries, based on a more integrated linkage between the industrial sector and other sectors of the economy. In that perspective, the iron and steel industry has an important role to play in creating a coherent national productive system. The industrialization process in developing countries must attempt to promote the links between the iron and steel industry and the capital goods sectors.

17. He indicated that the general trends in the iron and steel industry showed that the developing countries were the only ones experiencing a positive growth rate. However, the possibilities of increasing their production capacity would have strong constraints due to financial and also technological difficulties. That situation could result in a deficit of production in developing countries of more than 30 million tons in 1990, and as much as 45 million tons if China and the Democratic Republic of Korea were included.

18. The development of an integrated approach between the iron and steel and the capital goods and the other sectors of the economy, he said is an important alternative for developing countries to create a more coherent productive system.

19. He indicated that the planning of an integrated approach has to take into account all possible links between the iron and steel and other sectors, the differences between countries, the problems due to little or lack of national infrastructure, as well as the level of production of capital goods and the degree of technological dependence.

20. He pointed out that the integrated approach had to take advantage of the technological changes that were taking place in order to select technologies that better meet the size, resources and capabilities to master the technology in developing countries. In that perspective, mini-steel plants could play, for newcomers or countries of small size, an important role in increasing the links between the iron and steel industry and other sectors of the economy.

General discussion

21. The discussion of the interrelations between the iron and steel industry and the capital goods sectors began by examining the roles they played in the industrial development and the problems that they are facing. It was pointed out that, historically, in developed countries there was a strong link between the steel production and the capital goods sectors. However, it was emphasized that the present crisis in some developed countries had weakened the structural links between the iron and steel and the capital goods sectors.

22. Several participants stressed that, in many developing countries the development of the links between the iron and steel and the capital goods sectors was not really planned. It was pointed out that in developing countries the iron and steel production developed faster than the capital goods sectors, thus creating in some cases important imbalances at the national, regional and subregional levels. It was mentioned that the institutional organization in many developing countries was a serious constraint in establishing the necessary co-ordination between the iron and steel industry and the other sectors of the economy for achieving an integrated development.

23. Some participants drew attention to the tendency of some developed countries to increase the diversification of their iron and steel industry, through the production of capital goods mainly for the iron and steel, and electronics industries. Also that in the developed countries there was a tendency to decrease the ratio of production of iron and steel to that of machinery and equipment. One participant emphasized that the production of capital goods for the iron and steel industry had a higher rate of return on capital than that of iron and steel.

24. Many participants indicated that experience had shown that the iron and steel and the capital goods sectors were of primary importance for the establishment of a country's technological and infrastructural base. It was stressed that strategies and policies which developing countries would have to adopt in order to promote a more integrated development between the iron and steel and the other sectors of the economy, would have to depend on a number of factors, e.g. the country's size, national resources, economic structure, availability of infrastructure and trained manpower, and possibilities of co-operation at the regional and subregional levels.

25. Several participants emphasized that foundries and the iron and steel industry are of prime importance for the initial development of the capital goods sectors in developing countries. It was suggested that, in determining the strategies of development of the iron and steel industry in developing countries, special emphasis should be given to the production of steel products for the following sectors and activities: construction; manufacturing of agriculture tools, implements and machinery; manufacturing of transport equipment especially railways; machine tools; and manufacturing of spare parts needed for the normal functioning of the industrial sector.

26. It was suggested that, in the overall framework of industrial development planning of developing countries, there was a necessity to promote the links within the industrial sector and with other sectors of the economy, via the integrated development of the iron and steel with the capital goods sectors.

27. It was generally agreed that in planning an integrated development between the iron and steel industry and the capital goods sectors there was the necessity to take into account the demand-push and the demand-pull in order to increase the down-stream and up-stream integration.

28. It was pointed out that the need for regional planning and co-operation in the field of iron and steel and capital goods production are crucial aspects, not only for achieving an integrated development, but also to avoid underutilization of installed capacities.

29. It was suggested that, in planning the establishment and expansion of production capacities and for enhancing technological autonomy of the iron and steel and the capital goods sectors, developing countries should be able not only to reproduce the acquired technology, but mainly to develop design capabilities, adapt and improve the imported technologies, and generate new ones suited to the requirements of the developing countries.

30. It was stated that in some developed countries science, education and training had made a significant contribution to the development of both the iron and steel and the capital goods sectors. In these countries an extensive system of professional high schools and vocational training institutions provided the iron and steel and capital goods sectors with trained technicians and qualified workers.

31. It was emphasized that, in selecting the most suitable technological alternative for the establishment in a developing country, of an iron and steel or capital goods plant, the selected technology would only lead to success if more independent economic and social development was reached. It was pointed out by some participants that the mini-plant route could be an adequate technological alternative for many developing countries and especially for newcomers into the sector. It was stressed that standardization of the production of capital goods in developing countries was necessary in order to facilitate its integration with the iron and steel industry.

32. It was indicated that co-operation between developed and developing countries and among developing countries themselves to implement projects in the fields of iron and steel and capital goods, could not be conceived as a purely economic and technical undertaking. There is the need to consider the social context and the specific economic and technical conditions of the developing country where the project is going to be implemented. Some participants considered that UNIDO has an important role to play in promoting industrial co-operation in the field of iron and steel and capital goods based on mutual advantages and benefits between partners.

ANNEX I

List of Participants

Mr. Cesar Humberto CARRERA	PERU	Chief Adviser to the Ministry of Economy and Finance
Mr. Orlando VERA GIL	CUBA	Expert in iron and steel industry, Ministry of Heavy Metals Industry
Mr. Pierre JUDET	FRANCE	Director of Research Institute, IRKP, Grenoble University and specialist in iron and steel
Mr. O. MESAROS	CZECHOSLOVAKIA	Head of Section, Foreign Trade and International Economic Organizations
Mr. Daniel NDLELA	ZIMBABWE	Lecturer in industrial development at the University of Zimbabwe
Ms. Margit SCHERB	AUSTRIA	University of Vienna
Mr. Kurt ANTLINGER	AUSTRIA	Chief, RSF 4, VOEST-ALPINE
Mr. A.K. MITRA	INDIA	Regional Adviser, ECA/UNIDO

ANNEX II

List of Documents

Prepared by the UNIDO Secretariat

Discussion Paper: **The Iron and Steel Industry: Present situation, prospects and the need for more integrated development of the iron and steel and capital goods sectors.**

Prepared by participants

- Peru: **Aspects on the relation between the iron and steel and the capital goods sectors in Peru**
- Cuba: **Integration between the iron and steel and capital goods sectors in Cuba.**
- France: **The integrated development between the iron and steel industry and the capital goods sectors in France.**
- Czechoslovakia: **Integrated development of the iron and steel industry and the capital goods sectors in Czechoslovakia**
- Zimbabwe: **Prospects of an integrated development of the iron and steel industry and capital goods: East and Southern African countries.**
- Austria: **The integration between the iron and steel industry and the capital goods sector in Austria.**