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ID/WG.23/7

ID/42

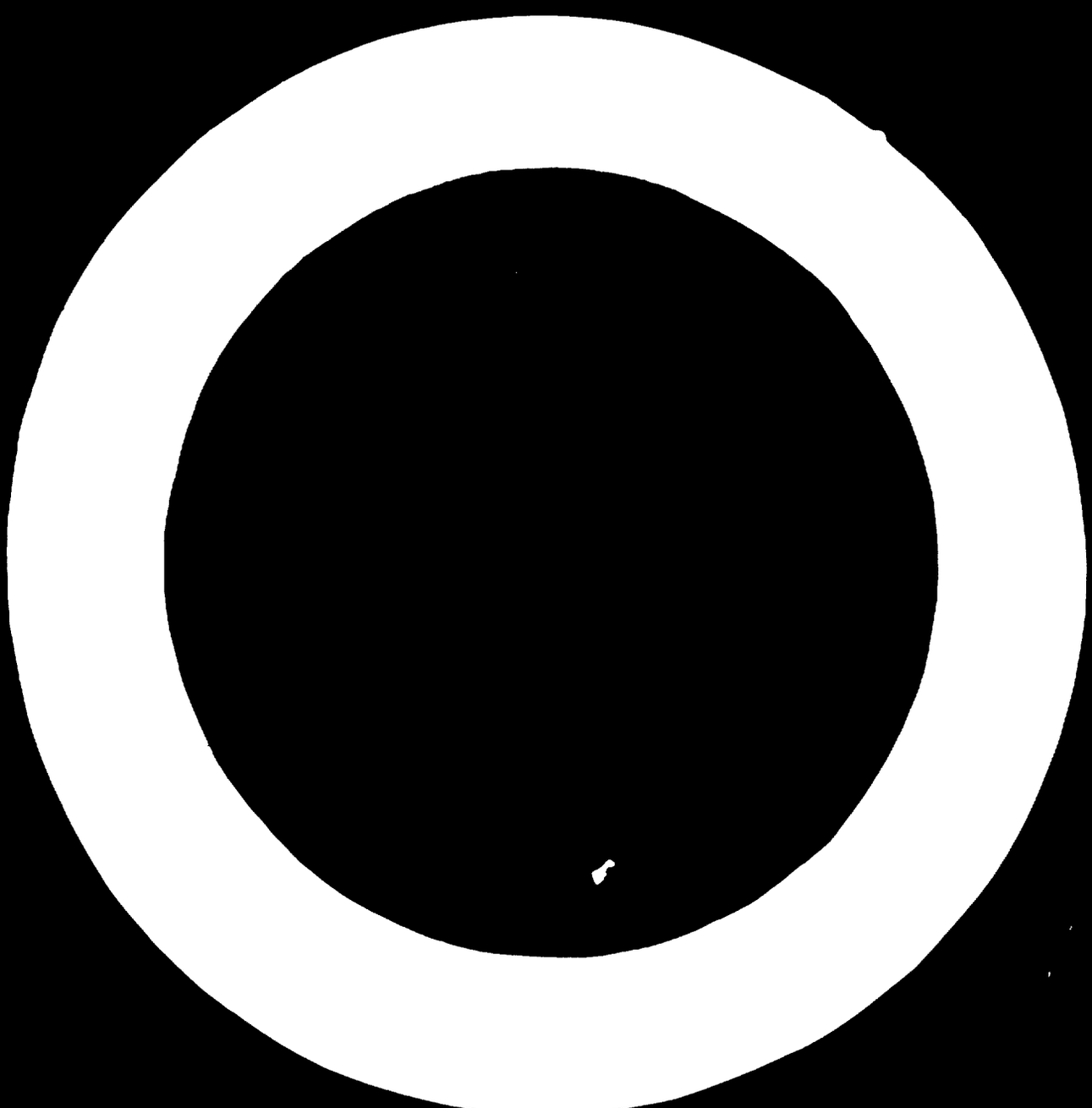
DC 1375

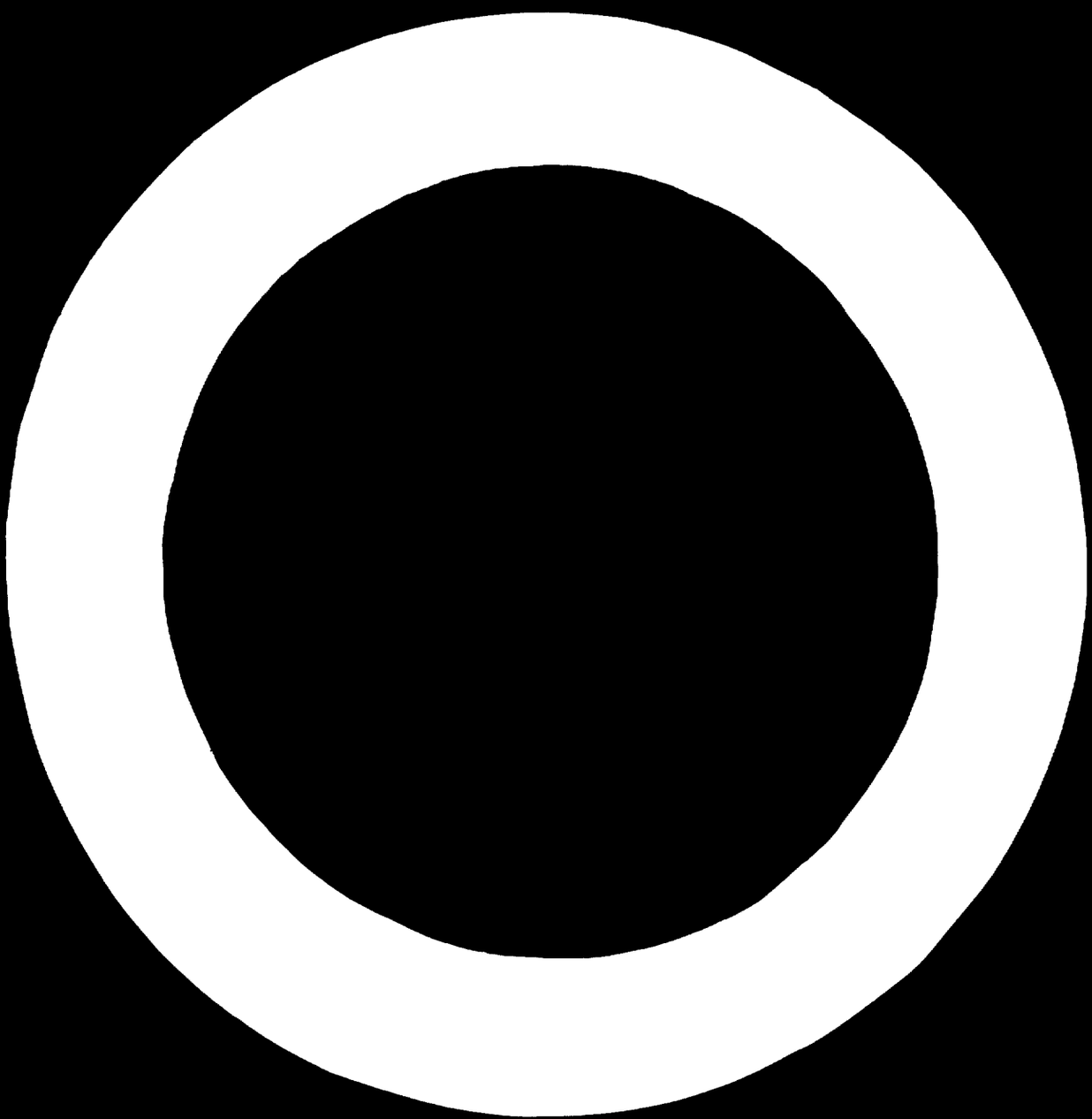
# INDUSTRIAL PROGRAMMING DATA

**Report of the First Session of the International Working Party on Industrial Programming Data**

**Vienna, 18 - 27 November 1968**

**UNITED NATIONS**





UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
VIENNA

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Report of the First Session
of the International Working Party
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UNITED NATIONS
New York, 1969

ID/48

( ID/WG.23/7 )

## Contents



## Annexes

## Preface

1. The first meeting of the International Working Party on Industrial Programming Data met in Vienna from 18 to 27 November 1968 at the headquarters of the United Nations Industrial Development Organization (UNIDO). The Industrial Programming Section of the Industrial Policies and Programming Division of UNIDO was responsible for the organization of the session. The background of the meeting and its organization are considered in the Introduction, which follows.

2. The working party was made up of thirty-three experts from many fields, representing national and sub-regional organizations, private organizations, and specialized and affiliated agencies of the United Nations. The participants are listed by name and institutional affiliation in Annex I.

3. The present publication includes a consideration of industrial programming data - concept, problems and approaches (Part I), evaluations of four UNIDO work proposals in this area (Part II) and a presentation of the operational guide-lines followed by the working party (Part III). The working documents used at the session are listed in Annex 2.

## Introduction

### Background for the UNIDO initiative

4. In 1965, the Centre for Industrial Development (CID), predecessor to UNIDO, initiated a research project aimed at the systematic collection, analysis and dissemination of useful data on the operational parameters describing basic quantitative relationships in industrial establishments. The project, first referred to as "Parameter Patterns for Industrial Programming" and later re-named "Industrial Programming Data", was undertaken with the hope that a broader and more flexible framework of data could be evolved to facilitate improvements in the data aspects of industrial planning and programming in the developing countries.

5. Thus, in 1965, the series Profiles of Manufacturing Establishments was initiated, the first two volumes of which have been published.[1/] At the same time that these Profiles were getting under way, a special effort was being

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1/ Volume I (ID/SER.E/4), Sales No. E.67.II.B.17; Volume II (ID/SER.E/5), Sales No. E.68.II.B.3. Two more parts of this series, Structure of material inputs in manufacturing industries in inter-industry relations (ID/SER.E.6) and Profiles of medium-size establishments in selected countries [illegible] publication in 1970.

made to examine the possibilities for developing detailed input-output data suitable for industrial programming at both the project and the sectoral levels in the developing countries. An ad hoc expert group meeting was convened in New York from 9 to 12 November 1965, in connexion with this sub-project.[2] Also, in those early years, CID and UNIDO produced a complementary series of studies under the title "Studies in Economics of Industry". The programming data summaries prepared for cement, natural gas-based nitrogenous fertilizers, aluminium, petroleum refining industry, chemical industries and some others, already published,[3] represent examples of this approach, which utilizes the techniques of techno-economic process analysis, supported by ad hoc study materials, but which differs from that of conventional engineering manuals. It was this latter approach that was explored much earlier, it may be recalled, by an Expert Working Group on Industrial Development Programming Data, which met in New York in May 1961.[4]

6. Despite those earlier efforts, it must be said that industrial programming data remains a little-explored field for investigation. Many aspects of the desiderata implied by the term drew the attention of the delegates at the

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2/ International comparisons of interindustry data (ID/SER.E/2), Sales No. 65.II.B.14, has been published. Structure of material inputs in manufacturing industries in interindustry relations (ID/SER.E/6) is scheduled for publication in 1970.

3/ Studies in Economics of Industry: No. 1. Cement/nitrogenous fertilizers based on natural gas (ST/ECA/75), Sales No. 63.II.B.3;

Studies in Economics of Industry: No. 2. Pre-investment data for the aluminium industry (ST/CID/9), Sales No. 66.II.B.10;

Techniques of sectoral economic planning: the chemical industries (ST/CID/11), Sales No. 66.II.B.17;

Thomas Vietorisz, "Programming data summary for the chemical industry"; and Alan S. Manne, "Programming data for the petroleum refining industry" (Industrialization and Productivity Bulletin 10, Sales No. 66.II.B.8);

Technological and economic aspects of establishing textile industries in developing countries (ID/7) 1967;

Fertilizer Manual (UN/ID/15), Sales No. 67.II.B.1.

4/ "Expert working group on industrial development programming data", Industrialization and Productivity Bulletin 5, Sales No. 62.II.B.1;

Data requirements for industry analysis and programming, by Thomas Vietorisz (ID/WG.23/4) page 93.

International Symposium of Industrial Development, Athens, 29 November to 19 December 1967. Specifically, the following recommendations were made:5/

> "Having regard to the complexity of the problems of programming data which calls for concerted action at both the national and international levels, UNIDO should immediately explore . . . the possibility of putting into effect a "data bank" service, in order to create a permanent effective machinery for systematic centralization and exchange of information to be available at the national, regional and international levels; to this end, UNIDO should take all necessary measures and steps to ensure the best possible co-ordination between its activities and those of regional economic commisssions, UNESOB and other regional and international organizations concerned with development.", and
>
> "In co-operation with these organizations, UNIDO should assist in improving and rationalizing methods and means for compiling and evaluating industrial programming data for developing countries".

7. It should be noted that the UNIDO activities summarized in the preceding paragraphs comprise but one of the diversified attempts that have been made on the part of the many international, national and private institutions concerned with industrial development. As these efforts continue, it becomes increasingly apparent that the solution to the problem lies not in the sort of fragmented approach that has been pursued in the past, but rather through co-ordinated, sustained efforts on the part of all the major institutions and individuals concerned with industrial development programming. The first session of the International Working Party on Industrial Programming Data was thus designed as a first test of an idea for an inter-institutional task force charged with defining and seeking solutions for the complex of problems involved in industrial programming data and to promote and co-ordinate the many different programmes in this field.

Participants

8. In accordance with the strategy recommended at the Athens Symposium (see paragraph 6 above), the first session was designed to operate primarily at an interregional level. Invitations were thus sent to the relevant agencies of the United Nations and were accepted by the Economic Commission for Africa (ECA), the Economic Commission for Asia and the Far East (ECAFE), the Economic Commisssion for Europe (ECE), the United Nations Economic and Social Affairs Office in Beirut (UNESOB), the United Nations Statistical Office and the International Bank for Reconstruction and Development (IBRD). In addition, a UNIDO field adviser attached to the office of the Economic Commission for Latin America (ECLA) in Mexico joined the UN component.

5/ Report of the International Symposium on Industrial Development, (held in Athens 29 November-19 December 1967 (ID/11), pages 91 and 92.

9. While the international element of industrial programming data deserves attention in general terms, it was considered advisable, from the standpoint of the working party, to accord priority to the programmes aimed at strengthening or establishing comparable programming data systems within the regional or sub-regional groups of countries. To this end, pre-sessional field study missions were sent to the East African and the Central American sub-regions for the purpose of locating and conferring with key personnel who were or would be particularly active in the subject matters to be considered by the working party. As a partial result of the contacts established by these missions, officers from the East African Community, the East African Development Bank, and the National Council for Economic Planning and Co-ordination of El Salvador participated in the first session. In addition, a preliminary network of interested persons and organizations was established as a basis for a gradually evolving body of inter-institutional task force.

10. With a view to keeping in sight the problems and needs of the individual developing countries, invitations were extended to a limited number of them. The representatives from three such countries, El Salvador, Iran and Malaysia, constituted the country component for the first session.

11. In addition, some of the special consultants who had been assisting UNIDO on related technical subjects participated in the session. Invitations were also extended to private consulting firms and universities that showed particularly strong interest in the agenda of the session. Altogether, fourteen persons from six such organizations joined the working party, mostly on a voluntary basis, constituting a consultant component for the session. UNIDO and other members of the working party owe them special thanks for their generous and active contributions to the discussions.

12. The list of participants is attached to this report as Annex 1.

13. The session was opened on 18 November 1968 with an introductory statement by Mr. François Le Guay, Director of the Industrial Policies and Programming Division of UNIDO, who briefed the participants on the activities of UNIDO that had led to the development of the working party. The hope was expressed that the participants would not consider themselves merely as among those attending a conference or seminar but rather as the nucleus of a continuing forum that could function as an active task force for promoting new efforts and co-ordinating existing activities in the field of industrial programming data.

**Organization of discussions**

14. Three chairmen were elected to lead the discussions in rotation: Amir Shapour Shaheen, Peter F. M. McLoughlin and Ricardo Flores-Cena.

15. It was noted that the outcome of the deliberations, that is, the final suggestions and recommendations of the working party, should be addressed not only to UNIDO, which had taken the initiative in preparing for the session, but also to each individual participant, since he will find them relevant to his own current and future area of competence and responsibility. Thus, it was agreed that UNIDO was to act during the session primarily as one of the participants, and only as an operational necessity as the secretariat of the session. Many participants felt that the conventional formalities required for completing an official report agreeable to every participant before the closing of the session should be avoided so as to allow more time for consideration of the substantive agenda of the session. Accordingly, a draft report was prepared after the session and then circulated to each of the participants for comments and revisions. This final report provides a synthesis of views as finalized through the post-sessional communication.

16. The discussions during the earlier part of the session were devoted to problem-setting: What are industrial programming data? Where are the data gaps? What can be accomplished by the working party to fill these gaps? The deliberations on these general basic issues immediately revealed not only the vastly complex nature of industrial programming data, but also the diverse preparations of the participants, as different participants reacted in different ways, reflecting their different backgrounds and the different types of responsibilities that they had within their respective organizations.

17. After a careful search for ways to define clearly the nature of industrial programming data in general, the working party decided to consider in detail the specific work proposals submitted by UNIDO to the first session, in the hope that such a procedure would help to clarify the over-all problem area.

18. It was noted that it was unfortunate, although entirely understandable at this early point, that UNIDO was the only participant to submit specific project proposals to the session. Hopes were voiced that future sessions would be based on problem-definitions and projects as submitted by many other participants, thereby leading to a better balance in the development of the working party's concept. Two and a half days were devoted to discussing three of the UNIDO proposals in plenary meetings: namely, (a) Profiles of Manufacturing Establishments, (b) Profiles of Pre-investment Industrial Projects, and (c) the Industry File System. The working party was divided

into the three following sub-groups, each of which endeavoured to summarize the position of the working party regarding the three projects.

19. Sub-group on the Profiles of Manufacturing Establishments: R. Ernst, P. Joe-Adigwe, C. Festa, S. Jowhari, Lee Jong Ki, H. Koesoemo, J. Ligthart, W. Murray, O. Neudorfer, J. Richter, J. Ritter and T. Wang. Mr. Murray served as the group rapporteur.

20. Sub-group on the Profiles of Pre-investment Industrial Projects: J. Lewis, P. F. M. McLoughlin, P. Stokke, K. Vyasulu, B. Wilstedt, M. Usui and K. Zeitler. Mr. Usui served as the rapporteur for this group.

21. Sub-group on the Industry File System: F. E. K. Britton, R. Flores-Cena, D. Mwiraria, A. S. Shaheen, O. Specht, J. Spijkerman and R. P. Stobaugh. Mr. Britton acted as the rapporteur for this group.[6/]

22. The discussions on the fourth UNIDO project, Time Profiles of Industrial Project Implementation, took place in plenary meetings only. No sub-group was formed to consider it.

23. Much time was devoted to a general re-assessment of the views expressed on each of the specific projects and proposals and, at the same time, to further clarification of the problems and issues of industrial programming data. Section I of this report INDUSTRIAL PROGRAMMING DATA - CONCEPT, PROBLEMS AND APPROACHES, reflects the discussions held in both stages of the session in a consolidated fashion. Section II, EVALUATION OF THE FOUR UNIDO WORK PROPOSALS, provides a consolidated summary of both the preliminary reports of the sub-groups and the plenary debates and conclusions of the working party as a whole.

24. The concluding deliberations touched on the possibilities for future programmes that would fall within the purview of the working party. The hope was expressed that the working party would adopt a substained flexible organizational structure that would enable it to function both as a trouble-shooting task force and as a workshop carrier in response to specific needs and problems envisaged in individual countries, regions or participating organizations. Part III of this report, OPERATIONAL GUIDE-LINES FOR THE WORKING PARTY, recapitulates the hopes and opinions expressed on this matter.

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6/ On 23 November the Director of the Systems Engineering Department, IBM-Austria, presented a talk on the technical data-processing possibilities for the Industry File System or other activities of the data-bank type. Illustrations were given of the application of the IBM/360 General Information System (GIS) to such a problem.

**Background documents**

25. Many of the participants in the first session had been contacted as a result of the pre-sessional missions mentioned above. At an early stage in the preparation for the first session, some participants were briefed by a draft version of the Aide-Mémoire entitled "An introductory note on the UNIDO activities relating to improvement of industrial programming data systems at both national and multinational levels" (15 November 1967). This Aide-Mémoire was later re-written with specific reference to the first session of the International Working Party on Industrial Programming Data and widely circulated as ID/WG.23/1, PURPOSE, SCOPE, OPERATIONAL FRAMEWORK AND PROVISIONAL AGENDA. This document and several others were submitted for pre-sessional and in-sessional reference and are listed in Annex II to this report.

26. In addition to the UNIDO documents (those with ID/WG symbols), there were a number of contributions from both participants and non-participating contacts. These are also listed in Annex 2 but were intended only for the use of the working party.

## CHAPTER I INDUSTRIAL PROGRAMMING DATA - CONCEPT, PROBLEMS AND APPROACHES

27. The working party first addressed itself to the task of defining the basic issues at hand; namely, what are industrial programming data? Where are the gaps that call for particular attention? What kinds of new approaches should be initiated, and how? Each of these had been outlined in the Aide-Mémoire (ID/WG.23/1, pages 4-6). The participants in the first session, coming from a variety of institutions and having different professional backgrounds, spent some time considering these general questions so as to bring the issue into focus in both conceptual and practical terms. Deliberation on this matter extended over the period prior to the evaluation of the specific UNIDO work proposals and again after the debates on them had been concluded. The following report summarizes the key points of clarification as they emerged in the session, although it does not necessarily reflect the exact time order in which the discussion evolved.

### Definition of problems

28. The working party was of the opinion that the term "industrial planning and programming" covers a broad range of activities, including, among other things, the evaluation of industrial development potentials, the identification of industrial investment opportunities, the preparation and evaluation of feasible investment projects, the determination of targets, priorities and policy measures normally referred to as "industrial development plans" (no matter whether formally documented or not). The term "industrial programming data" should therefore be defined in similar breadth to include the data requirements for ministerial discussion of resource allocation at one end and the practical requirements for placing a productive facility in operation at the other. Although, in practice, the activities of different institutions and their personnel involved in any of the various stages of industrial planning and programming take place simultaneously, the working party noted the importance of identifying the distinct stages of planning and decision-making for the setting of problems in concrete working terms.

29. As an example of the complexity of data needs for just one stage of project preparation, it was pointed out that a good pre-investment study on an industrial project should be supported by the following four sets of data:

- Data on the national (or regional) characteristics of the economic, social and political conditions in the area where the given project is to be tested;

- Data on the current conditions and potentials of the sector (or industrial branch) of which the given project is to be a part;
- Data on the technologically feasible possibilities of production, so as to reveal the alternatives available for project designing purposes;
- Data on the specific details of the particular plant found most suitable for the local conditions.

30. Different institutions accord varying priorities to these four sets of informational co-ordinates in response to their own needs. In this connexion, some participants noted that those who make decisions on the macroeconomic or regional-economic levels might be more often concerned with the problem of infrastructural requisites for industrial development or harmonious development of different sectors of the economy than with the problem of individual project designs. Decision-making at the level of development banks and corporations, industrial programming offices of national planning agencies and the like, on the other hand, should not fail to grasp the interacting factors between different specific projects and sectoral plans. Individual investors or entrepreneurs are also concerned with macroeconomic trends and developments touching upon their own and related sectors. In addition, however, they and their financiers will be keenly interested in data on specific plants and on their supplying industries and markets.

31. Such decision-making requires data that have been collected and tailored for this purpose. The quantity of ad hoc information required in every instance to make a decision should never be underestimated. It was pointed out, however, that a considerable part of the information-seeking activity for each new project could be and should be routinized. A salient example would be the national statistical machinery that is specialized to provide a continuous flow of basic information that can be used for a variety of purposes on a variety of occasions. Although different institutions employ different formats in which to collect and organize the information necessary for their daily tasks, it is likely that a significant part of such information is either commonly useful or exchangeable for better synopsis among the different institutions.

32. Bearing in mind the complexity and diversity of the various activities that might involve the use of industrial programming data, the working party endeavoured to answer the question, "What is specifically the body of industrial programming data, that can best be handled by inter-institutional

machinery such as the working party?" It was suggested that such a body of information should be:

- Generally useful for a broad range of industrial planning and programming purposes;
- Amenable to efficient collection and effective distribution by a central (or polycentric) source; and, at the same time,
- Justifiable in terms of the benefits-cost balance.

Nature of the "data gap"

33. Each institution, establishment or project has, in its own socio-political environment, a large number of data requirements, some of which are more, and others less, peculiar to its own operational requirements. In preparing a synopsis of the types of data most frequently needed as against the types of data currently available, a clear distinction should be made, it was suggested, between:

(a) Gaps resulting from delayed implementation of existing programmes, and

(b) Gaps attributable to differences in the background experiences of the users of currently available data programmes.

It would also be advisable to distinguish between:

(a) Needs arising from national and regional differences in stages of industrial development, and

(b) Needs that have some logical claim to appropriate treatment at an interregional level.

34. It would obviously be fruitless to concentrate on an international data programme that would service only the least common denominator of a wide range of vaguely defined needs. However, the action programme of the working party should be developed on a flexible, field-bound basis, each of its projects being designed to meet a well-identified set of requirements.

35. A number of participants noted that the national statistical programmes, as guided by the United Nations Statistical Commission, reflects and provides the broadest and, in many ways, the most essential information for general economic and industrial planning purposes. However, it is well recognized that, in many developing countries, the existing, and even the projected, statistical systems are far from adequate. Although improvements are being made, they generally involve a slow and costly course of action. Apart from the problem of gradual improvement of national statistical programmes, there

is an obvious need for some supplementary data systems that can fill the gap between what is available from the current national statistical programmes and what is required for present-day planning and programming activities. It was also noted that industry statistics, in the conventional sense, are as a rule aggregation-oriented, partly owing to disclosure problems, partly because the prototype systems were developed in relatively industrialized countries for the needs of the first generation of planners after the Second World War; and partly because of the conventional recourse to administrative records or those of enterprises, which require stochastic treatment, and the like.

36. Some participants were of the opinion that the data requirements for industrial planning and programming, in the broad sense, arise to bridge the area between macroeconomic planning and microeconomic programming. For so-called "sectoral" planning purposes, there is very little in existing data systems that can help planners to handle their economic calculations at a level only a few steps removed from individual industrial plants. On the other hand, the evaluation of a given pre-investment project and the programming of its implementation should be supported by an adequate flow of information relating to other industries and projects and to the conditions and potentials of over-all sectoral and regional economies.

37. In connexion with this task, which is often associated with that of reconciliation between macroscopic and microscopic tools of analysis, attention was paid to the fact that, instead of trying to analyse and summarize plant-level engineering information directly, many economists had attempted to perform indirect statistical estimates or to develop short-cuts of one kind or another. "It is of course true that incorporating the level of detail encountered in engineering reports into the broader industrial development studies would constitute a task completely out of proportion with the resources typically available for such studies. Nevertheless, it is evident that the statistical approach is more instructive viewing the past than for deciding about the future; and that none of the short-cuts that have been suggested by economists for getting around the need for summarizing and representing the relevant production relationships have given satisfactory results."1/

38. At the level of sectoral industrial studies, somewhat detailed considerations of product mix, process characteristics, fixed costs, overhead for

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1/ Quotation from: Thomas Vietoriss, "Data requirements for industrial analysis and programming", ID/WG.23/4 (15 February 1968), page 77.

complementary plants and other technical specifications should underly the over-all economic calculations. A techno-economic analysis and programming of a sector, to be linked closely to the task of preparing and evaluating individual specific investment projects, can be an extremely complex task. The necessary empirical reference materials for such a task are yet far from being sufficient. It was noted that the exploratory efforts made in this field thus far, should be further substantiated.[8/]

39. To that end, one possibly useful approach would be to assemble comparable information reflecting the experiences gained in different countries and regions. The possible transfer utility of what might be called "inter-country reference data" requires a very careful assessment. The goal of such reference data systems, it must be understood, is not to create "instant experts"; rather, it should be generally considered as but one of the skills and tools required for daily use of experts, thus permitting a depersonalized diffusion and exchange of knowledge and experience.

40. Apart from the general discussions cited above, concrete examples were given of the kinds of data that must be developed to facilitate decision-making activities at different levels in the programming process. For example, at the project level, where feasibility studies are looked upon as major decision bases for investors, particular emphasis was laid on up-to-date market data on the raw material supply as well as on the demand for products, which normally provides the point of departure for project programming. In a similar context, attention was also called to a possibly useful "reference-data" approach by providing models of industrial projects that would elicit the minimum feasible capacities for various types of production process. Such models of minimum feasible capacities might be useful for development banks and similar institutions in evaluating industrial feasibility studies and project offers.

41. At the level of development institutions, which are typically concerned with the interdependence among several industrial projects and between a given group of projects and the rest of the industrial sector, a sensible approach to reference programming data could be, some participants suggested, to elaborate a complete and detailed chart of industry chains (or trees) for each

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8/ It was noted that some of the UNIDO proposals such as the Profiles of Manufacturing Establishments and the Profiles of Pre-investment Industrial Projects had very much to do with this particular field. See Part II of this report.

type of major raw material, as might be observed in a (hypothetical) fully industrialized economy. In such a chart, information could be given on available minimum capacities for each individual process, which in turn could be mosaicked in order to study demand-supply gaps on the over-all sectoral level. Such a reference data scheme, when utilized in comparison with an up-to-date catalogue of existing industrial factories and projects in each country, could be of great help for the programming work at the macroeconomic level, where the chief concern is the optimal structuring of industrial development.2/

42. While the inter-country reference data approach, as construed along these lines, would provide some guidance for certain phases of industrial programming, emphasis was laid, at the same time, on the "indigenous" aspect of the data gap, which some participants described in terms of the problem of routine communication among different institutions involved in the local machinery for industrial planning and programming. Attention was called, in particular, to the need for a system of informational input-output feedbacks. An example was presented with reference to the existing industrial development system in one developing country. It consists of: (a) an Industrial Development Council (co-ordination of the activities within the system), (b) a Ministry of Economy (administration of policy measures), (c) an Industrial Development Institute (financing and project preparation and evaluation), (d) a Research and Development Institute (basic and applied technological research, development of natural resources and programming data processing), (e) an Export Promotion Centre (market studies and export promotion), (f) a Ministry of Agriculture (development of agricultural raw materials), (g) a Central Reserve Bank (monetary policy measures), (h) industrial associations and (i) industrial firms. This example revealed a vast area that requires further exploration concerning effective devices for regulating the flow of information between the different components of the total system, including private enterprise, as users of the services of these component operating units.

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2/ Some participants doubted the practical possibility of drawing up a hypothetical set of industry trees that would be complete enough to meet the needs of every different country and to encompass all of the possibly important variabilities arising from changing technologies. As regards the conventional input-output framework, it was pointed out that some new kind of compilatory techniques should be developed in order to establish an unambiguous working linkage between this broad statistical framework and plant-level or process-level technological information.

**Approaches**

43. It was recognized that, in the face of the vast complex of data requirements for industrial programming, the key was not so much the giving of a precise definition to each of the possible elements of the data gap, but rather to be conscious of the inability of the available approaches to fulfil some of the important data requirements.

44. It was suggested that one reasonable approach would be to weigh those programming data needs that are being met by ad hoc studies and expertise services against those being served by continuing, long-term programmes. Although programming data are no more than a tool for programming, this tool should lend itself to a depersonalized, institutionalized, sometimes even a routinized, development. The latter approach immediately points to the need for co-ordination among the daily efforts of the various national, as well as international, institutions concerned with industrial development.

45. As pointed out in the Aide-Mémoire (ID/WG.23/1), there seems to be very little co-ordination with regard to the numerous ad hoc industrial surveys, pre-investment studies and establishment-level case studies undertaken by different institutions. Provision is seldom made for utilizing the valuable information contained in these specific studies to develop a coherent stock of programming data sources for more general purposes. Thus, industrial inquiries of a more or less similar scope are seen to be repeatedly conducted on different occasions by different people; business enterprises, being the primary economic entities and hence the principal sources of information, all too often suffer from an overload of questionnaires.

46. The "librarian" or "cataloguing" approach to improving information availability is one approach; the screening of collected materials into pre-digested forms useful for a given set of interests is another. Modern advanced information media - books, periodicals, mimeographed material, letters, seminars, conferences, and the like, although they have been accompanied by an increasing effort of cataloguing and indexing, still appear to leave much information inaccessible from the standpoint of the absorptive capacity of the individual user. One participant spoke of the present-day "jungle" of development information as an environment only barely more hospitable than the "desert" of twenty years ago. It is obviously necessary to distinguish the primary information from the secondary information contained in each of these indexed documents. The distinction concerns whether or not a particular bit of

information represents a direct observation on a factual event, susceptible as such to different ways of processing and interpretation, depending upon the requirements at hand. Thus, for example, the returns of individual establishments for an industrial inquiry may be considered, for some purposes, as primary data when compared with data derived from a given aggregation or averaging procedures. For some other purposes, even the latter may be considered as primary when compared, for example, with articles on production trends and productivity written on the basis of such data.

47. The recognition of an "approach gap" such as that implied above would lead one step beyond normal cataloguing activity to the identification of the relatively primary elements of information needs that can be more or less equally useful for various phases of industrial programming. The choice among potentially sensible primary elements is wide open and can only be made on a pragmatic basis, having due regard to the possible cost-benefit balance. It was agreed that there was need for serious, creative thinking along these lines.

48. It was emphasized by many participants that the design of specific projects to deal with industrial programming data should follow specified guide-lines. That is, a sensible project should:

(a) Permit a routinized procedure of co-operative accumulation of relatively primary (or multipurpose) pieces of information, as opposed to ad hoc searches for once-only uses;

(b) Be based, however, on an unambiguous delimitation of the relevant spectrum of users to ensure effective uses;

(c) Motivate individual users to participate in the sustained, co-operative execution of the project by contributing relevant data from their own sources to the central disseminating agent;

(d) Establish a pre-specified format which will ensure standardisation up to a critical, collectively determined point but which will allow for user-oriented "deepening" in order to cope with the needs arising in the immediate context of application; and, at the same time,

(e) Be receptive to new ideas and approaches by making use of periodic re-assessment for gradual up-grading.

49. It was agreed that the above general principles or guide-lines should, at the same time, be applied in formulating the operational and organizational strategies of the working party itself.

## CHAPTER II EVALUATION OF THE FOUR UNIDO WORK PROPOSALS

50. Four specific work proposals were submitted to the first session, primarily for the purpose of providing an indication of the relevant areas of interest and the project prototypes to be considered in setting up guidelines for the future programme of the international working party. The four proposals were:

(a) Profiles of Manufacturing Establishments:

- Evaluation of the working uses of this continuing UNIDO project and the possibility of extending this series of reference data on manufacturing establishments;

(b) Profiles of Pre-investment Industrial Projects:

- Examination of the possibilities of developing a standardised technique and effective institutional arrangements for a sustained and systematic compilation of the techno-economic industrial project reports in a form complementary to the Profiles of Manufacturing Establishments;

(c) Industry File System:

- Examination of the feasibility of establishing a data-bank type of operation that would provide a continually up-dated, reasonably comprehensive list of both existing and proposed industrial establishments;

(d) Time Profiles of Industrial Project Implementation:

- Examination of the framework of data collection to be used for a series of case studies on industrial project implementation that would help to identify typical bottlenecks or trouble spots that retard the construction and operation of individual industrial projects.

The first and fourth of these projects are already being carried out by UNIDO under its regular programme of work, and the other two represent proposals that UNIDO has been exploring for implementation in the near future.

51. Although each of these four projects is intended to meet certain real needs in developing countries, it was repeatedly pointed out that the presentation of those proposals by UNIDO at the session was not intended to suggest any particular priority to be accorded to them in deliberations of the working party on possibly recommendable approaches and projects. All participants had been urged, prior to the session as well as during it, to submit specific project proposals that were under consideration within their own organizations. It was admitted, however, that the pre-sessional schedule of work did not allow adequate preparation of such proposals by most participants. Consequently,

at its first session, the working party decided to deliberate upon the UNIDO proposals, one by one, with a view to clarifying the key issues of industrial programming data with reference to these particular examples, as well as to making specific recommendations regarding the projects themselves.

52. The debates on the four specific proposals took place in three stages: first, a preliminary exchange of views; secondly, further detailed evaluation by the three sub-groups formed for the respective three proposals;[10/] and a concluding re-evaluation at the plenary session in the light of draft reports of the sub-groups. The following summary report provides a synthesis of the reports of the sub-groups and the final plenary appraisal.

Profiles of Manufacturing Establishments

53. The working party was informed of the development and current status of this major UNIDO project. The first volume in the series Profiles of Manufacturing Establishments was published in 1967 (ID/SER.E/4), and the second volume in 1968 (ID/SER.E/5). These two volumes, which contain some 460 examples drawn from establishments in France, India, Israel, Japan and Yugoslavia, were considered the output of the first phase of the project. Preparations are being made for the third and fourth volumes of the series, which would include studies of establishments in Austria, El Salvador, the Federal Republic of Germany, Mexico, the United Republic of Tanzania, Uganda and Zambia. Negotiations were taking place in several other countries for further extension of the series.

54. The purpose and technical features of the series were explained in the Introduction to the first volume. Each Profiles study was designed to provide summary data on the structure and performance of an existing industrial establishment for a given accounting period. The identity of the establishments was not revealed, but an indication was given of the particular countries in which they are located. The compiled data were intended to reflect the actual performance of each establishment, and only a limited effort had been made to normalize the observations.

55. With the preparation of the third and fourth volumes of the series, a second phase of the project had begun, distinguished by certain modifications with respect to both the scope of the data compiled and the methods of selecting the establishments. It was recognized, however, that the project as a whole was intended for gradual evolution in a manner suitable to the needs of the users.

10/ The proposed Time Profiles of Industrial Project Implementation was discussed in only two stages, both plenary, without the formation of a special sub-group. The names of the participants in the three sub-groups are indicated in Section I (paragraphs 19-21) of this report.

56. In discussing the Profiles, the working party expressed its appreciation of the work being carried out by UNIDO on this series. It was agreed that the precise scope of future Profiles will depend largely on the outcome of a careful review (which is currently being conducted) of the presently available collection. The consensus was that, at this stage of development, the most important function of the Profiles is to indicate broadly the range of actual production possibilities for the process structure and performance of establishments engaged in specified activities. Indications such as these studies attempt to provide must, of course, be supplemented extensively by other types of programming information and by additional data specifically applicable to the preparation of individual industrial projects. The adaptation of the information provided in the Profiles to different regional and national conditions is, it was agreed, an important problem; possibly some further indication might be given of those elements that might be of most relevance to the adaptive interpretation of the information from the users' standpoint.

57. The usefulness of the Profiles for cross-sectoral and cross-country analysis of structural and functional relationships (by means of mechanical or statistical treatment) was considered as being of secondary importance. The general view was that such a widening of scope could not be undertaken extensively unless accompanied by a significant expansion in the coverage (and cost) of the primary inquiries. However, it was pointed out that the users of these Profiles might feel free to conduct ad hoc analyses of the Profiles data in comparison with similarly aligned data on industrial establishments in their own countries and, to some extent, in comparison with the statistical behaviour of industries as revealed by conventional industrial statistics. In the former type of comparison, which can be considered as their primary mode of use, the Profiles might provide a bench-mark or reference point, facilitating the diagnostic evaluation of individual local firms or establishments, as well as of proposed projects.[11/] In terms of the latter type of comparison, it was noted

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11/ This task may be facilitated by adopting a set of more rigorous criteria for the selection of "typical" establishments; "typical", however, in just one of the possible contexts of use, and perhaps on the basis of an unambiguous but somewhat simplified theoretical consideration. It was noted that the present approach could provide challenging raw material for certain types of studies concerning "normal" prototypes, should users be interested in such a subject; but the present approach is intended to deal more with the problem of "viable" industrial firms than with that of "normal" plants.

that the Profiles themselves appeared to cast an intentionally disconcerting light on the basic thesis of so-called "programming norms"; for the working purposes connected with industrial programming, how could one deal with the deviations of individual establishments from a statistically (or aggregatively) obtained expectation except by discarding them as random errors. Or should not such deviations, which may be of serious concern to the business practitioner, be treated more explicitly as an important object of study for the purpose of realistic assessment of industrial programming norms?

58. The selection of the establishments to be included in the Profiles was generally considered to be of great significance for the usefulness of the results. Many participants felt that further efforts should be made to extend the coverage, both on an industry-wide basis and from the geographical standpoint. In the absence of a statistical indicator of representativeness, an alternative basis for evaluation might be provided and some guidance given to users concerning the possible range of configurations to be found in existing economic units.

59. However, some participants emphasized more strongly the need to "deepen" the content of the Profiles in order to make them more serviceable to its intended users. They indicated that the desired supplementary material should include:

(a) An introductory note for each product or product group, describing the general trends in its manufacture and the major technical, economic and financial requirements for the manufacture of a similar product (alternative technologies, economies of scale and the like); also, a comparative summary of other available profiles in a similar product group;

(b) A brief note for each sample establishment, indicating its place in the industry, any particular conditions or difficulties faced and the like, including an opinion of the editor as to whether the particular case considered could be regarded as a model for an efficient plant;12/

(c) An evaluation of the price aspects, that is, the relationships of actual sales prices to world market prices and of prices of major input materials to those of competitive imports, excluding customs duties;

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12/ Some participants felt that the matter of more immediate interest for industrial programming was what a manager would do, rather than what he has done, in the context of providing a new facility to produce the products under consideration.

(d) Inclusion of data on capital, output and employment in the first year of commercial production for comparison with the data for the year of reference; also, description of the history of the performance and structural changes of the establishment in past years;

(e) A better method of organizing the information on major machinery and equipment; indication of the rated capacities of major items of equipment, their positions in the relevant production line or process shop, their sources of supply (manufacturers and countries) and the like;

(f) A formal reconciliation between the financial statements for the company or operating division and the estimates on physical production relationships.

60. It was noted, however, that the marginal costs of increasing the level of detail and controlling the compilation to ensure even qualities for all cases would be extremely high. In fact, the existing form or dissemination of the Profiles has been designed so as to leave some of the additional tasks suggested above in the hands of their users. In this sense, the Profiles, as disseminated, should be clearly distinguished from study or survey articles on specifically defined subjects. Given the over-all resource limitations, the critical question for UNIDO is whether to deepen the Profiles at the expense of industry coverage or to widen them at the expense of depth of technical detail. It was felt that the Profiles, as they appear in the two volumes published thus far, may reflect the difficulty of attempting to attain these two objectives at the same time. However, it was also noted that the new Profiles questionnaire is already providing a considerably deeper insight into the establishments under study. With further improvement, bearing in mind the desired end-uses and their relative priorities, an accepable point for cost-benefit balancing might be attained.

61. As regards the different types of establishment to be studied, it was pointed out that the "establishment", as a statistical unit, is an organizational entity that has a stable, legally recognized existence at a given location. However, there is no exact correspondence between a given establishment and either the products that it produces and utilizes or the technical processes that it encompasses. One might accord, therefore, differential priorities to different types of establishment: a single-plant establishment or enterprise, a single-plant branch establishment of a multi-establishment enterprise, and a multi-plant establishment or enterprise. Here again, it was noted, the approach of the current Profiles has been designed to provide materials for two distinct purposes:

(a) To guide general economists a few steps inside the conventional statistical unit and its administrative records, so as to show them

more explicitly the specific commodities and productive resources that the unit is associated with; and, at the same time,

(b) To guide industrial engineers a few steps outside the specific technical processing units, so as to give them an insight into the ways in which these technical units are administered as economically sustained establishments or enterprises.

The latter role of the Profiles should be considered no less important than the former, because the rapid evolution of production technology and ever-changing market conditions demand great flexibility in the managerial policies of an existing establishment. Again, from the standpoint of viability, one of the most relevant aspects of project programming would be the ability of management to develop flexible product assortments and, in some cases, even flexible plant assortments. It was thus felt that one should not be over-preoccupied with the need for immediate comparability among the cases presented in the Profiles, although this preoccupation is legitimate, but that, in extending the series, due attention should be paid to the possibility of providing raw material, hitherto unavailable and unexplored, for studying the dynamics or variability of techno-economic entities for industrial development.

62. With regard to the new questionnaire, several participants felt that it appeared to be needlessly elaborate, and that some thought might be given to reducing its scope. In this connexion it was noted that the information requested in the new questionnaire is far more detailed than that published in the first two volumes of the Profiles (ID/SER.E/4 and ID/SER.E/5). The working party indicated that there might be some redirection of emphasis in the items of information so as to improve the usefulness of the final results. A number of specific suggestions for such modification were made by some participants. It was also noted that the concepts, classifications and terminology in the questionnaire were not always fully consistent with the standards of the United Nations in the field of industrial statistics. It was further suggested that the special technical working team to be organized in initiating the second project (Profiles of Pre-investment Industrial Projects) should give due consideration to those points, so that these two Profiles series could be developed in a mutually complementary manner.

63. The working party stressed the importance of considering the project within the context of the over-all data requirements for industrial programming. With a forceful emphasis on specified needs of designated users in structuring the studies, augmented where possible by means of more pragmatic procedures for extending the industry coverage, the Profiles could become even more valuable

programming aids. To this end, efforts should be made to secure the co-operation of all agencies interested in the project, either as producers or users of the data compiled. These should include all agencies at the national, sub-regional, regional and international levels.

Profiles of Pre-investment Industrial Projects

64. The working party had before it a brief description of this work proposal, including the draft proposal, submitted 7 June 1967 by the Economic Commission for Latin America, the Latin American Institute for Social and Economic Planning and the Inter-American Development Bank (ID/WG.23/2). The UNIDO proposal was presented as an integral part of the extended, dual approach to reference programming data of the Profiles type. The earlier proposal, although a year and a half old, had not been followed up by any practical action, so the working party had no material or study to demonstrate the intended scope of this new series of Profiles. However, it was recognized that an enormous number of techno-economic feasibility studies on various pre-investment project proposals, available in industrial banks, development corporations, governmental agens, international organizations, private consulting firms and the like which e being generated every year, could provide a great deal of useful reference programming data, if properly retrieved and analytically digested.

65. The proposal was considered as possibly involving two sub-projects:

(a) Development of a continuously up-dated catalogue of relevant pre-investment studies; and

(b) Compilation of summary data on selected studies for a reference programming data series of the Profiles type.

It was agreed, however, that the omission of the first sub-project would not impair the practical significance of the second, at least at its outset; and that, moreover, cataloguing, as such, has already become a popular subject for a number of organizations, and this should not be considered as the primary function of the proposal in question.

66. It was suggested that the main objectives of the Profiles of Pre-investment Industrial Projects should be:

- To provide an analytically digested summary of pre-investment industrial studies, with a view to developing common guidelines (or perhaps even a standardized format) for the preparation and the evaluation of such studies;
- To develop sample terms of reference for industrial projects, with due regard to realistic estimations of costs, quantification of benefits, projections of future outputs, engineering and design standards, and the like;

- To demonstrate what may be considered as sound criteria for economic and financial analysis for project formulation, thus providing practical guidelines for cost-benefit analysis, as well as for assessment of internal rates of return;
- To serve as a check-list of evaluation criteria to be used by investment decision-makers for evaluating the project studies of consultants;
- And, in a later phase, when properly co-ordinated with the Profiles of Manufacturing Establishments, to provide an insight into the working linkage between the techno-economic characteristics of industrial projects as envisaged in the pre-investment stage and those observed in the actual operation of similar industrial projects, helping thereby to up-grade project preparation methodologies.

67. Some participants felt that the transfer utility of information contained in a given pre-investment project report would arise primarily in relation to the technological data on process specifications, raw material qualifications, choice of alternative plant sizes, investment costs, production costs, skill requirements and the like. Others wished to focus on the utility in terms of techniques of project evaluation, such as market estimation, estimation of "system costs", attribution problems, profitability analysis, cost-benefit assessment, evaluation relative to the national development programming plan, and programming for possible implementation. The summary data, in Profile form, would thus serve as illustrative model cases for pre-investment project evaluation. Many participants were of the opinion, however, that technological adaptation and economic evaluation were of equal importance for project preparation purposes, and that both should be accommodated within the study.

68. It was recommended by some members that those candidate feasibility studies selected for the compilation of profiles should be good studies rather than poor ones. It was reasoned that a balanced, comprehensive and thoroughly critical evaluation of an uninspired project proposal might be even more acceptable than an uninspired, incomplete evaluation of a well-designed project. An opportunity to compare good and poor studies might possibly add to the significance of the Profiles as a teaching instrument. However, it was pointed out that selection of candidate studies should be carried out carefully so as to minimize the risk of misuse by non-expert users.

69. There was a consensus that this proposal could be developed to meet a long-felt need of both users and producers of industrial pre-investment studies; as such it would be a highly rewarding attempt, particularly at a

time such as the present, when another, complementary, reference programming data series - Profiles of Manufacturing Establishments - was reaching a post-experimental stage.

70. It was recommended that UNIDO continue to take the initiative in arranging appropriate pilot work. A small group of experts should be organized for this purpose to elaborate the basic methodology and design detailed forms for standardized compilation.

71. This pilot expert group should work on materials from more or less readily available sources; for example, from organizations such as the International Bank for Reconstruction and Development (IBRD), the Inter-American Development Bank (IDB), Fonds Européen de Développement (FED), the Organization for Economic Cooperation and Development (OECD), the British Ministry of Overseas Development, the Secrétariat d'Etat Chargé de Coopération of the French Foreign Ministry, the Deutsche Entwicklungshilfe, the United States Agency for International Development (AID) and the Swedish International Development Agency (SIDA). Wherever possible, the archives of private consultant organizations should be searched for similarly useful materials. The first sample to be collected should consist of no more than 40 to 50 studies covering a maximum of a dozen designated types of industry. The types of industry may be selected in an experimental way, with emphasis on their respective characteristics in relation to the developing countries, such as:

(a) Applicability to plants of relatively small size;
(b) Orientation to local natural resources;
(c) Import substitution;
(d) Orientation to export; and
(e) Capital saving.

Two or three cases for each type of industry (for example, one from each region) should preferably be included.

72. It was agreed that it is an important first step to have a homogeneous working group in order to evolve a standard of evaluation that can restructure the varying contents of individual project reports into a common frame of reference programming data. The gradual extensions of this series should be

adequately institutionalised to warrant voluntary but well co-ordinated contributions from organizations that commission and evaluate industrial pre-investment studies for developing countries. For that purpose, the pilot working group mentioned above should be absorbed into the international working party as a part of its specialized technical component. It was anticipated that the subsequent sessions of the working party, on both the country and the sub-regional levels, would offer the best possibility for establishing the practical staffing arrangements needed for gradual extension of the Profiles compilation. It was also suggested that these sessions could be instrumental in acquiring sustained financial support from United Nations field operational funds, which could be tapped by registering proper requests from governmental authorities.

Industry file system

73. This proposal, which had been tentatively termed the "Industry File System", represented an idea that, although still at a very early stage of exploration, appeared to stand a good chance of being developed as a critical addition to industrial programming tools for the developing countries, especially for groups of countries with relatively strong potential for industrial co-operation. In brief, the proposal consisted of a data-bank scheme that would allow the adaptive use of continuously up-dated information of the factory-directory type, including an up-to-date inventory of investment projects under consideration, and which might serve as a sensitive detector of the trends of industrial development, an aid in market identification and surveillance of project implementation, a tool for inter-industrial programming and the like.

74. The summary description of the concept given in the Aide-Mémoire (ID/WG.23/1) did not seem to clarify many points of the proposal to the satisfaction of the working party. Some participants preferred to the proposed system a more general filing system that would include all the possibly useful items of information concerning industrial development. One participant felt, although many did not agree, that the kind of information suggested for the minimum system would normally be easily accessible after a few minutes, or at

most, a few hours, of inquiry in any given country. Still others regarded it simply as a speedy, up-to-date processing technique to be applied to the conventional annual industrial census. The varying interpretations of the proposed simplified system, as voiced by many participants, were themselves indicative of their different backgrounds and different interests, all of which the Industry File System, in its proposed form, could never serve equally well. It was finally agreed, however, that the proposal was intended to provide only a limited portion of the entire battery of instruments required for industrial programming. Although there appeared to be no convergence of views regarding the precise scope of the Industry File System to be recommended, there was a consensus regarding the usefulness of a simplified data-bank approach to industrial programming, of which the version presented by the Industry File System could be regarded as a variant.

75. To the extent that they may help to identify the operational potentials of a similar, if not identical, proposal, several key points concerning the varying interpretations of the original proposal, as raised in the course of discussion, are summarized below.

76. The working party was of the opinion that a well-conceived work proposal in the field of industrial programming data should be such that it should, as a first priority, be established and operated on the national level, by and for the national authorities. Placing only secondary priority on the potential usefulness of the system in a multinational context immediately implied that there could not be a single or unique minimum system that would be equally useful for a number of different countries. As against this view, others argued that one should structure the system in terms of some "absolute minimum" without which no sensible industrial programming activities would be possible, and which should be satisfied in every developing country. In the vein of this latter approach, the following list was suggested as a point of departure for further possible elaborations:

- What factories presently exist in a given country?
- Where are they located?
- What specific products do they produce?
- How much do they produce (output), and/or how large are they (employment)?
- What investment projects are being implemented or are being considered for implementation?

- What products are to be produced under those projects and in what quantity?
- When and where are those projects expected to become operational?

77. The working party noted that the cataloguing of the data suggested above constitutes nothing more than a current directory of existing factories and noteworthy industrial projects. It was argued that the conventional national statistical programmes that exist in most developing countries, might have, or be planned to have sooner or later, a scope broader than that offered by such a directory and thus render the Industry File System redundant in some (if not all) respects; with fuller development of national statistical systems, the Industry File System, in its minimum version, would perform no real function, it was further argued. In reply to this view, it was pointed out that:

- Owing to the well-known (and often exaggerated) rule concerning the disclosure of business secrets, the statistical programme, in the conventional sense, reveals neither the identity of, nor the specific figures on, individual statistical units, thus ruling out the use of disaggregated information at the factory level;
- In contrast, the extremely limited amount and clearly non-critical nature of information on individual factories and projects to be collected by the Industry File System would hopefully nullify any fears of disclosure;
- At present no attempt is being made to put together information on both existing factories or establishments and potential establishments or projects under a common classification system;
- A fully developed, highly computerized and rapid national statistical programme, with meticulous and flexible classification techniques, would serve the same purpose as a perfectly developed industry file system; however, it is not realistic to anticipate the development of such a utopian mechanism in the foreseeable future for most of the developing countries.13/

78. It was thus agreed that the Industry File System, even in its minimum version, is concerned with a grey area of information, the responsibility for which falls between the current programmes of several existing agencies - national statistical offices, industrial programming offices, development banks or corporations, industry promotion bureaux, and the like - all of which are not usually well co-ordinated, especially with regard to the needed parellelism

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13/ A citation from a recent periodical was given by a participant, indicating the deficiencies and delays of existing statistical programmes in providing structural data, even in highly industrialised countries such as the United Kingdom: ". . . complete data on the Census of Production for 1963 are still not available, astonishing as it may seem" (Lloyds Bank Review, Oct. 1968).

of alignment of information on industrial projects at the pre-investment, construction and post-investment phases. It was likewise agreed that each developing country that decides to develop such a mechanism should be urged to include in its own file system a broader range of data than the suggested minimum, in accordance with its own capacity and needs. In extending the scope of the Industry File System beyond the suggested minimum, however, efforts should be made to identify types of information that are not duplicative of those provided by the programme of the national statistical office. It was recommended, rather, that the Industry File System be developed as a complement to the latter and be particularly directed towards facilitating necessary routine communication between different industrial planning and development institutions with regard to the key data on industrial establishments and projects.

79. As regards the usefulness of the proposed Industry File System as a market identifier, it was pointed out that the preliminary market estimations normally practised for pre-investment project studies consist of no more than an extrapolation of commodity consumption trends from conventional statistics. All too often such studies do little to indicate how and where the necessary sales efforts can be initiated vis-à-vis expected buyers of the given products, nor do they go on to specify the necessary complementary measures to be pursued by other manufacturers and industry promotion agents who envisage expansion of capacity in potentially related fields. The responsibility for such entrepreneurial efforts is often treated as a residual, which is left entirely to the project manager at an implementation phase. A sound market evaluation, including preliminary field investigations of specific potential customers, would contribute to a timely decision on project financing and a proper time scheduling for project implementation. The Industry File System, even in its minimum version, might prove a useful routine check-list for both those concerned with the preparation of feasibility studies and those charged to evaluate and follow up on these studies.

80. Many industrial development projects in developing countries might be characterized by relatively weak interlinkage within the manufacturing sector and relatively strong linkage between the manufacturing and the non-manufacturing sectors (agriculture, mining, construction, transportation and also household consumers). As a market-identifier system, the Industry File System might preferably be extended to cover, in a comprehensive manner, the establishments and projects in all economic sectors, rather than limiting its

coverage to the manufacturing sector. Obviously, this is one of the workable ways in which an individual country's industry file system could be evolved, wherever feasible. However, it was pointed out in this connection that practically two thirds of the entire 4-digit manufacturing industries (according to the United States Standard Industrial Classification System (SIC)) are known to produce commodities that are mainly consumed by other 4-digit manufacturing industries.[14/] The potential dynamism of the manufacturing sector, supported by its within-sector interdependence, should not be overlooked, no matter if the starting base is small. Such a base can already be fairly sophisticated when considered in the context of sub-regional industrial co-operation potential.

81. The distinction was made between what is desirable now but feasible only in the long run and what is immediately feasible but susceptible to gradual sophistication as the crucial factor for defining the approach rather than the concept to be approached. It was recognized that the Industry File System, in its minimum version, would require only a few items of data in addition to the normal industrial directory. Practically all of these additional items are currently collected in one way or another as industrial permits, licences, financial applications or censuses. The gist of the proposal was thus simply to combine these data in a well-established, standardized, routinized framework that would facilitate routine uses. Once this was done, not only the sorting out of data on individual factories and projects but also a quasi-quantitative treatment by addition, subtraction, division and multiplication of these data would become possible. By these means, the proposed system could supply critical time-series data if only it were maintained by periodic up-dating.

82. There was nearly unanimous agreement that the proposed Industry File System would be a useful instrument in the multinational context of industrial development programming. In this form it could be visualized as a sort of long-range detection system for headquarters operations. Its usefulness for a given country must be qualified by the realization that the minimum system is designed to be used together with, and not instead of, conventional statistical and other data locally available, and that the strategically significant use would be more clearly felt after a few years' time-series data have been accumulated.

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14/ See "Recent trends in the development of business data banks in the United States" (ID/WG.23/3), pages 29-38 (Exhibit E).

83. The working party thus asserted that the appropriate strategy for initiating an Industry File System on a pilot basis should be, as a first step, to tailor a sample file system with generalized priority-specified data inputs, collection methods, and uses, which would serve as a point of departure for the individual file system to be structured for a given country. With a view to making it immediately operational, its application may be focussed for the moment on the developing countries where industry is still in a relatively early stage and where the existing statistical apparatus is relatively rudimentary. The possibility of consolidated application of comparable systems to different countries for their common interests should receive proper attention wherever desired.

84. Some participants expressed their interest in initiating pilot projects in their own countries and organizations along the above general guide-line. It was anticipated that the subsequent sessions of the working party would afford further deliberation for the Industry File System approach at a technically advanced level, with a view to providing direct assistance to the countries or institutions interested in such undertakings.

Time Profiles of Industrial Project Implementation

85. This proposal, as submitted to the first session, represented a particular approach being followed by one of the continuing UNIDO research projects. The working party had before it, in addition to the general description in Annex IV of the Aide-Mémoire (ID/WG.23/1, pp. 30-32), two internal working papers describing this particular UNIDO project: "Brief note on Time Profiles of Industrial Project Implementation" and "Design of an empirical study of problems in implementing industrial projects in developing countries". The first of these explained the background of the project and its main objectives; namely, to provide reference parameters for project scheduling and to disseminate information on actual implementation delays and their cost implications in the form of a case-study series. The second document indicated the particular design of the format being used for the compilation of data on a pilot scale.

86. It was agreed that the implementation phase of industrial projects is of crucial importance for the developing countries, and that development resources at that stage, despite their scarcity, tend to be underutilized and wasted due to poor project programming and delays in execution. It was admitted as well that this problem area is itself lacking in well-framed

informational co-ordinates, and that, accordingly, the information on various delays, difficulties and wastes encountered in the project implementation phase is usually available in no more than an anecdotal fashion. There was thus a consensus that industrial programming data should be developed with full cognizance of the time aspects of the activities connected with the preparation and execution of industrial development projects.

87. After having been briefed on the exact scope and format of this continuing UNIDO study, some participants felt that the definition of project implementation, if limited only to those activities undertaken after a given project has been approved and resources committed to it, might leave out some of the critically important problems of project implementation. In this connexion, it was pointed out that delays in the pre-investment decision-making process are indeed an important issue for project programming in general, but that the real cost (opportunity cost as well as direct project cost) of delays would arise only after the licence had been given and funds committed; the implementation phase, as distinguished from the preparation phase, might thus be considered as relating to actual projects in that sense. While admitting this point, however, some participants voiced the view that the suggested demarcation line itself called for careful treatment and might even prove to be an area in which key factors for implementation delays tended to cluster.

88. In many instances, investment decisions are not made on a one-time basis but are phased over a period of time in relation to annual budgeting procedures. The reversal or delay of a one-time (formal or informal) decision as to the extent and timing of actual commitment, often attributed to unforeseen circumstances or forced by some socio-political disturbances, can be a serious factor for delayed project implementation. Also, a decision made by an investor may not necessarily be supported by the concurrent decisions needed on the part of an industrial licensing bureau, import licensing bureau, legislative bodies for industrial policies, or the like. This suggests not only the need for a sufficiently sophisticated scheme for delimiting the implementation phase of an industrial project, but also the complex of interactions between within-project and without-project activities, which probably constitutes the core area of the problem of project implementation, most participants asserted. Therefore, in seeking the necessary information on the subject, contact should be made not only with the particular company managing a given plant but also

with the development bank or corporation, the licensing bureau, or the like which took part more or less directly in the process of its implementation.

89. The design of a study is immediately associated with the expected type of its user. One of the questions raised in this connexion was: Is the study intended primarily to educate the people who engage in project programming at pre-investment phases or those who are responsible for managing the construction and capacity build-up phases of industrial projects? Some participants maintained that, for people of the project-manager type, major problems and difficulties would be quite specific, calling for such ad hoc tactical solutions that the experience to be gained on the job and the personal ability to live through a given socio-political milieu would bear far more directly upon their success than general knowledge of likely trouble spots in project implementation. A case study such as the one initiated by UNIDO might better contribute to the general understanding of the problems of industrial development machinery in general if it were to address itself to those who are responsible for institutional improvements in the procedures of industrial programming and project execution. There was no general agreement on this point, however.

90. It was also noted that better knowledge of typical project delays and investment gestation periods in the developing countries would contribute to the technique of financial planning on the part of development banks and corporations. For example, the larger the opportunity cost of an investment expenditure, the earlier it is effected relative to the date of final completion of a given entire project. Knowing that certain types of delay are normal events in a given country or region, financiers could attempt to have an otherwise too-optimistic implementation schedule adjusted in such a way that relatively heavy expenditures are made as late as feasible within the implementation period. The working party thus noted the importance of studying the implications of the time phasing of investment expenditures for a capital budgeting technique suitable to the conditions prevailing in developing countries.

91. In recapitulation, it was agreed that the Time Profiles of Industrial Project Implementation, in the form proposed, could be supported mainly for the two following purposes:

- To suggest, by way of comparison, how certain project delays and excess costs might be avoided; and

- To aid in framing more realistic estimates regarding construction, starting-up and running-in periods, regarding investment costs, particularly in capital-intensive projects, and regarding various time factors to be considered in the preparation and evaluation of industrial investment projects.

92. It was noted that the current UNIDO study was the first pilot attempt, proposing to cover no more than about 100 selected cases. In the future, when a greater number of countries and institutions have been invited to participate in a similar line of data-piling activity, this pilot attempt may provide a useful stepping-stone. Out of this first study, more elaborate, adequately absorptive forms may be developed.

93. As regards the sampling of the cases to be studied, some participants felt that the possible transfer utility of the lessons to be learned from a typical case in a given region of developing countries vis-à-vis problems typical of other regions might be dubious in many respects. The utility of the cases studied in a given country or region would be more obvious to those who are concerned with project programming and implementation in the same country or region. Some participants did not share this view but maintained that a comparison between the performances of industrially developed and developing countries in project implementation could be the heart of the proposed case studies. The types of industry to be studied should also be established selectively, with a view to facilitating comparative assessment of the cases concerning similar types and sizes of projects, as well as to illustrating a given set of well-defined problems, rather than relying on broad random sampling for these purposes.

94. In the hope of achieving further progress in the basic framework of study on this subject, a number of participants expressed their desire to obtain assistance in initiating and guiding related practical studies on the problem of project implementation in their own areas. It was agreed that UNIDO should continue to take the initiative in exploring the possibilities in that direction, and that the subsequent sessions of the working party would give further consideration to this problem area.

## CHAPTER III OPERATIONAL GUIDELINES FOR THE WORKING PARTY

95. It was agreed that the working party should adopt an organizational structure and modus operandi somewhat different from those of the usual ad hoc working group, expert group, seminar or other such conventional forums. In drawing up the first nucleus of the working party, it was emphasized that the candidates for membership were in a position either to carry out, commission or assist in formulating projects for improved data systems for industrial planning and programming in their own countries or organizations. Those who join the party at future working sessions will be similarly qualified individuals. Thus, the working party as a whole can be sustained on the basis of a series of forums that will permit each participant to find ways and means of co-ordinating his own activities with those of others, as well as for the exchange of advice, the assignment of technical matters requiring specialized experience and, wherever desirable, a degree of multinational standardization.

96. The deliberations of the working party on the over-all problem area, on the related concerns of individual participants and on the specific work proposals summarized in the preceding sections were considered as sufficiently indicative of its domain of expertise. The concluding phases of the debates on the specific projects were particularly suggestive as to the dynamic attitudes to be taken towards the major problem area and to the necessity for developing a task-force type of machinery for field-bound approaches. It was recognized that emphasis should be laid more on what the working party would actually help to accomplish in concrete terms in the individual countries or organizations from which its participants were drawn than on what it could recommend in matters of a general, theoretical nature. The real test of its effectiveness will therefore be how the subsequent sessions of the working party are to be prepared and conducted, and in what way the outputs will be developed in the participating countries and organizations, which in turn contribute to the staffing and the capabilities of the working party itself. This is not meant to claim a degree of autonomy and exclusiveness in this body, but rather to emphasize the need for an actively field-bound approach, which is often missing in the conventional arrangements for international seminars, expert group meetings and the like.

97. The general principles used to describe and haracterize the working party, as expressed by such terms as "reciprocity", "dynamism", and "continuity", are perhaps best illustrated by the specific recommendations given by the first session with reference to the specifie projects before it.

98. For example, the implied strategy for further development of the Profiles of Manufacturing Establishments was:

- The working agencies, experts and technicians in the developing countries, as the primary users of this reference data series, are to continue to guide UNIDO in the development of the Profiles by, among other things, registering their requests and suggestions concerning the specific types of industry and establishment and the particular types of data that are of immediate interest to them;
- As potential suppliers of the data, they should promote periodic diagnoses of existing industrial establishments, taking advantage of the UNIDO-generated stock of reference programming data for comparative assessment, and controlling, wherever possible, the inquiry methods to be applied in such trouble-shooting studies. Such a procedure suggests one major variant of the way in which the UNIDO Profiles series would be deepened in a user-oriented manner;
- Having due regard to the ways in which the needs and contributions of the users will evolve in the developing countries, UNIDO, in co-operation with the regional economic commissions and UNESCO, should continue to improve the scope and method of this series and to provide supplementary cases for better comparisons and diagnostic evaluation. As for the business communities in developed countries, which are invited to provide reference information as needed, an appropriate measure should be taken to let the Profiles series serve, wherever agreeable, as an extra channel of communication between the developed and the developing countries that may enhance the possibilities for ad hoc bilateral co-operation;
- The participating organizations, both international and national, would do well to make use of these reference establishment data for their own operational needs, in particular to gain further insight into the real problems and issues of industrial development in the developing countries.

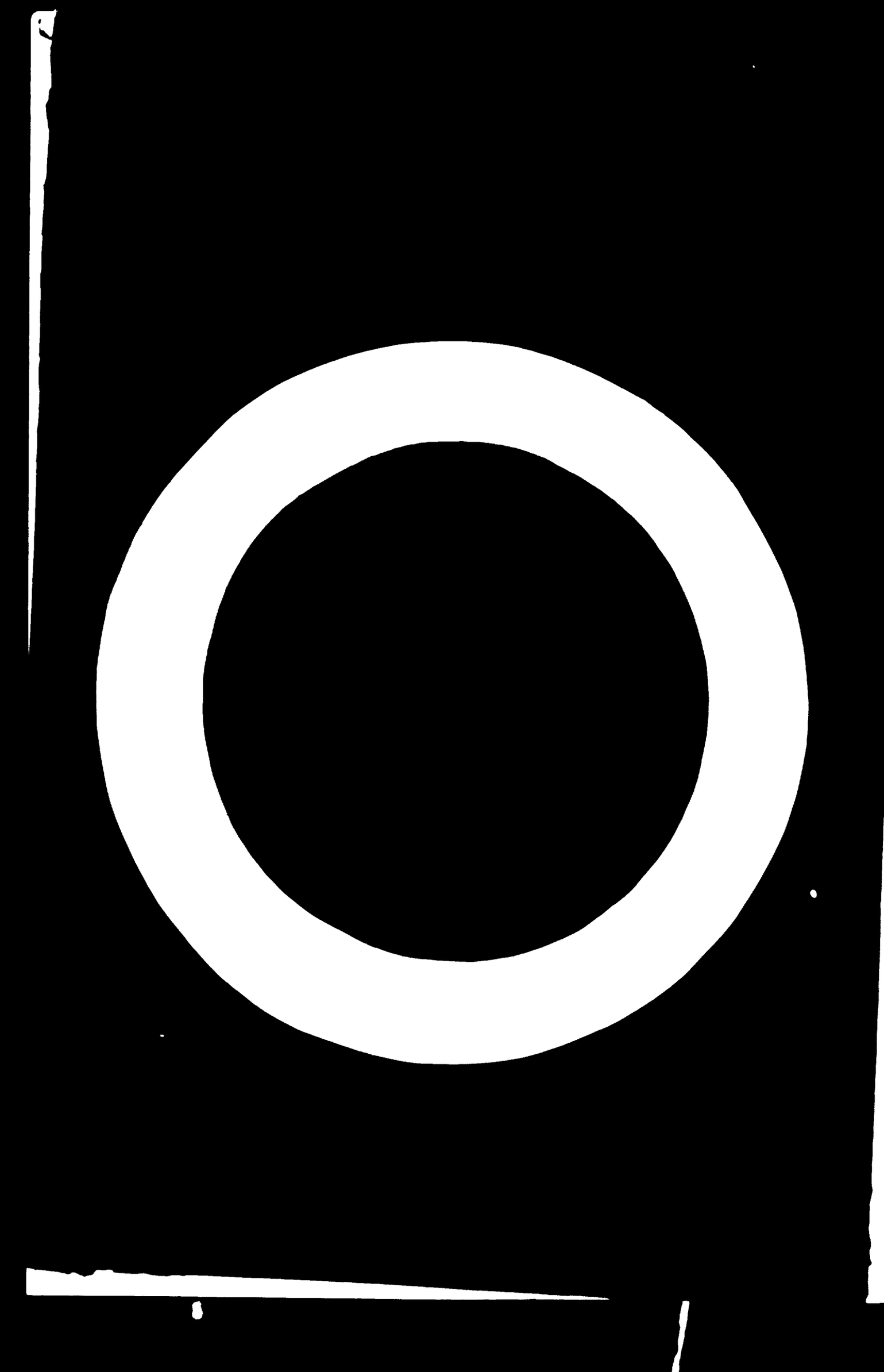
99. For the Profiles of Pre-investment Industrial Projects and the Time Profiles of Industrial Project Implementation, a similar policy will be applied to the long-term, sustained extension of the coverage, once the pilot work to provide the method and examples to be followed has been concluded. The Industry File System, or at least the key aspects of the approach implied by this proposal, will receive the continued attention of the working party at its subsequent sessions, taking into account the need for a flexible framework that would be adaptable to individual countries and institutions. Furthermore, it was agreed that the working party should focus its attention on a far larger area than just that implied by the four UNIDO-initiated projects. The working party should thus operate essentially as an inter-organizational task force capable of responding, at the working level, to the specific programming data problems encountered in individual participating countries or regions.

100. It was indicated that the suggested operational methodology of the working party could, in reality, be tested only through its subsequent sessions, where the main agenda would be focused upon specific work proposals to be carried out in the individual countries or groups of countries to be covered by the respective sessions. The participants would be urged to initiate appropriate field studies prior to those sessions, in a more intensive and self-directed manner than was the case with the first session. It was agreed that another session on the interregional level should be convened no earlier than in 1970, and only after the machinery for it had been properly set up at three or more sub-regional sessions.

101. With regard to the structure of future sessions of the full working party and of the regional and/or sub-regional sub-parties, general consent was given to the following proposal: that the participation in each of the subsequent sessions will be structured in a manner more or less similar to that of the first session; that is, at each session the working party will have three basic components: (a) United Nations organizations, (b) national and/or sub-regional institutions, and (c) consultant organizations and private research groups. The original nucleus of the working party, as constituted in the first session, would send some of its members to each later session, selectively, in accordance with the specific agenda, thereby effecting the principle of continuity and cumulation of experience, which is pivotal to the working party concept. However, subsequent sessions should be open to participants from new institutions and countries, which would be free to choose between an ad hoc, once-only role and a sustained share in the continuing task force responsibility. Thus, the working party is to be structured with due emphasis on flexibility and expansibility. This approach suggests the possiblity of gradually developing regional and/or sub-regional sub-parties which, it is hoped, the relevant regional commissions and sub-regional organizations will wish to take the initiative in organizing. the next interregional session, which is to be held only after the preliminary organizational work has been done, will serve as a forum for synthetic assessment and co-ordination of the activities of the sub-parties.

102. The above guidelines, promising as they are, must be buttressed by careful planning and execution of the country and/or sub-regional sessions in the next one or two years. While three such sessions, possibly one in each of the major developing regions, were proposed as a target for the year 1969, the details regarding their locations, participants, and agenda have been carried

over as unfinished business to be completed by all the participants in the first session. The continued initiative of UNIDO was requested to guide the post-session follow-up toward this end.



## Annex 1

## PARTICIPANTS AND OBSERVERS

### A. Governmental and inter-governmental organizations (in alphabetical order)

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#### Department of Economic and Social Affairs

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**Messrs. C. Festa, G. Herget, J. Richter and K. Teufelsbauer**, Austrian Chamber of Commerce, Vienna, Austria

## Annex 2

## LIST OF WORKING DOCUMENTS

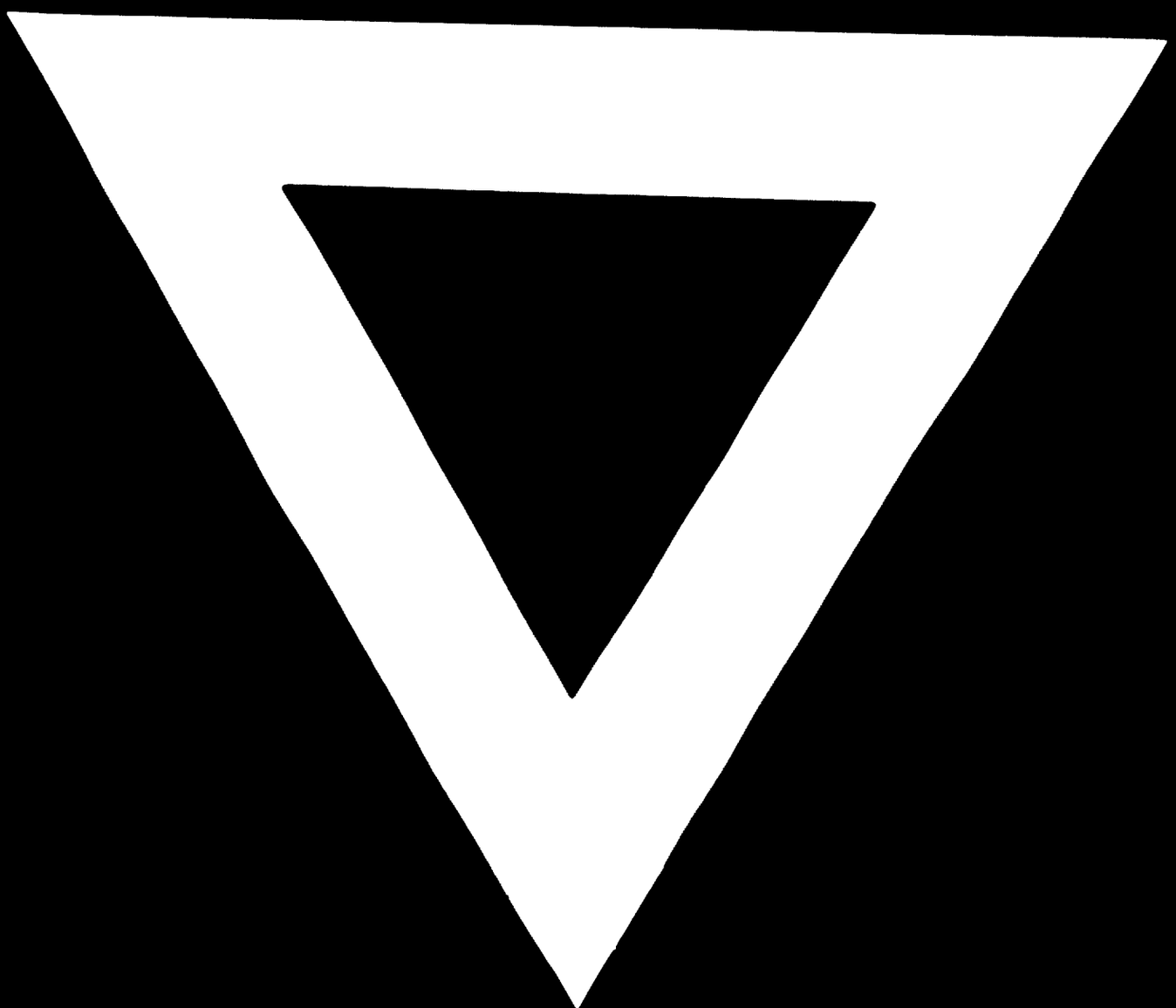
| | |
|---|---|
| ID/WG.23/1 | **Aide-Mémoire:** purpose, scope, operational framework and provisional agenda (in English, French and Spanish) |
| ID/WG.23/2 | Proposal for a study on capital coefficients and other relations of interest in industrial sectors |
| ID/WG.23/3 | Recent trends in the development of business data banks in the United States |
| ID/WG.23/4 | Data requirements for industry analysis and programming |
| ID/WG.23/5 | Schedule of work (provisional) |
| ID/WG.23/6 | Standard questionnaire form for the compilation of primary information for Profiles of Manufacturing Establishments |
| ID/WG.22/27 | UNIDO's proposed system for matching industrial opportunities with available financial and technical resources |

In addition to the above, Profiles of Manufacturing Establishments Volumes I and II (ID/SER.E/4 and ID/SER.E/5) have been made available to the participants.

The following papers were distributed for in-sessional use only:

- "Predicting best with imperfect data" (William Alonso)
- "Design of an empirical study of problems in implementing industrial projects in developing countries" (Maurice D. Kilbridge and Robert P. Stobaugh)
- "Preliminary comments received through correspondence" (UNIDO)
- "Notes on the activities of the East African Development Bank" (Peter F. M. McLoughlin)
- "Resource data bases and their uses" (R. K. Laurino)
- "Programming data for industrial entrepreneurs: a personal note" (J. E. Stepanek)
- "Proposal for an analytical digest of Profiles of Manufacturing Establishments, Vol. I" (H. Millendorfer)
- "Prediction with imperfect data" (R. Ernst)
- "Statement by Mr. J. Ritter and Mr. K. M. Zeitler, Planungsgruppe Ritter, Königstein/TS, Federal Republic of Germany"
- "The need for an industrial information service in El Salvador" (R. Flores-Cena)

- "The industrial development system" (R. Flores-Cena) together with FIGURES 1-5 pertaining to this paper
- "Identifying suitable industries in West Malaysia using the factor endowment approach" (Lee Jong Ki)
- "Brief note on Time Profiles of Industrial Project Implementation" (UNIDO)



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