OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as "developed", "industrialized" and "developing" are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

D00 924

ID

Distr.
LIMITED
ID/WG.57/5 . Corr 1
24 April 1970
ORIGINAL: ENGLISH

United Nations Industrial Development Organization

Working Party on Industry Profiles
Beirut, Lebanon, 4 - 7 May 1970

THE ANALYTIC INDUSTRY PROFILES

A PROGRESS REPORT ON A NEW UNIDO INDUSTRIAL PROGRAMMING DATA PROJECT[1]

prepared by

the secretariat of UNIDO

1/ This document has been reproduced without formal editing.

id.70-3110

Distr.
LIMITED
ID/WG.57/5/Corr.1
3 June 1970
ORIGINAL: ENGLISH

United Nations Industrial Development Organization

Working Party on Industry Profiles
Beirut, Lebanon, 4 - 7 May 1970

THE ANALYTIC INDUSTRY PROFILES

A PROGRESS REPORT ON A NEW UNIDO INDUSTRIAL PROGRAMMING DATA PROJECT 1/

prepared by
the secretariat of UNIDO

Corrigendum

Change symbol on cover page of document ID/WG.57/4, dated 24 April 1970, to read ID/WG.57/5.

TABLE OF CONTENTS

Preface

Deeply buried within any development project are a number of assumptions concerning what is the best way to contribute to the development of the sector or regions affected by the project. The subject of the following progress report is certainly no different in this respect. The programme associated with the Analytic Industry Profiles can be readily identified as belonging to a school of development thought which maintains that the key to efficient and equitable development lies in the strengthening of institutions and personnel at the national level, to improve their ability to make the right decisions and to participate effectively in the development process. One author has called this approach "development from within", and opposed it to the conventional technical assistance approach wherein institutions, personnel, and resources are, to a greater or lesser extent, superimposed on an indigenous economy in an attempt to 'get it moving".

Upon examination, it becomes clear that this conventional approach necessitates a continuing import of technical services which, as in the analogous case of material imports, places a proportionate strain on the domestic economy. The standard operating procedure which characterizes this approach is to bring in a foreign expert who first spends a good deal of time in educating himself to the problem and only at a relatively late stage of his "temporary residence" is able to contribute effectively to the problem-solving effort. The final step in this all-too-familiar pattern is for the expert to leave the country, personally enriched by a considerable patrimony of knowledge gained through his work experience, but no longer of use to the country which has, in effect, just rewritten this particular stage of his education. Apart from some "training" effect exerted on the expert on his local counterpart (if indeed there was one), his leaving the country in effect implies an uncompensated export of valuable knowledge and ability which is thus no longer available for domestic purposes. Understood from this point of view then, this type of traditional technical assistance exercize amounts to nothing less than an officially-blessed, government-inspired "brain drain".

Now, whereas the foregoing might well represent a satisfactory contingency procedure in a crisis situation where there are no apparent alternatives, it clearly makes little sense as a deliberately chosen, long-run development policy. Accordingly, it is seen as a matter of great importance that increased emphasis now be placed on alternative approaches which emphasize strengthening the domestic capacities of the developing countries to deal with their own development problems. The programme associated with the Analytic Industry Profiles has been drawn up in exactly this spirit. An example drawn from the project itself may help to clarify this point.

As will shortly be seen, one of the chief functions of the new Profiles programme is to facilitate the diagnostic (i.e. trouble-shooting) analysis of industrial activity at the factory or shop level, in a way that will show up weak departments, pinpoint inefficient procedures, reveal cost imbalances, etc.

The information generated as a result of these studies should provide valuable insights to managers interested in improving their efficiency, productivity, and competitiveness. Thus, one goal of the new Profiles programme is to take a partial but important step in the direction of institutionalizing the materials and techniques normally associated with management and technical consulting firms, in a way that will permit local personnel to carry out efficiently many of these same functions.

This promises to be a meaningful exercise for at least three sets of reasons. In the short run, because it offers the developing countries a practical means for dealing with some of these technical and managerial problems which can be expected to face their industrial sectors. Additionally, the project permits a certain saving of foreign exchange (or, what amounts to the same thing, credit with development aid organizations) since the bulk of these professional services can now be carried out by nationals.

Lastly however, this approach appears particularly promising when it is realized that it can contribute substantially to the indigenous capacity of domestic institutions and personnel to engage effectively in problem-solving. Concerning this last, it has been observed that what effectively distinguishes a developed from a developing economy is not that the one has problems and the other does not, but rather that the former is generally rather better equipped to analyze, identify, and solve its technical and economic problems. Thus, any increase in the capacity of the developing countries in this key area must be regarded as a major step in the development process.

THE ANALYTIC INDUSTRY PROFILES

I. INTRODUCTION

The purpose of this brief report is to introduce and to summarize recent developments as they affect a new UNIDO project, the Analytic Industry Profiles. It is expected that this project will be of broad interest, particularly inasmuch as it offers a fully defined technique which permits the developing countries to utilize their own domestic technical capacity to carry out the diagnostic analysis of industrial activities at the establishment level, in a practical manner which is expected to be broadly useful for a number of management, planning and policy purposes.

The origins of the present project can be traced back to a research programme initiated in 1965 by the Centre for Industrial Development (CID), predecessor to UNIDO, which was aimed at the systematic collection, analysis and dissemination of useful data on the operational parameters of individual industrial establishments. It was expected that the results of this project would be particularly useful as reference programming data for project-level planners in the developing countries. More than 600 case studies were then conducted under the auspices of that programme and have since been published in three volumes under the title Profiles of Manufacturing Establishments. 1/

1/ Volume I, ID/SER.E/4 (1968); Volume II, ID/SER.E/5 (1969); Volume III, ID/SER.E/6 (available shortly in 1970).

As the various case studies associated with the original Profiles series were being carried out, the entire project was subjected to a continuing review and evaluation in an attempt to determine the answers to such key questions as:

> Who, exactly, is making use of the Profiles?
> For what purposes?
> How, in detail, are the results being put to use?
> Is the job the project sets out to accomplish worth doing?
> Is there a better way of doing that job?

As a result of this intensive scrutiny a new project, the Analytic Profiles, has now been formulated. While this new series has much in common with its predecessor, it also embodies a number of major changes, the effects of which are felt to be sufficiently important as to justify the following explanatory note.

II. THE PROFILES OF MANUFACTURING ESTABLISHMENTS

The Profiles - in both their earlier (descriptive) and present (analytic) variants - offer a rather original approach to industrial programming which, being at least in part somewhat unconventional, is open to a certain amount of misinterpretation. The risk is minimized if we begin by coming to an agreement as to the meaning of a few of the basic terms which are central to the project, as well as by providing a brief but complete account of the historical and substantive background of the proposal.

A. Definitions of key terms

To begin in a general vein, it should be understood that the Profiles address themselves to that particular sub-set of development problems which is identified with the term the data gap. The data gap will be defined here as representing the (usually quite substantial)

discrepancy which separates that body of information (primarily quantitative) required to support planning operations from that which is currently available.

More specifically, the Profiles - as well as other related UNIDO projects [2/] - are addressed to the problems not just of planning in general but of industrial planning in its broadest sense. These range all the way from the highly aggregated activities associated with overall planning and sectoral programming on the one hand, down to the specific technical aspects of project preparation, evaluation and implementation. The expression is thus not, as is generally the case, intended to include only economic programming per se, but also many phases of techno-analytic and policy-making activities at all levels of aggregation throughout the industrial sector.

Accordingly, the data base for industrial planning must be interpreted in equal breadth, as referring to all of that quantitative information which is required to support industrial planning as defined above. The chief sub-set of the data base - and the one which bears directly on the subject of this paper - is industrial programming data. More precisely, the latter is defined to include just those

---

2/ An incomplete list of the "related" projects would include: "The Industry File System", UNIDO, November 1969. Industrial Programming Data: Report on the First International Working Party on Industrial Programming Data (ID/WG.23/7, 1968). "Data requirements for industry analysis and programming" (ID/WG.23/4, 1968). "Data requirements for specified stages of industrial project preparation" (ID/WG.52/8). "Extracts of industrial feasibility studies" (ID/WG.52/2, 1969). "Checklists for individual project studies and planning stages as used in the project screening operation" (ID/WG.55/3).

elements of the overall data base which are specific to the industrial sector. To clarify further this distinction, it might help to point out, for example, that whereas both GDP and, say, steel inventory estimates can be considered as elements of the overall data base for industrial planning, only the latter may be properly referred to as industrial programming data.

The body of information which falls under the heading of industrial programming data is itself an extensive one; thus, it is useful to break it down somewhat further into sub-categories. The latter can be accomplished either by defining the sub-sets in terms of their origin or in terms of their use. As to the former, it will be seen that there are three principal sub-categories of origin, namely engineering, economic and accounting data. However, for the purposes of this report it is more useful to think primarily in terms of the two major sub-categories of use. These include both indigenous and reference programming data.

Reference programming data refers to all of that information which can be borrowed from the industrial development experience of other countries - or other activities - in order to guide the development of a given project, a sector, or area. Programming norms, capital/output ratios, and the old USAID "Industry Fact Sheets" - all provide clear-cut examples of this category. Indigenous data, on the one hand, refers to that information which describes existing and/or past economic conditions, at both micro and macro levels, in the country, sector, or project in question.

Against this background, there is clearly no difficulty in classifying the original Profiles. These were unambiguous examples of reference programming data. By contrast, the new Analytic Profiles experiment represents something of a mixed bag in these terms. It will be seen that in the first instance the programme is oriented to provide indigenous data at the plant level, though the case studies are also

(potentially) useful as reference programming data in a form perhaps similar to that of the original Profiles series.

A. "The original Profiles series"

It will be easier to understand the present effort to develop the project which is the subject of these pages if one has first a clear idea of what its "parent" project, the original Profiles of Manufacturing Establishments, was all about.

An unambiguous statement as to the purpose of that project appears on the first page of Volume I.

> The data contained in the Profiles are intended primarily to assist in preparing economic feasibility studies for industrial development programmes, profitability or viability analysis in both pre-project and actual project contexts; and other diagnostic studies on important programming parameters. 3/

Then the following points were emphasized as explaining the distinctive characteristics of the contents of the series:

(i) The data, as compiled, are intended to follow the structure and performance of existing establishments engaging in various manufacturing activities

(ii) Such establishments are selected from various countries and a common form of analysis and compilation is applied;

(iii) For each industry (specified at a classification level one step more detailed than the ISIC 3-digit industries), a limited number of establishments are selected in each country, according to a set of criteria concerning "model" cases

(iv) The primary data are collected by means of an ad hoc questionnaire survey, the participating personnel of selected establishments being briefed and guided by a special expert group organized in each country

(v) Since the purpose of the survey is to gauge certain techno-economic aspects of more or less typical production activities under the unique set of operational constraints characterizing the particular productive unit, those who compile the data disregard trivial details whose impact

---

3/ Profiles of Manufacturing Establishments, Volume I (ID/SER.E/4), p.1.

is too transitory to affect the overall structural features of the establishments;

(vi) The number of effective digits in the reported figures does not exceed two or three

(vii) For certain questions, such as capacity utilization, replacement value of equipment, etc. (which are not usually handled in accountants' records but constitute important working knowledge on the part of the managerial personnel of each enterprise) even rough but realistic guesswork is accepted as reference information. 4/

It can be observed, in retrospect, that the foregoing were not uniformly adhered to in carrying out the project. In particular, the implicit notion of a "sample" which emerges from point (iii) proved particularly untenable. Ultimately, establishments were selected for inclusion in the series as long as they were (a) willing to co-operate, (b) not too small, and (c) producing a line of goods and with technologies that could be thought to be reasonably interesting given the demands and potentials of the developing countries.

The basic idea of the Profiles was thus to show the developing countries, for example, eight ways of producing ball point pens (assuming, of course, that the latter represent a broadly interesting production possibility). The concept underlying the project might well be characterised as a kind of anti-programming norm. The basic argument runs as follows: in the real world, factor costs are so variously skewed, uncertainty is so rampant, and non-technical problems are so dominant, as to make programming norms based solely on engineering data of, at best, limited usefulness for actual programming purposes at the present time in the developing countries.

4/ Ibid., page 2. The quoted materials have been slightly modified and abbreviated.

This being the case, it is clear that there can be no single "best" way of producing ball-point pens. And even if it could be "proved" that an "optimal" prototype productive process existed (for a given set of conditions), the results might well prove disasterous if one were to try to imitate it pro forma in a developing country.

Accordingly, it was felt that it would be far more helpful to show the developing countries several alternative ways in which each major meaningful production possibility is in fact being handled, each in a radically different techno-economic environment, than to try to present them with information on the process or the ideal plant. This, then, is the idea that lies at the heart of the Profiles effort, having been expressed in other words in the "Introduction" to the first volume:

> In brief, the primary purpose of the Profiles series is to provide a 'zoo" of live specimens of industrial establishments. Aside from the general problems of observation errors, this zoo may be studied by various users for different purposes. The intent is not to force upon the users a basic image of "representative" specimens, but rather to invite them to acquaint themselves with a number of possibilities existing in the real world.
>
> As a 'zoo" of live specimens, the collection provides raw materials for further study rather than a "manual of instruction' for immediate application. For the present, the zoo is stocked in a rather arbitrary and limited manner and its collection may not be large enough for precise delimitation of programming 'norms" in many of the industries considered. For this reason, the collection should be interpreted as complementary to other kinds of reference data, especially those from engineering sources. 1/

* * * * *

1/ Ibid., page 3.

With the publication of the third volume of the original Profiles, 6/ a total of more than 625 case studies have now become available. These are currently being used in a large number of developing countries for a variety of purposes, not all of which had been clearly foreseen in the early years of the project's formulation. Careful examination of the contents of the three volumes reveals that as the series was developed over time, there was a marked tendency to include more and more detailed data on each firm surveyed. Thus, it happens that three separate "generations" of progressively more detailed case studies can now be identified.

The first generation, comprising some 150 case studies, was carried out in Yugoslavia. The data summaries resulting from these filled a single page with basic engineering and accounting data on each reporting unit. A sample "first generation" case study has been attached as Annex A to this paper.

The second generation, consisting of about 400 case studies, was carried out on the basis of a somewhat more detailed questionnaire in France, Japan, El Salvador, India, Mexico, Israel and Tanzania. The resulting case studies were then summarized in the form of two-page presentation formats. A sample second-generation case study has been appended as Annex B below.

6/ Volume III (ID/SER.E/6), which is expected to become available in the second half of 1970, is currently available in a considerably abbreviated form as "Profiles of Manufacturing Establishments: Selected cases from Volume III", (ID/WG.57/2).

Beginning in 1968, all case studies were carried out on the basis of a still more detailed questionnaire which has been widely distributed in its original English language version and has subsequently been translated into German, Spanish, Italian, and Russian for field use. 7/ About 80 of these "third-generation" case studies, which were carried out in Austria, Germany, F.R., and Italy on the basis of the expanded questionnaire, have been made available by means of 4-page data summary formats in Volume III. Again, a sample case study of this more elaborated approach has been attached as Annex C to this report.

C. Evaluation and reformulation

As the Profiles case studies were being carried out, the results were continuously subjected to analysis and evaluation, not only by the Secretariat of UNIDO but also by universities, consulting firms, and experts in the field who communicated their findings to UNIDO. The most immediate result of this stream of feedback was the continuous marginal adjustment of the questionnaire and procedures which resulted in the successive "deepening" of the inquiry as has been noted in the preceeding section. These and other such marginal changes proved to be very much in the nature of short-run adjustments and were made within the framework of the original project outline.

7/ The English-language version is available as a UNIDO document ID/WG.23/6, "Standard questionnaire form for the compilation of primary information for the Profiles of Manufacturing Establishments." It should be noted that it is this "third-generation" questionnaire which has served as the point of departure for developing the new Analytic Profiles questionnaire.

In time, however, it became apparent that a more radical transformation of the project (which, it should be borne in mind, was initiated as a "research" project) was going to be required if it was to fit in with the new thrust of UNIDO's activities in the developing countries, as is touched on in the Preface to this study. It will be recalled that the major goal of technical assistance activities should now be to strengthen the ability of national development cadres to deal with their own development problems, the key words in this new approach being "in-country" and "catalytic". Now, although the original Profiles were already somewhat oriented along these lines, it soon became obvious that with further adaptation the general usefulness of the project along these lines could be greatly enhanced.

The first step in this direction was to convene a special meeting of the International Working Party on Industrial Programming Data, 8/ in November of 1968. The Working Party discussed and weighed the results of the first two volumes of the Profiles series, finding in a general vein, that:

> The goal of such reference data systems is not to create "instant experts"; rather it is to provide but one of the entire battery of skills and tools which is required for the daily use of experts, thus permitting a depersonalized diffusion and exchange of knowledge and experience.

More specifically, it was noted that:

> Perhaps a major goal of the Profiles should be to provide a series of practical useful benchmarks or reference points, thus encouraging the diagnostic evaluation of local manufacturing establishments in an increasingly use-oriented manner.

8/ The findings have been made available in the form of a UNIDO document entitled Industrial Programming Data: Report of the First International Working Party on Industrial Programming Data, UNIDO, ID/42, 1969. The following quotes from that document have been somewhat condensed, though this has been done while preserving the sense of the original findings.

At about the same time several diagnostic studies on the Profiles were being undertaken in the Netherlands and Germany, while in Italy a limited series of third-generation case studies were commissioned with the general mandate of making recommendations as to how the Profiles series could be further rationalized and made more useful. It became apparent that a whole new orientation was going to have to be introduced into the series if the Profiles approach was to realize its full potential, since

> Whenever the management of a given enterprise agrees to co-operate with a Profiles Team, it must be prepared to devote the equivalent of at least two full working days of staff time, on the part of accountants, personnel officers, engineers, etc. That is to say, the total cost (mostly hidden) to the firm of co-operating with this project can be expected to range anywhere from 250 to 500 and beyond for most modern enterprises. Since this is not an inconsiderable expenditure of funds - indirect though it is - it is clear that UNIDO must now be prepared to provide a satisfactory answer to the query of the firm's management, "Why should we co-operate?". 9/

The author of that study then went on to suggest several ways that UNIDO could get around this problem, of which perhaps the most meaningful alternative was:

> To reformulate the Profiles so that they could serve to perform a management consultant-type service for co-operating enterprises in advanced as well as in the less-developed countries. 10/

9/ "Profiles, Italy 1969, Case Study 370 (1)", a mimeographed report prepared by EcoPlan International, Rome, Italy, Section IV, p. 14.

10/ Ibid.

Fortunately, it became apparent upon inspection that the project could, with appropriate modification, be redesigned to meet these ends. The key to this lay in the fact that up until this time what was probably the potentially most rewarding "informational pay off" of the case studies had been entirely ignored. Here was a situation in which a considerable amount of information was being collected on each industrial unit - information which was of enormous potential value to the managers and engineers of the particular enterprise, but which was not being put to use for or by them.

Accordingly, it became quite clear that the next priority would be to restructure the Profiles in a way that could make them primarily useful for the diagnostic analysis of participating establishments in order to provide decision-information for their managers. Further, it was agreed that every effort should be made to retain a basic comparability with the earlier Profiles case studies, so that the considerable stock of reference programming data which had thus far been generated by the series could be useful in conjunction with the new approach.

III. THE ANALYTIC INDUSTRY PROFILES - A NEW APPROACH TO INDUSTRIAL PROGRAMMING

As a result of the foregoing events, it was decided in the latter part of 1969 to mobilize a portion of UNIDO's resources to develop a new project as an extension of the Profiles series in accordance with the following programme outline.

A. Programme outline

In brief, the goal of the new programme is to provide a practical analytic technique, complete with all required supporting materials to assist national survey teams in carrying out the diagnostic analysis of industrial activities at the establishment level, for the following general purposes:

- Management and Technical consulting

  to provide a concrete basis for rendering specific advisory services for productivity and efficiency improvements, at both plant and process (shop) levels.

- Policy evaluation

  to enable the evaluation of the effects of government policies on the actual cost structures and relative productive efficiency of existing industrial plants.

- Reference programming data

  to further expand the stock of international reference data for industrial programming and planning purposes.

Building on the comprehensive base provided by the original Profiles project, with particular reference to the materials and techniques associated with the so-called "third-generation" Profiles, the new series will have to be modified and improved in each of the following key areas:

- Inquiry materials, must be specified in accordance with the sector.
- Inquiry procedure, must involve the direct and active participation of field teams.
- Analytic techniques, must be stressed with particular emphasis on cost accounting.

- Inquiry teams, should be more broadly multi-disciplinary, with experience in the particular sector under study.
- Plant managers, must now co-operate more actively with the inquiry team.

B. Notes on possible uses

In section A above, reference is made to three "schools" of uses to which the results of the Analytic Profiles would appear to lend themselves. It is unfortunately not possible to draw up a complete, uniform listing of all possible uses to which any or all Analytic Profiles programmes might be put. This is the case for several reasons. In the first place, there will be enormous variation of uses from project to project. In one instance a Profiles project might be undertaken in order to say, determine what is wrong with a given "sick" sector of the economy. In another case, such a project might be implemented in order to determine export possibilities at the product level. Thus, it should be clear that there is considerable potential for inter-project variation.

Moreover, it should be recognized that a project-in-progress like the Profiles is certain to turn up new uses as it goes along, many of which could not be forecast with much certainty. Accordingly, it has been decided to engage, not in a definitive but in a suggestive listing, in the hope that the latter approach will suffice to point out the direction in which this approach can be further developed. This has been done in outline form below.

(i) Management and Technical consulting uses (enterprise level)

- to spot involuntary under-utilization of capacity
- to identify intermediate production possibilities
- to identify cost imbalances
- to identify production bottlenecks
- to indicate how and where new shops (processes) can be added
- to assess scope for improving labour productivity at all levels of production
- to determine ability of firm to compete internationally or in a given market
- etc.

(ii) Policy evaluation uses

- to evaluate the effects of a given government policy (such as wage rates, taxes, subsidies, depreciation allowances, import duties, interest rates, etc.) on the cost structure and performance of both individual establishments and industrial branches;
- to assist in drawing up sectoral targets and programmes for global productivity programmes;
- to identify industrial export possibilities, both with reference to sectors and establishments which by virtue of their cost structures may be able to compete outside of the domestic economy and at the level of potentially promising product lines.
- as a complement to aggregate industrial surveys, by providing in-depth Analytic Profiles case studies on a sample basis. This can be useful for a variety of planning/policy purposes.

(iii) Reference programming data

For the time being the assumption will be made that the results of the Analytic Profiles will be organized for reference programming data purposes in a published form along the lines of the current Profiles series. In all cases, of course, the wishes of the country and the firm will be paramount in determining whether or not the results will be used as referece data. For publication, the individual case studies will probably have, in most cases, to be "neutralized" in either or both of two different senses. Generally, it will be necessary to disguise the identity of the firm. Occasionally, it will be preferable not to identify the country. In either case, a minor modification of the data and the simple addition of some minimum random error will serve to disguise the origins of the case study. Thus, publication should be able to take place in most instances without any breach of confidentiality regulations.

Eventually, however, it will become necessary to face the problem of determining how the considerable quantity of data which is generated in performing each original case study can be made available in a more dynamic, efficient and broadly accessible way. It has already been suggested in the

report on the "Industry File System" (UNIDO 1970), that such data might well be fed into some sort of national or multinational data bank. It can be expected that such more efficient alternatives will become increasingly attractive as work on this project proceeds and a larger stock of programming data is accumulated.

C. Structural modifications in the new series

In section A above, a preliminary indication was given of how the new series must be differentiated from the original descriptive Profiles in order to meet its objectives. Each of the required areas of modification mentioned there will now be treated in somewhat more detail.

(i) Inquiry materials

The new Profiles approach differs considerably from its predecessor in this respect. The original series treated all of the many different types of manufacturing activity without adjusting its basic modus operandi to take into account the differential characteristics of the specific industrial branch under study. Thus, a common questionnaire and standard survey technique were uniformly employed in all cases.

Given the requirements of the new series, it will now be necessary to introduce a new degree of elaboration into the Profiles methodology, "tailoring" different techniques and materials so as to make them more appropriate for the study of each major "sector" of industrial activity under consideration. 11/

11/ The problem of what constitutes a sector in this sense has not yet been finally resolved. It may be, for example, that food processing can be treated as a sector. Or aternatively, this may prove too heterogeneous an activity to permit meaningful analysis under the new Profiles programme. In this event, it may prove necessary to be more specific in such a designation and to treat "food-canning" or "grain mill products" as "sectors" in this sense.

The final implication of this is that three separate sets of working documents will have to be elaborated for each major sector to be studied. These consist of:

- A questionnaire, which will not only contain the usual questions and instructions for acquiring data from standard management and accounting sources, as was the case with the earlier Profiles studies, but now must additionally provide a series of detailed benchmarks, reference points and instructions to guide the Profiles Field Teams in collecting and organizing original data at the plant, process (shop) and product level.
- A Methodological Note, which will explain in detail: how exactly, from what sources, and in what sequence data is to be collected; how intermediate results are to be checked, how the final results are to be processed and, then, put to use.
- A Data Summary Format, which will indicate how the results of each case study are to be summarized for presentation as reference programming data.

(ii) Inquiry procedure

The Analytic Profiles differ also from their predecessors in that they will require far more active administration and participation on the part of persons conducting the surveys, than was necessary for the old series. No longer will it be possible to obtain data simply by asking managers to fill in a (relatively) simple questionnaire. The new series will have to be administered in a rather aggressive manner by a team of qualified professionals who will be required to draw heavily on first-hand observation and direct inquiry, as well as on the inspection of specialised records in determining the data inputs of the survey.

It is not possible to forecast with complete certainty the number of man-days which must be devoted to collecting data on each establishment. However, on the basis of experience, it would seem reasonable to expect - depending, of course, on the depth of the inquiry, the size of the plant, etc. - that the team will spend anywhere from one to four days on each case. Assuming two as a reasonable average, this will provide six man-days for each examination, sufficient time to allow for a reasonable detailed inquiry.

(iii) Analytic techniques

One reason the decision was taken to "tailor" the Analytic Profiles with respect to the particular sector under study arose from the need for detailed instructions as to how to carry out the inquiries. In most cases under the new programme it will no longer be sufficient simply to tap existing administrative and technical sources of information, unless the firm in question has already established a finally detailed system of cost accounting and production budgeting capable of providing all of the data required for the purposes of the study. In the case of the developing countries, the latter situation can be expected to be the exception rather than the rule. In most instances, the Profiles Field Team must be prepared to actively seek out, identify and assemble a considerable quantity of original data, much of it of a cost accounting variety, on the strength of its own in-plant investigations.

(iv) Inquiry teams

The Profiles Field Teams (the units conducting the actual inquiries) are expected to assist in preparing as well as administering the questionnaires for the respective industrial branches in which they are specialized. The exact professional composition of the teams is not important, although it is imperative that between them the team members exhibit a broad understanding of the economic, technological, accounting, and administrative characteristics of the

activity under study. Thus, a "best" combination would probably entail one industrial economist, an industrial engineer, and an accountant/management expert, all with experience in the branch under study. It should be noted here that their active involvement in the preparatory and analytic stages of the project is nearly as important as their participation in the field studies themselves.

(v) Plant managers

It is here where a major qualitative improvement in the data input can be expected to take place. In the past, managers have agreed to co-operate with Profiles Teams for a variety of purposes, but seldom if ever because they thought that the results of the study would be directly important for them. Now, however, with the new Profiles approach, the entire emphasis of the project has been changed. Accordingly, since the plant managers will now expect to be a major (in many instances the principal) beneficiary of the results of the case study, a new and more active type of participation can be expected on their part. This should serve to improve the quality of the resulting case studies.

IV. AN IMPLEMENTATION PROPOSAL FOR AN ANALYTIC PROFILES PROJECT

In the following section a generalized implementation proposal for a sample Analytic Profiles programme has been outlined, with the intention of providing a preliminary guide for those countries and institutions interested in initiating such a project. Thus, the primary goal of the following is to provide a clear idea of the specific steps which must be taken once the decision has been made to initiate such an Analytic Profiles programme to turn what is still no more than an idea into an implementable project. To make the whole procedure easier to visualize, a hypothetical Analytic Profiles project for a given (hypothetical) country has been referred to. Of course, when the time comes to prepare an actual project, a fully individualized implementation programme will have to be drawn up, taking into full account the unique operational context for which it is intended. However, the basic outline which has been provided here should prove useful in this regard.

A. Stage I: Programme definition

The first step will be to determine the specific requirements which are to be met by the programme. The second, to estimate the scale of resources available for the project. These first two steps, which can be thought of as "framing" the project, are essential in drawing up an appropriate programme, which is accomplished here in step 3.

1. Specify programme objectives

   To carry out an Analytic Profiles project in country "X" in order to make recommendations for productivity and efficiency improvements in four key sectors of the nation's industrial economy, as well as to identify the need for changes and improvements in the particular sets of government policies, which affect these sectors.

   To accomplish this general objective, it has been determined that some 140 industrial units in four sectors of the domestic economy must be analyzed in detail. The final results are expected to be available within less than a year from the time of initiation of the project.

2. Estimate resources available for project

Total project costs should be in the range of $25,000. Moreover, an upper limit of about 84 man-months of professional input (7 man-years) have been set for this project.

3. Prepare a detailed project programme

Given the above outline of requirements and resources, it should next be possible to draw up a detailed time-phased programme which will at once meet the performance and budgeting specifications which have thus been clarified.

In this case, total active project life is expected to span a period of about nine months; however, this does not take into account either pre-project preparations (steps 1-3 here) or any post-project follow-up activities as may occur. The details of the actual (sample) project programme are spread out over the following paragraphs. However, special notice is given here to the staffing proposal, inasmuch as it explains several key factors which are not treated elsewhere in this proposal.

Staffing pattern: In this case other than the UNIDO Adviser (who will be in the country for about 6 weeks), the project will be entirely staffed by the Government. In addition to a three-man expert team (not taking into consideration secretaries or clerks) which will perform all headquarters and control functions, the project will require separate Profiles Field Teams for each of the four industrial branches under study.

(i) Headquarters Team:

These experts will be involved with the project over its entire active duration, in this case about 8½ months beginning with Step 2 of the following stage. The project manager can expect to be involved for at least ten months in all. The Headquarters Team will oversee the entire project, direct the activities of the several Field Teams, and be primarily responsible for the analysis and use of the results. It will consist of:

- Project Manager: (a senior Industrial Economist or Engineer), who is an able administrator, with experience in programming at the establishment level.
- Industrial Engineer (or Economist if the above is an Engineer) with experience in programming and general knowledge of management accounting techniques.

- Accountant/Statistician, preferably with experience in both cost accounting and industrial statistics.
- Secretary/Clerk: (A second clerk may also be required).

- Approximate man months - 35

(ii) Profiles Field Teams

The four Field Teams will not only carry out the bulk of the case studies, but will also assist in the analysis and use of the final results. Each Team will consist of:

- Industrial Economist
- Industrial Engineer
- Management/Accountant Expert

- Approximate man months - 50

B. Stage II: Project preparation (3½ months)

The activities in this stage can be grouped into four major "steps" and are in this case programmed to be carried out over a 3½ months period.

Step 1: Preliminary preparations: (1 month)

Prior to the actual initiation of the project, the Government will be required to deal with such preliminary matters as designating the project manager, recruiting the Headquarters Team, arranging for financing, logistical support, co-operation from related government agencies, etc. It is early in this step that the Project Manager should become available for the project and that all of the background materials must be supplied.

Step 2: Basic organization and preparation of materials: (1 month)

It is at this step that the entire Headquarters Team is assembled and the actual project gets under way. The following is an incomplete listing of the activities to be carried out at this point.

- Drawing up a detailed implementation programme;
- Final decision on sectors (branches) to be covered;
- Preliminary list of, and tentative agreement with, potential participating establishments;
- Develop four basic sectoral questionnaires;
- Establish detailed procedures for conducting field studies;
- Preliminary selection of Profiles Field Teams.

Step 3: **Final preparations:** (3 weeks)

- Arrival of UNIDO Adviser (for a stay of 1½ months).
- Finalize implementation programme;
- Final selection of Profiles Field Teams;
- Review questionnaires;
- Review and finalize procedures to be carried out in Stages III and IV.

Step 4: Training and Field Test: (3 weeks)

- Intensive Training Workshop for Profile Field Teams;
- Pre-test of the questionnaire and procedures (at least ten case studies).
- Finalization of questionnaires and procedures.

C. Stage III: Field Work (3 months)

This stage will be devoted entirely to visits by the various field teams to co-operating enterprise for the purposes of collecting data in accordance with the questionnaires and procedures established as per the above. During the earlier parts of this stage, it is expected that the Headquarters Unit will use its own technical capacity to carry out some additional case studies within the area that they are located. No fixed numerical targets should be pre-set for this activity, however, since the major concern of the Headquarters unit will be to discharge their responsibilities as per stages II and IV. However, in this case, it would be reasonable to expect that they could accomplish at least 10 such case studies over the three months period during which field work is being carried out. Assuming that at least 10 studies will have been completed in Stage II for pre-test purposes and that each Field Team completes its minimum quota of 30 studies, a total of 140 case studies could thus be realized in all.

D. Stage IV: Analysis and use (3 months)

Even within the field work stage, while the various Profiles Field Teams are still conducting plant studies, the Headquarters Team can already begin to check all case studies as received for internal

consistency. Thus, there can be expected to be one month of overlap between these two stages. The case studies will have to be verified on a sample basis for accuracy, and then can be put in final form for analysis and use.

In this particular case, as was indicated, the results of the project are to be put to work for the two sets of purposes: namely,

(i) Productivity and efficiency improvements

The individual case studies should be carefully examined by the Headquarters Team, in conjunction with one representative of each Field Team (who should be available half-days for the last two months of the project's life) and other sources of technical expertise, to determine possible recommendations for productivity or efficiency improvements at the level of both the plant and the process (shop) for those establishments which have participated in the project. These will then be communicated directly back to the plant's management.

(ii) Industrial policies

On the basis of a careful analysis of the results, the Headquarters Team will make the results of their findings available to those government organizations responsible for determining industrial policies and strategies. Additionally, the results should be scrutinized to determine if they indicate the advisability of changes in the existing structure of relevant government policies as they effect the several branches, specific regions, individual units, or the industrial sector as a whole.

E. Stage V: Follow-up

There are two sets of activities which will be carried out in this stage, namely evaluation and preparation. It is expected that UNIDO will be active in both of these and will accomplish this by

sponsoring a follow-up mission which will involve several of the UNIDO staff members who are urgently directing the Analytic Profiles project, consultant experts, and a few representatives of other countries and organizations. The latter will include both those already experienced in Profiles projects, and others who are interested in undertaking such an activity.

(i) Evaluation

It is felt desirable in this specific case that the results of the particular project be evaluated by an international panel, under the assumption that such an evaluating effort is going to be useful for two distinct purposes:

- First, to indicate additional ways in which the results of the specific Profiles project can be put to use in the country in question; and
- Second, to indicate how the Analytic Industry Profiles as an international development project can be up-graded or transformed to make it more effective and more efficient in dealing with the problems for which it is intended.

(ii) Preparation

An additional but related activity, which will primarily be carried out with the use of UNIDO resources, will involve the further preparation of the case study results in a form that makes them available as additions to the (international) stock of reference programming data. The several alternative techniques which can be used in doing this have been touched on in the preceding chapter.

V. UNIDO'S ROLE IN DEVELOPING THE NEW SERIES

In assisting in the further development of the new Analytic Profiles, the Secretariat of UNIDO is prepared to perform a sharply different role than was the case with the original Profiles series. In the past the Secretariat had assumed the full burden for structuring the overall project; commissioning, overseeing, and paying for the various plant studies; evaluating the studies and plugging them into a summary format; and finally publishing the results in the various volumes of the series Profiles of Manufacturing Establishments.

In the future, by contrast, UNIDO will take a primarily catalytic role as is appropriate to the spirit and methodology of the new Analytic Profiles approach. UNIDO's support of this project will take several forms, some of which have already been touched on in the discussion in the preceding chapter.

A. Preparation of "inquiry prototypes"

In carrying out a given Analytic Profiles project, the task of selecting the sectors and individual establishments to be studied will be left entirely to the national authorities who are to perform the inquiry. However, in order to guide the various national Profiles teams in their efforts to develop appropriate questionnaires and other related materials for each sector under study, UNIDO will undertake to make available prototype Profiles inquiries for several of the following manufacturing activities:

- food processing,
- textiles,
- fertilizers,
- electrical machinery,
- pharmaceuticals, and
- metal working industries.

A draft study has already been prepared on the last of these and is currently available in draft form to guide the further development of the series in this and other sectors. 12/ Additional prototype sector studies are expected to become available in the near future. Each of these, of course, will have to be adapted for local conditions, however, it is expected that as background materials they will be invaluable guides for the national teams.

Moreover, to assist the national Profiles teams in carrying out their activities, UNIDO is not only undertaking to provide prototype inquiries, but also has prepared a working paper under the title "Main elements of industrial cost accounting - a preparatory note for the Analytical Profiles". It is expected that this note will be further elaborated in a form that will be more directly useful as an operational guide for the new Profiles inquiries. Every attempt will be made to supply additional supporting materials which will be of general interest to the developing countries as the need for these is clarified.

B. Sponsorship of pre-project working parties

UNIDO has already initiated several "pre-project" working parties for the Analytic Industry Profiles. It is expected that these meetings will explore ways in which such projects can be usefully initiated at the national level. As was noted above, the first such exploratory meeting took place along inter-regional lines in the form of the International Working Party on Industrial Programming Data which met in Vienna in 1968. As the first of a new series, the Working Party on Industry Profiles has been scheduled for Beirut, Lebanon in May of 1970, meeting under the joint auspices of UNIDO, UNESOB, and the Industrial Development Centre for Arab States. A second working party on the Analytic Profiles has been tentatively slated to take place in Bulgaria in June of this year. In addition, related meetings are currently under active consideration for several Latin American, one Middle Eastern, and one Far Eastern country. A number of similar meetings are also anticipated for the near future.

12/ "The Analytic Profiles: Draft Questionnaire, oriented to the metal working industries", UNIDO, ID/WG.57/3, 1970.

C. Active participation in an advisory capacity in on-going projects

As has been noted in the preceding chapter, UNIDO is prepared to play an active advisory role for countries and organizations interested in carrying out Analytic Profiles projects. This participation can take several forms. Besides supplying all of the basic background materials as currently available to support such a project, UNIDO is prepared to:

(a) dispatch short-term technical advisory missions to advise the national authorities on:

- setting up local projects,
- reviewing and revising prototype materials to assure their appropriateness for local conditions,
- training Profiles Field Teams,
- instructing Headquarters unit, etc.; and moreover to

(b) arrange for short-term follow-up missions to:

- evaluate results,
- indicate how they can be put to further use within the country; and to
- prepare the case studies for eventual use as international reference programming data, etc.

D. Preparation of the results as reference programming data

The details of this final stage in the active life of a given Analytic Profiles project have been treated in several other sections of this report. The matter has been singled out at this point, largely inasmuch as it is expected that it will be UNIDO that will bear most of the costs involved in preparing the case study results, so that they will be available as further additions to the international stock of reference programming data.

ANNEX A

YUGOSLAVIA : 311(C F) - (2)

(i)

A newly established (in 1961) enterprise manufacturing superphosphate (annual capacity output 375,000 t on three shifts); also can produce up to 4,000 t of artificial cryolite. Raw phosphate is imported. No exports of products. Located favourably with respect to source of raw materials and market for products.

I. FIXED CAPITAL (end of 1963)

	Original purchase value	1963 replacement value
TOTAL (Drs. million)	9,463	11,300
Buildings & land improvements	3,042	[illegible]
Machinery & equipment	4,723	[illegible]
Other capital assets	1,698	[illegible]

Major machinery crucial for determining the overall production capacity

Superphosphate. Equipment for unloading and warehousing raw phosphate, reactors with plants for milling, sorting, dosing and also for softening sulphuric acid, equipment for loading and transporting superphosphate. Fully mechanized and automated (3 shifts).

(Most of the equipment - 84% - is of foreign makes.)

Capital expenditures in the past years: (Drs. million)

			[illegible]	1961-63
Gross expenditures	—	—		559
Retirements				979

Calculated average age of fixed assets: 2.0 years

Electric motors

Total installed capacity
of which actually operated in 1963: 1,120 kW

1st shift [illegible] %, 2nd shift 98 %, 3rd shift 96 %

Technological features

Production of superphosphate by dissolving raw phosphate with sulphuric acid through continuous process, employs 'Morits' reactors. The factory is new and of the most modern type in this field.

II. LABOUR (1963) TOTAL no. of employees 595

1. **Factory workers:**

	1st shift	2nd shift	3rd shift
Total 502 persons	283	111	108
(1,081 thous. manhrs.)	(611)	(240)	([illegible])
- Superphosphate	48	28	28
- Cryolite	14	10	9
- Maintenance	73	6	5
- Transport	65	67	66
- Other services	83	-	-

2. **Non-factory workers:** 93 persons
(200 thous. manhours)

Educational background of workers:

	Techn.	Engn.	Law	Others	Total
Univ. or higher	6	2	1	1	10
Tech. Higher sch.		2	1	1	4
Secondary sch.	15	4	-	9	28
Primary school				553	553

III. ANNUAL PRODUCTION & CAPACITY

	Quantity	Value (Drs. million)
TOTAL actual revenue output 1963		9,130
- Superphosphate	489,484 t	9,105
- Artificial cryolite	134 t	25

* Includes turnover tax on sold products.

Capacity output

- Superphosphates 375,000 t
- Cryolite 4,000 t

Overall rate of utilization is 71%

Underutilization due to unbalance among the capacities of various processes; and insufficient supply of raw materials. Full capacity operation requires no more than 280 factory workers on the 1st shift.

IV. INTERMEDIATE INPUTS

	Quantity	Value (Drs. Million)
TOTAL actual consumption 1963		7,402
1. **Energy inputs:** total		142
- Electricity	5,379 mwh	78
- Liquid fuel	748 t	64
2. **Major production materials:** total		6,309
- Raw phosphates	298,483 t	4,006
- Sulphuric acid	220,841 t	2,041
- Other materials	(million Drs.)	262
3. **Repairs & maintenance:** total		191
4. Other material & non-factor service inputs		704

V. VALUE ADDED (1963) - (Drs. Million)

TOTAL (except turnover tax)	1,639
- Wages of factory workers	287
- Salaries of non-factory workers	72
- Depreciation	530
- Interests paid	556
- Other accumulation	194
(Turnover tax)	([illegible])

VI. SUPPLEMENT

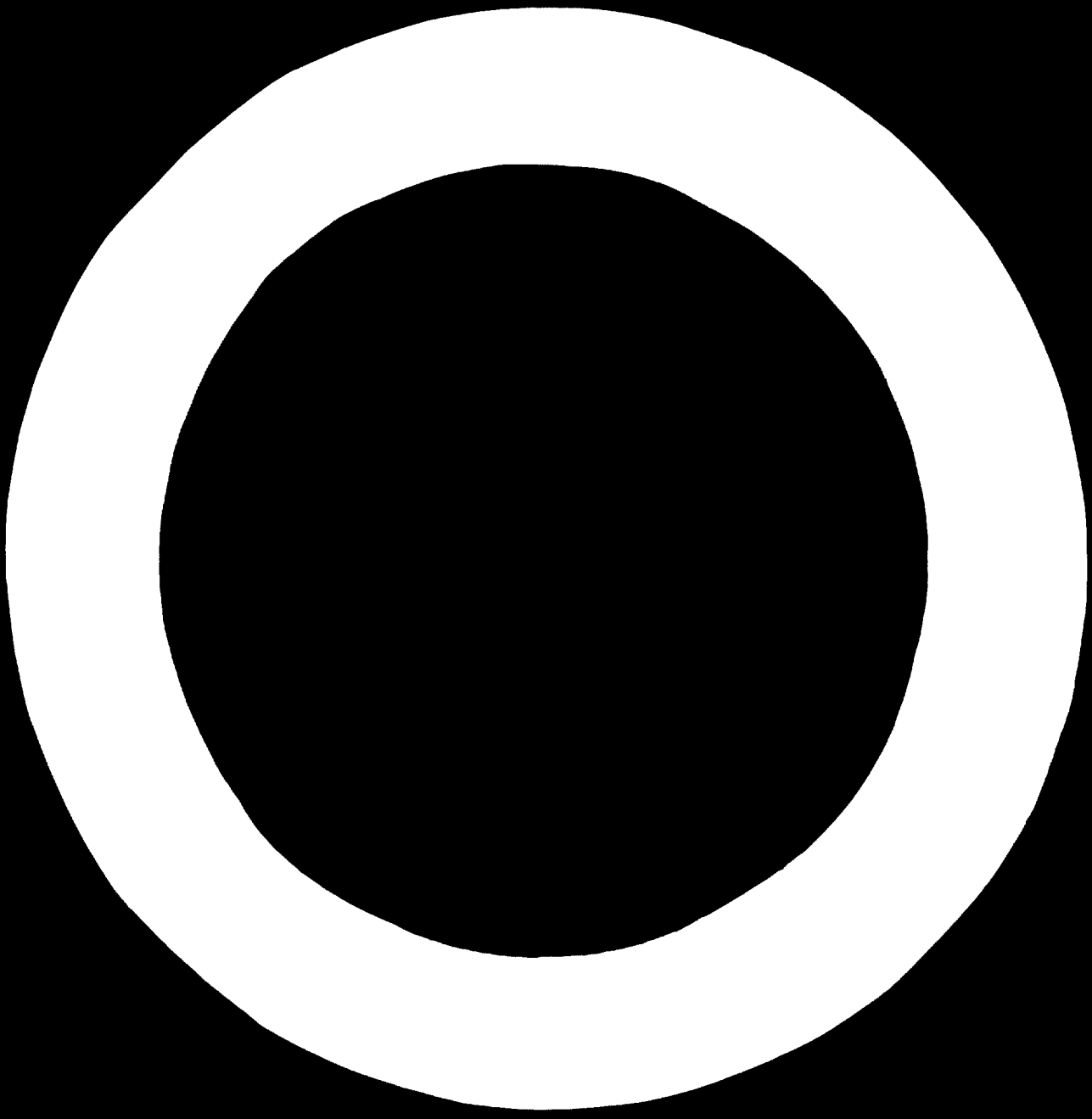
Future plans

Introduction of triple superphosphate, compound granulated fertilisers and phosphoric acid. New processes are to be introduced for these new products except for triple superphosphate. In connection with these plans an expansion of the existing capacity is also envisaged.

SELECTED COEFFICIENTS

- Mach. & equip. per factory worker on 1st shift: Drs.18,370,000
- Value added per employee: Drs. 2,750,000
- Annual wage per factory worker: Drs. 570,000
- Variable input cost/gross production ratio: 1/ 71.5 %
- Gross accumulation/gross production ratio: 2/ 8.3 %
  (at full capacity 14.2 %)
- Level of production at break-even point: 71 % of the 1963 actual level.

1/ All the wages of factory workers are considered fixed costs.
2/ "Gross accumulation" includes interests paid.



[illegible]oducts: Ammonium sulphate and single super phosphate (prod[illegible] ammonia and sulphuric acid internally). Capable of produc[illegible] annually [illegible] t ammonium sulphate and 118,0[illegible] t single super phosphate on 3-shift operation. The capacity [illegible] ammonia and sulphuric acid production [illegible] and [illegible] respectively.

[illegible] Unit: [illegible]nancially independent branch of a [illegible] founded in [illegible]; public corporation, [illegible] of foreign capital. This branch was founded [illegible]

[illegible] ASSETS

	Year of installation	Orig. purchase value (000 US $)	Replacement value (000 US $)
[illegible] equipment		5,307	..
[illegible]		5,251	..
[illegible] & apparatuses		56	
[illegible] installation (incl. in primary equipment)			
[illegible] building			
		2,144	..
[illegible] 90,000 m²)		2,144	..
[illegible]		1,554	..
[illegible] electricity, [illegible] storing		1,240	..
[illegible] facilities		151	
[illegible] facilities		163	
[illegible] facilities		-	
[illegible]AL FIXED CAPITAL ASSETS		9,004	..
[illegible]tural assets		81	...
[illegible] acreage: 150,000 m²)		69	
[illegible]		12	

[illegible] EQUIPMENT [illegible]	Supplier country	Year of installation	Orig. purchase value (000 US $)	Replacement value (000 US $)
[illegible] equipment	USA	60% in 1951	2,328.0	..
[illegible] equipment			661.4	
[illegible]phate equipment			698.7	
[illegible] equipment			184.0	
[illegible]ment			1,378.9	

[illegible]ESTMENT:

[illegible] of the factory started in 1949. The first trial on commercial production started in 1951. The following [illegible] were made for expansion purposes: (in 000 US $)

[illegible]prox. 168 for single super phosphate plant
787 " sulphuric plant
267 " gas purification plant
136 " crystallization of ammonium sulphate
174 " mixing equipment.

[illegible] ENTERPRISE:

[illegible] enterprise has altogether 6 branches and a headquarters. [illegible] branches are functionally not related to this branch. [illegible] employment of the parent company is a little over 2,000, [illegible] the headquarters has 230 employees (annual operating costs [illegible] million).

II INVENTORIES AND WORKING CAPITAL (in 000 US $)

([illegible] of 196[illegible])

1. Inventories	Actual value
TOTAL	1,474
- Production materials	250
- Other input materials	1,095
- Work-in-process	-
- Finished products	129

2. Liquid assets	Actual value
TOTAL	[illegible]
- Cash (hand/bank)	[illegible]
- Market. sec. & bonds	[illegible]
- Short-term investment	2,[illegible]
- Prepaid expenses	[illegible]
- Accounts receivable	2,[illegible]

3. Desired working capital	Number of months	Value
TOTAL		7,472
- Production materials	1	248
- Other input materials	12 -	1,096
- Finished products (*)		128
- Wages & salaries		
- Other special items	..	6,000

(*) see below.

III MANNING TABLE (number of personnel)

A = Machine [illegible]
B = Other op[illegible]

(1966 average)

	Total	1st shift A	1st shift B	2nd shift A + B	3rd [illegible]
ALL SHOPS & UNITS	646	360		119	
1. Primary operative shops	123	34	-		
- Ammonia department	36	14	-	11	
- Sulphuric acid department	18	6	-	6	[illegible]
- Single super phosphate	21	7	-	7	7
- Ammonium sulphate dept.	9	3	-	3	
- Mixing department	9	4	-	3	
- Substitutes	30	(as required)			
2. Auxiliary operative units	455	268		80	
- Repair and maintenance	162	140		12	
- Mechanical shop	-	-		-	
- Utilities control	7	5		1	
- Product & material storage	8	8		-	
- Off site transport	3	3		-	
- Guards, cleaners, etc.	28	10		9	
- Packing and shipment	208	102		58	
- Substitutes	39	(as required)			
3. Auxiliary non operative units	68	58		8	
- Production management	10	10			
- [illegible] & development	-	-		-	
- [illegible]	-			-	
- General administration	25	25		-	
- [illegible], waiters, gardeners, messengers	33	23		[illegible]	

WORKING TIME PER OPERATIVE WORKER:

Normal hours/day 8 hours - Normal days/year: 299 [illegible]

Actual hours/year 2,392 hours

CAPACITY OF OPERATIVE SHOPS:

The [illegible] of ammonium sulphate is limited by the supply capaci[illegible] of ammonia and sulphuric acid; the processing of superphosphate [illegible] also limited [illegible] the supply capacity of sulphuric acid. Production lines are highly automated.

(*)
The storage facilities within the enterprise are limited. A l[illegible] quantity of finished products is stored with the facilities of [illegible] storage companies.

[illegible]ITY POWER:

[illegible] equipment		
[illegible]	3,742	kW
[illegible]	5,000	"

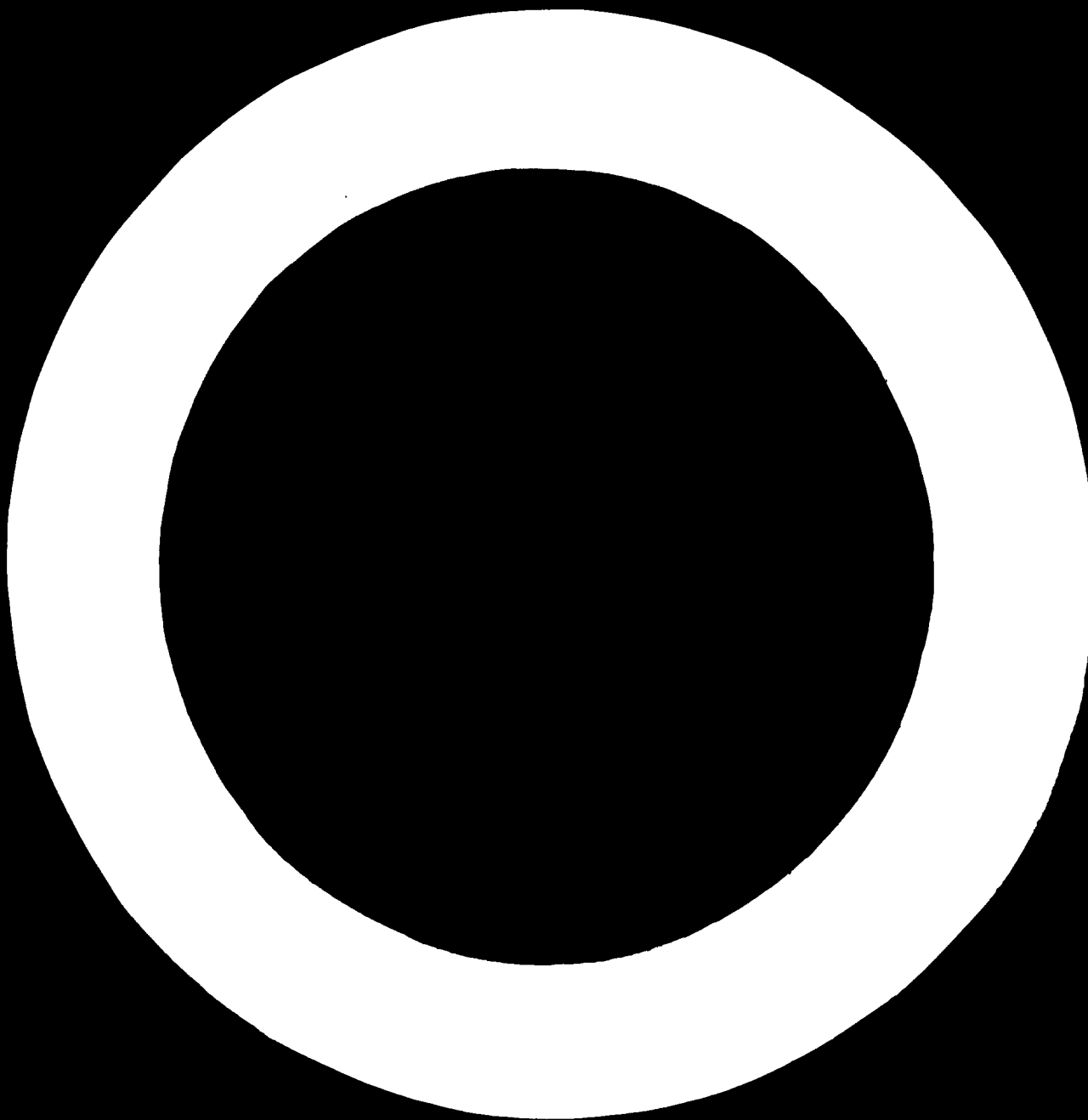
Generating equipment:
- Installed capacity - kVA

[illegible]ONDITIONS:

[illegible] distance, excellent; local area, fair.

[illegible]ricity and water internally supplied, gas, excellent.

[illegible] dental, health and recreational, educational, fair.



MEXICO : 311 (CF) - (1)

IV. ANNUAL PRODUCTION

(1966)

Products (or group of products)	Yr. of first prod.	Quantity produced: Unit	Quantity produced: Output	(*) Nominal capacity output	Unit (**) price ex factory (US $)	Total production value 1000 US $)
- Ammonium sulphate	1951	t	123,763	150,000	53.36	6,604
- Single super phosphate	1953	t	86,119	118,000	31.92	2,745
Intermediate products:						
(Ammonia)	1951	t	(22,385)	(22,000)	-	-
(Sulphuric acid)	1951	t	(108,042)	(135,000)	-	-
TOTAL VALUE OF PRODUCTION						9,349

(*) Assuming a 3-shift operation and 335 working days. (There are 69 substitutes or relief workers to make possible 6 days/week continuous operation).

(**) Unit price does not include sales tax.

COMPETING IMPORTS:

C.I.F. price of competing imports without tariff for ammonium sulphate is $ 53.84/t to which tariff rate of $ 0.05/t + 3% ad valorem is applied. Single super phosphate is not imported.

EXPORTS. None.

CAPACITY UTILIZATION:

Productive capacity is underutilised due to insufficient supply of the raw materials which are dependent on imports.

V. ANNUAL CONSUMPTION

(1966)

	Quantity consumed: Unit	Quantity consumed: Purchase	% imported	Tariff rate	Total consumption value 1000 US $)
1. Energy and water TOTAL					830
- Electricity	000 KwH	19,240			296
- Liquid fuels and lubricants		..			37
- Gas (included in production mat.)	000 m3	17,522			155
- Steam	000 t	223			304
- Water	000 m3	1,662			38
2. Production materials TOTAL					3,154
- Natural gas	000 m3	-			157
- Sulphure	t	-			1,074
- Ammonia	t	[illegible]			648
- Sulphuric acid (purchased from outside)	t	[illegible]			211
- Phosphoric rock (*)	t	-	100		1,064

(*) Import licence is required for phosphoric rock.

VI. VALUE ADDED

(1966)

	Value (000 US $)
1. Wages & salaries	[illegible]
Employees [illegible]	[illegible]
([illegible] persons)	
Other employees	
([illegible] persons)	
2. Other payments for employees	[illegible]
3. Annual depreciation	[illegible]
4. Rentals paid	
5. Interests & royalties	[illegible]
6. Sales tax (not in [illegible])	[illegible]
7. Other ind. bus taxes	[illegible]
8. (-) Subsidies	[illegible]
9. Corporate income before tax	[illegible]
	[illegible]

VII. MONTHLY EARNING RATES

(End of 1966)

	No. of pers. empl.	Average earnings (US $)
1. Local non-operatives TOTAL	8[illegible]	[illegible]
- Supervisors	[illegible]	
- Engineers	[illegible]	[illegible]
- Technicians	2[illegible]	[illegible]
- Accountants		
- Sales officers		
- Other professional staff(*)	1	[illegible]
- Clerks & typists	[illegible]	[illegible]
2. Local operatives TOTAL	4[illegible]	[illegible]
- Supervisors	-	-
- Foremen		
- Machine operators	4[illegible]	[illegible]
- [illegible] men	4[illegible]	[illegible]
- [illegible] drivers	[illegible]	[illegible]
- Other full-time operatives	4[illegible]	[illegible]
- Unskilled & part-time operatives	-	
3. Foreign employees TOTAL	-	-

(*) Physician, part-time employee.

	Value (000 US $)
3. Other materials & supplies TOTAL	[illegible]
- Packagings	[illegible]
- Repair & maintenance	[illegible]
- Non-factor service inputs	4[illegible]
4. Business services purchased TOTAL	[illegible]
- Transport, storage & insurance	[illegible]
- Communication, advertisements, etc.	[illegible]
5. Work performed by sub-contractors TOTAL	11

VIII. CHARACTERISTICS OF THE INDUSTRY IN THE COUNTRY

(1965)

Industry group: Basic industrial chemicals, including fertilizers (ISIC: 311)

1. Size groups by number of persons employed	Number of establ.	Number of empl.	Av. W. & S. per pers. (US $)	Av. gross prod. val. per pers. (US $)	Av. cap. gross prod. ratio* (%)
up to 25					
over 25	249	21,242	1,894	15,117	113
TOTAL	249	21,242	1,894	15,117	113

2. Size groups by scale of annual production (000 US $)	Number of establ.	Number of empl.	Av. W. & S. per pers. (US $)	Av. gross prod. val. per pers. (US $)	Av. cap. gross prod. ratio* (%)
up to 2					
over 2	385	21,457	1,875	14,970	113
TOTAL	385	21,457	1,875	14,970	113

* Capital is defined as physical capital assets.

IX. SUPPLEMENTS

Branch profit accounting:

This branch as such has practically no [illegible] sales and purchase activities. The profit, as [illegible] and above, is believed not to be adjusted for the possible share of the reputable operating costs of the corporate headquarters.

Government policies:

No specific opinions.

Future plans:

In 1968 approx. US $ 68,000 will be invested for mod.f.. of the sulphuric acid plant.

ANNEX C

Major Products: Fertilizers, organic and inorganic chemicals, plant protection products, pharmaceuticals, adhesives. In 1967 the total value of production surpassed US $ 80 million based on 3-shift operation. Company operated at almost full capacity.

Reporting Unit: A wholly government-owned, one-establishment enterprise; founded in 1939; nationalized in 1946; 6,400 employees; largest chemical enterprise in the country; production programme comparable with other European companies. Favourably located. 40% exports. The company has 490 employees working on research and development and spends about 3.5% of the annual sales in this field. Enterprise is continuously expanding.

I. FIXED CAPITAL ASSETS

(End of 1967)

	Original purchase value (000 US $)	Replacement value (000 US $)	Average age (Yrs.)
1. Primary process equipment (including installation cost) TOTAL	65,123	..	
Process equipment *	61,749	9,134	
Hand tools & apparatuses	3,374	..	..
2. Buildings TOTAL	19,694	21,679	
Primary industrial buildings (total floor space: 88,800 m2)	8,021	..	..
Auxiliary buildings	5,884	..	..
Warehouses	3,350	..	..
Office administration buildings	1,541	..	..
Housing	898	..	..
3. Auxiliary facilities (excl. buildings) TOTAL	6,330	..	
Internal power equipment	5,179	..	..
Laboratory facilities (**)	-	..	..
Means of transportation	321	..	.
Office equipment	830	..	.
TOTAL PHYSICAL FIXED ASSETS (excluding land)	91,147	..	
4. Other fixed capital assets TOTAL	12,408	..	
Land (total acreage: 1,479,457 m2)	50	1,314	
Land improvements (1,231,182 ")	1,264		
Others	11,094	..	

(**) Included in I.1. "Hand tools and apparatuses".

*NB Details on process equipment and capacity of primary operative shops are given on Page three (Section VIII)

II. MONTHLY GROSS WAGES AND SALARIES (Number of persons)

(1967 monthly average)

	up to 100 US$	100 -140 US$	140 -160 US$	160 -240 US$	240 -560 US$	over 560 US$
1. Local non operatives						
- Managers	-	-	-	-	-	48
- Engineers	-	-	-	200	60	-
- Technicians	-	-	48	192	299	-
- Accountants	-	-	-	-	45	20
- Sales officers	-	-	-	-	120	20
- Clerks and typists	-	7	48	257	325	-
- Foremen	-	-	-	-	245	-
2. Local operatives						
- Supervisors (*)						
- Foremen (*)						
- Skilled operatives	-	-	-	376	-	-
- Machine operators	-	-	-	577	-	-
- Craftsmen	-	-	-	1,486	26	-
- Truck drivers	-	-	-	36	-	-
- Unskilled operatives	-	168	253	5	-	-
- Other full-time operatives	-	-	262	1,215	-	-
- Part-time operatives	-	-	-	-	-	-
3. Foreign employees (**)						
- Managerial staff						
- Technical staff						
- Other skilled operatives						
- Unskilled operatives						

(*) Included in local non-operatives.
(**) Included in local non-operatives and local operatives.

EXTERNAL CONDITIONS.

Transport	- external long distance	fair
	- internal long distance	"
	- local and city	"
Utilities	- electricity	fair
	- water	"
	- gas	"
Community	- residence	fair
	- health and recreation	"
	- education	"

(*) Social Welfare Facilities

III. INVENTORIES

(End of 1967)

	Actual value (000 US $)	Number of months
Inventories TOTAL	18,802	
- Production materials	3,575	2
- Other input materials (*)	3,955	6
- Work in-process	1,021	1
- Finished products	10,251	1

(*) and spare-parts

IV. MANPOWER

number of personnel

Shift categories: A. Supervisory staff and foremen (for all shifts) B. Skilled operatives C. Semi-skilled operatives (machine operators) D. Unskilled operatives

(End of 1967)

	Total	A	1st Shift B	C	D	2nd Shift B	D	3rd Shift B	D
ALL SHOPS & UNITS	6,393	1,909		3,655		276		553	
1. Primary operative shops	1,696	255	334	263	15	276		553	
Manufacturing shops and units of all divisions	1,696	255	334	263	15	276		553 (*)	
2. Auxiliary operative units	3,205	909		2,696		-		-	
- Repair & maintenance (**)	1,456	242		1,214		-		-	
- Mechanical shop (***)	-	-		-		-		-	
- Tooling shop (***)	-	-		-		-		-	
- Utilities control	49	10		39		-		-	
- Product & material storage	189	40		149		-		-	
- Office & transport	743	120		623		-		-	
- Quality control, etc.	635	97		538		-		-	
- Apprentices	133	-		133		-		-	
3. Auxiliary non-operative units	1,492	1,145		347		-		-	
- Production management	131	112		19		-		-	
- Research & development	589	402		187		-		-	
- Sales unit	334	314		20		-		-	
- Accounting	173	169		4		-		-	
- General administration	265	148		117		-		-	

(*) Including extra-shift with 27 operatives.
(**) and installation of new plants
(***) included in IV.2 - "Repair and maintenance and installation of new plants."

TIME PER OPERATIVE WORKER:

	1st shift	2nd shift	3rd shift	
Normal hours/day				hours
Normal hours/year	1,862	1,862	1,862	hours
Normal days/year	Cannot be determined since some			days

Primary operative shops are working around the clock

MIDDLE [illegible] (3)

[illegible] TWO

V. ANNUAL PRODUCTION

([illegible])

Products (or group of products)	Year of first prod.	Quantity produced Unit	Quantity	Average price factory (US $)	Total value (000 US$)
- Fertilisers	1943	t	1,257,666	[illegible]	[illegible]
[illegible]rganic chemicals	1950	"	31,48[illegible]	335 [illegible]	[illegible]
- Inorganic chemicals	1943	"	166,470	45 [illegible]	[illegible]
- Plant protection products / - Adhesives, pharmaceuticals	1946/50	"	1,278	4,419 [illegible]	[illegible],649
- Other revenue	..	..	..		[illegible],506
TOTAL VALUE OF PRODUCTION					[illegible],274

VI. VALUE ADDED

([illegible])

		Total value (000 US $)
1. Annual wages & salaries		16,914
[illegible]	[illegible]	
([illegible] persons)		
[illegible]	[illegible],414	
([illegible] persons)		
2. Other payments for employees		4,2[illegible]2
3. Annual depreciation		8,163
Machinery & equipment	6,[illegible]30	
Buildings & other facilities	1,951	
[illegible]	182	
4. Rentals paid		285
5. Interests & royalties		1,761
6. Sales tax		595
7. Other indirect business taxes		145
8. [illegible] Subsidies		-
9. Corporate income before tax		5,317
TOTAL VALUE ADDED		37,382

DESCRIPTION OF MAJOR PRODUCTS

Fertilizers: Ammonium sulfate from natural anhydrite, natural gypsum, or by-product gypsum respectively. The [illegible] or anhydrite with ammonium carbonate solution, prepared from ammonia and carbon-dioxide, leads to ammonium sulfate and lime [illegible] product. Nitrogen content of nitrogenous fertilizers varies between 21 and 4[illegible]%. Compound fertilizers are manufactured [illegible], phosphoric acid and potassium in different concentrations and combinations.

Plant protection products: Herbicides, insecticides and fungicides.

Chemicals: Aluminium fluoride from fluorine containing off gases from the digestion of rock phosphate. Fluorine [illegible] are converted to fluosilicic acid by absorption, the latter reacts with aluminium hydroxide under formation of aluminium [illegible]. By appropriate calcination pure aluminium fluoride is obtained, suitable for aluminium electrolysis. Other chemi[illegible] 99.9% and 99.96% purity. Ammonium sulphate [illegible] anhydride, [illegible] phthalic anhydride, urea, sodium [illegible] liquid, [illegible] acid.

Catalysts: For cracking liquid and gaseous hydrocarbons, catalysts for processing sulphur free as well as sulphurous [illegible] catalyst for ammonia synthesis.

Plastics: Sold under a trade name in various modifications and colours for injection moulding, extrusion and blow moulding. [illegible] of product: high strength, ideal surface properties, resistance to heat, acids, and alkaline solutions, low weight.

Continuation see page 4/31, Supplements

MARKET ASPECTS

Re-sales:

Completion of the product-mix. Re-sales are sometimes used to open up markets for products which are planned to be manufactured by the company.

Consumers of products:

Agricultural establishments, chemical processing industry, manufacturing establishments, households (pharmaceuticals).

Sales organisation:

Fertilizers and plant protection products are sold through agricultural co-operatives and wholesalers. Representatives abroad. Partly direct selling.

Market and competition:

The enterprise supplies customers all over the world with the exception of North-America. The share in the domestic market for fertilizers and organic chemicals amounts to 100%. 2% of the world nitrogen production is manufactured by this company.

EXPORT

Total annual export: US $ [illegible] The company exports to almost [illegible] countries.

Major products	To Western countries	To Eastern countries	To Developing countries
- Fertilizers / - Organic chemicals / - Plastics / - Pharmaceuticals	36.6%	35.5%	27.9%

Export price policy:

Depending on the world market.

VII. ANNUAL CONSUMPTION

(1967)

	Quantity consumed Unit	Quantity	% Import	Average import duties (000 US $)	Total consumption value (000 US $)
1. Energy and water TOTAL					6,934
- Electricity	000 kWh	[illegible]37,[illegible] (*)	.	-	6,121
- Coke and coal	t	[illegible]	-	-	6
- Fuel oil	t	1[illegible],[illegible]50	-	122	401
- Gas	m3	[illegible]	-	-	1
- Steam	t	68 (**)	-	-	205
- Water	m3	82,372 (***)	-	-	200
2. Production materials TOTAL					24,983
- Coal gas	000 m3	273,706	-	-	3,544
- Natural gas	000 m3	95,832	-	-	[illegible],943
- Crude phosphate	t	176,370	100	-	3,577
- Alcohol	t	11,000	95	-	2,605
- Potassium chloride and sulphate	t	54,900	33	-	2,132
- Oxygen xylol	t	9,600	96	65	1,463
- Naphthalene	t	[illegible]	33	24	1,343
[illegible] and anhydride	t	349,[illegible]	9	-	1,663
- Others	t	89,[illegible]	30	101	6,713

(*) Not including internal supply of: 000 kWh 2,[illegible]
(**) " " " " " 000 t [illegible]59
(***) " " " " " 000 m3 181,598

	Average import duties (000 US $)	Total consumption value (000 US $)
3. Other materials & supplies TOTAL		7,943
- Packaging material	[illegible]	3,[illegible]42
- Parts, supplies & services	385	3,852
- Other materials & supplies	-	549
4. Business services purchased TOTAL		3,032
- Transportation, storage & insurance		221
- Communication, advertising & other business services		2,811
5. Work performed by subcontractors TOTAL		-
TOTAL VALUE OF CONSUMPTION		[illegible],892

VIII. TECHNOLOGICAL CHARACTERISTICS

DETAIL OF PROCESS EQUIPMENT (U.S.)	Number	Original Purchase Value (000 US $)	Replacement value (000 US $)	Av. Age (yrs)	Remarks
Due to the size of the enterprise it is impossible to present a small portion of the list of equipment:					
High-pressure gas compressors	9	1,746	..	..	
Air-compressors for pressure-type carburators	2	324	..	..	
Turbo compressor for contact gas	1	186	..	..	
Copper lye pressure pumps	4	46	..	..	
Mole-pumps	6	91	..	..	
NO [illegible] compressors	2	143	..	..	
Platinum vitriol-blasts	5	147	..	..	
[illegible] mixture-blasts	4	24	..	..	
[illegible] compressors for urea	2	207	..	..	
[illegible] compressors	2	73	..	..	
[illegible] plant for sulphuric acid	2	10	..	..	
[illegible] mills (air-swept-mill)	5	368	..	..	
[illegible] mills	2	108	..	..	
[illegible] centrifugal pumps	15	99	..	..	
Compressed-air compressors	12	108	..	..	
[illegible]-oxygen gas turbo blasts	2	72	..	..	
Air compressors	4	33	..	..	
Gas meters	5	312	..	..	
Petrol tanks	2	273	..	..	

Remarks:
SH Purchased second hand
Ob Obsolete
R Rented
SC Self-constructed

Further details:
Research and development as well as production facilities are continuously kept at most modern standards. The following plants have been installed since 1952:

1952: Ammonium sulphate plant, phtalic anhydride plant
1955: Sulphuric acid plant, pharmaceutical plant, superphosphate plant
1958: Urea plant
1961: Maleic acid anhydride plant
1963: Urea plant, ammonium nitrate plant
1964: Fertilizer plant
1966: Consolidation of nitric acid plant
1967: Phosphoric acid plant

CAPACITY POWER:
Process equipment:
- electric motors kW 131,200
- Other prime movers 1,110

Generating equipment:
- installed capacity kVA 1,592
- Other prime movers kW 1,460

CAPACITY OF PRIMARY OPERATIVE SHOPS:

Mechanization:
A: most advanced
B: considerably high standard
C: moderate standard
D: appreciably short of today's standard
E: almost outdated

Automation:
I: fully automated
II: semi-automated
III: non-automated

Major primary operative shops	Kind of process involved	Mechan.	Autom.
Fertiliser division		A	[illegible]
Organic chemical division		A	II

Further details:
Due to the complexity of the processes applied none of them can be described in detail. The enterprise uses the most advanced techniques in research, development and production.

CAPACITY UTILIZATION:
Full-capacity output: US $ 80,000,000

Current utilization: Based on 3-shift operation

Major products (or processes)	up to 20	Approximate % 40	60	80	70	80	90	100

The company reports to produce at almost full-capacity.

IX. HISTORY & PLAN

1. Performance in the past:

	Total output (000 US $)	No. of persons employed	Total exports (000 US $)
Year 1963	60,200	5,221	24,[illegible]
1964	57,390	5,189	26,120
1965	69,260	5,798	27,680
1966	77,400	6,207	30,930
1967	81,670	6,133	49,160
1968	-	-	-

2. Investments in the past:

	Approximate amount (000 US $)	Type of investment
From 1945 to 1966:	61,100	Land, buildings
" " " "	30,200	Machinery and equipment, tools, office equipment

In 1967 investments amounted to about US $ 12,100,000 excluding securities and capital participations

3. Future Plan:

From 1968 to 1972:	69,660	Expansion of the product-mix, rationalisation and expansion of both the machinery and the methods of production used. The quantity of additional personnel required is not yet known

X. CHARACTERISTICS OF THE INDUSTRY IN THE COUNTRY

C = confidential; figures include in underlined size-groups.

(1963)

Industry: Basic industrial chemicals (ISIC-Code: 351)

1. Size groups by number of persons employed

	No. of establ.	No. of empl.	Av W & S per pers. (US $)	Av gross prod val/ per pers. (US $)	Av value added/gross prod ratio (%)
1 - 19	59	518	1,[illegible]	[illegible]	41
20 - 99	39	1,802	2,05[illegible]	[illegible]	48
100 - 499	15	1,285	2,196	12,279	48
500 - 999	3	11,480	2,321	12,166	41
over 1,000	3	C	C	C	C
TOTAL	119	16,885	[illegible]	12,240	45

2. Size groups by annual scale of production (000 US $):

	No. of establ.	No. of empl.	Av W & S. per pers. (US $)	Av gross prod val/ per pers. (US $)	Av value added/gross prod. ratio (%)
up to 20	21	56	1,[illegible]	[illegible]	
20 - 40	8	45	1,336	[illegible]	
40 - 200	30	289	1,[illegible]	[illegible]	5
200 - 400	14	433	1,[illegible]	[illegible]	4
400 - 2,000	30	2,241	2,[illegible]	11,[illegible]	2
over 2,000	16	13,861	2,[illegible]	[illegible]	[illegible]
TOTAL	119	16,885	2,[illegible]	12,[illegible]	45

MIDDLE EUROPE : 1?? - ??

A?? FOUR

XI DESIRED AREAS FOR CO OPERATION WITH DEVELOPING COUNTRIES

Type of services

1. Engineering study
2. Financial assistance
3. Industrial services
4. Equipment supply, installation & maintenance
5. Technical and managerial personnel
6. Industrial training
7. Technical partnership
8. Import and export promotion
9. Provision of foreign labour

INDUSTRIAL SERVICES FOR CO OPERATION WITH DEVELOPING COUNTRIES:

Type of services	Country or region	No. of projects	Field of industry	Description of projects

The establishment is interested in co-operating with developing countries, provided problems of financing and risk taking could be solved.

Licence and know-how contracts can be furnished. Able to supply consultants for preparation of engineering studies.

XII. SUPPLEMENTS & NOTES

ad V. ANNUAL PRODUCTION - DESCRIPTION OF MAJOR PRODUCTS (cont'd):

Adhesives: Glutine glues, gelatine, cold setting glues, film adhesives, construction glues, casein glues, solvent-type adhesives, metal adhesives.
Pharmaceuticals: Anaesthetics, analeptics, antiglaucomatous, antimycotics, antirheumatics, choleretics, haemostyptics, vasoregulants, hypnotics, corticosteroid preparations, X-ray contrast agents, sulfonamides.

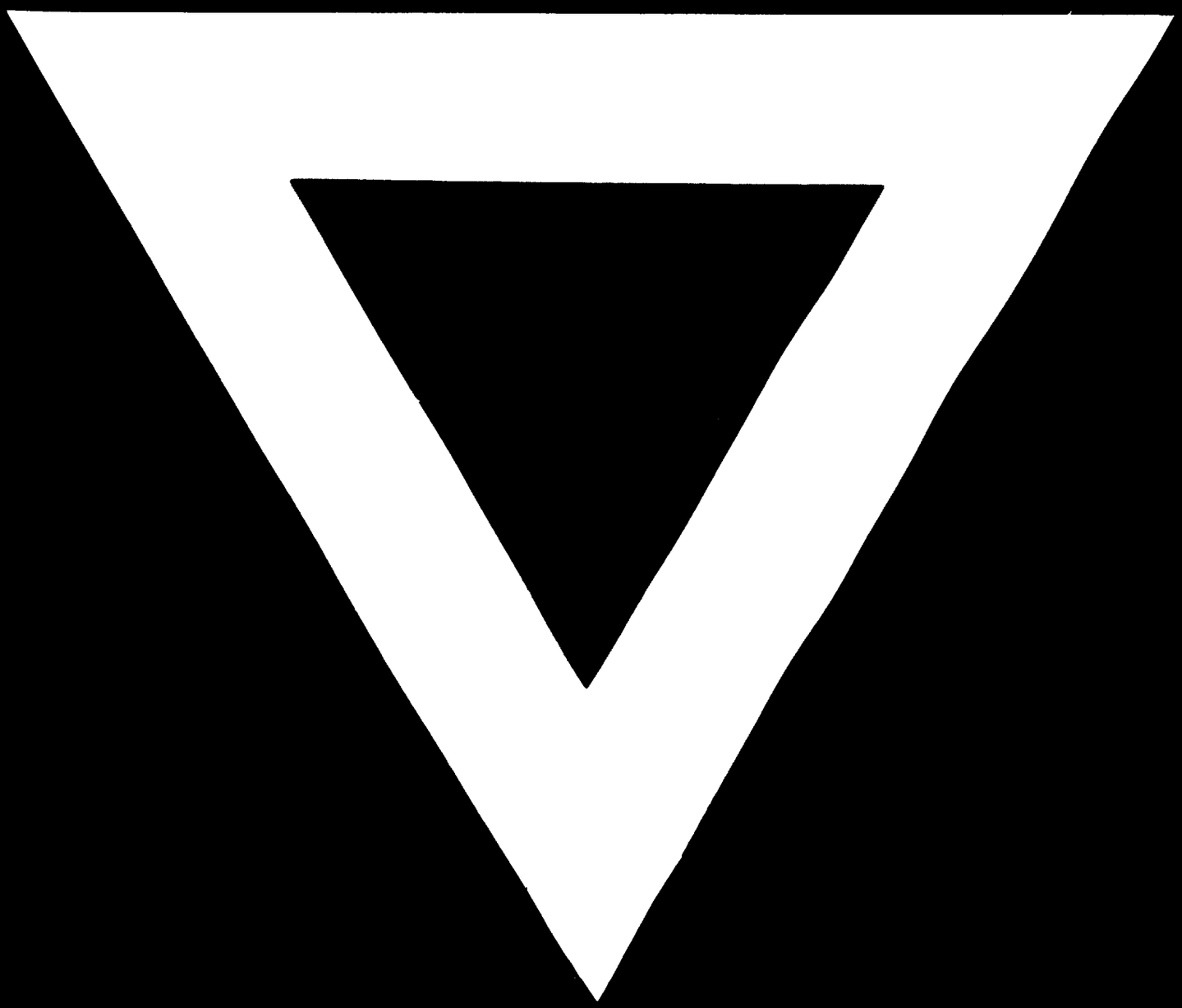
The company produces also
pharmaceutical active substances (belonging mainly to the group of organic-synthetic active substances) and fine chemicals and intermediary products (e.g. succinic acid, creatine, various kinds of esters).

History of investment

The company was founded in 1939. Construction of the plant started one year later, production, however, could not be taken up before 1941. Severe reduction of business activities caused by war damages. The break-even point could not be surpassed for the first time until 1947, when sales amounted to US $ 2,700,000

Bottlenecks in the past and current problems:

Production could sometimes not meet the demand for organic chemicals. Company is interested in having a steady supply of cheap raw materials for the production of nitrogen.
The production of plastics, plasticizers, pharmaceuticals and insecticides will be expanded.



3. 12. 73