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United Nations Industrial Development Organization

Distribution
LIMITED

ID/WG.14/66
14 August 1968

ORIGINAL: ENGLISH

Second Interregional Symposium
on the Iron and Steel Industry

Moscow, USSR, 19 September - 9 October 1968

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A-10-1

REVIEW OF THE ACTIVITIES OF THE UNITED NATIONS
IN THE IRON AND STEEL INDUSTRY
IN DEVELOPING COUNTRIES ✓

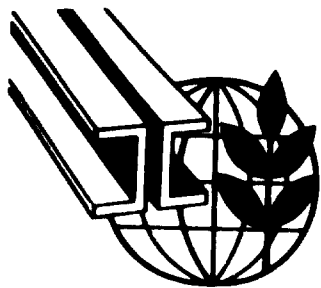
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UNIDO Secretariat

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REVIEW OF THE ACTIVITIES OF THE UNITED NATIONS
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SUMMARY

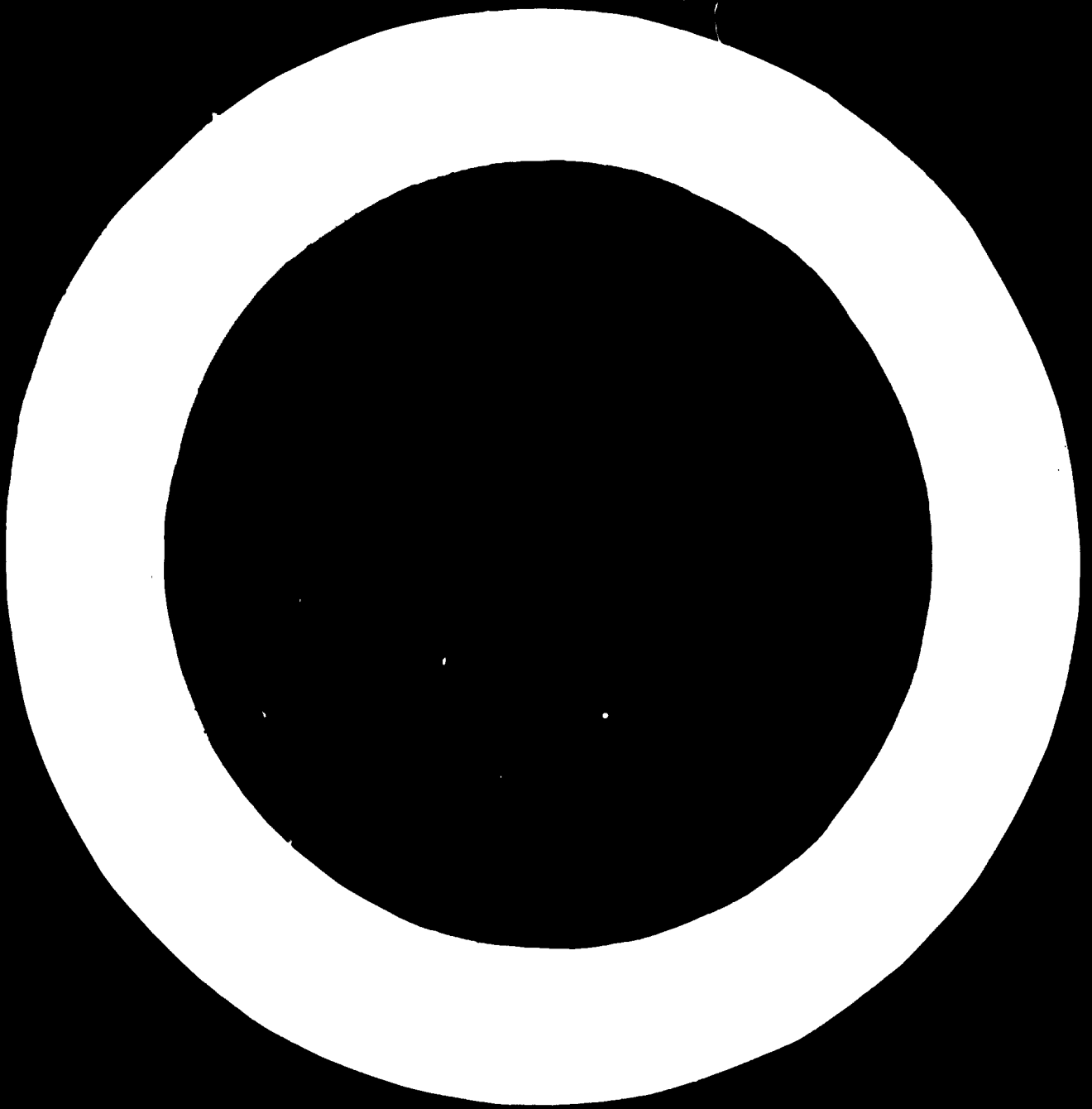
The paper assesses both the operational and non-operational activities of the United Nations in the iron and steel industry during the period after the First Interregional Symposium in Prague and Geneva in 1963 on the application of modern technical practices in the iron and steel industries of developing countries.

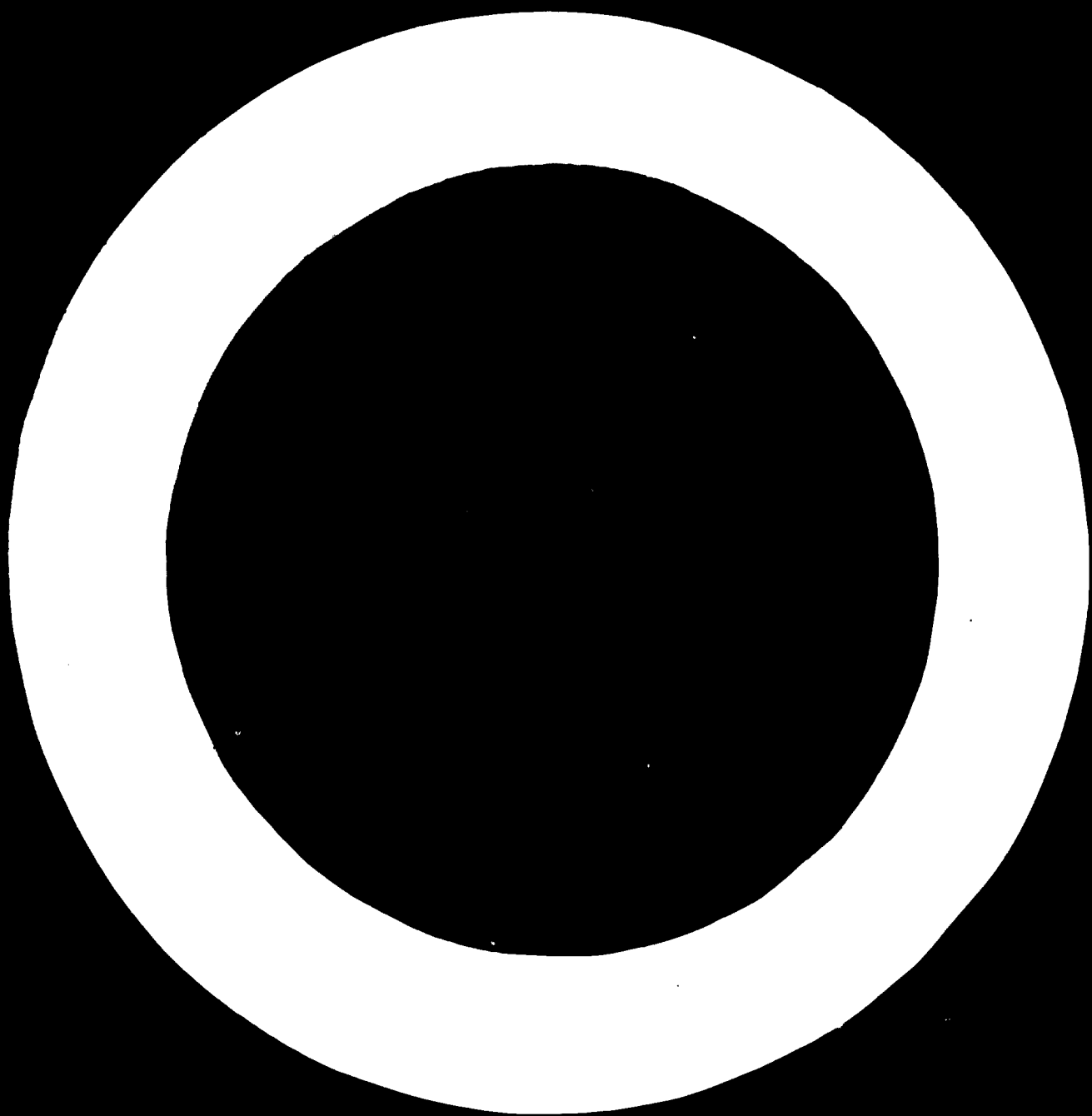
Since the First Interregional Symposium over seventy experts and a number of consulting bodies have been sent to developing countries. Projects have ranged from pre-investment studies to assistance on the quality control of rolled steel plates. These are listed according to their respective regions of location and date of origin.

A bibliography has also been compiled of the publications of the non-operational activities of the United Nations relating to iron and steel activities issued as a result of studies, symposiums and expert group meetings under the auspices of the United Nations Regional Economic Commissions, the

* This is a summary of a paper issued under the same title as ID/WG.14/66.

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International Labour Office and the Centre for Industrial Development, and, more recently, the United Nations Industrial Development Organization (UNIDO). These documents are listed according to the organization and date of issue.

Most of the questions affecting developing iron and steel industries are reflected in these studies. The publications relating to the availability of raw materials are specified and assessed. A suggestion has been made that more attention might be paid to examining energy and water supplies to steel works. The studies carried out relating to consumption and demand are also specified and assessed, together with other important topics such as regional and inter-regional co-operation, trade in steel, the role of small steelworks and non-traditional methods of production.

The UNIDO in-plant training programme for iron and steel engineers and technologists from developing countries at the Zaporozhye iron and steel plant in the USSR is described. This programme consists of practical training in all departments of a large integrated iron and steel plant.

The recommendations made at the International Symposium on Industrial Development held in Athens in December 1967 in the field of iron and steel are reviewed. These recommendations will, if followed, expand the activities of the United Nations in this field. The specific recommendations made to UNIDO for its future activities in iron and steel are outlined.

The list of United Nations' operational activities and bibliography of studies arising from the non-operational activities in iron and steel will, together with the review of training programmes and fields of future UNIDO activities, assist both developing and developed countries in understanding more fully the work of the United Nations in this particular industrial sector.

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It is certainly well founded to say that the activity of the United Nations in the iron and steel industry has become wider and more diversified during the period elapsed since the first United Nations interregional symposium on the application of modern technical practices in the iron and steel industry of the developing countries organized by the Centre for Industrial Development from 11 to 26 November 1963 in Prague and Geneva.

Three main forms of technical assistance have been crystallized during this period. Firstly, operational activities, which entail the direct technical assistance through sending experts and expert teams to developing countries. Secondly and thirdly, non-operational activities, such as studies, symposiums, expert group meetings, and also training courses and study tours.

Operational activities - field experts and expert teams, etc.

The attachment No. 1 comprises a complete list of experts, expert teams and consulting firms engaged during this five years' period to deal with specific problems or to handle particular situations on the spot. Unfortunately, there is no satisfactory measure to express the real impact of all these activities on the economy of the developing countries. Despite these uncertainties we may safely say as a minimum that these experts have successfully contributed to a clearer definition of the problems and situations as well as of the options available for action in the countries visited. At the same time we could refer to a great number of cases when action with measurable economic benefit followed the exploratory work of the United Nations experts. It is expected that the Second Interregional Symposium on the Iron and Steel Industry will broaden the scope of the technical assistance, will identify ways and means how to make the traditional forms more effective and define new complementary forms, if needed, of larger single projects in this industrial sector.

Non-operational activities - studies, symposiums, expert group meetings, etc.

The reports and observations made by field experts often initiate studies and surveys directed towards the actual problems encountered by countries creating or expanding their own iron and steel industries. These activities are sometimes considered as unnecessary, or at least less efficient, ways of using United Nations financial resources. The view has been expressed that such "paper work" is not a real help to developing countries. The publication of studies or other professional literature cannot, of course, substitute the direct forms of

technical assistance, but the reliable information is an indispensable instrument for a well oriented action. It is not accidental that in any scientific or technical publication devoted to the problems of the developing countries and of the world economy the UN reports represent a significant and authentic source. In the attachment No. 2 we present a list of United Nations documents dealing with the iron and steel industry.

As it may be expected, the studies carried out under the auspices of the Regional Economic Commissions are rather complementary, not only geographically, which is quite natural, but to a large extent also thematically. In its publications the Economic Commission for Europe Steel Committee relies upon the experience and achievements of the first steelmaking countries of the world. These publications represent, therefore, an indispensable source of information regarding the development of this industry. At the request of the Centre for Industrial Development one ECE paper was devoted to "World trade in steel and steel demand in developing countries." This paper was prepared for the International Symposium on Industrial Development held in Athens in December 1967.

In addition to studies on specific subjects the ECE also publishes periodical issues containing fundamental data about the production, trade and other aspects of the iron and steel industry of the ECE members. The publication of similar periodicals may duly be considered by other Regional Economic Commissions. Such publications could provide continuous information on the iron and steel industries of these regions.

A large number of studies was devoted to the location, quantity, type and grade of ore and coal of the developing countries. This interest is understandable although the favourable raw materials situation raised sometimes premature expectations regarding the feasibility of integrated iron and steel works. Some of the publications covering these topics are given below:

"Review of the iron and steel industry in the ECAFE region 1960-1965"
E/CN.11/I+NR/Sub.2/1.37 issued 1967.

"Development of the steel industry in East and Central Africa 1965"
E/CN.14/INR/87/Add.2 issued 1965

"The Liberia Steel Project" prepared by W. S. Atkins and partners
(demand for West Africa), issued 1967.

"The iron and steel economy of Latin America"
E/CN.12/727 issued 1966.

It appears that in some of the reports the problems of energy and water supply have not always received the appropriate share of attention. Obviously modern iron and steel production cannot exist only with coke and iron ore, it needs large quantities of water, electric power, fuel as well as refractory materials. When resources for the iron and steel industry are evaluated, therefore, these factors should be fully taken into account.

The question which has had the most detailed consideration is that of consumption and demand of steel. The low figures of the current steel consumption and demand and the high capacity rates of internationally competitive, integrated iron and steel plants are the most significant phenomena studied in connection with the steel development in the developing countries. Even if we consider that the demand may increase in these countries rather drastically under favourable conditions, and there are several options in the level of economical steel production and integration, the accurate assessment of the demand and the optimum economic way to meet it, is and continues to be the basic problem of any action geared to develop the steel industry in any country. In this connection the recommendation on regional and subregional co-operation in steel production is a returning element in the papers and reports prepared by UN experts. The First Interregional Symposium on Iron and Steel in 1963 gave due attention to the technical and economic benefits expected from such co-operation. The studies devoted to regional and subregional co-operation evidently do not produce specific solutions for all cases. Sometimes they just emphasize the necessity to co-operate but in other cases they offer a precise solution.

A few documents from the rather long list of the papers relevant to this problem are mentioned below:

"ECA study on the industrialization and economic co-operation in the North African subregion"

"Regional co-operation - integration of steel production in some of the less developed countries of the ECAME region"
E/CN/11/I+NR/Sub.2/L.38 issued 1967.

"Present technology and the obstacle of its incorporation in the iron and steel industry of Latin America"
ST/ECLA/Conf.23/L.34.

"Report on the Survey Mission on the development and expansion of the iron and steel industry in South-East Asia"

"Suggested principles governing the development and co-ordination of subregionally based industries in West Africa"

There was a general agreement also at the International Symposium on Industrial Development^{1/} that the size of the markets of the developing countries is one of the most important factors inhibiting the establishment of the iron and steel industry. It may be worthwhile to mention here that three types of solution to this problem were discussed:

- (i) The organization of subregional markets like those currently being contemplated in East and West Africa, in which multinational co-operation is obtained by an equitable distribution of different industrial projects;
- (ii) The addition of a further dimension to the markets by envisaging from the beginning an excess capacity for exports;
- (iii) Through specialization of plants established in different countries, which would reduce the minimum market requirements and would permit complementarity through interchange of their specialized products.

It was pointed out that in each of these cases, but especially in the last one, a considerable number of techno-economic studies were necessary for each specific case, and that UNIDO might assist in this fruitful field of activity.

Much attention has also been paid to trade in steel and with special regard to the participation and role of the developing regions in the world trade of steel. In this respect the ECE study "World trade in steel and steel demand in developing countries" is particularly relevant.

The future of small steel plants and their role in the iron and steel industry of the developing countries is carefully examined not only in general papers on the iron and steel industry, but in some studies written especially on the problem. One such paper, "Economies of scale at small integrated steel works" was submitted by EGIA to the International Symposium on Industrial Development. In the course of the resulting discussion on this topic several delegations referred to the advantage, in small markets, of starting steel-making activities by stages; first, producing a few products for which there

^{1/} Report of the International Symposium on Industrial Development held in Athens 29 November-19 December 1967, ID/E/P1 (ID/CONF/1/62) 2 February 1968 by UNIDO, Vienna.

is a greater market and adding more products later, as well as integrating the operations by steps. One of the most commonly practised procedures is to start with a semi-integrated scrap melting and rolling mill producing mostly bars, light shapes and skelp. Scrap can be either of local origin or imported, if obtainable at reasonable prices. Another possibility that was mentioned was making flat products, starting from imported slabs, to roll and produce galvanized sheet, tinplate and sheet. Finally, it should be emphasized that the small iron and steel plants are also very important as centres for training personnel.

A number of studies have examined the non-traditional methods for treating iron ore and steelmaking which are not widely spread in the developed countries and also new steelmaking techniques, such as continuous casting, which have been widely adopted by developing countries. Absence of coking coal and availability of relatively cheap oil, gas and electric power made some countries turn to such processes as direct reduction of iron ore, melting in electric low-shaft furnaces and use of charcoal. United Nations papers have covered these accordingly. Some papers relevant to this subject may also be mentioned.

"Growth pattern of iron and steel industry in developing countries"
CIB/VI/Background Paper No. 2 issued 1966.

"Problems requiring technological investigations in the iron and steel industry of Latin America and reflections of necessary action"

ST/ECLA/Conf.23/L.44 issued 1966.

"Review of the iron and steel industry in the ECAFE region 1960-1965"
E/CN.11/I+NR/Sub.2/I.37 issued 1967.

"Economic aspects of continuous casting of steel"
STEEL/Working Paper No. 328 and Addenda issued 1967.

In-plant training of engineers and technicians

Both the International Labour Office and UNIDO have undertaken projects in this field. UNIDO has established the regular courses for training iron and steel engineers and technicians from developing countries at the Zaporozhye plant (USSR). It came into being in 1965 when twenty five UN Fellows from nine countries attended the Zaporozhye plant. The training programme was organized by UNIDO in co-operation with the Government of the Ukrainian Soviet Socialist Republic to bridge the gap between the fundamental knowledge gained by the participants at university and its application in industrial practice.

The programme consists of theoretical training on general steelmaking matters and also practical experience in the specialized departments of the large integrated works. Joint practical training was also organized on repair problems, scheduling of plant activities, maintenance work including matters dealing with works' reconstruction, the organization of technical training and finally, operations' planning and management, purchases and sales, financing, manpower, structure of managerial control of an integrated iron and steel plant, data compilation and its utilization for better plant performance, economic considerations and structure of the production costs. In order to take full advantage of facilities provided by the steel plant, it was considered that Fellows should work on the shop floor.

The three previous six months' on-plant training programmes for engineers and technicians in the iron and steel industry from developing countries, in 1965, 1966 and 1967 have been successfully completed. Thirty seven Fellows from twelve countries in 1966 participated in these programmes, whilst forty six Fellows from fifteen countries participated in the third in-plant group training programme which started in May 1967. The fourth training programme (forty five participants) began on 15 May 1968 and will last for about five months.

The use of such training programmes for specialists from developing countries is confirmed by the experience of the Zaporozhye courses, and now UNIDO is undertaking efforts to organize other training programmes on iron and steel in other countries with highly developed steel industries.

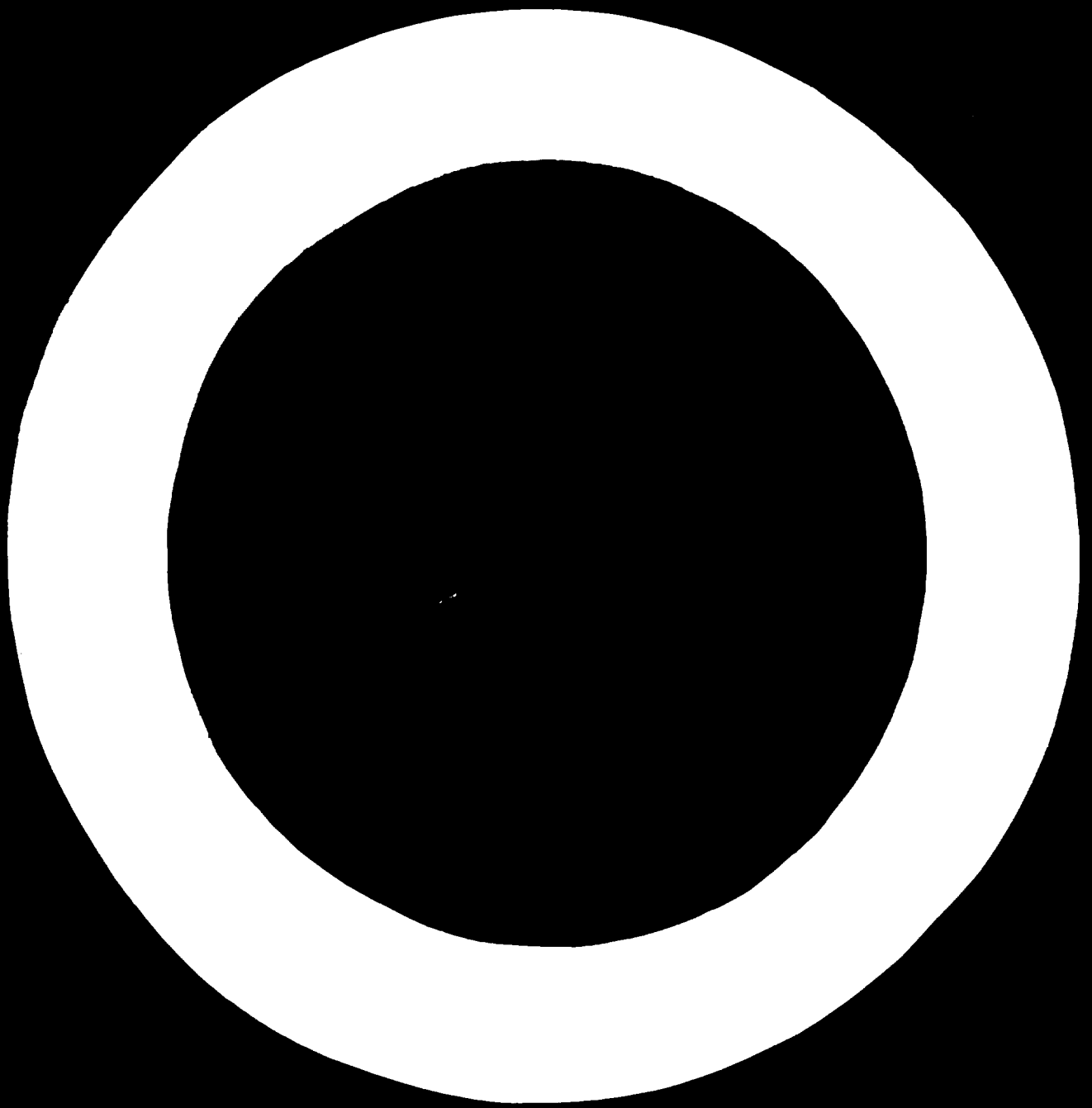
Recommendations by the International Symposium on Industrial Development

The International Symposium on Industrial Development held in Athens *inter alia* reviewed the situation, problems and prospects of the iron and steel industry particularly in the developing countries, and in this framework also the special functions to be carried out by the UN. The recommendations adopted by the Symposium, if followed, will certainly further expand the activities of the whole United Nations system in this particular area. The attention of UNIDO was particularly drawn to the following field of activities:

- (i) The appraisal of the potential for producers of iron and steel in different regions in collaboration with regional bodies;

- (ii) Collection and dissemination of information on research and development work, including pilot plants, feasibility and pre-investment appraisals;
- (iii) Assistance in studies relating to consultancy and project engineering services for the establishment of steel plants in suitable developing regions and collaboration in the development of national consultancy services for project engineering;
- (iv) Studies on the international and interregional trading of iron ore with a view to the planning of the industrial growth in developing countries;
- (v) Assistance in formulating the choice of production technology related to approximate product mix;
- (vi) Assistance in the negotiations of developing countries with the international finance institutions as well as in assessing capital availabilities;
- (vii) Assembling and making available information from the experience of the developing countries in the steel industry.

The International Symposium on Industrial Development gave emphasis to certain United Nations activities in the iron and steel industry and suggested new aspects to this work. The current preparation for the Second Development Decade will offer further opportunities to use the past experience, and the resources and energies of the United Nations system to serve the development of the iron and steel industry even more effectively than during the period just reviewed.



ANNEX 1**LIST OF UN EXPERTS IN THE IRON AND STEEL INDUSTRY
(1963 - 1968)****AFRICA**

Country	Subject	Experts	Year
Tunisia	Promotion of the Primary Metal Industries	CID Expert	1964
UAR	Promotion of the Primary Metal Industries	CID Expert	1964
Tunisia	Help in Primary Metal Industries	CID Expert	1965
Zambia	Steel Market Research	CID Expert	1965
Algeria	Study of using mineral resources for development metallurgical industry	CID Expert	1966
Congo (Kinshasa)	Assistance in request to Special Fund for Iron and Steel Project	CID Expert	1966
Guinea and Mauritania	Investigation of the comparative advantages for the location of an integrated Iron and Steel Plant in West Africa	Three Staff members of PCA	1966
Gabon and (Iran)	Submission of a report on direct reduction iron ore to sponge iron in Mexico	UNIDO team	1967
Liberia	Techno-economic study of possible sources of financing for an integrated iron and steel plant	Consultative firm	1967
Liberia	Study on feasibility of the establishment integrated iron and steel plant	UNIDO Advisor for iron and steel projects	1967
Liberia	Feasibility Study on the iron and steel industry	PCA staff member	1967

Country	Subject	Experts	Year
Morocco	Metallurgical industries exploratory mission	UNIDO team	1967
Nigeria	Study on iron and steel market	UNIDO expert	1967
NAR	Help in preparing a study on Iron and Steel in the NAR	Two staff members of ECA	1967
Congo (Brazzaville)	Study on feasibility to develop iron and steel industry	UNIDO Expert	1968
Liberia	Help in establishment of the integrated iron and steel plant	UNIDO Expert	1968
Mali	Help in development of metallurgy	UNIDO Expert	1968
NAR	Feasibility of using black sands	UNIDO Expert	1968
<u>ASIA AND THE FAR EAST</u>			
India	Promotion of the Primary Metal Industries	CIP Expert	1964
Iran	Promotion of the Primary Metal Industries	CIP Expert	1964
Japan	Promotion of Steel Smelting and Foundry Production	CIP Expert	1964
Singapore	Research of Metallurgy	CIP Expert	1964
South Korea	Promotion of the Primary Metal Industries	CIP Expert	1964
India	Promotion of Steel Foundry	CIP Expert	1965 1966
Singapore	Promotion of Steel Production	CIP Expert	1966

Country	Subject	Experts	Year
India	Promotion of the Ferro-Alloy Production	CID Expert	1966
India	Pig Iron Techno-Economic Survey	CID Expert	1966
Thailand	Promotion of the Primary Metal Industries	CID Expert	1966
Pakistan	Evaluation of Iron and Steel projects	UNIDO Expert	1967
Ceylon	Review of Iron and Steel Industry and proposals on its development	UNIDO Expert	1967
Iran and (Gabon)	Submission of a report on direct reduction iron ore to sponge iron in Mexico	UNIDO team	1967
Philippines	Discussion on a report on the integrated steel mill at Iligan	UNIDO expert	1967
Philippines	Study of feasibility of the integrated steel plant near Manila	UNIDO expert	1967
China (Taiwan)	Metal Industries development centre	IIO Expert	1967
Nepal	Vocational training on metal trades	IIO Expert	1967
Singapore	Metal Industries development centre	IIO Expert	1967
India	Evaluation of projects on Iron and Steel	UNIDO Expert	1967
South Korea	Study on Iron and Steel Market	UNIDO Expert	1967
South Korea	Evaluation of projects on integrated Iron and Steel Plant	UNIDO Mission	1967
Pakistan	Promotion Iron and Steel Industry	Two UNIDO Experts	1968
China (Taiwan)	Development production of the refractory materials for iron and steel	Two UNIDO Experts	1968

Country	Subject	Experts	Year
Philippines	Study on coking coal	UNIDO Expert	1966
Singapore	Promotion of the Steel Production	UNIDO Expert	1966
<u>EUROPE AND THE MIDDLE EAST</u>			
Yugoslavia	Steel Technology	CID Expert	1966
Yugoslavia	Stainless Steel Plates production	CID Expert	1966
Yugoslavia	Steel Degasification	CID Expert	1966
Yugoslavia	Tool Steels	CID Expert	1966
Yugoslavia	Application of Oxygen in openhearth furnaces	CID Expert	1966
Israel	Help in Iron and Steel Foundry Techniques	UNIDO Expert	1967
Jordan	Establishment of the smelting scrap and rolling billets production	UNIDO 2 Experts	1967
Iraq	Comment on Feasibility Study for Integrated Iron and Steel Plant	UNIDO staff member	1967
Turkey	Iron and Steel Industry	UNIDO Expert	requested 1967
Syria	Integrated Steel Plants	UNIDO Experts	requested 1968
	Iron Ore Concentration	UNIDO Expert	requested 1968
	Steel Rolling Expert	UNIDO Expert	requested 1968

Country	Subject	Experts	Year
Surinam	Establishment Steel Smelting Shop	CID Expert	1964
British Guiana	Promotion of the Primary Metal Industries	CID expert	1964
Peru	Promotion of the Primary Metal Industries	CID	1964
Mexico, Venezuela, Colombia, Peru, Chile, Argentina, and Brazil	Discussions on planning of steel expansion programme	A staff member of CID	1965
Mexico, Venezuela, Colombia, Peru, Chile, Argentina, Uruguay and Brazil	Consultations on Iron and Steel	1) ECYA Regional Adviser on tech. research 2) Steel Expert from CID	1965
Venezuela	★ Help in Primary Metal Industries	CID Expert	1966
Venezuela	Formulation of the request for SIS assistance for a study of prospects of iron ore deposits at San Isidoro	UNIDO staff member	1967
Bolivia	Feasibility study of metallurgical industries	UNIDO team	1967
Ecuador	Advising on Iron and Steel	UNIDO Expert	1967
Venezuela	Treating of Iron Ore	UNIDO Expert	1967
Argentina	Determines Steel Production and Steel Rolling Capacity	UNIDO Expert	1968
Venezuela	Development Steel Making Process	UNIDO Expert	1968

Country	Subject	Experts	Year
Argentina	Iron Production - Improvement of metallurgical plants producing iron and steel for structural, commercial and railway engineering requirements.	INWID Expert	1968
	Steel Products Marketing	INWID	1968
Chile	Quality Control of Rolled Steel Plate	INWID	1968
	Roller Plate Adviser	INWID	1968

ANNEX 2

UN PUBLICATIONS CONCERNING THE DEVELOPMENT OF IRON AND STEEL INDUSTRIES IN DEVELOPING COUNTRIES (1963 - 1968)

Symbol	Title and author	Date of issue	No. of pages
<u>Issues of UNIDO (CID):</u>			
STD/3/PERIODIC-I/ UN-1	Iron and Steel: report of the Centre for Industrial Development.	28.1.1965	21
CID/VI/Background Paper No. 2	Growth pattern of iron and steel industry in developing countries. by Dr. B.R.Nijhawan, Consultant.	11.3.1966	117
E/C.5/82	The Centre's activities in the field of iron and steel industry. Note by the Secretariat.	1.4.1965	3
CID/IFE/D.22	Operational planning of a sponge iron and continuous rolled steel production process. by H. A. Havemann.	11-29.10.1965	46
CID/IFE/D.37	Planning an integrated steel mill in a developing country. by K. E. Robberg and R. Berchem.	11-29.10.1965	31
ID/CCNP.1/34	Sectoral Studies prepared for the Athens Symposium: Iron and Steel Industries.	24.6.1967	47
ID/CCNP.1/42	Sectoral Studies prepared for the Athens Symposium: Iron Ore Industry.	30.6.1967	5
ID/CCNP.1/D.27	Prospects for Exports of Processed Iron Ore from Developing Countries. Note by Secretariat of the United Nations.	25.7.1967	75
ID/CCNP.1/G.40	Ways of developing the iron and steel industry to meet the requirements of the developing countries.	1.9.1967	32

Symbol	Title and author	Date of issue	No. of pages
<u>Issues of ECE:</u>			
ST/ECE/STEEL/10	The Use of Steel in Construction.	1964	188
ST/ECE/STEEL/13	Automation in the Iron and Steel Industry.	1965	
ST/ECE/STEEL/17	Aspects of Competition between Steel and other Materials.	1966	121
ST/ECE/STEEL/14	Economic Aspects of Iron Ore Preparation.	1966	280
ST/ECE/STEEL/20	International Comparisons of Labour Productivity in the Iron and Steel Industry.		

The following studies will be published shortly:-

STEEL/Working Paper No. 332 and Addenda	The World Market for Iron Ore.	9.8.1967	14
STEEL/Working Paper No. 337 and Addenda	World Trade in steel and Steel Demand in Developing Countries.	11.9.1967	30
STEEL/Working Paper No. 328 and Addenda	Economic Aspects of Continuous casting of steel.	20.3.1967	54
STEEL/Working Paper No. 333 and STEEL/Working Paper No. 317 and Addenda	Main factors affecting the Development of Labour Productivity in the Iron and Steel Industry.		
STEEL/Working Paper No. 336	Economic Aspects of Computer Control of the Oxygen Steelmaking Process.	8.8.1967	91

Continuous Periodicals of ECE:

Annual Review of the European Steel Market.
Statistics of World Trade in Steel.
Quarterly Bulletin of Steel Statistics for Europe.

Symbol	Title and author	Date of Issue	No. of pages
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Issues of ECA:

East Africa

E/CN.14/INR/87/ Add.2	Development of the Steel Industry in East and Central Africa 1965. by W. S. Atkins and Partners with addendum and note by ECA.	13.10.1965	6
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West Africa

E/CN.14/IS/2 and E/CN.14/IS/2 Corr.1	Iron and Steel in West Africa with Annex I, II, III and IV.	15.9.1963	75
E/CN.14/INR/26	Report of the Meeting of Experts on Iron and Steel in West Africa.	October 1963	16
E/CN.14/INR/27	The Development of the iron and steel industry in Africa.	20.11.1966	84
E/CN.14/INR/22	Iron and Steel and the first stage of transformation. Vols. I and II. (Conference on Industrial Co-ordination in W. Africa)	21.7.1964	99 (Vol.I) 208.+ Annexes (Vol.II)
WAC/IRON/5	Proceedings of the Consultative Meeting on Iron and Steel held in Monrovia.	August 1965	
WAC/IRON/10	Report of the Meeting of the West African Interim Expert Committee on Iron and Steel, Abidjan.	22.10.1965	48
WAC/IRON/17	Report of the Meeting of the West African Interim Expert Committee on Iron and Steel, Freetown.	28.7.1966	46

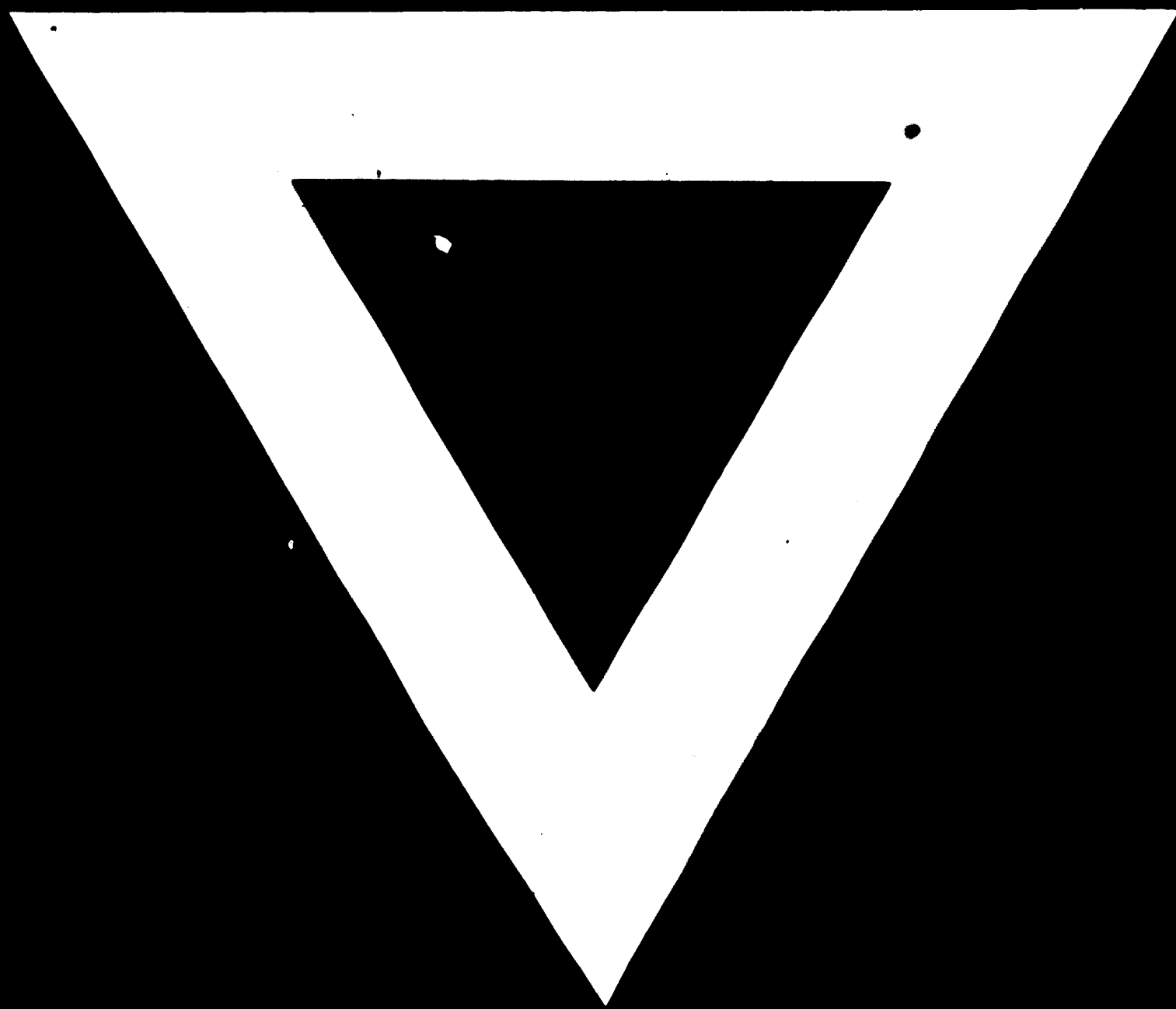
and supporting documents (type, size and location of re-rolling mills (WAC/IRON/7). Proposed terms of an agreement on a West African Iron and Steel Authority (WAC/IRON/9). Proposed agreement establishing a West African Iron and Steel Commission (WAC/IRON/13). Sources of finance (WAC/IRON/12). Suggested principles governing the development and co-ordination of sub-regionally based industries in West Africa, October 1965 (October 1965 WAC/IRON/8).

Symbol	Title and author	Date of issue	No. of pages
	<u>Central Africa</u>		
	Iron and Steel Sub-regional Study.		
	<u>North Africa</u>		
	ECA Study on Industrialization and Economic Co-operation in the North African Sub-regions: Basic Metals.		
	Demand for Steel in the Maghreb Countries.		
	<u>Africa as a whole</u>		
E/CH/14/AS/III/23	The Iron and Steel Industry in Africa. (Symposium on Industrial Development in Africa).	8.12.1965	28
E/CH/14/AS/II/2/a/2	Blast Furnace Experience and Practice in UAR.	27.9.1965	35
E/CH/14/AS/II/2/a/1	The Expected Trends in Rolled Steel Consumption from the Point of View of Product Mix in Developing Countries, with Special Reference to UAR Experience. by the Government of the UAR.	5.10.1965	26
<u>Issues of ECAFE:</u>			
I+NR/AIDC(1)/5	Report of the ECAFE Iron and Steel Mission on the Development and Expansion of the Iron and Steel Industry in Southeast Asia.		
E/CH.11/I+NR/Sub.2 /1.28	Review of the Iron and Steel Industry in the ECAFE region.	10.4.1964	28
E/CH.11/I+NR/Sub.2 /1.27	Availability of Raw Materials for Iron and Steel making in the ECAFE region.	10.4.1964	18

Symbol	Title and author	Date of issue	No. of pages
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