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REPORT OF THE SEMINAR ON STRATEGIES AND INSTRUMENTS
TO PROMOTE THE DEVELOPMENT OF CAPITAL GOODS INDUSTRIES
IN DEVELOPING COUNTRIES *

Algiers, 7-11 December 1979

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I. Opening of the meeting and election of Chairman

1. The meeting was opened by Mr. A. Hacini, Head, Negotiations Section, Division of Policy Co-ordination, UNIDO.
2. The meeting was addressed by Mr. Mourad Castel, Secretary General of the Ministry of Heavy Industry, Algeria.
3. Mr. D.G.A. Butaev, Director of Industrial Operations Division, UNIDO, made an introductory speech on behalf of Dr. Abd-el Rahman Khane, Executive Director of UNIDO.
4. Mr. R.C. Torres, a representative from Mexico, made a statement on behalf of his Government.
5. Mr. D.G.A. Butaev was elected Chairman of the Seminar by acclamation.

II. Discussion of alternative strategies for the development of capital goods based on the first results of the World-wide Study by UNIDO

6. A representative of the Secretariat introduced the "Position Paper". It was, in substance, a progress report as a stage towards the preparation of the more extensive World-wide Study on the Capital Goods Industry which was expected to be completed by the summer of 1980 as part of the preparations for a consultation meeting.
7. The "Position Paper" brought out the fact that developing countries produced no more than 3 to 4 per cent of the world's production of capital goods and were responsible for no more than 2½ per cent of world exports. No more than six developing countries had a reasonably mature industry structure in this sector; 20 more countries had an embryo industry; and more than 100 countries had no capital goods production at all.
8. The process of industrialization primarily depended on the expression of the political will on the part of each developing country to implement it as an integral part of the country's socio-economic progress. It followed that the principal task of UNIDO was to help developing countries in creating and making progress with their capital goods industries. The aim would be to allow the expansion of capital goods industries in developing countries to play its part

in creating a new international division of labour in the spirit of the New International Economic Order. The studies would draw attention to the international activities which could serve in achieving these objectives.

9. The problems which would arise were summarised as follows :
How could a country which had no capital goods industry take the first steps towards creating it ? How to ensure that the process made the best use of whatever technical and manpower base already existed ? What level in the successive stages of complexity should be aimed at in relation to a country's existing situation, the time-scale, and the existence of current restraints on production ? What combination of industrial integration, vertical and horizontal, should be considered ? What diversification of production would be possible, having regard to the levels of complexity in the production of capital goods and using the potentialities of production facilities for a varied range of output ? What internal activities and what forms of international co-operation could be established between industrialized and developing countries and between developing countries themselves for the realization of projects ?

10. In the general discussion of the "Position Paper", the following were the main points made:

11. The analysis of the production processes for various types of capital goods would provide a useful instrument for national policy-makers.

12. Many of the problems arising in planning capital goods industry, whether in a centrally planned economy or not, were of a political nature. They included, for example, the consideration of the share of GNP going to capital investment, the division of industrial investment between the various branches, the choice between internal and external markets, and the decisions on standardization.

13. The range of criteria and variables to be considered requires a great volume of information and skilled central assessment. If the latter is lacking or inadequate, there would be no alternative to

adopting pragmatic solutions but to consider the main social and economic factors.

14. The systems analysis approach in the study of the capital goods sector would assist in reducing the variety in the system. The typology would guide developing countries towards the selection of the degree of complexity of the items to be produced which would make appropriate use of local resources and potentialities.

15. When considering the range of complexity of capital goods, it was important to identify the discontinuities which divide the successive stages in the evolution of the production processes.

16. The capital goods industry required a substantially greater input of software in comparison with physical equipment than was the case in other industries. This referred particularly to the design and servicing of machinery and quality control.

17. The primary elements in the engineering infrastructure, such as forges and foundries, should be given priority in development. The training of qualified manpower, technologists and managers should be considered as an essential part of the infrastructure.

18. There was a need to consider a balanced synthesis of the technological aspects of a capital goods programme with economic and social factors. A country's capital goods production by itself was not sufficient to solve the economic and social problems which might exist.

19. Some developing countries with an embryo capital goods industry were not yet in a position to satisfy their basic needs nor even to replace their existing capital equipment.

20. Prices of capital goods had risen substantially over recent years, but it was possible that this was not only the result of increasing technological complexity but also of commercial factors.

21. It was important in the formulation of a capital goods production programme to avoid introducing machinery which was more complex than necessary. It was equally important to retain the memory of earlier technology which might otherwise disappear, and to readapt it to modern conditions.

22. There was scope for regional co-operation among developing countries for the purpose of establishing centres for the adaptation of designs of machines, and in training manpower.
23. There were principal differences in the methods and forms of co-operation between developing countries on the one hand, and planned economy or market economy countries on the other. The recent economic recession in market economy countries had affected the progress in developing countries.
24. Representatives of the regional and international organizations present offered to co-operate with UNIDO in bringing the World-wide Study on Capital Goods to a successful conclusion. The experience of ECE in the field of engineering industries could usefully be drawn upon, especially for methodology and the collection of statistics. The work being initiated in UNCTAD on transfer and development of technology in response to Conference resolution 112(D) may also provide a useful input in elaborating this aspect of the World-wide Study.
25. Consensus was reached on the following points :
- A. A method should be developed for measuring technological complexities, continuities and discontinuities in the production of capital goods.
 - B. The method should be tested in selected countries in order to improve it and make it available to developing countries, particularly those with little or no capital goods industry at the present time.
 - C. The World-wide Study should explore the possibility of joint planning for capital goods required in connexion with agriculture, relating, for example, to agricultural machinery and to equipment for the food-processing industries.
 - D. Individual countries should let UNIDO know about their plans for capital goods industries in order to help in improving the long-term projections in the "Position Paper".

III. Overall strategy and methodology for the programming of the development of capital goods industry based on the experience of Mexico and other countries

26. The Mexican delegation and the members of the UNIDO team of experts introduced the joint NAFINSA/UNIDO Capital Goods Development Programme. (Documents No. 1,2,3,4,5,6,7 and 12).

27. Given the structure of the socio-economic situation in Mexico and its sizable perspective of development in several key sectors, the decision of developing capital goods industries on a priority basis was an obvious and undisputed one.

This was furthermore in line with the strategy of the Mexican Industrial Plan, aimed at the following :

- Reorient production towards basic consumer goods;
- Develop high-productivity sectors, capable of exporting and substituting imports efficiently;
- Improve the integration of the industrial structure, to make better use of natural resources and develop machinery and equipment production;
- Decentralize economic activity geographically by channelling investments towards the coasts, border zones and other localities;
- Bring balance to the market framework, correlating big business with medium and small firms.

28. The planning process which guided the definition of a strategy for development and the establishment of objectives through selection of priorities, was the result of the joint efforts of the NAFINSA and UNIDO team of economists and technicians. These priorities resulted from the disaggregation of the following elements :

- The demand and its projections based on in-depth investigation of the strategic users sectors, the size of the market, its dynamism and the public sector users;
- The supply and its projections calculated on its physical, technological and institutional aggregations and its horizontal basic infrastructure requirements;
- The content, constraints and conditions of required technology;

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- The implications for international trade; and
 - The capacity and potential for national enterprises to participate in a production structure.

29. Based on these investigations, the programme proceeded to identify investment opportunities, and thirty-eight closely interrelated and complementary projects co-ordinated with existing supply were identified:

- Seven projects on basic general processing units including heavy platework and machining, casting and forging and heavy duty machine tools;
- Twenty projects in equipment for specific industries, including petroleum industry, petrochemicals, electricity, steel, mining and food;
- Eight projects in standard equipment, including diesel engines, control valves, oil pumps, electrical motors, etc.; and
- Three projects in professional electronic equipment in telecommunications, computer equipment, control instruments.

30. The programme has designed, and was instrumental for the adoption of governmental policy instruments included in the NAFINSA plan and complementary instruments establishing an articulate and coherent set of specific mechanisms and incentives at the level of financing, public sector purchases, fiscal incentives, customs tariffs. The key criteria of these measures was to provide a sufficient yet coherent set of supports and limited tariff protection, which has been designed on a selective basis and programmed so as to decrease and even disappear in due time.

31. The responsibilities of the joint NAFINSA/UNIDO programme also include the promotion of investments of the new projects towards the private sector, both national or foreign, through technical monographs describing investment potential on the seven major sectors identified for investment, and the creation of a technical information centre, distribution of regular bulletins, promotional films and the organization of technical seminars.

32. The Mexican delegation pointed out that such a programme required substantial investments, which called for mobilization of resources, internal and external. Capital goods in general imply long gestation

periods and yields often less attractive than those from investment in consumer goods. Hence, private entrepreneurs could not be expected to come forward to invest in all the types of capital goods that a country may find socially necessary to produce. This necessitated, at least partially, the channelling of investments through the public sector.

33. With regard to the transfer of technology from abroad, it was pointed out that capabilities for negotiation were being built up in Mexico. Adequate technical and financial information concerning a project considerably facilitated negotiations with the foreign supplier. The preparation of detailed feasibility studies helped the collection, analysis and effective use of such information.

34. On the part of the representatives of Mexico, satisfaction was expressed on the progress of the NAFINSA/UNIDO project. The project had acted as a catalyst and enabled the Mexican specialists, working along with the UNIDO experts, to develop and implement a realistic approach, duly inspired by theoretical interpretation of national realities.

35. Several participants welcomed the opportunity provided by UNIDO to exchange views, in the light of the Mexican experience, on the development of programmes for production of capital goods in the developing countries. Appreciation was expressed on the extensive documentation presented on the Mexican experience. That experience, as explicitly expressed by the Mexican team, could obviously not be applied in all respects to other developing countries, for a number of reasons. However, the Mexican experience provided valuable insights for the formulation of a national strategy for the production of capital goods. In particular, it highlighted the need for a political will to develop and implement a strategy.

36. Subsequently several delegations briefly described the situation of capital goods development in their respective countries or regional grouping, highlighting the historical pattern of such development, its positive sides and the problems encountered. Of particular relevance

to the Seminar were comments and suggestions connected with the difficulties of planning the development of such a sector in developing countries, with specific reference to market size and different levels of economic and technological development.

37. The development of the sector in Spain, was based on rapid technological development to respond to the pressure of the internal market and simultaneously participate through exports in the rapid process of economic growth of the European countries. The capital goods industries now cover the whole spectrum of machine and equipment building with 13% of the production exported (Document No 19. Also refer to the UNIDO's study on the Situation of the Capital Goods Industry in Spain - Metra).

38. In Turkey, through a computer programme, investigations are carried out on existing and required technology levels on selected sub-sectors. Such information will be coupled with information on existing machines and equipment, development programmes of private and public sector and will create the base for the programming exercise which the State Planning Organization will implement, in co-operation with the Turkish Industrial Development Bank (TSKB), the Middle East Technical University (METU) and with UNIDO assistance.

39. The situation of the People's Republic of China capital goods sector is exhaustively covered in the Document No. 16. After 30 years of continuous development, China is presently producing large quantities of machine tools, electrical equipment, agricultural machinery, transport equipment, heavy equipment, etc. Efforts are now concentrated on improving quality and technical level of production and labour productivity, and promoting specialization and subcontracting.

40. As highlighted in the Doc. No. 20, the dynamism of the Pakistan capital goods industry has been constrained by the limited domestic market and inadequate foreign exchange resources available for equipment and technology acquisitions. Another constraint is to be found in the insufficient ancillary supporting industry. The Government, with the assistance of UNIDO, expects to reorganize the sector and launch an articulated development programme.

41. In the first stages of industrialization in the USSR, the channelling of resources from agriculture and consumer goods sector in favour of heavy industry, justified by the specific conditions of the country, secured a rapid growth for machine building. The result is that the USSR is now one of the largest producers of capital goods of the world. The lesson which could be drawn from this development is that establishing of strong public sector, long-term planning and development of human resources, the creation of central outlets serviced by small subcontracting firms, the establishment of standards and quality control are pre-requisites to the sector development.

42. India has reached the rank of the seventh industrial nation of the world, thanks also to the development of a very important capital goods sector. Such development was facilitated by the existence of an efficient civil service and a strong private sector, which developed ties with foreign enterprises and technology. Capital goods were developed with a main strategy of self-sufficiency based on import substitution. A dispassionate diagnosis shows that such dramatic results were obtained also through socio-economic imbalances. The Indian machine building sector was mainly urban oriented, with connected social and pollution problems. India has adopted and is implementing corrective measures for these problems, and results in terms of social benefits, competitiveness, environmental effects and increased exports are already registered.

43. The USA capital goods structure is characterized by the existence of a few exceptionally large production units and companies and a multitude of small and medium-sized manufacturers, which constitute an extremely solid and versatile industrial sector operating as servicing and subcontracting units to the whole structure. Such a structure permits the USA capital goods sector to be extremely competitive and at the peak of technological development.

44. In the Netherlands, the fact that the capital goods structure is composed of medium-sized factories was dictated mainly by the constraints of a small market and the impelling necessity to turn production towards exports. The case of the Netherlands and of other advanced yet medium-sized countries sets an example which, in the long run, could be of inspiration for small and medium-sized developing countries.

45. The original approach developed by the Andean Group countries was the joint industrial programmes, by which production units covering the entire market of the five member countries will be created. These programmes cover the metal-mechanic, petrochemical and passenger car industries. The Andean Group has adopted a common external tariff which sets varying degrees of protection depending on the technological requirements and labour implications of the internal manufacturing processes (Document No 18).

46. The present situation and the development perspectives of the equipment goods sector in Algeria are fully illustrated in document No. 17. The key factors of such development perspectives are the stage of progress and the technological level reached by other Algerian industrial sectors, such as heavy industry, which make it possible for the planner to include capital goods development among the priority sectors in the next industrial plants.

47. The case of the Byelorussian industrial production (Document No. 14), in which capital goods account for about 70 per cent of total output, was a result of historical, natural, economical conditions and a political will to develop highly skilled labour-intensive branches of industry with low fuel, power and metal requirements.

48. In Poland the development of capital goods sector has been closely interlinked with general social and economic reconstruction of the country after 1945. An important part has been played by machine tools subsector which decisively contributed to the technological flexibility of all sectors of engineering industries. During the last decade capital goods sector was restructured and based on modern, complex units and mass-production technologies. Network of research and development centres associated with the sector have given a framework for further improvement of design and technological advancement.

49. In the Philippines, the Government is reorienting incentives and policies in favour of local production of equipment goods. In order to strengthen the mechanical and engineering sector, specific types of capital goods which could be manufactured in the Philippines with comparative advantages are in the process of being identified, and a selective upgrading of metalcasting and forging capabilities is also pursued. International expertise from UNIDO might also be required to formulate a development plan and a strategy for the mechanical-electrical capital goods industry.

50. The discussion which followed clearly underlined that the development of the capital goods industry requires an adequate technological base. If capital goods industry were not to be a mere assembly operation, but were to provide the basis for industrial and technological development, several aspects covering the selection, acquisition, adaption and absorption of technology, and the technological support services needed, required serious attention.

51. In regard to the selection and acquisition of technology, the need for information on technological options and sources of technology was felt. Such information would strengthen the negotiating position of developing country enterprises and enable the acquisition of technology on reasonable terms and adequate guarantees. The types of capital goods selected for production would have a bearing on the technologies for the production of further intermediate or consumer goods and as such, care was needed in their selection. Financial institutions which financed the production of capital goods should have adequate technical support to facilitate proper selection of technology. Considering the size of the markets of several developing countries, the possibilities of joint acquisition of technology on the subregional basis as attempted in the Andean Group were also relevant.

52. In regard to the absorption of technology, lack of trained manpower often constituted a serious constraint and needed systematic remedial measures planned in advance. As already attempted by some developing countries, training institutions and programmes needed to be established to cover not only the training of operatives but higher level technicians, engineers and managers.

53. Several developing countries were handicapped by the absence of design and consultancy capabilities. Research and development facilities were needed for local adaptation and the updating and further development of the technologies acquired. Standardization which was an essential prerequisite for the growth of the capital goods industry was yet to be adopted in several developing countries. Attention was also needed to promote maintenance systems, quality control, productivity and industrial engineering. The setting up of ancillary industries would, among other things, promote technological diffusion from the capital goods industry, provided adequate technological support systems were set up between the parent and ancillary units.

54. It was suggested that the starting point for capital goods production, particularly for small and medium sized countries, lay in setting up common fabrication, machining, foundry and forge facilities. The importance of technological co-operation among developing countries as a means of accelerating capital goods production in them was stressed.

55. Several participants stressed the role of UNIDO in providing comprehensive technical assistance and advisory services and in undertaking promotional activities to enable developing countries to take up capital goods production and to concurrently build the technological base therefor. In particular, the following recommendations were made :

- (i) Developing countries should, in the light of their individual requirements, build the structures necessary for capital goods production. UNIDO should assist them in this respect with a structured Capital Goods Development Programme in fields such as the analysis of the priorities and the definition of development programmes, coupled with pre-investment studies.
- (ii) UNIDO should assist developing countries in setting up specialized technological centres for senior engineers and technicians for assimilation, adaptation and development of technologies, particularly in the metallurgical, mechanical and electrical industries and for training in designing.
- (iii) UNIDO should study and promote the role of financial institutions, public and private, in developing countries, in the production of capital goods.

(iv) UNIDO should compile and publish developing countries experience in the field of capital goods.

(v) UNIDO should assist developing countries in building up technological services, such as consultancy, design, standardization, and research and development.

IV. The issues suggested for the First Consultation Meeting on Capital Goods Industries to be held in 1981

56. A number of the UNIDO secretariat introduced a number of proposed issues might be submitted to the Consultation Meeting. The following were the main points made in the ensuing discussion :

Issue I - Potentialities and possible progress of the capital goods industry development in small and medium-size developing countries

57. Capital goods industry development in these countries should be looked upon as a way to realize social and national priorities, such as accelerated, balanced economic growth, reduced unemployment, increased economic and political independence, utilization of resources, (natural, financial), territorial deconcentration or a change of geographic pattern of economic development.

58. The choice should be based on consideration of political and economic factors :

- (a) Consumption/investment ratio in GNP of countries in question;
- (b) Existing economic structure;
- (c) Existing institutional, educational and physical infrastructure;
- (d) National standardization reducing a variety of products and technologies.

59. The basic concepts and programmes of the sector's development should be formulated for a minimum of 15 years' perspective. They should be closely interlinked with other social and economic concepts and programmes.

60. The choice of a structure of production and the level of technological complexity should be combined through vertical and horizontal integration, bearing in mind specific conditions of the countries.

61. At the stage of programming and planning, the importance of the software input should be kept in mind. The strains and sacrifices which are difficult to avoid are to be evaluated versus expected social and economic benefits.

These circumstances should be considered particularly in timing of stages of

capital goods industry development. It has been found out that large imports of equipment could cause subsequent, associated domestic expenditure according to the ratio 1:1.5.

61. In view of the complexity of the capital goods sector's development, the institutional framework should be elaborated. Political, social, economic, financial and technological aspects ought to be identified and analysed in order to provide a rational basis for the decision-making process.

62. UNIDO and other international organizations could help to elaborate proposals related to some institutional arrangements, mechanisms and means of action based on the experiences of other countries.

Issue II - Technology in the service of development

63. There was a need for "demystification" of capital goods industry in order to demonstrate different ways leading towards the establishment of the industry in less developed countries. It is also UNIDO's intention to help developing countries to realize the paths of development most accessible to them.

64. Over-ambitious technologies have been demonstrated by discrepancy between a degree of technological sophistication and conditions prevailing in many countries. In the context of these conditions, sophisticated, labour-saving design should be considered versus desired durability, reliability as well as simple operation, service and maintenance of machinery.

65. Many capital goods could be produced through different technological routes. A selection of an optional route should be based upon consideration of such factors as size of market, level of available skills, learning effect expected through adoption of a particular route.

66. The technological routes leading to capital goods production should be examined in terms of production engineering and analysis of relevant economic and social factors. Experiences of countries both developing (e.g. India) and developed (Netherlands) in this field should be carefully examined.

Issue III - The framework of international co-operation

67. The newcomers in the field of capital goods industry seek information and expert advice on alternatives available to them as well as on possible difficulties and constraints.

68. UNIDO and other international organizations should provide the information and the advice. They should also undertake other steps to increase the negotiating capacity based on national plans of developing countries in bilateral and multilateral negotiations related to the development of the capital goods industry.

69. There is a need to examine the interrelationship of large, small and medium companies in the process of capital goods manufacturing.

70. The principles, institutional arrangements and agreements on industrial co-operation should be analysed for the sake of their more universal application during the process of expansion of the capital goods industry in developing countries.

71. It seems desirable to undertake some steps jointly by groups of developing countries entering into the field of capital goods production in order to better utilize their complementarities, to create a market adequate to economic size for some products (such as big castings and heavy forged components) to negotiate and to purchase from other countries. In this context, the experience of the Andean Group should be examined and discussed in detail.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

General conclusions

72. The discussions clearly showed that the production of capital goods was an essential and critical component in the strategy for industrialization. Its importance extended beyond the production of machines to the creation of technological capabilities which is a basic pre-requisite for sustained industrial development. The capital goods industry would enlarge and diversify the economic activities of a country through its backward and forward linkages. It could make a contribution to alleviate the balance of payments position of the developing countries over a period of time both by way of import substitution and through the creation of a competitive capacity in international trade. Taking all these facts together, capital goods production would help to initiate qualitative changes in the national productive capacities of the developing countries investing them with the essential elements for sustained national development. Developed countries should make efforts to restructure their capital goods industries to adapt to new conditions in terms of international division of labour. As to methods used in this connection reference was made to the work done in the OECD on Positive Adjustment Policies.

73. It follows that not only is the strategy for capital goods production needed, but that it should form an integral part of the national industrial development strategy. That strategy in turn, has to necessarily reflect the social and political objectives of the country, its internal conditions and external linkages.

74. In increasing the capital goods production in developing countries quantitatively and more importantly, in technological content, several interrelated factors are relevant, including: what lines of production should be taken up; the pattern of the productive capacities to be set up; the technological content, several interrelated factors are relevant, including: what lines of production should be taken up; the pattern of the productive capacities to be set up; the technological base necessary; the policy actions needed to guide, stimulate and interrelate the activities of the internal and external participants in the national effort; the contribution of international co-operation to this effort; and the role that UNIDO has to play to promote and support the effort, both in terms of its technical assistance and advisory services and through its System of Consultations.

75. In view of the variety and complexity of capital goods production, the selection of the goods to be produced has to be made within a framework of several factors, such as the sectors and the specific products within the sector; the volume of present and potential demand, internal and external; existing and planned industrial and technological capacities; the potential impact on industrial and technological growth; and the financial requirements. Thus, a set of criteria should be applied for this purpose, reflecting the national priorities and objectives.

76. The production of the goods selected should be conceived and organized through a system of productive capacities instead of isolated industrial units. That system should include and interrelate the physical production facilities; infrastructure; skilled manpower at different levels; and technological services, including design and research and development.

77. The conception and organization of a system of productive capacities necessitate a set of comprehensive and interrelated policy actions covering: the mobilization and allocation of investment resources; fiscal and financial mechanisms; strengthening technological capabilities; regulation of trade and technology flows; and channelling local demand to local supply. In addition, Government departments and the public sector could be important generators of demand and suppliers of capital goods. The specific policy instruments and mechanisms would vary depending on country situations.

78. Although the creation of capital goods capacity has to be basically a national effort, international co-operation has a crucial role, both because of the global economic interdependence and more particularly through its potential to fill critical gaps in the national effort. Such co-operation could be, in terms of supply of information on trade, technology and finance; flow of technological and financial resources; stimulation and diversification of trade with due and reasonable consideration to the unavoidable learning process of potential producers of capital goods; complementarities, particularly of a regional or sub-regional nature; and the provision of training facilities and institutional linkage in fields such as R & D, design, quality control, and standardization.

79. The essential role of UNIDO is to promote and support international co-operation in addition to provide directly information, advice and technical assistance. Such assistance is called for in regard to a wide range of national activities, including selection of lines of production, conceiving and organizing

a system of productive capacities, designing policy instruments and mechanisms, establishing physical and institutional infrastructure and in strengthening technological capabilities. The assistance has to be rendered in an integrated manner aimed at inter-linking the various components of the national effort into an over-all framework for action so as to produce a substantial impact on capital goods production.

80. The Consultation Meeting on the Capital Goods Industry could provide a valuable impetus to international co-operation in this field. The thrust of the System of Consultations should be to enhance the availability of information on sources of supply of technology, equipment and markets in developed and developing countries, in a few selected sectors of common interest to developing countries; to stimulate financial, technology and trade flows; and to explore for this purpose, new institutional modalities and mechanisms and the reorientation of existing ones.

Operational recommendations

81. In the context of the World-wide Study, UNIDO should consider implementing the following actions:

- (i) A method should be developed for measuring technological complexities, continuities, and discontinuities in the production of capital goods;
- (ii) The method should be tested in selected countries in order to improve it and make it available to developing countries, particularly those with little or no capital goods industry at the present time.
- (iii) The World-wide Study should explore the possibility of joint planning for capital goods required in connexion with agriculture, relating, for example, to agricultural machinery and to equipment for the food-processing industries.
- (iv) Individual countries should let UNIDO know about their plans for capital goods industries in order to help in improving the long-term projections in the World-wide Study.

82. Resulting from the discussion on country experiences, the following was recommended:

- (i) Developing countries should, in the light of their individual requirements, build the structures necessary for capital goods production. UNIDO should assist them in this respect with a structured capital goods development programme in fields such as the analysis of the priorities and development programmes, coupled with pre-investment studies.

- (ii) UNIDO should assist developing countries in setting up specialized national and regional technological centres for assimilation, adaptation and development of technologies, particularly in the metallurgical, mechanical and electrical industries, and personnel training;
- (iii) UNIDO should assist developing countries in building up technological services such as consultancy, design standardization, and research and development;
- (iv) UNIDO should study and promote the role of financial institutions, public and private, in developing countries, in the production of capital goods;
- (v) UNIDO should compile and publish the experience of developing countries in the field of capital goods;
- (vi) Effective communications should be established between ongoing UNIDO sponsored projects to avoid duplication of efforts in finding solutions to specific complex, techno-economic problems of a common nature requiring in-depth discussions between experts in relevant disciplines;
- (vii) The role of the INTIB of UNIDO should be strengthened to provide essential technological information to developing countries for setting up capital goods production.

83. In the context of the First Consultation Meeting on the Capital Goods Industry, the following issues were recommended for consideration:

- (i) An assessment should be made by UNIDO of the world situation in the sector covering the current situation of demand and supply and future prospects vis-a-vis technological trends and restructuring of capital goods industry in the framework of a new international division of labour;
- (ii) The opportunities of the development of the capital goods industries in developing countries should be defined;
- (iii) The types of technologies in the service of the development of the capital goods industry should be described and expounded;
- (iv) Long term contractual arrangements for the setting up of capital goods.

LIST OF PARTICIPANTS

ALGERIA

M. CASTEL
Secrétaire général
Ministère de l'industrie lourde
Alger

M. S. DJENNANE
Directeur à la SONACOME
Alger

M. HAKIKI
Directeur général
SONELEC
Alger

M. AMRANI
Directeur
Ministère de l'industrie lourde
Alger

M. SAIDI
Directeur
S.N.S
Alger

A. BENBOUALI
Directeur
Ministère de l'industrie lourde
Alger

A. KERMICHE
Ingénieur
Direction Planification
S.N.S.
Alger

BELGIUM

R. RENARD
Research Fellow
Center for Development Studies
University of Antwerp
13 Prinsenstraat
2000 Antwerpen

BRAZIL

F. TAVARES DE LYRA
Co-ordinator
Planning Institute of the Planning
Secretariat of the Presidency of the Republic
Brasilia

CHINA

X. ZHOU
Chef de Section du 1er Ministère de l'industrie mécanique
Sanlihe Road
Fuxingmenwai
Beijing

COLOMBIA

Gonzalo GIRALDO-ECHEVERRI
Jefe, Unidad de Estudios
Industriales del Dto.
Nacional de la Planeacion
Calle 26 No. 13-19
Bogota

EGYPT

H. M. AMER
Director of Engineering Projects Department
GOPI
Cairo

GERMANY, FEDERAL REPUBLIC OF

Paul Jürgen BENDIX
Research Fellow
German Development Institute (DIE)
Fraunhoferstrasse 33-36
D-100 Berlin 10

INDIA

S.M. PATIL
Consultant
Former Chairman and Managing Director
HMT Bangalore
28 Palace Cross Road,
Bangalore 560020

MEXICO

Mario LOPEZ
Jefe, Departamento de Bienes de Capital
Nacional Financiera
Mexico D.F.

Fernando SANTOSCOY
Sub-Director General de la Industria
Metal-Mecanica
Secretaria del Patrimonio y Fomento Industrial
Hermosillo 26. Col. Roma
Mexico D.F.

R.C. TORRES
Gerente de Programacion Industrial
Direccion de Programacion y Proyectos
NAFINSA
Paseo de la Reforma 136
Mexico D.F.

NETHERLANDS

Johan A. VAN SANDICK
VMF Stork
P.O. Box 9251
1006 A.G. Amsterdam

NIGERIA

O.E. AFOLABI
Principal Assistant Secretary
Federal Ministry of Industries
Lagos

PAKISTAN

A. TAQVI
Director General
Investment Promotion Bureau
Ministry of Industries
Bunder Road Garden Road Crossing
Karachi

PHILIPPINES

A.L. KALINGKING
Chief Analyst
Board of Investments
Industry and Investments Building
Buendia Avenue
Nakati, Metro Manila

POLAND

L. WASILEWSKI
Secretary General
Federation of Polish Engineering
Associations "NOT"
Ul. Czackiego 3/5
Warsaw

SPAIN

A. LOPEZ
Director of Economic Studies
SERCOBE
Capitan Haya, 20
Madrid

SWEDEN

O. JOHANSSON
Head of Research Department
National Industrial Board
Box 16315
10326 Stockholm

K.S. TJERNSTRÖM
Director
Ministry of Industry
Fack, 10310 Stockholm

THAILAND

S. CHULKARAT
Director
Industrial Economics and Planning Division
Ministry of Industry
Bangkok

TURKEY

A.C. GÜRKÖK
Economic Planning Department
State Planning Organization
Bakanliklar
Ankara

USSR

S. ELEKOEV
Senior Research Staff
Institute of World Economy
Academy of Sciences
Profsojuznaja st. 47
Moscow

O. PRIKHODICHENKO
Chief of Department
Research Institute of Economic
Investigation (GOSPLAN)
State Planning Committee of the Byelorussian SSR
Parkovaja magistrat, 7
Minsk

USA

A. PHILLIPS
President
Phillips Corp.
4910 Lehigh Road
College Park, Md. 20740 (Washington)

REGIONAL COMMISSIONS AND UN OFFICES

ECE

C.M. MISZCZOREK
Administrator
Team Leader for Engineering Industries
Palais des Nations
1211 Geneva - Switzerland

ECWA

A.K. NARULA
Regional Adviser
Joint UNIDO/ECWA Industry Div.
P.O. Box 4656
Beirut - Lebanon

ESCAP/UNIDO

K. ASELMANN
Project Co-ordinator
Division of Industry
The United Nations Building
Rajadamnern Avenue
Bangkok 2 - Thailand

UNCTAD

M. NAGAO
Economic Affairs Officer
Technology Division
Palais des Nations
1211 Geneva - Switzerland

INTERGOVERNMENTAL ORGANIZATIONS

IDCAS

A. KHALFALLAH
Directeur
CNEI
Ligue Arabe
B.P. No 5
Le Belvédère Tunis
Tunis - Tunisia

ANDEAN GROUP

E.C. D'ANGELO
Project Manager
Technical Assistance Programme for Industrial Development
Casilla 3237
Lima, Peru

OLADE

J.D.R. PIMENTEL
Co-ordinator
Capital Goods Programme
Casilla 119 A
Quito, Ecuador

CONSULTING FIRMS

TECNIBERIA

E. TRIANA
INITEC
General Mola 120
Madrid 2 - Spain

METRA

J. PEÑA
Orense 30
Madrid 20 - Spain

TERNI S. p. A.

F. GIANNELLI
Manager, Technical Int. Operations Division
Viale Brin 218
I-05100 Terni - Italy

E. MARIANESCHI
Executive Manager
Technical International Operations Division
Viale Brin 218
I-05100 Terni - Italy

UNIDO CONSULTANTS

C. GILLEN
Enrique Barron
1109 Lima - Peru

F. VIDOSSICH
c/o ECLA
Casilla 179 - D
Santiago de Chile - Chile

R. TIBERGHIEU
Domaine Universitaire
38 Saint Martin d'Hères
Bp 47 x Centre de Tri
38040 Grenoble - France

P. JUDET
Domaine Universitaire
38 Saint Martin d'Hères
Bp 47 x Centre de Tri
38040 Grenoble - France

UNIDO FIELD STAFF

M. HUSSEIN
Senior Industrial Development Field Adviser
c/o United Nations Development Programme
c/o United Nations Development Programme
Islamabad - Pakistan

A. DE GROOT
Junior Professional Officer
c/o United Nations Development Programme
Ankara - Turkey

M. LUTHER
Project Manager
c/o United Nations Development Programme
Ankara - Turkey

F. FAJNZYLBER
Project Manager
c/o United Nations Development Programme
Mexico City - Mexico

J. AYZA
Expert
c/o United Nations Development Programme
Mexico City - Mexico

G. ROBINSON
Expert
c/o United Nations Development Programme
Mexico City - Mexico

J. MALKUS
Expert
c/o United Nations Development Programme
Mexico City - Mexico

A. BOZZOLO
Expert
c/o United Nations Development Programme
Mexico City - Mexico

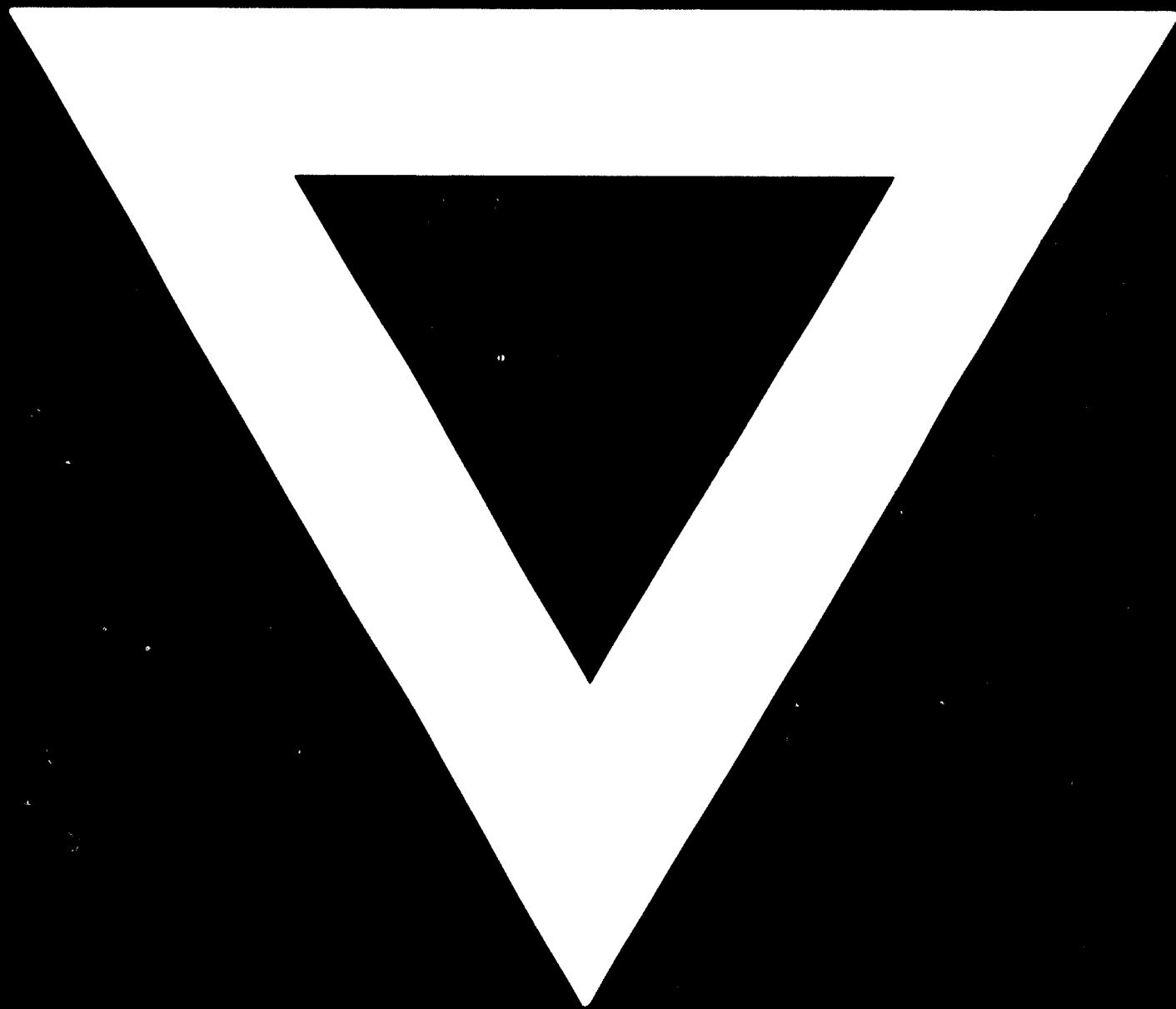
Annex 2

LIST OF DOCUMENTS DISTRIBUTED

- No. 1 - Capital Goods Programme in Mexico
Conception, Content and Achievements
by Mr. F. Fajnzylber (E)
- No. 2 - A Case Study on the Strategy for Promotion of
Heavy Industry in Developing Countries - Mexico
by Mr. G. Robinson (E)
- No. 3 - Study on Strategy for Promotion of Machine Tool
Industry in Developing Countries - Mexico
by Mr. J. Malkus (E)
- No. 4 - Study on Demand Forecasting for Capital Goods - Mexico
by Messrs. A. Bozzolo and R. Trufello (E)
- No. 5 - Study on Productive Capacity in the Mechanical Industries
Mexico - by Mr. J. Ayza (E)
- No. 6 - Study on Specific Aspects Related to the Preparation and
Promotion of Capital Goods Projects in Developing Countries
by Mr. S. Musa (E)
- No. 7 - Sectoral Profiles of Electrical Industry, Mining, Pulp
and Paper, Petroleum Industry, Steel - Mexico (E)
- No. 8 - Problems and Prospects of Capital Goods Manufacture in the
Third World - Observations from the point of view of the
production engineer - by Mr. K. Aselmamm (E)
- No. 9 - Summary Notes of Two Preparatory Expert Panels for Consultations
on the Capital Goods Industry
by Negotiations Section, UNIDO (E)
- No. 10 - Provisional Agenda (E)
- No. 11 - Provisional List of Participants (E)
- No. 12 - The Mexican Capital Goods Programme -
The NAFINSA's Appraisal (E)
- No. 13 - Development of Capital Goods Manufacturing
Capacity in Mixed Economies - Turkey
by Mr. M. Luther (E)
- No. 14 - Industrial Development of the Byelorussian SSR
(60 years of experience) by Mr. O.I. Prihodchenko (E, F, R)
- No. 15 - ECWA - Regional Development of Selected Branches of Capital Goods
Industries - by Mr. Narula (E)

- No. 16 - Exposé par M. X. ZHOU, Representative of the People Republic of China, (F)
- No. 17 - Les biens d'équipement dans l'industrie algérienne - Evolution passée et perspectives (F)
- No. 18 - Los Bienes de Capital en el Grupo Andino - by Mr. d'Angelo (S)
- No. 19 - Breves Notas sobre la Evaluación de la Industria Espanola de Bienes de Equipo - by Mr. A. Lopez (SERCOBE) (S)
- No. 20 - Development of Capital Goods Industry in Pakistan - by Mr. A. Taqvi (E)
- No. 21 - TERNI S.p.A. - The contribution of TERNI Company to the Capital Goods Production Development - by Mr. F. Giannelli (E)
- No. 22 - Draft Report - Seminar on Strategies and Instruments to Promote the Development of Capital Goods Industries in Developing Countries (E)
 - Outline of the First Study on Capital Goods (E)
 - "Position Paper" prepared by the Sectoral Studies Section, ICIS, UNIDO (E, F)

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