



**TOGETHER**  
*for a sustainable future*

## OCCASION

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



**TOGETHER**  
*for a sustainable future*

## 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](mailto:publications@unido.org) for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at [www.unido.org](http://www.unido.org)

16701

Distr.  
LIMITED

UNIDO/ICPT  
10 April 1987

UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

---

ENGLISH

Information Brochure on the Work of  
the Industrial Development Division

THE INDUSTRIAL DEVELOPMENT DIVISION  
IN AFRICA

582

Industrial Investment Division

---

**THE INDUSTRIAL DEVELOPMENT DIVISION  
IN AFRICA**

**Table of Contents**

	Page
1. INTRODUCTION . . . . .	2
2. PROJECT IDENTIFICATION AND FORMULATION	
2.1 Generating Industrial Investment Projects . . . . .	5
2.2 Industrial Project Formulation and Preparation. . . . .	6
2.3 UNIDO's Project Preparation Software: PROPSPIN AND COMFAR . . . . .	6
2.4 External Financing of Pre-Investment Studies . . . . .	7
3. PROJECT PROMOTION	
3.1 Investment Promotion Information System . . . . .	8
3.2 Investment Promotion Services . . . . .	12
3.3 Investment Project Promotion Forums and Country Presentation Meetings . . . . .	15
4. SUBSECTORAL PROJECT IDENTIFICATION AND PREPARATION PROGRAMME . . . . .	19
5. OTHER IID ACTIVITIES	
5.1 Research and Studies . . . . .	21
5.2 Seminars and Workshops on Investment Promotion related Topics . . . . .	21
5.3 Technical Assistance . . . . .	22
<b>ANNEXES</b>	
Annex 1. UNIDO Investment Promotion Services . . . . .	23
Annex 2. "How to Start Manufacturing Industries": Complete list of available profiles and sample profiles on Cassava Starch Making, Ammonia, Refrigerator Assembly . . . . .	25
Annex 3. Specimen Project Summary: Poultry Farming in Nigeria . . . . .	45
Annex 4. Specimen COMFAR and PROPSPIN Print-outs. . . . .	46
Annex 5. Sample INPRIS Data Sheets . . . . .	52
Annex 6. Projects in Africa Promoted and Concluded through the Investment Promotion Services 1980-85 . . . . .	56
Annex 7. Participants from Africa in the Investment Promotion Officials Orientation Programme 1978-85 . . . . .	63
Annex 8. UNIDO Publications Relevant to Investment Promotion . . . . .	65

## 1. INTRODUCTION

The mandate of the United Nations Industrial Development Organization (UNIDO) is to "promote and accelerate industrial development in developing countries with a view to assisting in the establishment of a new international economic order."<sup>1</sup> It fulfils this mandate by helping to establish new industrial plants and expand the productive capacity of existing ones, by enhancing the skills of the local workforce, by determining priority industrial subsectors in the context of a given country's resource endowment and by strengthening the ability of government departments and other official institutions to formulate policies which will encourage investment in industry by both local and foreign entrepreneurs.

In carrying out this mandate, UNIDO encounters a number of obstacles to industrial development, such as:

- the lack of well-prepared, "bankable" industrial investment projects, capable of attracting the financial and other resources needed for their implementation;
- the lack of convertible funds to purchase or replace plant and machinery;
- shortages of skilled labour, technical personnel and managerial staff;
- lack of know-how to apply modern production technologies;
- shortcomings in the physical infrastructure: inadequate telecommunications and transport networks, unreliable utility supplier, insufficient adaptation of facilities to adverse climatic conditions;
- shortcomings in the institutional infrastructure: inadequate development policies which adversely affect the climate for investment, both foreign and domestic; complex administrative procedures which hamper individual enterprise; an inability to come to grips with the problems of a large and loss-making public sector.

UNIDO has long recognized that by inducing industrialists in more advanced countries to co-operate with entrepreneurs in developing countries in setting

up productive facilities it can mobilize resources far in excess of the amounts it can itself allocate to technical assistance, whether from its own budget or from the budgets of financing agencies with which it co-operates. The encouragement of direct foreign investment and the search for new mechanisms to promote it, e.g. the redeployment of plant and machinery from industrialized to developing countries, and the sale of technology under buy-back arrangements, will continue to be a priority activity for the organization.

This policy has been encouraged in recent years by the trend of many developing countries away from state involvement in industry and towards greater support for the private sector. In the words of the International Finance Corporation "Now, after several decades of experience with a variety of state interventions and regulations, many governments have begun to look to the private sector to play a more prominent role in their countries' development...The causes of this shift include the recognition of the above-average growth rates that have been achieved by those developing countries that did encourage the private sector. The shift reflects an increasing concern for efficiency in a period of heightened scarcity of resources."<sup>2</sup>.

The Industrial Investment Division (IID)<sup>3</sup> of UNIDO is thus the arm of the organization which aims to accelerate the flow of private sector resources for industrial expansion from more advanced to developing countries. Located within UNIDO's Department for Industrial Promotion, Consultation and Technology, the Division is concerned with:

- i. Identifying and formulating industrial investment projects in developing countries;
- ii. Helping local sponsors of such projects obtain the financial, technical and human resources needed to implement them, which effectively means bringing them to the attention of industrialists in more advanced countries and seeking appropriate sources of local and foreign finance. In addition to the staff and other resources available at UNIDO Headquarters in Vienna, IID operates a network of Investment Promotion Services located in Cologne, Milan, Paris,

Seoul, Tokyo, Vienna, Warsaw, Washington DC and Zurich staffed by UNIDO personnel which play a valuable catalytic role by keeping firms in their host countries regularly informed about industrial investment opportunities arising in developing countries and by helping local project sponsors find a suitable foreign partner.

In carrying out its work programmes IID is fully supported by other parts of UNIDO in assessing technological feasibility of projects, in the preparation of pre-investment studies, in designing manpower development programmes and industrial studies with a regional or subsectoral focus, or both.

---

<sup>1</sup>UNIDO constitution, Article 1.

<sup>2</sup>International Finance Corporation, 1986 annual report, p. 9

<sup>3</sup>IID was established in 1986; prior to this its functions were carried out by the Investment Co-operative Programme Branch within the Division of Industrial Operations.

## 2. PROJECT IDENTIFICATION AND FORMULATION

### 2.1 Generating Industrial Investment Projects

IID's involvement commences at the level of project generation, i.e. helping determine what type of manufacturing facilities would make sense in the context of a given developing country's resource endowment. For this purpose the Division has prepared a series of guides entitled "How to Start Manufacturing Industries" covering the manufacture of some 300 different products (see Annex 2 for a complete list and three specimen Profiles)..

Each profile contains a brief description of the requirements for a particular manufacturing process: raw materials, machinery and equipment, labour, investment and production costs, and is intended to serve project promoters and sponsors in developing countries as a reference guide to identify products suited to local manufacture on a small to medium scale. The selection of appropriate technologies and the ultimate feasibility of any manufacturing idea generated through use of the series must of course be ascertained by more exhaustive study. The profiles are intended primarily for use by:

- Officials of national planning commissions, ministries of industry and related institutions who seek to convert sectoral plans for industry which are based on the country's resource endowment into concrete investment projects
- Importers who wish to exploit import substitution opportunities by manufacturing the goods they trade in
- Other individuals who perceive an opportunity of manufacturing for the domestic market and/or for export and wish to learn more about the technology and processes involved and their approximate cost.

One of the main problems in designing this series is that developing countries, notwithstanding the features they have in common, differ materially in terms of type and availability of resources, level of technology and size and sophistication of internal markets. For this reason the profiles are not intended for use in preparing a formal pre-investment study.

Examples of the "How to Start Manufacturing Industries" series and a list of those currently available are attached as Annex x.

## 2.2 Industrial Project Formulation and Preparation

Frequently, project ideas are generated by local sponsors based on their own observations and commercial activities without outside assistance, in which case IID's involvement commences at the project preparation stage. In order for a project idea to be capable of interesting a potential foreign partner, it must be set out in a coherent manner with evidence that the basic assumptions concerning the level of initial investment, operating costs, estimated sales, marketing arrangements, cash flow and return on investment are realistic.

The local sponsor must also have decided how he intends to raise the foreign and local currency resources needed and whether, in addition to the capital to be contributed by himself and the foreign partner, he counts on obtaining loan and/or equity funds from a development or other financial institution, and on what terms. The question of control must also be resolved: does the local sponsor intend to be the majority partner, or will he be satisfied with less than 50% of the equity. Information on the sponsor himself, his business experience and the scale of his existing operations, if any, is of particular concern to future partners, so that appropriate details must be supplied.

Project sponsors - even those who are already in business - do not always have the technical knowledge required for project preparation, and IID has therefore prepared two questionnaires to serve as a check-list when formulating industrial projects and ensure that no essential information is omitted. One is designed to elicit basic information on a project at an early stage of preparation, while the other is for use when formal pre-investment work resulting in the preparation of a feasibility or pre-feasibility study has already been carried out. A specimen project summary is attached as Annex 3.

## 2.3 UNIDO's Project Preparation Software - PROPSPIN AND COMPAR

A pre-investment study covering the life of an industrial project will contain many hundreds of figures reflecting the various aspects of implementation and



operation and that are largely interdependent. Exploring the effects of changes in one set of parameters on the project's outcome, e.g. a reduction in sales or an increase in manufacturing costs on net profit (so-called sensitivity analysis), is an essential part of project preparation but, done manually, time-consuming and prone to error.

In order to simplify this procedure, UNIDO has developed application software for project formulation and evaluation. The main advantage of such software is that, once entered into the system, any item of data can be changed at will, the effect on the project as a whole being recalculated by the programme in a few seconds. At present, two such software packages are available - PROPSPIN and COMFAR. PROPSPIN uses a commercial spreadsheet system as its base and can be adapted by the user to suit the specific structure of his project. COMFAR has been developed in house by UNIDO and is designed for the preparation of feasibility studies structured according to UNIDO's "Manual for the Preparation of Industrial Feasibility Studies." Specimen print-outs of PROPSPIN and COMFAR are shown as Annex 4.

#### 2.4 External Financing of Pre-Investment Studies

The commissioning of pre-investment studies from consultants is a costly affair and an outlay few project sponsors are willing to undertake since, if the conclusions are unfavorable, the expenditure will have to be written off. However, IID has access to technical assistance funds for pre-investment studies, which are provided on the understanding that the cost need only be reimbursed if the project concerned is implemented.

In order to identify a suitable foreign partner, IID must also obtain information regarding the type of co-operation desired. The type of input most frequently sought is finance for the convertible currency portion of the initial investment in the form of a medium to long-term loan or equity participation. But the local sponsor may also seek assistance in choosing the most appropriate technology for the planned facility. He may need training for local staff, expatriate managers to run the project in its initial years, and assistance in gaining access to overseas markets. All this information must be included in the project profile so that prospective foreign partners can know what is expected of them.

### 3. PROJECT PROMOTION

After all necessary information has been collected, IID can endeavour to identify firms (and financing institutions) in industrialized countries interested in implementing projects of a given type with partners in a developing country. The principal tools it has for this purpose are

- I. Its computerized Investment Promotion Information System (INPRIS),
- II. Its Investment Promotion Services; and
- III. Events it organizes for the purpose of putting local project sponsors into personal contact with potential partners from developed and more advanced developing countries.

#### 3.1 Investment Promotion Information System

The INPRIS data bank consists of five files (see Annex 5 for specimens):

##### i. Investor File

The investor file containing details of over 3,000 public and private firms that have expressed willingness to participate in industrial projects in developing countries. The information stored includes the firms' names and addresses, the person to be contacted, and the products and countries or regions preferred for a co-operative venture.

Firms entered in the investor file regularly receive details of investment project identified by IID. Their names also appear in searches of the database when enquiries are received from ministries of industry and investment promotion agencies in developing countries for information on potential partners for a particular venture. The system allows multi-criterion questions to be asked, e.g. which potential partners in Italy would be interested in a textile project in Indonesia.

##### ii. Project File

The INPRIS project file contains some 2,700 entries describing industrial

investment opportunities in developing countries that require foreign co-operation, which may be in the form of joint venture partnerships, transfer of technology, management expertise and marketing know-how (or any combination thereof). These projects come from both private and public sources in developing countries - ministries of industry, national development corporations and finance institutions, planning commissions, local manufacturers and traders and even individuals. Each entry contains basic details taken from the project questionnaire: whether it is a new plant or the expansion or rehabilitation of an existing one, the products to be manufactured, the rated capacity and planned annual output of the plant, energy, raw material and labour requirements, the proposed marketing arrangements, the total initial cost of the project and with what combination of equity and loans and from what sources it is to be financed. The existence or otherwise of a pre-investment study and a local sponsor is also indicated.

Once a project is entered in the project file it is promoted in three ways:

a. Publishing lists of projects under promotion

INPRIS entries referring to projects under promotion are published in booklet form two to three times per year and distributed to potential partners, to development banks and institutions, bilateral and multilateral aid agencies. IID responds to the resulting enquiries by sending a copy of the project questionnaire and any supporting information available, including the name and address of the local sponsor, who can then be contacted direct.

b. Matching requests from prospective partners

Entrepreneurs in developed countries seeking project opportunities in specific industrial subsectors, countries or regions, or seeking a particular form of co-operation, receive a print-out of the corresponding entries in the Projects file. Here again INPRIS's multi-criterion search capability makes it possible to combine any desired parameters, e.g. projects in the furniture industry of Ghana seeking access to foreign markets. As in the case of the project booklets, project questionnaires and details of local sponsors are available for each project.

c. Affording remote access to the INPRIS data files

IID supplies project information to institutions and companies that specialize in this type of data in machine readable form. Subscribers to such services are thus able to learn of projects under promotion from sources outside UNIDO. However, further information on such projects can only be obtained from IID itself.

iii. Bank File

UNIDO as a technical assistance agency cannot itself provide funds for industrial investment projects except as regards their technical assistance components - pre-investment studies to determine their feasibility, evaluation of appropriate technologies, training and related matters. UNIDO is however able to bring project proposals to the attention of development finance institutions (DFIs) and can also provide information on such institutions to project sponsors and potential partners, for which purpose a bank file has been set up within INPRIS containing some 600 entries covering international, regional and national DFIs, including ones operating along Islamic lines, i.e. not granting interest-bearing loans. This file can generate print-outs of DFIs that are willing to finance projects in a particular country or region, together with details of the type of finance that can be supplied, the conditions under which loans can be made, the maximum participation in a given project, whether the institution will finance pre-investment studies and other relevant details. Here again it is possible to perform multi-criterion searches, e.g. a list of all development finance institutions that will take equity in private sector projects in Kenya.

Although the bank file is not linked as closely as the project and investor files, it provides useful supplementary information, especially at the early stages of project promotion and negotiation.

iv. Institution File

Information on industrial investment project proposals reach IID from a variety of sources, including ministries of industry, investment promotion agencies, national and regional development corporations, manufacturers' associations. In order to ensure that the project generation resources of all

such bodies can be fully utilized, about 1,200 of them were gathered in a single data bank which can be used by IID staff members and consultants carrying out project identification missions to a given developing country or region. Institutions entered in the data bank also receive details of current investment promotion activities such as Industrial Project Promotion Forums (IPPF).

v. Sponsor File

This databank contains details of firms in developing countries that are interested in redeploying plant and machinery from industrialized countries which is serviceable and still viable in a different technological environment. Information on approx. 1,000 such firms is currently available.

Once information on an opportunity for redeployment reaches the Division a search is made in the sponsor file and copies of the relevant entries are mailed to the firms that emerge from the search. If interested, they can establish direct contact with the plant concerned for discussions on putting the redeployment into effect.

Who can use INPRIS ?

The INPRIS data banks are available to manufacturers, development institutions, industry associations and private and public sector enterprises in both industrialized and developing countries and requests for information are welcomed.

Applications are also welcomed for data to be entered in the appropriate data bank. In the case of industrial investment projects, the local sponsor should complete a copy of the appropriate Industrial Investment Project Questionnaire, available from IID. Firms and development finance institutions wishing to be included in the investor and bank files, should write for a copy of the appropriate form to IID. Entrepreneurs in developing countries interested in learning about redeployment possibilities should also write to the Division.

### 3.2 Investment Promotion Services

One of the obstacles to the transfer of industrial resources from industrialized to developing countries is that many companies that are interested in some form of direct involvement often fail to pursue their interest, either because they are unaware of the opportunities that exist or because they are unable to evaluate the quality of projects that come their way and doubt the competence of the local sponsors who are promoting them. There are also misgivings about operating in a remote part of the world with an unfamiliar language, culture, and political system.

This leads to investment in developing countries being regarded as a high risk undertaking, with a possibility of the investment being lost through expropriation or adverse political events, or at least being affected, owing to foreign exchange shortages, by delays in obtaining spare parts and other essential items and in repatriating earnings and capital.

In order to correct such misconceptions by alerting firms in industrialized countries to the many profitable business opportunities in developing countries - and also to assist local project sponsors in their search for a suitable partner - UNIDO has established offices in major cities of eight leading industrial nations. These "Investment Promotion Services" (IPS), as they are generally known, exist by agreement with the relevant host country government, which also meets their staff, office accommodation and travel outlays. As previously mentioned, such services exist in Cologne FRG, Paris France, Seoul Korea, Tokyo Japan, Vienna Austria, Warsaw Poland, Washington DC USA and Zurich Switzerland. Agreements has been signed with the Governments of Italy and of the Republic of Korea for the establishment of IPSs in Milan and Seoul, which are expected to become operational during 1987. In 1985, the Services obtained partners for industrial projects in developing countries for a total investment value of at least US\$628 million. The number of projects promoted in 1985 was 93, compared to 47 in 1984, representing an increase of nearly 100 per cent.

The mandate of the IPSs vis-à-vis potential investors in industrial countries is to:

- identify industrial firms in their respective host countries, and particularly those in the small to medium-scale bracket, which are looking for opportunities for industrial co-operation in developing countries and bring suitable project proposals to their attention;
- provide such firms with advice on ways of putting such co-operation into effect in the form of joint ventures, leasing, sub-contracting, licensing, limited-time partnerships, buy-back arrangements and any other legitimate form of resource transfer.
- provide these firms with details of banks and other financing institutions willing to participate in the funding of industrial projects in developing countries
- provide information on the investment climate in developing countries - legal and fiscal regulations, incentives available to foreign investors and the arrangements regarding profit remittances and repatriation of capital.

The activities of IPSs specifically directed towards developing countries are to:

- help project sponsors in developing countries to identify partners in IPS host countries, bring the prospective partners into personal contact and support them in their negotiations;
- alert sponsors to sources of technical assistance funding for the preparation of pre-investment studies on industrial project proposals
- organize visits to their host countries by representatives of government and industry in developing countries and visits by host country industrialists to specific developing countries.
- build up data banks of information on government and other institutions in IPS host countries concerned with the transfer of industrial resources to developing countries

The IPSs also distribute information on IID events such as the Investment Project Promotion Forum (p.x) and the Country Presentation Meeting (p.x) and workshops on the financial and technical aspects of project promotion.

In addition to their "matchmaking" role, the IPS's assist developing countries to improve their own project promotion capability through the "learning by doing" on-the-job orientation programme for investment promotion officials from developing countries. The objectives of the programme are to

- familiarize the participants with all aspects of project identification, formulation, evaluation and promotion; and
- acquaint them with the institutions and mechanisms available for the encouragement of overseas investment in their host country.

Initiated in 1978, these programmes have to date provided 253 participants from 64 developing countries with an opportunity of acquiring project preparation and promotion skills at first hand. The participants usually bring with them priority industrial investment projects from their home country authorities and use the resources of the IPS to promote them. If an IPPF or CPM is forthcoming in their home country or region, they also assist in organizing it, e.g. by preparing a guide to foreign investment regulations for participants and continue the active role during the meeting by helping local sponsors in their discussions with potential partners and following up the contacts made.

After returning home, participants usually take up responsible posts in government or in development institutions and are often able to exercise a beneficial influence on the country's foreign investment climate. IID endeavours to maintain the links established by using orientation programme alumni as focal points for subsequent investment promotion activities and project follow-up.

In order to improve their service to the numerous industrial firms interested in industrial co-operation with developing countries, the IPSs are proceeding to install their own automated data banks. The Cologne FRG IPS, for example,



already has a computerized roster of some 8,000 German firms, the aim of which is to simplify and accelerate the matching of potential partners in the Federal Republic with suitable projects and sponsors in developing countries. The IPSs are also starting to make arrangements for on-line access to INPRIS, so that the files at UNIDO's Headquarters can be searched for project details in response to enquiries from host country companies. This gives an added dimension to the help the IPSs can give to local sponsors and potential partners.

The Paris office has pioneered a network of regional counterpart organizations which help to give its work greater impact in other regions of the country. These organizations arrange missions by local industrialists to selected developing countries and host visits by representatives of industry and government from developing countries. They also organize workshops on topics relevant to industrial co-operation with the Third World.

The IPSs also aim to establish links with the business press, which can help publicize industrial co-operation between industrialized and developing countries in general and the Services' investment promotion activities in particular. In recent years the UNIDO IPSs have devoted much effort to promoting projects in Latin America, and have achieved noteworthy results. The results per IPS maybe summarized as follows:

### 3.3. Investment Project Promotion Forums and Country Presentation Meetings

In fulfilling its "matchmaker" role IID attaches great importance to personal contacts between project sponsors in developing countries and potential partners in industrialized countries. In view of the time and expense entailed, such personal contacts require careful preparation if they are to justify the outlays involved. IID has developed a number of types of meetings and refined them to a point where their contribution to UNIDO's overall objective of accelerating the creation of productive capacity in developing countries is widely acknowledged and there is a long waiting list of countries whose requests for such meetings are still in the pipeline for lack of resources to respond to them.

Investment Project Promotion Forums (IPPF)

The type of event with perhaps the greatest impact is the Investment Project Promotion Forum, formerly known as "Investor's Forum" or "Investment Promotion Meeting, of which a number are held every year in various developing countries or regions of the globe. These meetings provide an opportunity for project sponsors from developing countries and potential partners from other countries (both industrialized and more advanced developing) to sit together and discuss a portfolio of projects prepared specially for the meeting.

The planning phase of such meetings, which usually cost between US\$50,000 and US\$100,000, may last 9 to 12 months from the date of receipt of the government request. Consultants are appointed and sent to the field to identify and formulate a suitable portfolio of projects to be screened and vetted at UNIDO Headquarters, lists of projects and often the project questionnaires themselves have to be disseminated to potential investors all over the world, hundreds of meetings between project sponsors and potential foreign partners have to be scheduled, the logistics of providing suitable premises and all necessary equipment must be dealt with. IID staff travel to the location of the meetings to provide secretariat services while it is proceeding. Depending on the country(ies) participating the number of projects can vary between 50 and 150 of which between 5% and 10% are eventually implemented.

These investment forums focus almost entirely on the practical aspects of project promotion. After a brief opening session at which the participants are welcomed by the sponsors and by members of the host government(s), face-to-face meetings between project sponsors and potential partners commence, the latter having had an opportunity to acquaint themselves with the projects in advance of the meetings and to specify those that interest them. The first step towards implementation of a project is the signing of a "declaration of intent" which bears witness to the parties' intention to implement the project jointly. At this point IID ceases its involvement, unless specifically requested by the parties who may wish assistance in identifying sources of finance or in drafting an appropriate joint venture agreement.

Even after a project has been successfully promoted it continues to be held on IID's files until the parties reach full agreement on the details of its implementation: the location, the production technology, the marketing arrangements, the total initial investment required and the sources thereof, the legal form and structure of the new enterprise and the sharing of its equity between the partners, the date of commencement and the timetable for implementation. When these matters have been settled, for IID the project is provisionally concluded and no further activities are undertaken - unless some unforeseen obstacles arise, the foreign partner withdraws and the local sponsor again requests help in finding a replacement.

IID has by tradition devoted considerable effort and resources to organizing investment project forums in Africa. To date forums have been held in Morocco and for the 15 ECOWAS countries in Senegal (1980, 1982, 1984, 1986); for the Arab countries in the Gulf region (1981); in Lusaka for the countries of sub-Saharan Africa (1983); in Khartoum for the Sudan, Uganda, Yemen, Djibouti, Egypt, Somalia and Central Africa - Gabon, Burundi, Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, Sao Tomé - (1985); and in Harare for the SADC countries - Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia, Zimbabwe, - (1986).

#### Country Presentation Meetings (CPM)

Country Presentations Meetings are arranged to enable representatives of industry and government from developing countries to visit UNIDO Headquarters and the IPSs and discuss investment opportunities with potential partners, while at the same time providing first-hand information on the investment climate and explaining the advantages their countries can offer foreign investors.

On the industrialized countries' side, IID invites attendance by senior staff of banks, manufacturers' associations and federations of industry as well as individual entrepreneurs. The presentations are supported by a portfolio of industrial investment project proposals which include many sectors of industry. CPMs, by giving the participants an opportunity of generating new project ideas, often prepare the way for investment promotion meetings in the countries which are the subject of the presentation and help them mobilize

maximum participation.

To ensure the success of CPMs the Services use all their contacts with individual industrialists and industry associations as well as public and private information media. A large number of presentation meetings have been held for African countries: Benin, Egypt, Kenya, Mauritania, Mauritius, Rwanda, Zaire (1981); Kenya, Lesotho, Senegal (1982); Tanzania, Zambia and Zimbabwe (1983); Cameroon and Senegal (1984); Cameroon, Congo, Senegal and Tunisia (1985); Ethiopia, Ivory Coast, Rwanda, Senegal, Zimbabwe (1986).

#### 4. Subsectoral Project Identification and Preparation Programme

In order to demonstrate to developing countries how to generate well-identified and well-prepared investment projects, IID designed a new subsectoral programme approach, first tested in 1983 through a programme financed by Japan covering the electronics industry. The programme approach aims at bringing together industrialists from industrialized countries or selected developing countries, and their counterparts from a group of developing countries, who are already active in the selected subsector or are interested in entering it.

The assistance of UNIDO experts, combined with the practical expertise of industrialists from developing and industrialized countries from the very early stages of investment project generation, ensures the preparation of better quality projects and enables potential technical partners to be involved in project design from the early stages. Each programme concentrates on a specific industrial subsector and a group of developing countries where the development of the subsector has been accorded priority and where small and medium-size industries predominate.

The programme approach enables developing countries to convert sectoral development plans into specific industrial investment opportunities for new, rehabilitation, expansion or redeployed projects, and to identify the technical assistance and programme-lending needs which are required to attain the objectives of these plans and improve the countries' investment climate. Furthermore, implementation of the programme requires the full participation of nationals from developing countries, who thereby receive valuable on-the-job training. Developing countries that participate in the programme also contribute financially to the implementation costs of the programme.

The subsectoral programme approach includes the preparation of documentation on the characteristics of the selected industrial subsector, of an annotated outline for the compilation of pre-investment data covering each developing country, and of production plant profiles to help industrialists in developing countries prepare projects. The documentation may be utilized by other developing countries in subsequent programmes covering the same subsectors.

Following the programme in the electronics sector financed by Japan, a second programme is currently under implementation with financing from Italy. It covers production in developing countries of equipment which utilizes or produces energy from selected new and renewable energy sources. Another programme to identify and promote investment projects in the metalworking industry was formulated during 1985 and is expected to be implemented in co-operation with the Government of Japan in 1986.

## 5. Other IID Activities

### 5.1 Research and Studies

In addition to its project identification and promotion activities, IID prepares studies on topics relevant to this work with the aim of keeping abreast of new developments in the field. Many of these studies are of interest to project sponsors and potential partners since they concern the problems faced by industry in developing countries.

Recent studies concern such areas as the impact of tax and other incentives on the level of foreign investment in selected Asian countries; the chances of setting up an international repair and maintenance agency to correct the under-utilization of plant in Africa; countertrading and buy-back as innovative sources of funding for industrial development; examples of how Islamic banks use risk capital as an alternative to loan finance.

This research is carried out partly by IID staff members but also by outside consultants chosen for their expertise in a given field. The resulting studies are used by the Division to guide and focus its work so as to maximize the benefits to its clients in both industrialized and developing countries.

### 5.2 Seminars and Workshops on Investment Promotion related Topics

IID attaches considerable importance to arranging meetings at which it can share its expertise in the field of identifying, preparing and promoting industrial investment projects with interested institutions and individuals, and where it can exchange with them views and experience on such topics.

From time to time, therefore, workshops and seminars are arranged in co-sponsorship with organizations whose aims and objects, like those of IID, concern the overall topic of financing industrial development in developing countries. Events of this type are:

- the Expert Group Meeting on Industrial Joint Ventures and Compensation Agreements, held in Vienna in March 1982

- the Workshop on Financial Markets and Project Financing, held in Aden, Democratic Yemen, in December of 1984 and co-sponsored by the Arab Industrial Development Organization;
- the Workshop on Investment Project Identification and Preparation, held in Fujiang, China in November 1986;
- the Workshop co-sponsored by the Islamic Development Bank on the Industrial Financing Activities of Islamic Banks held in Vienna in June 1986.

### 5.3 Technical Assistance

Developing countries often need help in selecting the correct "mix" of measures to attract foreign direct investment in productive facilities while ensuring that the benefits of such investment are equitably shared between the investor and the host country. Within the scope of UNIDO's technical assistance resources, IID can give such help. Examples are the modification of laws regulating foreign investment, the preparation of foreign investment guides, and help with setting up foreign investment promotion offices to ensure that their place within the governmental structure will enable them to carry out their function of creating and maintaining an attractive foreign investment climate.

IID has particularly broad experience in designing investment guides to developing countries and regions, such as the one to the SADCC countries prepared for the Harare Investment Project Promotion Forum held in 1986, or the one to the Fujiang province of China, prepared for the 1986 IPPF held there.



UNIDO INVESTMENT PROMOTION SERVICES

Cologne, Federal Republic of Germany

Head of Service:  
Mr. Ulrich WEBER

Address:  
Unter Sachsenhausen 10 - 26  
D-5000 Cologne 1  
Federal Republic of Germany  
Telephone: 120451  
Telex: 1721349 UN KOELN

Paris, France

Head of Service:  
Mr. Christophe GUILLEMIN

Address:  
118, Rue de Vaugirard  
F-75006 Paris  
France  
Telephone: 45443802  
Telex: 203503 ONUDI PR F

Tokyo, Japan

Head of Service:  
Mr. Mitsuo SAITO

Address:  
Shin-Aoyama Building, East-1009  
1-1-1, Minamiaoyama, Minatoku  
Tokyo  
Japan  
Telephone: 4029341  
Telex: 2425528 UNIDO J

Vienna, Austria

Head of Service:  
Mr. Hans Joerg BAUER

Room D 1863  
Vienna International Centre  
P.O.Box 300  
A-1400 Vienna  
Austria  
Telephone: 26313943  
Telex: 135612 UNO A

Warsaw, Poland

Head of Service:  
Mr. Krzysztof LOTH

Address:  
Stawki 2  
PL-00950 Warsaw  
Poland  
Telephone: 398723, 397112  
Telex: 817916 UNIDO PL

Washington, D.C., United States of America

Address:  
Suite 215  
1660 L Street, N.W.  
Washington, D.C. 20036  
USA

Telephone: 6595165  
Telex: 9102406649 IPS WSH

Zurich, Switzerland

Address:  
Loewenstrasse 1  
CH-8001 Zurich  
Switzerland

Telephone: 2212320  
Telex: 814456 UNIT CH

Head of Service:  
Mr. Robert Y. JUSTIS, Jr.

Head of Service:  
Mr. Franz X. STIRNIMANN

HOW TO START MANUFACTURING INDUSTRIES

LIST OF AVAILABLE PROFILES

Background Note to Profiles G17 to G76, pages xi-xv, in Volume II

Part A : Food ISIC 311, 312\*

In Volume I:

A1	3117	Baking Plant
A2	3117	Biscuit Making Plant
A3	3115	Vegetable Oil Milling Plant
A4	3116	Rice Milling Plant
A5	3117	Instant Noodle Making Plant
A6	3114	Fish Meal Making Plant
A7	3121	Ice Making and Refrigeration Plant
A8	3121	Cassava Starch Making Plant
A9	3121	Starch Syrup Making Plant
A10	3116	Flour Milling Plant
A11	3112	Fresh Milk Making Plant
A12	3113	Concentrated Fruit Juice Making Plant
A13	3115	Margarine Making Plant
A14	3121	Soy Sauce Brewing Plant
A15	3113	Tomato Ketchup Making Plant
A16	3122	Assorted Animal Feed Making Plant
A17	3119	Candy Making Plant

In Volume II:

+	A18	3118	Mini White Sugar Mill
+	A19	3118	Cube Sugar
+	A20	3113	Gari Production
+	A21	3116	Decorations of Groundnuts and Millet/Sorghum
+	A22	3117	Pasta Production
+	A23	3113	Fruit Processing and Soft Drinks
+	A24	3116	Flour Milling Plant
+	A25	3116	Dry Milling of Maize

In Volume III:

A26	3113	Cashew Juice and Kernel Processing Plant
A27	3115	Castor Oil and Pomace Plant
A28	3118	Cane Sugar Processing Plant
A29	3113	Aseptic Banana Puree Processing Plant
A30	3113	Tropical Fruit Nectar Processing Plant
A31	3116	Meals from Pregelatinized Flour
A32	3115	Milk Processing Plant
A33	3121	Cassava Flour and Starch Processing Plant
A34	3116	Soy Flour Processing Plant
A35	3111	Poultry Processing Plant
A36	3111	Cattle Slaughter House

\* International Standard Industrial Classification number  
+ Addition to Volume II

Part B : Textiles ISIC 321\*

- 26 -

In Volume I:

B1	3212	Woven Bag Making Plant
B2	3215	Plastic Filament Twine and Rope Making Plant
B3	3215	Polypropylene Soft Rope and String Making Plant
B4	3213	Socks Making Plant
B5	3212	Terry Towel Plant

In Volume II:

+ B6 3212 PP Woven Bag Making Plant

In Volume III:

B7	3211	Polyester Fabrics Making Plant
B8	3211	Cotton Yarn and Fabric Plant
B9	3211	Nylon Tyre Cord Fabric Plant
B10	3213	Socks Knitting
B11	3215	Twine and Rope Making Plant
B12	3219	Manufacture of Shoulder Pads for Garment

Part C : Textile, Wearing Apparel and Leather Industries ISIC 321, 322, 323, 324\*

In Volume I:

C1	3220	Working Clothes Sewing Plant
C2	3220	Men's Dress Shirt Sewing Plant
C3	3220	Underwear Making Plant
C4	3220	Outerwear Knitting Plant

In Volume II:

C5	3231	Leather Production
C6	3231	Wet-blue Leather
C7	3231	Crust Leather
C8	3231	Finished Leather
C9	3240	Footwear Production
C10	3233	Leather Goods Production
+ C11	3240	Shoe Making Plant

In Volume III:

C12 3220 Men's Shirts Making Plant

Part D : Wood and Wood Products ISIC 331\*

In Volume I:

D1	3311	Flywood Making Plant
D2	3311	Sawmill
D3	3319	Woodscrew Making Plant

In Volume II:

+ D4	3310	Production of Parquet Flooring
+ D5	3310	Joinery Plant
+ D6	3310	Plywood Making Plant
+ D7	3310	Chalkboard Making Plant

\* International Standard Industrial Classification number  
+ Additions to Volume II

**Part E : Paper and Paper Products ISIC 341\***

In Volume I:

- E1 3411 Toilet Paper Making Plant
- E2 3412 Corrugated Board Box Making Plant
- E3 3411 Straw Pulp and Yellow Board Making Plant
- E4 3412 Kraft Bag Making Plant

**Part F : Printing and Publishing ISIC 342\***

In Volume I:

- F1 3420 Printing Plant

**Part G : Industrial Chemicals ISIC 351\* and other Chemical Products ISIC 352\***

In Volume I:

- G1 3513 Urea Resin Adhesive Making Plant
- G2 3511 Packaged Type Oxygen Plant
- G3 3512 Mosquito Coils Making Plant
- G4 3512 Aerosol Insecticide Making Plant

In Volume II:

- G5 3511 Fatty Acids
- G6 3511 Fractionation of Fatty Acids
- G7 3511 Furfuryl Alcohol
- G8 3513 Furfurylic Resins from Organic Wastes
- G9 3511 Sulphation of Higher Alcohols
- G10 3511 Synthesis of Higher Alcohols
- G11 3511 Sulphuric Acid
- G12 3511 Phenol
- G13 3523 Glycerine from Natural Products
- G14 3523 Soap
- G15 3511 Sulphonation of Alkylbenzene
- G16 3511 Alkylation of Benzene

(NOTE: for Files G17 to G76, see also the Background Notes - Basis of Calculations - in Volume II, pages xi-xv)

- G17 3513 ABS Resins
- G18 3511 Acetic Acid via Acetaldehyde Oxidation
- G19 3511 Acetic Acid from Methanol and CO
- G20 3511 Acetaldehyde
- G21 3511 Acetic Anhydride
- G22 3511 Acetone from Propylene
- G23 3511 Acrylic Esters
- G24 3511 Acrylonitrile
- G25 3511 Adipic Acid
- G26 3511 Ammonia
- G27 3511 Aniline
- G28 3511 Aromatics Extraction - BTX from Reformate
- G29 3511 Caprolactam
- G30 3511 Caustic-Chlorine (Diaphragm Cell)
- G31 3511 Cumene
- G32 3511 Cyclohexane
- G33 3511 Dimethyl Terephthalate (DMT)
- G34 3511 Ethanol

\* International Standard Industrial Classification number  
+ Additions to Volume II

G35	3511	Ethylbenzene
G36	3511	Ethylene from Ethane
G37	3511	Ethylene from LPG/Propane
G38	3511	Ethylene from Naphta
G39	3511	Ethylene from Gas Oil
G40	3511	Ethylene Dichloride - Balanced Oxychlorination
G41	3511	Ethylene Oxide
G42	3511	Ethylene Glycol
G43	3511	Formaldehyde
G44	3511	Hydrogen from Natural Gas
G45	3511	Isopropanol
G46	3511	Methanol from Natural Gas
G47	3511	Methyl Methacrylate via Acetone Cyanohydrin
G48	3511	Nitric Acid - Weak
G49	3511	Nitric Acid - Concentrated
G50	3513	Nylon-6
G51	3511	Paraffins Recovery
G52	3511	Phenol
G53	3511	Phthalic Anhydride (Xylene Oxidation)
G54	3513	Polybutadiene Rubber (BR)
G55	3513	Polyethylene Low Density (LDPE) - Tubular Reactor
G56	3513	Polyethylene Low Density (LDPE) - Autoclave Reactor
G57	3513	Polyethylene High Density (HDPE) - Slurry Process
G58	3513	Polyethylene High Density (HDPE) - Gas Phase Process
G59	3513	Polypropylene - Liquid Phase Process
G60	3513	Polypropylene - Vapour Phase Polymerisation (BASF)
G61	3513	Polystyrene
G62	3513	PVC - Suspension Polymerisation
G63	3511	Propylene Oxide - Chlorohydrin Process
G64	3511	Propylene Oxide (Co-product Styrene)
G65	3511	Propylene Oxide - Co-product TBA
G66	3511	Propylene Glycol by Oxide Hydration
G67	3513	Styrene
G68	3513	SBR - Cold Emulsion Process
G69	3511	Sulphuric Acid (Single Absorption Process)
G70	3511	Synthesis Gas from Partial Oxidation of Fuel Oil
G71	3511	Terephthalic Acid (TPA) - Fibre Grade
G72	3513	Unsaturated Polyesters
G73	3511	Urea
G74	3511	Vinyl Acetate - Ethylene Vapour Phase Oxidation
G75	3511	Vinyl Chloride
G76	3511	p-Xylene - Recovery by Adsorption
+ G77	3511	Oxalic Acid
+ G78	3513	Polystyrene Resin Making Plant
+ G79	3511	Nitrobenzene Making Plant
+ G80	3511	Pentaerythritol Making Plant
+ G81	3512	EPN Making Plant
+ G82	3511	Titanium Dioxide Making Plant
+ G83	3511	Formaldehyde Making Plant
+ G84	3513	Unsaturated Polyester Resin Plant
+ G85	3511	Calcium Carbonate Making Plant
+ G86	3513	CNC Making Plant
+ G87	3510	Starch Hydrolysis Products Plant.

\* International Standard Industrial Classification number  
+ Additions to Volume II

+	G88	3511	Lauryl Sulphate Making Plant
+	G89	3511	Caustic Soda Making Plant
+	G90	3511	Sulfuric Acid Making Plant
+	G91	3511	Trichloroethane Making Plant
+	G92	3512	TAM Synthesis Technology
+	G93	3512	DEP Synthesis Technology
+	G94	3512	DDVP Synthesis Technology
+	G95	3511	Azodicarbonamide Making Plant

In Volume III:

G96	3513	PVC Paste Resin Making Plant
G97	3511	Sodium Chlorite Making Plant
G98	3512	Phosphate Fertilizer Plant
G99	3511	Mixed Xylene Separation Plant
G100	3511	Calcium Carbide Making Plant
G101	3513	Epoxy Resin Making Plant
G102	3511	Hexane/Cyclohexane Solvent Plant
G103	3512	Complex Fertilizer Making Plant
G104	3512	KAP Insecticides Making Plant
G105	3512	Liquid Pesticides Manufacturing Plant
G106	3512	Production of Powdered Pesticides
G107	3512	BPIC and MIPC Insecticides Making Plant
G108	3511	Linear Alkylbenzene Plant
G109	3512	MTX Insecticides Making Plant
G110	3511	Tricalcium Phosphate Plant

**Part H : Other Chemical Products ISIC 352\*/Petroleum Refineries ISIC 353\*/  
Manufacture of Miscellaneous Products of Petroleum and Coal ISIC 354\***

In Volume I:

H1	3529	Match Making Plant
H2	3523	Toilet Soap Making Plant
H3	3523	Detergent Making Plant

In Volume II:

+	H4	3522	Plasma Fractions Making Plant
+	H5	3529	Dynamite Making Plant
+	H6	3529	Carbon Black Making Plant
+	H7	3521	Paint Making Plant
+	H8	3529	Sensitizing Paper Making Plant
+	H9	3529	Adhesive Making Plant
+	H10	3529	Self-adhesive Tape Making Plant
+	H11	3522	Ursodesoxycholic Acid Synthesis
+	H12	3522	Riboflavin Tetrabutyrates Synthesis
+	H13	3522	Rifampicin Synthesis Technology
+	H14	3522	Saccharin Making Plant
+	H15	3522	Amoxycillin Synthesis Technology
+	H16	3522	Cephalothin Synthesis technology
+	H17	3522	Pyrantel Pamoate Synthesis Technology
+	H18	3529	Match Making Plant
+	H19	3530	Used Oil Regeneration
+	H20	3530	Transformer Oil Making Plant

\*International Standard Industrial Classification number  
+ Additions to Volume II

In Volume III:

<b>H21</b>	<b>3530</b>	<b>Petroleum Solvent Making Plant</b>
<b>H22</b>	<b>3521</b>	<b>Paint and Varnish Manufacturing Plant</b>
<b>H23</b>	<b>3529</b>	<b>Production of Light-Sensitive Paper</b>
<b>H24</b>	<b>3529</b>	<b>Footwear Glue Manufacture</b>
<b>H25</b>	<b>3521</b>	<b>PVAC (Polyvinyl-Acetate) Wall Coating</b>
<b>H26</b>	<b>3540</b>	<b>Coal Tar Distillation Plant</b>

**Part J : Rubber Products ISIC 355\***

In Volume I:

<b>J1</b>	<b>3559</b>	<b>V-Belt Making Plant</b>
-----------	-------------	----------------------------

In Volume III:

<b>J2</b>	<b>3551</b>	<b>Tire Making Plant</b>
-----------	-------------	--------------------------

**Part K : Plastic Products ISIC 356\***

In Volume I:

<b>K1</b>	<b>3560</b>	<b>Polyethylene Bag Making Plant</b>
<b>K2</b>	<b>3560</b>	<b>Agricultural Use PVC Film Making Plant</b>
<b>K3</b>	<b>3560</b>	<b>Unplasticized PVC Pipe Making Plant</b>
<b>K4</b>	<b>3560</b>	<b>Plastic Container Making Plant</b>
<b>K5</b>	<b>3560</b>	<b>Polyester Button Making Plant</b>
<b>K6</b>	<b>3560</b>	<b>PVC-Asbestos Tile Making Plant</b>
<b>K7</b>	<b>3560</b>	<b>PVC Wall Covering Making Plant</b>
<b>K8</b>	<b>3560</b>	<b>PVC Flexible Tube Making Plant</b>
<b>K9</b>	<b>3560</b>	<b>Fastener Equipped Polyethylene Bag Making Plant</b>
<b>K10</b>	<b>3560</b>	<b>Plastic Container Making by Blow Moulding</b>
<b>K11</b>	<b>3560</b>	<b>Rigid Polyvinyl Chloride Corrugated Sheet Making Plant</b>
<b>K12</b>	<b>3560</b>	<b>PVC Plastisol Moulding Plant</b>

In Volume II:

+	<b>K13</b>	<b>3560</b>	<b>Rigid PVC Pipe Making Plant</b>
+	<b>K14</b>	<b>3560</b>	<b>PVC Flooring Making Plant</b>
+	<b>K15</b>	<b>3560</b>	<b>MRP Ballistic Helmet Making Plant</b>

In Volume III:

<b>K16</b>	<b>3560</b>	<b>BOPP (Polypropylene) Film Making Plant</b>
<b>K17</b>	<b>3560</b>	<b>Rotary Thermoforming of Plastomers</b>
<b>K18</b>	<b>3560</b>	<b>Plastic Bottle Production</b>

**Part L : Pottery, China and Earthenware ISIC 361\*/Manufacture of Glass and Glass Products ISIC 362\***

In Volume I:

<b>L1</b>	<b>3610</b>	<b>Wall Tile Making Plant</b>
<b>L2</b>	<b>3610</b>	<b>Ceramic Tableware Making Plant</b>
<b>L3</b>	<b>3610</b>	<b>Sanitary Ware Making Plant</b>
<b>L4</b>	<b>3610</b>	<b>Porcelain Insulator Making Plant</b>

---

\* International Standard Industrial Classification number  
+ Additions to Volume II



In Volume II:

- + L5 3610 Ceramic Rod for Carbon Film Resistor
- + L6 3620 Insulation Glass Fiber Making Plant

In Volume III:

- L7 3620 Tube and Bulb Glass Making Plant
- L8 3620 Glassware Making Plant
- L9 3620 Sheet Glass Making Plant

**Part M : Other Mineral Products ISIC 369\***

In Volume I:

- M1 3699 Grinding Wheel Making Plant
- M2 3699 Concrete Block Making Plant
- M3 3691 Refractories Making Plant
- M4 3699 Concrete Pole and Pile Making Plant
- M5 3699 Gypsum Board Making Plant
- M6 3699 Home Pipe Making Plant
- M7 3699 Aggregate Plant

In Volume II:

- + M8 3691 Mosaic Tile Making Plant
- + M9 3692 Cement-Based Tile Plant
- + M10 3691 Firebrick Manufacturing Plant
- + M11 3699 Brake Lining Making Plant
- + M12 3699 Coated Abrasives Making Plant
- + M13 3691 Clay Brick Making Plant

In Volume III:

- M14 3691 Brick Factory
- M15 3699 Concrete Block Factory

**Part N : Iron and Steel Basic Industries ISIC 371\*/Non-Ferrous Metal Basic Industries ISIC 372\***

In Volume I:

- N1 3710 Foundry

In Volume II:

- + N2 3710 Spiral Weld Pipe Making Plant
- + N3 3710 Tin Plate Making Plant
- + N4 3720 Zinc Making Plant
- + N5 3720 Atomized Metal Powder Plant

**Part O : Fabricated Metal Products ISIC 381\***

In Volume I:

- O1 3819 Wire and Wire Product. Making Plant
- O2 3819 Electroplating Plant

\* International Standard Industrial Classification number

+ Additions to Volume II

03	3819	Canning Plant
04	3819	Aluminium Cooking Ware Making Plant
05	3819	Cabinet Making Plant
06	3819	Pipe Fitting Making Plant
07	3819	Can Making Plant
08	3819	Crown-Cap Making Plant
09	3819	Coin Making Plant
010	3819	Wire Nail Making Plant

In Volume II:

+	011	3819	Steel Fabrication and Ironwork Factory
+	012	3819	Electroplating Workshop
+	013	3819	Metal Punching Plant
+	014	3819	Leaf Spring Making Plant
+	015	3811	Automatic Key Set Making Plant
+	016	3819	Crow Cap Making Plant
+	017	3819	Can Making Plant
+	018	3819	Vacuum Metallized Film Making Plant
+	019	3819	Copper Covered Steel Wire Plant
+	020	3819	Electroplating Plant
+	021	3819	Pipe Fittings Making Plant
+	022	3819	Dumet Wire Making Plant
+	023	3819	Wire Rope Making Plant

In Volume III:

024	3819	Building Materials Made of Steel
025	3811	Production of Hand Tools
026	3813	Manufacture of Studded Tubes
027	3811	Manufacture of Locks

**Part P : Non-electrical Machinery ISIC 382\***

In Volume I:

P1	3829	Pump Assembling Plant
----	------	-----------------------

In Volume II:

+	P2	3824	Machinery Maintenance and Repair Shop
+	P3	3824	Small-Scale Repair Workshop
+	P4	3829	Air Conditioner Making Plant
+	P5	3829	Elevator/Escalator Making Plant
+	P6	3829	Pump Assembling Plant
+	P7	3821	Diesel Engine Assembly Plant
+	P8	3829	Ball Joint Making Plant
+	P9	3829	Carrier and Return Roller Making Plant
+	P10	3823	Rolling Mill Plant
+	P11	3822	Power Duster and Mist Blower Plant

In Volume III:

P12	3829	Washing Machine Making Plant
P13	3829	Refrigerator Assembling Plant
P14	3824	Sieve for Building Materials

\* International Standard Industrial Classification number  
+ Additions to Volume II

P15	3829	Assembly of Wheel Tractors
P16	3823	Manufacture of Welding Machines
P17	3823	Spare Parts Making Plant for Machine Tools
P18	3822	Power Tiller Making Plant
P19	3829	Water Pump Making Plant
P20	3823	Engine Lathe Making Plant
P21	3823	CNC Milling Machine Making Plant
P22	3823	Drilling Machine Making Plant
P23	3823	Hydraulic Press Making Plant
P24	3823	Shearing Machine Making Plant
P25	3823	Press Brake Making Plant
P26	3823	Hack Sawing Machine Making Plant
P27	3823	Gas Welding Machine Making Plant
P28	3824	Concrete Mixer Making Plant
P29	3824	Crusher Making Plant
P30	3824	Concrete Batcher Making Plant
P31	3824	Rocker Shovel Loader Making Plant

**Part Q : Electrical Machinery, Apparatus, Appliances ISIC 383\*/ Supplies, Manufacture of Transport Equipment ISIC 384\***

In Volume I:

Q1	3839	Arc Welding Electrode Making Plant
Q2	3839	Dry Cell Making Plant
Q3	3839	Wire and Cable Making Plant

In Volume II:

Q4	3831	Automotive Starter and Generator Rebuild Plant
Q5	3843	Engine Block, Engine Head, Water Pump Rebuilding
Q6	3843	Truck Brake Relining Plant
Q7	3843	Carburator and Fuel Pump Rebuild Plant
+ Q8	3839	Electrical Switches, Sockets and Plugs
+ Q9	3831	Electrical Motor Assembling Plant
+ Q10	3832	Telephone Assembling Plant
+ Q11	3839	Electric Lamp Making Plant
+ Q12	3831	Transformer Assembling Plant
+ Q13	3833	Mixer Making Plant
+ Q14	3833	Electric Fan Assembling Plant
+ Q15	3832	Stereo Phonograph Making Plant
+ Q16	3832	TV Tuner Making Plant
+ Q17	3832	Deflection Yoke Making Plant
+ Q18	3839	Carbon Rod Making Plant
+ Q19	3839	Electronic Ballast for Fluorescent Lamp
+ Q20	3831	V.S. Motor Assembling Plant
+ Q21	3839	Head Lamp Making Plant
+ Q22	3839	Arc Welding Electrode Making Plant
+ Q23	3843	Front and Rear Axle Making Plant
+ Q24	3843	Shock Absorber Making Plant
+ Q25	3843	Brake Cylinder Making Plant
+ Q26	3843	Wheel Disc Making Plant
+ Q27	3843	Radiator Making Plant
+ Q28	3843	Clutch Cover Assembly Making Plant
+ Q29	3843	Transmission and Transfer Making Plant
+ Q30	3844	Two-Wheeler Assembling Plant

\* International Standard Industrial Classification number  
+ Additions to Volume II

Q31	3832	TV Assembling Plant
Q32	3833	Rice Cooker Assembling Plant
Q33	3839	Dry Cell Making Plant
Q34	3831	AC Generator Assembling Plant
Q35	3832	Condenser Manufacturing Plant
Q36	3839	Communication Cable Making Plant
Q37	3843	Car Heater Making Plant
Q38	3833	Electric Cables and Wires
Q39	3833	Manufacture of Pressing Irons
Q40	3833	Water Heater Manufacturing Plant
Q41	3831	Manufacture of Distribution Transformers
Q42	3831	Manufacture of Switches
Q43	3839	Manufacture of 2 MVO Fuses
Q44	3839	Manufacture of Electrical Fittings
Q45	3839	Manufacture of Plugs
Q46	3843	Car Cooler Making Plant

**Part R : Professional, Scientific, Measuring and Controlling Equipment, and Optical Goods ISIC 385\***

In Volume I:

R1	3851	Absorbent Cotton Making Plant
R2	3851	Sanitary Napkin Making Plant
R3	3851	Water Meter Making Plant

In Volume II:

+	R4	3851	Thermometer/Pressure Gauge Plant
+	R5	3851	Watt Hour Meter Assembling Plant

**Part S : Other Manufacturing Industries ISIC 390\***

In Volume I:

S1	3909	Cellophane Tape Making Plant
S2	3909	Pencil Making Plant
S3	3909	Sign Pen Making Plant
S4	3909	Chalk Making Plant
S5	3909	Carbon Paper Making Plant
S6	3909	Toothbrush Making Plant

In Volume II:

+	S7	3909	Polyester Zipper Making Plant
---	----	------	-------------------------------

In Volume III:

S8	3909	Manufacture of Plastic Zippers
----	------	--------------------------------

**Part T : Repair Services ISIC 951\***

In Volume I:

T1	9513	Automobile Repair Plant
----	------	-------------------------

\* International Standard Industrial Classification number  
+ Additions to Volume II

**Part U : Forestry and Logging ISIC 121\* and 122\***

**In Volume II:**

- + U1 1210 Small-scale Charcoal Production

**Part V : Water Works and Supply ISIC 420\***

**In Volume II:**

- + V1 4200 Solar Desalination Unit

---

\* International Standard Industrial Classification number  
+ Additions to Volume II

*How To Start Manufacturing Industries*

# Cassava Starch Making Plant

Starch, which is a supply source of carbohydrate, one of the three essential elements of food, occurs widely in farm produce. The starch industry is to extract starch from farm produce to manufacture agricultural processed goods.

Starch is contained in the grains of rice, wheat, maize, etc. and also in the roots and tubers of potatoes, sweet potatoes, cassava and the like. The grain starch contained in rice, maize, etc. is generally small in particle. As their starch grain is surrounded by protein, the extraction of starch is more difficult than that in potato, cassava, etc. The starch in the roots and tubers of potato, cassava, etc. is large in particle and easily settles, and moreover, the fat and protein existing with starch is small in quantity, and thus good starch can be extracted comparatively easily.

The production scale of the starch industry ranges from such a large one as 1,000-ton-per-day to 1-ton-per-day as seen in the cottage industry run by farmhouses. The production scale is greatly affected by the conditions of location involving the supply of raw material, demand and supply of the product and so forth.

### Outline of Starch Production

As mentioned above, starch can roughly be classified into the grain starch and the roots and tuber starch. Consequently, the method of production of starch varies to some extent depending on the raw materials to be used. Anyway, the production of starch starts with crushing or grinding the raw material to destroy its tissue. In this way, the starch in the tissue is extracted and the fiber and protein are removed. The grain starch of wheat and maize is crushed by the dry process, and the root and tuber starch of potato and cassava is ground by the wet process, and then the starch is extracted by filtering it through water and also washing with running water. The process from gathering the raw material up to the manufacture of a final product is outlined as follows:

Gathering of raw material → washing  
→ crushing or grinding → extracting  
→ refining

### Manufacture of Cassava Starch

Cassava is a plant originated in South America. The starch accumulated in its root and tuber is extracted. Cassava is widely cultivated in the tropics, namely in Indonesia, the Philippines, Malaysia, Thailand, Africa and Brazil. The yield per hectare is 10 to 40 tons, varying depending on the growing conditions. Cassava reportedly contains an average of 18% of starch. In case the starch yield is supposed to be 80% of the raw material and a 10-ton-per-day plant is to be set up, the quantity of cassava that should be supplied to this plant would become as below:

$$10 \text{ tons} \times \frac{1}{0.18} \times \frac{1}{0.8} = 70 \text{ ton}$$

In case the plant is assumed to be operated for 250 days a year, it will need 70 tons x 250 = 17,500 tons of cassava per year. In order to establish a plant manufacturing 10 tons of starch a day, careful planning must be mapped out in respect of cultivation and gathering of cassava. The present data is concerned with a cassava starch manufacturing plant having a production scale that can easily be industrialized. And in preparing the data, the conditions prevailing in developing countries have been taken into consideration.

- (1) Production Scale: 5 tons/day
- (2) Specification of Product:  
Water - 18 to 19%  
Starch - 90%  
This corresponds to the 3rd grade of the JAS (the Japanese Agriculture and Forestry Standards)
- (3) Requirement of Raw Material: 36 tons/day
- (4) Requirement of Utilities:  
Industrial  
water . . . . . 20 tons/hour  
Pure water . . . 15 tons/hour  
Electric  
power . . . . . 20 kWh  
Chemicals . . . given quantity
- (5) Required Manpower: 12 to 28 including  
manager . . . . . 1  
engineer . . . . . 1  
clerical worker . . . . . 3
- (6) Required Area for Plant Site:  
Building: 200 to 400 m<sup>2</sup>  
Land: 1,000 m<sup>2</sup>

### Others

In materializing this plan, it is necessary to investigate the situation of raw material, starch market, utilities such as water, electric power and the like.

Table 1: Required Machinery and Equipment

Item	No.
Weighing platform scale . . . . .	2
Separator . . . . .	1
Washing machine . . . . .	1 (with a 5 h.p. motor)
Chute . . . . .	1
Peeling table . . . . .	1
Conveyor . . . . .	1 (with a 2 h.p. motor)
Grinder . . . . .	3 (each with a 7.5 h.p. motor)
Starch extractor . . . . .	1 (with a 7 h.p. motor)
Sieve (cylindrical) . . . . .	1 (with a 1 h.p. motor)
Milk tank . . . . .	1
Self plying pump . . . . .	1 (with a 1 h.p. motor)
Nozzle separator . . . . .	1 (with a 15 h.p. motor)
Settling pond . . . . .	1 (made of concrete)
Grinder . . . . .	1 (with a 3 h.p. motor)
Packing machine . . . . .	1 set
Delivery pump . . . . .	1
Refuse conveyor . . . . .	1 (with a 2 h.p. motor)
FOB price of machinery and equipment . . . . .	(approx.) \$US 119,000

This information has been prepared by the Japan Consulting Institute (JCI) and reproduced by UNIDO (JCI) with special permission from JCI. Further reproduction of this document without permission of JCI is prohibited. Any inquiry about the information contained should be sent to: ITOCHUOP, Registry file No. ID/562/12, UNIDO, P.O. Box 300, A-1400 Vienna, Austria.

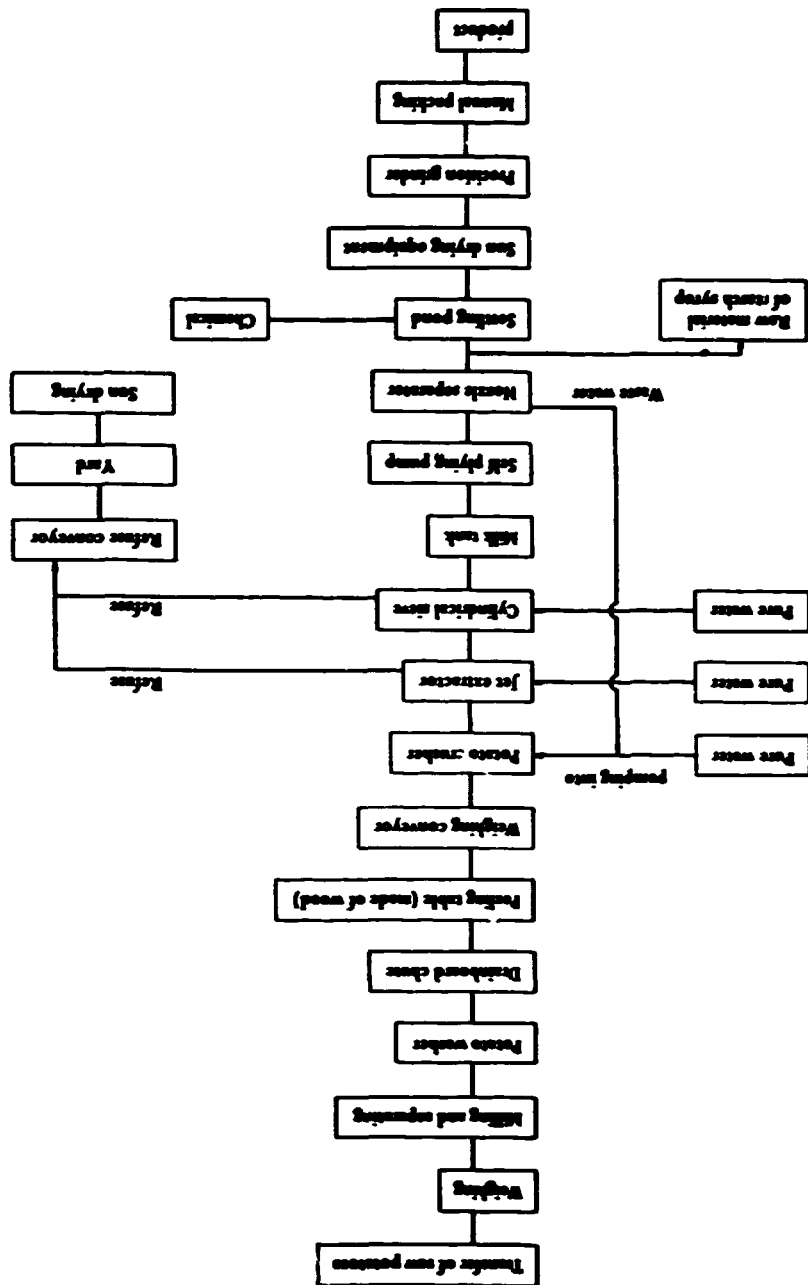


Fig. 1: Process Flow Sheet for Cassava Starch Making Plant (production capacity: 5 tons/day)



Cassava starch making plant

**How to Start Manufacturing Industries**

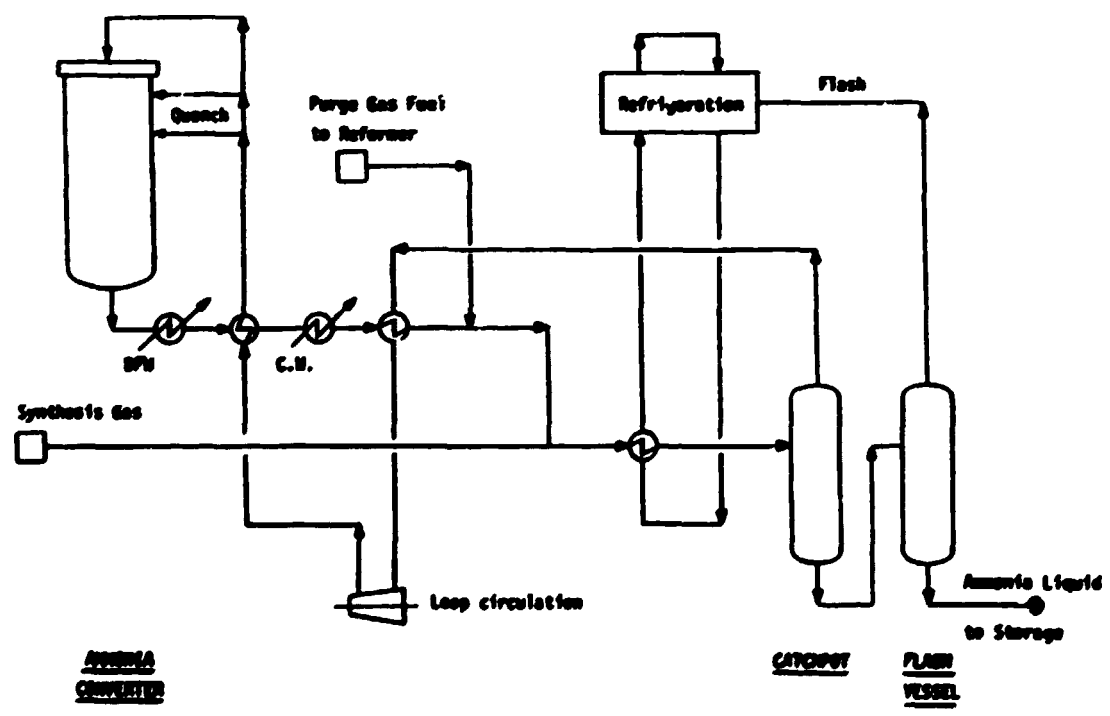
**AMMONIA**

Natural gas is mixed with steam and reformed over two stages to yield hydrogen and carbon monoxide. Reaction is highly endothermic and takes place at 800°C and 32 bar. In the second stage air is added so that the heat of combustion of part of the hydrogen supplies heat for the remainder of the endothermic reaction. Exit temperature is 1 000°C.

Exit gases are cooled and compressed and passed through a series of absorbers to take out water and carbon dioxide. The gases are compressed to the ammonia synthesis pressure of 225 bar. The ammonia catalyst is a promoted iron catalyst. The ammonia is condensed out of the synthesis loop by refrigerated cooling. Ammonia contents of 15-20 percent are obtained at the converter exit. Inerts are regularly purged and either burnt for fuel or processed further for hydrogen or argon recovery.

**Uses**

The major use for ammonia is in the fertiliser industry and containing 82 percent nitrogen, it is the most concentrated nitrogen fertiliser. Other uses are in the manufacture of nitric acid, in commercial explosives and fibres.





A plant capacity of 330 000 tonnes per year would occupy an area of 15 000 square metres. The smallest feasible size as built in Sweden is in the range 4-5 000 tonnes per year.

This information has been prepared for UNIDO by Chem Systems International Ltd., United Kingdom.

Any inquiry about the information contained should be sent to: IG/COOP, Registry file No. ID/562/12, UNIDO, P.O. Box 300, A-1400, Vienna, Austria.

**COST OF PRODUCTION ESTIMATE FOR AMMONIA  
(EXPRESSED IN CONSTANT 1980 US DOLLARS)  
PROCESS - NATURAL GAS**

<b>BASES</b>	<b>CAPITAL COST</b>	<b>\$ MILL</b>
<b>LOCATION- BENELUX</b>	<b>BATTERY LIMITS</b>	76.50
<b>CAPACITY- 330 000 TONNES PER YEAR</b>	<b>OFFSITES</b>	36.73
<b>PRODUCTN- 330 000 TONNES PER YEAR</b>		
<b>YEAR - 1980</b>	<b>TOTAL FIXED INV.</b>	113.33
<b>STR.TIME- 8000 HOURS PER YEAR</b>	<b>WORKING</b>	24.89

<u>RAW MATERIALS</u>	<u>QUANTITY/TONNE</u>	<u>PRICE*</u>	<u>ANNUAL COST</u>	<u>UNIT* COST</u>
NATURAL GAS	8.8200 GCAL	18.100	52 681 860	
CATALYST+CHEMS	1.0455 DOLLARS	1.000	345 000	
<b>TOTAL RAW MATERIALS</b>			<b>53 026 860</b>	<b>160.69</b>

UTILITIES

POWER	.0160 MWH	61.500	324 720	
COOLING WATER	.2000 KTONNE	17.000	1 122 000	
BLR.FEED WATER	.0008 KTONNE	450.000	118 800	
<b>TOTAL UTILITIES COST</b>			<b>1 565 520</b>	<b>4.74</b>

OPERATING COSTS

LABOUR	35.00 MEN @ 17 700 \$/YEAR		619 500	
SUPERVISION	1.00 MEN @ 29 200 \$/YEAR		29 200	
MAINTENANCE	@ .04xBLCC		3 063 855	
<b>TOTAL OPERATING COST</b>			<b>3 712 555</b>	<b>11.25</b>

OVERHEAD EXPENSES

DIRECT OVERHEAD	@ .400x LAB+SUPERVISION		259 480	
GEN PLANT OVERHEAD	@ .650x OPERATING COSTS		2 413 161	
INSURANCE+PTY TAX	@ .015x TOTAL FIXED CAP		1 699 913	
DEPRECIATION	@ .100x BLCC+ .050xOFFS		9 496 196	
INTEREST	@ .100x WORKING CAPITAL		2 488 748	
<b>TOTAL OVERHEAD EXPENSES</b>			<b>16 357 497</b>	<b>49.57</b>

BYPRODUCT CREDIT

<b>TOTAL BYPRODUCT CREDIT</b>	<b>0</b>	<b>.00</b>
-------------------------------	----------	------------

<b>NET COST OF PRODUCTION</b>	<b>74 662 432</b>	<b>226.23</b>
-------------------------------	-------------------	---------------

<b>VARIABLE COST OF PRODUCTION</b>	<b>165.43</b>
<b>CASH COST OF PRODUCTION</b>	<b>197.47</b>
<b>TRANSFER PRICE @ 10.0PC RETURN ON FIXED INV</b>	<b>260.59</b>
<b>TRANSFER PRICE @ 15.0PC RETURN ON FIXED INV</b>	<b>277.76</b>
<b>TRANSFFR PRICE @ 20.0PC RETURN ON FIXED INV</b>	<b>294.93</b>

\* \$/UNIT. TONNE=METRIC TON=2204.6 LB.

VARIATION ANALYSIS FOR	AMMONIA		NATURAL GAS		BENELOX		LANG FACTOR 0.65	
CASE NO	1	2	3	4	5	6	7	
<b>TONNES PER ANNUM</b>								
PLANT CAPACITY	330000	330000	330000	330000	264000	198000	132000	
PLANT OUTPUT	330000	280500	247500	198000	264000	198000	132000	
<b>MILLION DOLLARS</b>								
M.I.C.	74.4	74.4	74.4	74.4	64.3	55.0	42.2	
OFFTIER	36.7	36.7	36.7	36.7	31.0	26.4	20.2	
TOTAL FIXED	113.3	113.3	113.3	113.3	98.0	81.3	62.5	
WORKING	24.9	22.1	20.2	17.4	20.4	15.0	11.1	
<b>DOLLARS PER TONNE PRODUCT - (BASED ON NATURAL GAS AT \$10.1/BCAL )</b>								
RAW MATERIALS	140.7	140.7	140.7	140.7	140.7	140.7	140.7	
UTILITIES	4.7	4.7	4.7	4.7	4.7	4.7	4.7	
BYPRID. CREDIT	.0	.0	.0	.0	.0	.0	.0	
<b>VARIABLE COST</b>	<b>145.4</b>	<b>145.4</b>	<b>145.4</b>	<b>145.4</b>	<b>145.4</b>	<b>145.4</b>	<b>145.4</b>	
OPERATION	11.3	13.2	15.0	18.0	12.5	14.4	17.7	
OVERHEAD(EXCL. DEPN)	20.8	23.5	25.0	30.9	22.4	24.0	29.0	
<b>CASH COST</b>	<b>197.5</b>	<b>202.1</b>	<b>202.3</b>	<b>215.8</b>	<b>200.3</b>	<b>204.2</b>	<b>212.1</b>	
DEPRECIATION	20.0	33.9	30.4	40.0	31.1	34.4	39.7	
<b>NET COST OF PROD</b>	<b>222.2</b>	<b>232.8</b>	<b>246.2</b>	<b>273.8</b>	<b>231.6</b>	<b>239.8</b>	<b>251.8</b>	
RETURN ON INVESTMENT (AT 15% ON TOTAL FIXED INVESTMENT)	51.5	40.4	40.7	35.9	55.7	41.6	71.0	
<b>TRANSFER PRICE</b>	<b>277.0</b>	<b>292.8</b>	<b>313.3</b>	<b>360.0</b>	<b>287.1</b>	<b>300.8</b>	<b>322.0</b>	
<b>EFFECT OF NATURAL GAS PRICE VARIATION</b>								
PRICE CHANGE ON PRICE \$/BCAL.	+20% 21.7	-20% 14.5	+20% 21.7	-20% 14.5	+20% 21.7	-20% 14.5	+20% 21.7	-20% 14.5
<b>NET COST OF PROD</b>	<b>250.2</b>	<b>194.3</b>	<b>267.9</b>	<b>204.0</b>	<b>276.5</b>	<b>212.7</b>	<b>294.9</b>	<b>231.1</b>
<b>TRANSFER PRICE</b>	<b>309.7</b>	<b>245.0</b>	<b>328.5</b>	<b>244.7</b>	<b>345.2</b>	<b>281.4</b>	<b>300.0</b>	<b>316.9</b>

# Refrigerator Assembling Plant



View of Product

With the improvement in the living standard, there has been conspicuous changes in the improved dietary life surrounding our living. In particular, the desire to preserve fresh vegetables, fruits and meats in the household and enjoy eating them for a long time is quite natural, necessitating to have refrigerators in almost all individual houses.

As alcohol absorbs the heat of evaporation when evaporating, the refrigerator makes use of the property of absorbing the heat from outside when liquid vaporizes. Such a cooling action is carried out by the refrigeration cycle consisting of a compressor, radiator, capillary tubes and cooler.

The high-pressure refrigerant gas compressed by a compressor radiates its heat when passing through thin pipes of a radiator. The freezer is a small compartment surrounded by the compressor and specially closed by

a separate door and capable of keeping the temperature as low as  $-20^{\circ}\text{C}$ .

It is based on the principle that the naturally formed frost is deformed by a heater or it is automatically removed because the high-pressure refrigerant at high temperature directly flows to the refrigerator instead of passing through the condenser by means of a change-over cock.

The plant manufacturing such refrigerators requires relatively large investments and high-level technology, but its contribution to the national economy as a result of the investment is not only significant but also enhances the people's living standard.

## Products and Specifications

Refrigerators produced in this plant range from 48 to 500 liters in capacity including three-door types. They are of European style with the use of clean pipes requiring no cord heater in addition to being economical of electric power.

The refrigerator is characterized by its quick freezing time of only 30 minutes with no frosting as well as by being capable of an automatic control, providing the maximum capacity in a cabinet made of the steel plate with minimum thickness.

## Contents of Technology

### 1) Process Description

The cold-rolled steel plate (SPCC) first undergoes shearing, multi-notching, cold rolling and forming, and bending to be welded and assembled with such pre-formed cabinet component parts as a front plate, bottom plate, angle structure and other components into a cabinet.

The cabinet moved by a conveyor enters the coating line, where it is degreased, coated, washed with demineralized water, pre-dried, coated with anti-static agent for glazing and dried to be moved to the assembly section by a conveyor again.

Interiors are made of the plastic sheet by vacuum forming and further processed for assembly. The back plate is first prepared by pressing and forming, and

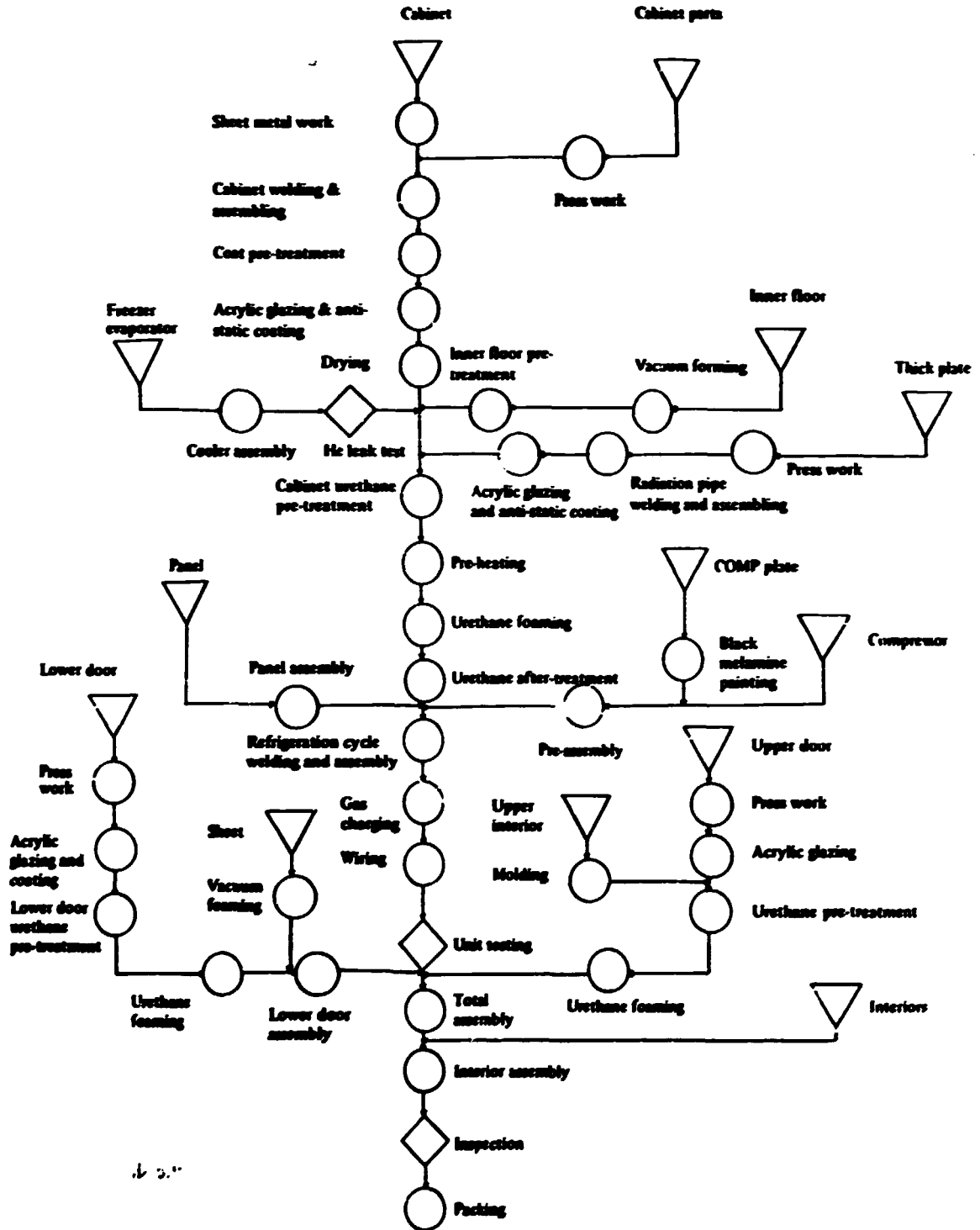
Table 1. Specification of Refrigerator

Model	Volume (lit)	Product dimension (H x W x D)	Net weight (kg)	Gross weight (kg)	CBM (cubic meter)
TR 48P	48	58.7" x 34.4" x 33.4"	21	22	20
TR 140	140	58.0" x 57.0" x 49.0"	43	54	170
TR 160 S	160	58.7" x 54.4" x 53.1"	50	65	60
TR 200 S	170	58.7" x 54.4" x 53.4"	57	68	60
TR 230 C	190	58.0" x 60.0" x 51.0"	62	71	60
TR 270 C	230	58.0" x 64.0" x 51.0"	68	74	60
TR 270 F	200	60.0" x 67.0" x 51.0"	70		70

welded with radiator pipes prior to assembly. It is then coated with acrylic anti-static agent for glazing for further assembly. The freezer and evaporator are argon-welded to be assembled with a cooler, undergoing thorough leak tests by a helium leak tester.

On completion of assembling interiors, cooler, back plate and the like, the cabinet is preliminarily treated with urethane and placed in a preheating furnace. Since the foaming jig is already heated, the urethane liquid is foamed by means of the high-pressure foaming

### Refrigerator Assembling Process Diagram



device for the cabinet. It is placed then in a curing furnace and assembled with welded refrigeration cycle system along with a compressor.

The welded and assembled refrigerator is vacuum dried and filled with R-12 freon gas to be followed by wiring. In the unit laboratory after the elapse of 20 minutes, the B-point temperature is measured, and defrosting and ampere are confirmed following high-pressure leak tests. A start-up test with 88 percent power source as well as low-pressure leak test are also conducted. The upper and lower doors are pre-formed, coated with acrylic resin for glazing. The doors are fixed with inside component parts and also insulated by urethane foaming for the final assembly, and then assembled to the cabinet.

Other component parts are assembled and interiors are inserted prior to such final tests as insulation resistance test, start-up test and leak test. The refrigerator thus finished is packed by an automatic packing machine including PP banding.

**2) Equipment and Machinery**

- Spot welder
- Trolley conveyor
- Slot conveyor
- Belt conveyor
- Tapping machine
- Power press
- Vacuum forming machine
- Urethane foaming
- Helium leak tester
- Lathers
- Die casting machine
- Injection molding machine
- Grinding machine
- Projection welder
- Shearing machine
- Cold rolled forming machine
- High speed precision press
- Compressor manufacturing facilities
- Painting equipment
- Crank press
- Oil press
- Compressor assembly facilities

**3) Raw Materials**

Raw materials	Requirement (per unit of product)
Steel plate	2.3 kg
Resin	0.8 kg
Silicate steel plate	5 kg
Urethane A Liquid	2.5 kg
Urethane B Liquid	2.5 kg

Note : Base on the product of 200L capacity

**Examples of Plant Capacity and Construction Cost**

- 1) Plant capacity : 60,000 sets/month
  - Basis : 8 hours/day, 330 days/year
- 2) Estimated Equipment Cost
  - o Manufacturing machinery : US\$1,000,000
  - o Utility facility : US\$ 400,000
  - o Installation cost : US\$ 500,000
  - Total : US\$1,900,000
- 3) Required Space
  - o Site area : 22,000 m<sup>2</sup>
  - o Building area : 7,600 m<sup>2</sup>
  - Total : 29,600 m<sup>2</sup>
- 4) Personnel Requirement
  - o Manager : 6 persons
  - o Engineer : 20 persons
  - o Operator : 290 persons
  - Total : 316 persons

This information has been prepared by the Technology Transfer Center (TTC) of the Korea Institute of Machinery and Metals (KIMM) and reproduced by UNIDO with special permission from TTC. Further reproduction of this document without permission of TTC is prohibited.

Any inquiry about the information contained should be sent to:  
 IFCT/II/PROM, Registry file No. ID/362/12, UNIDO, P.O. Box 300, A-1400 Vienna, Austria

Country: **N I G E R I A** Project No.: **MIR/051/V/85-11** ISIC: **1110, 3111** Date of submission: **6/11/85**

Project title:

**I N T E G R A T E D P O U L T R Y F A R M I N G**

Project summary	Total project cost (in US\$ million equivalent)	Foreign co-operation sought
Product: <b>EGGS, CHICKEN, FULLETS, ETC.</b>  Planned capacity/output: <b>L A R G E</b>  Location: <b>CROSS RIVER STATE</b>  Market: Domestic <u>100</u> % Export <u>NIL</u> %	Land and buildings: <b>660,000</b> Machinery and equipment: <b>1,250,000</b> Working capital: <b>250,000</b> Other: <b>433,000</b> Total: <b>US\$ 2,593,000</b> Foreign exchange portion: <b>US\$1,250,000</b>	Cash investment <input type="checkbox"/> Equity <input checked="" type="checkbox"/> Loans <input type="checkbox"/> Joint venture <input checked="" type="checkbox"/> Subcontracting <input type="checkbox"/> Licensing <input type="checkbox"/> Sale of technology <input type="checkbox"/> Turnkey project <input checked="" type="checkbox"/> Equipment supply <input checked="" type="checkbox"/> Market access <input type="checkbox"/>
This is <input checked="" type="checkbox"/> a new project <input type="checkbox"/> the expansion/modernization of an existing project  We have <input checked="" type="checkbox"/> a feasibility study dated _____ <input checked="" type="checkbox"/> a detailed project description <input type="checkbox"/> other studies:	Ownership structure: <u>60</u> % local private <u>1</u> % local State <u>40</u> % foreign	Expertise Management <input checked="" type="checkbox"/> Technical <input checked="" type="checkbox"/> Training <input type="checkbox"/> Marketing <input type="checkbox"/>
There is a local partner: Public sector <input type="checkbox"/> Private sector <input checked="" type="checkbox"/> Not yet identified <input type="checkbox"/>		

Brief description of the project

Responsible Officer:

**UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION  
Project Profile Screening and Pre-appraisal Information System**

**PROPSPIN PROJECT PROFILE**

**Summary**

**IDENTIFICATION**

Date: 16/4/1987  
Run Num.: 0

1. Project Title: Muffler Factory  
2. Product: Mufflers  
3. Location: Panama
4. Capacity: 78,000 pcs  
5. Constr. period:
- Sponsor: CNI  
Prep. by: G. Appelgren

**FINANCIAL SUMMARY**

CURRENCY: US dollars

6. Total Investment: 570,300  
7. Internal Rate of Return: 73 %  
8. Payback Period: 2 Years  
9. Breakeven Point: 17 % Cap Utilization  
10. Debt/Equity Ratio: 2.16 (Initial)  
11. Return on Equity: 183 % at Full Operation

**OPERATIONS SUMMARY**

	Year 1	Year 3	Year 5
12. Capacity Utilization %:	45	50	60
13. Total Sales:	877,500	975,000	1,170,000
14. Selling Price/unit (composite):	25.00	25.00	25.00
15. Total Number of Persons Employed:	16	16	16

**LIST OF ATTACHED SCHEDULES**

**PAGE**

1a-1d	Investment Tables, including Capital Structure, Debt Service, Depreciation & Amortization .....	1-3
2a-2d	Operations Analysis, Including Capacity, Sales, Materials, Labour, Energy, Overheads, Technology, Marketing & Administration .....	4-6
3	Net Income Statement .....	7
4	Cashflow Statement .....	8
5	Balance Sheet .....	9
6	Ratio Analysis .....	10



PROPSPIN - RATIO ANALYSIS

Schedule 6

Project Title: Huffers Factory	Run Number	3
Location: Panama	Date: 16/4/1987	Income Tax
Project No.:	Base Year: 1987	Rate (%): 43
Sponsor:	Startup: 1988	Income Tax
Prepared By: G. Appelgren	Inflation: 0	Defer.Yrs: 2

Period	1	2	3	4	5	6	7	8	9
-Return on Tot Invest %	62.9	62.9	42.3	43.3	57.9	58.8	66.2	67.1	56.0
-Return on Equity %	199.1	199.1	134.0	136.9	183.2	186.1	209.5	212.4	215.3
-Return on Sales %	40.9	40.9	24.8	25.3	28.2	28.7	29.6	30.2	30.6

-Payback Period Calc:

Initial Invest.	570,300	Annual Cashflow = NP+Dep+(1-taxrate)Int								
Annual Cashflow	-5.70E+05	456,700	456,700	315,957	315,957	386,722	386,722	423,717	423,717	423,717
Cumulative Cashflow		456,700	913,400	1,229,356	1,545,313	1,932,035	2,318,757	2,742,474	3,166,191	3,589,908
Lockup period		1	2	3	4	5	6	7	8	9
Payback Period:	2 Years									

-Debt Service Coverage	8.4	8.4	2.6	2.9	3.8	4.2	5.1	5.7	5.8	
-Investment Turnover	1.5	1.5	1.7	1.7	2.1	2.1	2.2	2.2	2.2	
-Debt/Equity Ratio	2.2	2.2	1.8	1.4	1.1	0.7	0.4	0.0	0.0	
-Investment/Employee	35,644									

-Internal Rate of Return IRR: 72.9 %

-Breakeven Point Calculation

	Year 5	Year 7	Diff	Ref
% Cap Util	50	65	15	100
Sales:	975,000	1,267,500		1,950,000
Cost of Operations	496,751	687,040	90,289	797,714
Fixed Cost	195,739	195,739		195,739
Variable Cost	300,962	391,251	90,289	501,925
BBP (%):	17			

PROPSPIN - CASHFLOW

Schedule 4

Project Title: Mufflers Factory		Est. Number	3
Location: Panama	Date: 16/4/1987	Income Tax	
Project No.:	Base Year: 1987	Rate (%):	43
Sponsor:	Startup: 1988	Income Tax	
Prepared By: G. Appelgren	Inflation: 0	Defer. Trm:	2

	0	1	2	3	4	5	6	7	8	9
<b>SOURCES OF CASH</b>										
Net Profit (Loss)		350,729	350,729	241,471	246,659	330,113	335,302	377,405	382,674	387,862
Depr & Amort		43,355	43,355	43,355	43,355	35,855	35,855	35,855	35,855	35,855
Incr in Acc Pay	45	21,040	31,560	0	4,075	0	8,149	0	4,075	0
New Equity		180,190								
New Loans		390,110								
<b>Total Sources</b>		<b>591,340</b>	<b>433,644</b>	<b>402,004</b>	<b>288,900</b>	<b>290,014</b>	<b>374,117</b>	<b>371,157</b>	<b>418,415</b>	<b>423,717</b>

<b>USES OF CASH</b>										
Incr (Decr) in Cash Bal		100,137	228,988	332,731	154,722	171,121	195,697	236,459	258,995	285,394
Incr in Acc Rcvbl	30		73,125	0	8,125	0	16,250	0	8,125	0
Incr in Inventories										
Raw Material	60	23,498	23,498	0	5,222	0	10,444	0	5,222	0
In-Process	15		15,544	15,544	16,876	16,876	19,384	19,384	20,715	20,715
Finished Goods	30		38,680	0	2,716	0	4,068	0	2,715	0
Spares	120	404	0	0	0	0	0	0	0	0
Fixed Assets		467,300	0	0	0	0	13,000	0	0	13,000
Repayments			0	0	65,018	65,018	65,018	65,018	65,018	65,018
Dividends			53,809	53,809	36,221	36,221	49,517	50,298	56,623	57,401
Add Payout-Being			0	0	0	0	0	0	0	0
<b>Total Uses</b>		<b>591,340</b>	<b>433,644</b>	<b>402,004</b>	<b>288,900</b>	<b>290,014</b>	<b>374,117</b>	<b>371,157</b>	<b>418,415</b>	<b>423,717</b>

**UNIDO INVESTMENT PROMOTION INFORMATION SYSTEM (INPRIS) - PROJECT FILE**

**CONTROL NUMBER:** 001904  
**ISIC:** 3512  
**PROJECT NUMBER:** UGA/035/V/84-09      **COUNTRY:** Uganda  
**PROJECT TITLE:** Pesticides Manufacture  
**PRODUCT & CAPACITY:** 2,160 to 5,000 tons/year of pesticides, fungicides,  
herbicides, etc.  
**COOPERATION SOUGHT:** LMS, SOT, APN  
**TOTAL PROJECT COST:** US\$ 13,436,000      **PROJECT IS:** New  
**STUDY AVAILABLE:** Yes      **LOCAL SPONSOR:** Yes  
**PROJECT STATUS:** Active      **AS ON (DATE):** 850220

**ACTIVITY RECORD:**

**DATE** 850304      **ACTIVITY:** Khartoum IPH  
**ENTERED** 850220      **REFERENCE:** Mr. Maadi

**DATE** 850524      **ACTIVITY:** Project questionnaire sent to Chanelle Veterinary  
Ltd., Loughrea, Ireland  
**ENTERED** 850524      **REFERENCE:** Letter of 850517

**DATE** 850626      **ACTIVITY:** Project questionnaire sent to East African  
Development Bank, Kampala, Uganda  
**ENTERED** 850626      **REFERENCE:** Letter of 850617 (in reply 9 May letter)

**DATE** 850725      **ACTIVITY:** Project questionnaire sent to Pracht Air Service  
GmbH, Kelsterbach, FRG  
**ENTERED** 850725      **REFERENCE:** Letter of 850715

**DATE** 850731      **ACTIVITY:** Project questionnaire sent to Micron Mills Ltd., East  
Peckham, Kent, England  
**ENTERED** 850731      **REFERENCE:** Letter of 850722

**DATE** 850809      **ACTIVITY:** Project questionnaire sent to Industries Development  
Corporation, Haifa, Israel  
**ENTERED** 850812      **REFERENCE:** Letter of 850731

**DATE** 850813      **ACTIVITY:** Project questionnaire sent to Commonwealth  
Development Corp., London, England  
**ENTERED** 850813      **REFERENCE:** Letter of 850809 in reply ICP's 9 May letter

**DATE** 850815      **ACTIVITY:** Project questionnaire sent to B.R.I., Brussels,  
Belgium  
**ENTERED** 850815      **REFERENCE:** Letter of 850726

**DATE** 860807      **ACTIVITY:** Project questionnaire sent to Hamro GmbH, Hamburg, FRG  
**ENTERED** 860910      **REFERENCE:** Letter from company of 860804

UNIDO INVESTMENT PROMOTION INFORMATION SYSTEM (INPRIS) - PROJECT FILE

CONTROL NUMBER: 001905  
ISIC: 3522  
PROJECT NUMBER: UGA/036/V/84-09 COUNTRY: Uganda  
PROJECT TITLE: Pharmaceutical Products (Bweyogerere)  
PRODUCT & CAPACITY: Cough syrup, expectorants, antibiotic syrup, antibiotic capsules, creams and ointments  
4,500 bottles/hour and 28,000 capsules/hour  
COOPERATION SOUGHT: LMS, SOT, TRX  
TOTAL PROJECT COST: US\$ 328,000 PROJECT IS: Expansion  
STUDY AVAILABLE: Yes LOCAL SPONSOR: Yes  
PROJECT STATUS: Active AS ON (DATE): 850220

ACTIVITY RECORD:

DATE 850304 ACTIVITY: Khartoum IPH  
ENTERED 850220 REFERENCE: Mr. Maadi

DATE 850311 ACTIVITY: Project questionnaire sent to S.A. AJH, Liege, Belgium  
ENTERED 850312 REFERENCE: Letter from company of 850301

DATE 850325 ACTIVITY: Project questionnaire sent to Prodesfarma S.A., San Justo Desvern (Barcelona), Spain  
ENTERED 850326 REFERENCE: Telex of 850325

DATE 850417 ACTIVITY: Project questionnaire sent to Hans Ligl GmbH, Neu-Ulm, FRG  
ENTERED 850417 REFERENCE: Letter of 850412

DATE 850524 ACTIVITY: Project questionnaire sent to Chanelle Veterinary Ltd., Loughrea, Ireland  
ENTERED 850524 REFERENCE: Letter of 850517

DATE 850725 ACTIVITY: Project questionnaire sent to Pracht Air Service GmbH, Kelsterbach, FRG  
ENTERED 850725 REFERENCE: Letter of 850715

DATE 850731 ACTIVITY: Project questionnaire sent to Merrell Dow Pharmaceuticals Hideoast/Africa, Geneva, Switzerland  
ENTERED 850731 REFERENCE: Letter of 850725

DATE 850731 ACTIVITY: Project questionnaire sent to Micron Mills Ltd., East Peckham, Kent, England  
ENTERED 850731 REFERENCE: Letter of 850722

DATE 850802 ACTIVITY: Project questionnaire sent to Dott. Bonapace & C., Milan, Italy  
ENTERED 850802 REFERENCE: Letter of 850724

DATE 860807 ACTIVITY: Project questionnaire sent to Hamro GmbH, Hamburg, FRG  
ENTERED 860910 REFERENCE: Letter from company of 860804

UNIDO INVESTMENT PROMOTION INFORMATION SYSTEM (INPRIS) - INSTITUTION FILE

CONTROL NO.: 000275  
 CODE NUMBER: GAB011  
 NAME OF INSTITUTION:  
     Chambre de Commerce,  
     d'Agriculture, d'Industrie et  
     des Mines du Gabon  
 MAIL ADDRESS: B.P. 2334  
                 Libreville  
                 Gabon  
 TOWN ADDRESS: ...  
 TITLE OF CEO: President  
 CONTACT NAME: Dominique Nandza  
 TELEPHONE: 72 20 64, 72 07 53  
 CABLE: ...  
 DATE: 850715

TITLE: Secretaire General  
 TELEX: 5554 GO  
 TYPE: COC

UNIDO INVESTMENT PROMOTION INFORMATION SYSTEM (INPRIS) - INSTITUTION FILE

CONTROL NO.: 000037  
 CODE NUMBER: GH0001  
 NAME OF INSTITUTION:  
     Bank for Housing and  
     Construction  
 MAIL ADDRESS: N.I. Ministries Post Office  
                 North Liberia Road  
                 Accra  
                 Ghana  
 TOWN ADDRESS: ...  
 TITLE OF CEO: The President  
 CONTACT NAME: ...  
 TELEPHONE: 66143-9  
 CABLE: BANKHOUSE, ACCRA  
 DATE: 840917

TITLE: ...  
 TELEX: 2096 BANKHOUSE  
 TYPE: COM

UNIDO INVESTMENT PROMOTION INFORMATION SYSTEM (INPRIS) - INSTITUTION FILE

CONTROL NO.: 000038  
 CODE NUMBER: GH0002  
 NAME OF INSTITUTION:  
     Ghanaian Enterprises Development  
     Commission  
 MAIL ADDRESS: P.O. Box N. 189  
                 Morocco Road  
                 Accra  
                 Ghana  
 TOWN ADDRESS: ...  
 TITLE OF CEO: The President  
 CONTACT NAME: ...  
 TELEPHONE: 21537, 27507  
 CABLE: ENTECOM, ACCRA  
 DATE: 840917

TITLE: ...  
 TELEX: ...  
 TYPE: ENFI, PRN

UNIDO INVESTMENT PROMOTION INFORMATION SYSTEM (INPRIS) - INSTITUTION FILE

CONTROL NO.: 000039  
CODE NUMBER: GH0003  
NAME OF INSTITUTION: Ghana Investments Centre  
MAIL ADDRESS: P.O. Box N193  
Accra  
Ghana  
TOWN ADDRESS: ...  
TITLE OF CEO: ...  
CONTACT NAME: Mr. K. Asoah TITLE: Project Development  
Division  
TELEPHONE: 65125 TELEX: 2229  
CABLE: Investment Accra TYPE: PRH  
DATE: 851007

UNIDO INVESTMENT PROMOTION INFORMATION SYSTEM (INPRIS) - INSTITUTION FILE

CONTROL NO.: 000795  
CODE NUMBER: GH0004  
NAME OF INSTITUTION: Ghana National Chamber  
of Commerce  
MAIL ADDRESS: P.O. Box 2325  
Accra  
Ghana  
TOWN ADDRESS: ...  
TITLE OF CEO: Executive Secretary  
CONTACT NAME: ... TITLE: ...  
TELEPHONE: ... TELEX: ...  
CABLE: ... TYPE: COC  
DATE: 841122

UNIDO INVESTMENT PROMOTION INFORMATION SYSTEM (INPRIS) - INSTITUTION FILE

CONTROL NO.: 000041  
CODE NUMBER: GH0005  
NAME OF INSTITUTION: National Investment Bank  
MAIL ADDRESS: P.O. Box 3726  
Accra  
Ghana  
TOWN ADDRESS: 37 Kwame Nkrumah Avenue  
TITLE OF CEO: The President  
CONTACT NAME: John Acquah Primpong TITLE: Manager  
TELEPHONE: 21312 TELEX: 2161 INVESTOR  
CABLE: INVESTBANK TYPE: COM  
DATE: 841114

**INDUSTRIAL INVESTMENT PROJECTS PROMOTED AND CONCLUDED  
THROUGH THE INVESTMENT PROMOTION SERVICES (IPS) OF THE  
UNIDO INDUSTRIAL INVESTMENT DIVISION  
1980-1985**

**AFRICA**

<b>Country</b>	<b>Project Title</b>	<b>Total Investment in US\$ million</b>	<b>IPS</b>	<b>Year</b>
<b>Algeria</b>	<b>Locksmithery (building hardware)</b>	<b>20.0</b>	<b>Brussels</b>	<b>1983</b>
<b>Benin</b>	<b>Charcoal Sugar cane complex</b>	<b>2.3 190.0</b>	<b>Cologne Brussels</b>	<b>1980 1980</b>
<b>Burundi</b>	<b>Coffee plant Glass bottles Brewery</b>	<b>30.0 31.5 18.4 0.7</b>	<b>Brussels Zurich Brussels Brussels</b>	<b>1981 1981 1983 1984</b>
<b>Cameroon</b>	<b>Brewery and soft drinks Feedmill</b>	<b>10.0 0.74</b>	<b>Brussels Cologne</b>	<b>1983 1984</b>
<b>United Republic of Cameroon</b>	<b>Animal feed</b>	<b>1.0</b>	<b>Brussels</b>	<b>1982</b>
<b>Congo</b>	<b>Manufacturing of prefabricated bungalows</b>	<b>8.5</b>	<b>Paris</b>	<b>1983</b>

Country	Project Title	Total Investment in US\$ million	IPS	Year
Egypt	Frozen food processing	1.75		
	Tomato growing project	16.0		
	Paper sack factory	9.0		
	Reinforced concrete pipes	5.5	Brussels	1980
	Vaccine production	1.5	Cologne	1980
	Frozen food processing	1.75	New York	1981
	Glass containers for pharmaceuticals	46.0	Brussels	1981
	Meat processing	20.6	Vienna	1981
	Tomato growing project	16.0	New York	1981
	Meat processing	4.0	Vienna	1982
	Production of sanitary irrigation material	10.5	Cologne	1984
	Paper sack factory	9.0	Zurich	1984
	Cabon	Palm oil	1.5	Brussels
Ghana	Agro business	15.0	New York	1981
	Charcoal	2.8	Cologne	1981
	Fodder Mill	0.6	Cologne	1980
	Agro business	15.0		
Guinea	Ceramics	7.5	Cologne	1981
	Mamou Cannery	n.a.	Paris	1983
	Kindia soft drinks complex	n.a.	Paris	1983
	Manufacturing of candles	n.a.	Paris	1983
	Pharmaceutical products	n.a.	Paris	1983
	Mineral water in Nawaeh	2.0	Paris	1984
	Animal food and fertilizer	3.5	Paris	1984
	Tomato canning	6.25	Paris	1985
	Mineral water in Nawaeh	2.0	Paris	1984
	Animal food and fertilizer	3.5	Paris	1984



Country	Project Title	Total Investment in US\$ million	IFS	Year
Ivory Coast	Banana transformation	n.a.	Paris	1984
	Electric transformers	1.5	Brussels	1980
	Underwear knitting	0.7	Brussels	1980
	Sanitary ware factory	8.0	Cologne	1981
	Assembly of light trucks	13.8	Brussels	1981
	Banana transformation	n.a.	Paris	1984
Kenya	Asbestos cement pipes and roof sheets (expansion)	1.2	Brussels	1980
	Glass factory	14.1	Cologne	1980
	Flower seed plantation	0.5	New York	1980
	Sunflower hybrid seed plantation	n.a.	New York	1980
	Cassava	1.0	Zurich	1980
	Fertilizer mixing complex	2.5	Brussels	1980
	Charcoal production, oil pyrolysis and latex refining	4.0	Zurich	1982
	Tannery	10.0	Brussels	1983
	Mosquito coils	1.3	New York	1983
	Liberia	Palm oil refineries (rehabilitation)	3.0	Brussels
Socialist People's Libyan Arab Jamahiriya	Poultry	120.0	Cologne	1980

<b>Country</b>	<b>Project Title</b>	<b>Total Investment in US\$ million</b>	<b>IPS</b>	<b>Year</b>
<b>Madagascar</b>	<b>Ammonia-Urea</b>	<b>150.0</b>	<b>Brussels</b>	<b>1980</b>
<b>Mali</b>	<b>Shea-nut extraction</b>	<b>4.0</b>	<b>Brussels</b>	<b>1980</b>
<b>Mano River Union</b>	<b>Dry cell batteries</b>	<b>2.9</b>	<b>Zurich</b>	<b>1980</b>
<b>Mauritania</b>	<b>Fish processing</b>	<b>69.0</b>	<b>Cologne</b>	<b>1981</b>
<b>Mauritius</b>	<b>Refrigerators and deep-freezers</b>	<b>1.5</b>	<b>Cologne</b>	<b>1982</b>
	<b>Electronic assembly</b>	<b>n.a.</b>	<b>Vienna</b>	<b>1981</b>
	<b>Tourist project (Hotel expansion)</b>	<b>1.5</b>	<b>Cologne</b>	<b>1984</b>
<b>Morocco</b>	<b>Chemical plant</b>	<b>1.0</b>	<b>New York</b>	<b>1980</b>
	<b>Distribution and copying equipment</b>	<b>4.0</b>	<b>New York</b>	<b>1980</b>
	<b>recycling plant</b>	<b>2.5</b>	<b>Zurich</b>	<b>1980</b>
	<b>Repair shops</b>	<b>0.8</b>	<b>New York</b>	<b>1981</b>
	<b>Seaweed harvesting</b>	<b>1.2</b>	<b>New York</b>	<b>1981</b>
	<b>Biscuit factory</b>	<b>n.a.</b>	<b>Zurich</b>	<b>1982</b>
	<b>Steel structures</b>	<b>0.4</b>	<b>Brussels</b>	<b>1983</b>
	<b>Phosphates</b>	<b>n.a.</b>		
	<b>Sunflower hybrid seed plantation</b>	<b>n.a.</b>		

Country	Project Title	Total Investment in US\$ million	IPS	Year
Nigeria	Animal feed mill	1.7	Brussels	1980
	Chicken farm complex	45.0	Cologne	1980
	Electronic industry	6.0	Cologne	1980
	Brewery	6.0	Cologne	1980
	Polyurethan	0.5	Cologne	1980
	Automobile spark plug project	7.7	Brussels	1980
	Peanut flakes	2.0	New York	1981
	Battery manufacturing	5.0	New York	1981
	Food processing	52.0	New York	1981
	Pharmaceutical	1.5	New York	1981
	Book and commercial printing	0.7	Vienna	1981
	Diesel engines, tractors, agricultural equipment	22.0	Cologne	1981
	Printing inks and colour pigments	1.5	Brussels	1983
	Particle board plant	11.7	Cologne	1984
Rwanda	Brewery and carbonated drinks	18.5	Brussels	1980
	Quinquina processing	5.0	Brussels	1980
	Precious and semi-precious stones exploitation	0.22	Cologne	1982
Senegal	Retreading plant	0.6	Zurich	1980
	Limestone extraction	5.0	Brussels	1980
	Fish processing	5.6	Brussels	1981
	Floor and wall tiles	6.2	Cologne	1982
	Textiles	65.0	New York	1982
	Brickyard	n.a.	Paris	1982
	Deep-frozen fish	n.a.	Paris	1982
	Colour laboratory	1.15	Paris	1983
	Metallic joinery	0.7	Paris	1983
	Electronic components	0.5	Paris	1983

Country	Project Title	Total Investment in US\$ million	IFS	Year
Senegal cont'd	Yoghurt and dairy products	0.6	Paris	1983
	Soft drinks	0.7	Paris	1983
	Production of travelling goods in leather	1.0	Vienna	1983
	Electrodes manufacturing plant	0.8	Zurich	1983
	Expansion cool storage house	0.5	Zurich	1984
	Expansion of electrical fixtures and installations	0.6	Zurich	1984
	Fishing vessels	1.0	Zurich	1985
Somalia	Pumps	0.5	Cologne	1983
Sudan	Integrated poultry complex	38.0	Brussels	1983
Swaziland	Brake and clutch linings	4.8	Cologne	1980
	Household candles	0.19	Cologne	1983
Tanzania	Bottle-works	29.0	Brussels	1980
	Cassava processing plant	20.0	Brussels	1980
	Flat glass	30.0	Brussels	1980
	Textile complex	72.0	Brussels	1980
	Toothpaste manufacturing	2.8	Cologne	1981
	Assembly of fire vessels and construction of floating dock	4.0	Brussels	1984

<b>Country</b>	<b>Project Title</b>	<b>Total Investment in US\$ million</b>	<b>IFS</b>	<b>Y</b>
<b>Togo</b>	<b>Retreading plant</b>	<b>0.6</b>	<b>Zurich</b>	<b>1980</b>
	<b>Industrial brick plant</b>	<b>7.2</b>	<b>Cologne</b>	<b>1982</b>
	<b>Cold store</b>	<b>0.2</b>	<b>Zurich</b>	<b>1983</b>
<b>Tunisia</b>	<b>Construction of engines and trucks</b>	<b>19.0</b>	<b>Cologne</b>	<b>1981</b>
	<b>Leather finishing and shoe desing</b>	<b>3.7</b>	<b>Brussels</b>	<b>1982</b>
	<b>Tannery</b>	<b>1.2</b>	<b>Brussels</b>	<b>1983</b>
<b>Zambia</b>	<b>Cosmetics factory</b>	<b>0.07</b>	<b>Warsaw</b>	<b>1985</b>
	<b>Ceramics manufacture</b>	<b>3.0</b>	<b>Cologne</b>	<b>1982</b>
	<b>Mushroom cultivation and processing</b>	<b>0.5</b>	<b>Cologne</b>	<b>1982</b>
	<b>Drugs manufacture</b>	<b>5.0</b>	<b>Brussels</b>	<b>1984</b>
<b>Zimbabwe</b>	<b>Printing press</b>	<b>1.0</b>	<b>Paris</b>	<b>1982</b>
	<b>Electrical wiring accessories</b>	<b>n.a.</b>	<b>Brussels</b>	<b>1983</b>
	<b>Dairy products</b>	<b>6.6</b>	<b>Brussels</b>	<b>1983</b>

**UNIDO INDUSTRIAL INVESTMENT DIVISION  
INVESTMENT PROMOTION OFFICIALS ORIENTATION PROGRAMME\*/  
1978-1985**

**AFRICA**

<b>Country</b>	<b>Name of official</b>	<b>Year(s)</b>	<b>Location of Programme</b>
Algeria	Mr. Omar Aoudj	s/t 1982	Brussels
Angola	Mr. Pedro Ms. O. Lima	1983/84 s/t	Paris Paris
Cameroon	Mr. Clarence Borland Ms. Mbozo 'o Efous Mr. Aka Amvan	1984/85 1984/85 s/t 1984	New York New York New York
Congo	Mr. Bouity Ms. A. Coma Mr. Missie Seys Mr. F.F. Dibes	1983/84 s/t 1983 s/t 1983 s/t 1982	Paris Paris Paris Paris

**\*/** The Orientation Programme enables officials from project promotion agencies or similar institutions in developing countries to be attached to one of UNIDO's Investment Promotion Services for a period of up to one year. During this time, the officials are introduced to project promotion techniques by UNIDO staff whose aim is to guide them in promoting industrial investment projects in their individual countries and in locating, and negotiating with, potential partners in the host country.

Egypt	Mr. M.S. Bayoumi	s/t 1978	New York
	Mr. Hassan Gadel Hak	s/t 1979	New York
	Mr. A.A. El-Din Masny	s/t 1979	New York
	Mr. Mohamed Salah	s/t 1981	New York
	Mr. Mohamed Mourd	s/t 1981	New York
	Mr. Mohamed Sadek	s/t 1981	New York
Guinea	Mr. Millinono	1983/85	Paris
Ivory Coast	Mr. Kassi	1983/84	Paris
	Mr. C. Kouadio Beni	s/t 1982	Brussels
Kenya	Mr. Ng' ang'a	1979/81	New York
	Mr. Macharia	1981/82	New York
	Mr. Jannah Mbaru	s/t 1979	New York
	Mr. J.E.O. Mwencha	s/t 1980	New York
	Mr. O.C. Kamidi	s/t 1980	New York
	Mr. E.N. Maragwa	s/t 1980	New York
	Mr. J.W. Murage	s/t 1980	New York
	Mr. Henry Njoroge	s/t 1980	New York
Mr. I. Saida Odera	s/t 1983	Brussels	
Malawi	Mr. Givah	1985/86	Cologne
		1985	New York