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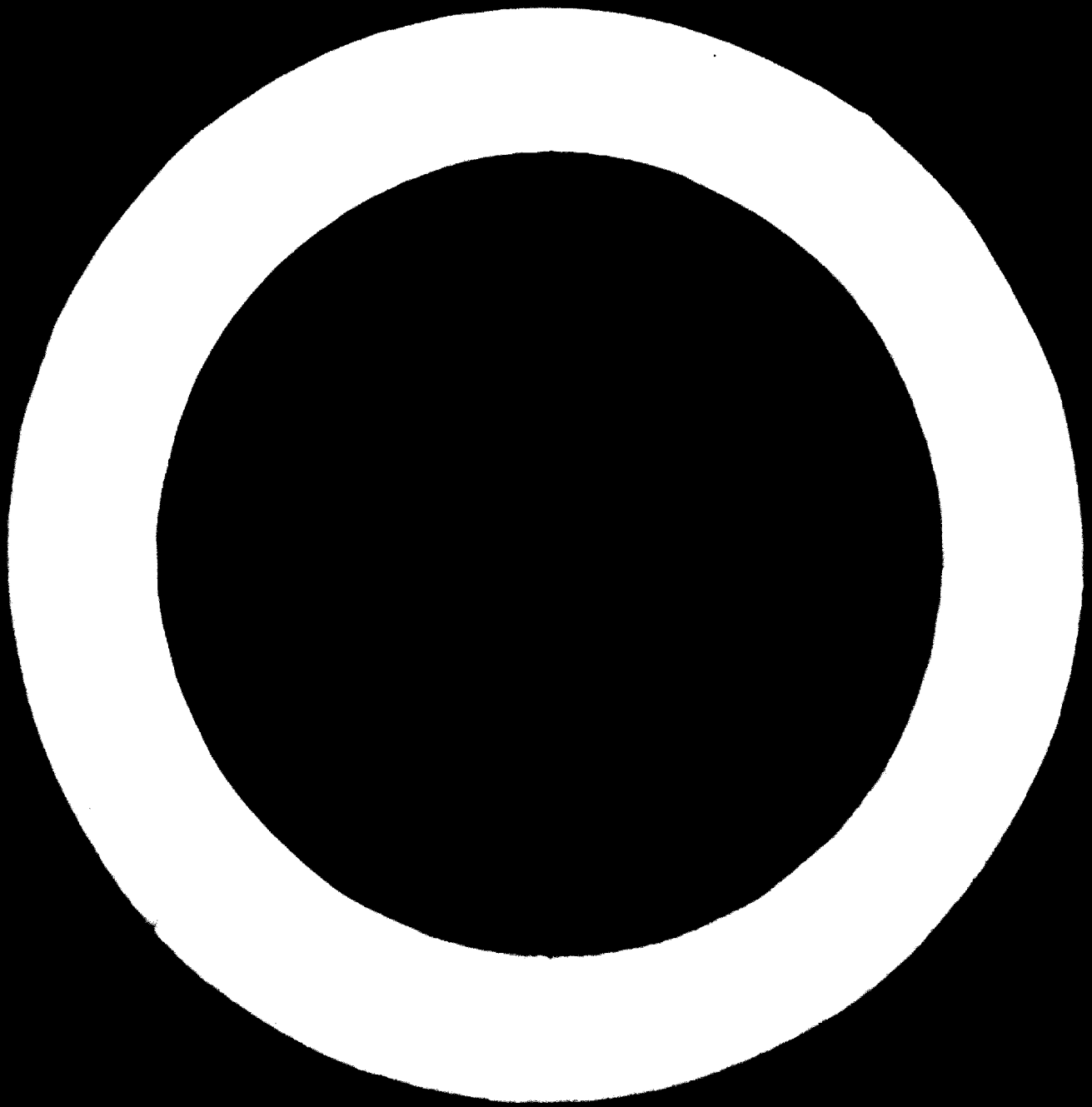
**UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION'S  
ASSISTANCE TO DEVELOPING COUNTRIES  
IN THE FIELD OF INDUSTRIAL SERVICES<sup>1/</sup>**

Presented by  
The Secretariat of  
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## INTRODUCTION

A basic element in the industrialization of developing countries is the establishment of a public and private institutional infrastructure capable of providing efficient services to industry. The objective of UNIDO is to give assistance to countries in establishing and strengthening their industrial institutions and services through a programme of field activities, special training programmes, the dissemination of information and supporting activities related to specific problems of particular industrial institutions and services. Some of the supporting activities are evolved in consultation with the regional economic commissions and with countries of a given region.

The programme of field activities involves the provision of direct assistance to developing countries through qualified international experts, equipment and fellowships. An important objective of the programme of supporting activities - which inter alia involves the organization of regional seminars and workshops on problems of organizing and administering particular industrial services - is to formulate guidelines for the further development of existing field activities and to lay the ground work for new ones. The following paragraphs attempt to give a brief description of UNIDO activities in the field of industrial services. A separate discussion paper is being presented on UNIDO's activities in the area of industrial promotion services (see ID/WG.61/DP.3)

## I. INDUSTRIAL RESEARCH

A great part of UNIDO's technical assistance goes towards the establishment or strengthening of industrial research institutes which are called upon to render locally, a wide range of routine, technical and techno-economic services as well as to carry out scientific, engineering, economic or socio-economic investigations on industrial projects which are anticipated to hold ultimate practical significance. These services and investigations are ordinarily initiated by the organisation itself or sponsored by industrial establishments, associations in both private and public sectors, as well as by government agencies.

Applied industrial research, and subsequent development up to the commercialisation of products and processes, is naturally, among the primary functions of an industrial research institute and often accounts for the largest portion of the budget. It is concentrated on the evaluation of existing knowledge originally evolved through basic research, often more aptly called "orientated long-range research". Its specific objectives may include the development of new or improved products or processes, adjustment of existing processes to special local production conditions, reduction of production costs, development of special preservation and packaging methods and uses for local raw materials and the like.

UNIDO's technical assistance in this field takes a variety of forms:

- a. Large-sized UNDP Special Fund type projects, which are carried out in partnership with the assisted country, with a duration which is normally from 2 to 5 years with possible extension. This type of project envisages providing the resources not locally available - experts, consultants and equipment as well as fellowships for training-abroad.

A team of experts, under the overall supervision of a Project Manager, is ordinarily assigned to assist a government in establishing a new industrial research institute or in strengthening an already existing one, with each expert being a specialist in a certain branch of industry.

As an example, the Technological Research Institute in Thailand, (TRI), can be mentioned. The project became operational at the end of 1964. At present its professional staff totals more than sixty specialists. The Institute has been successful in creating an infrastructure for the management of technological and industrial research, together with notable advances in individual industrial development projects. Through its continued efforts, TRI has created a sufficiently developed climate for productive innovation and it has initiated new developments in a number of fields believed to be rather promising for commercial use. The Institute has established close business contacts with national industrial enterprises which are most likely to make practical use of industrial research outcomes.

The other four Special Fund Projects which are operational during 1970, are making valuable contributions to the industrial development of Israel, Colombia, Paraguay and Sudan. This is done either by supplying consultancy and testing services to industrial enterprises by diagnosing problems on the factory level and by proposing solutions or by preparing feasibility studies and techno-economic evaluations for private investors or governmental agencies. Some of them also devoted special attention to developmental research on available natural resources.

Two new Special Fund Projects became operational this year - one in Malaysia the other in Trinidad and Tobago.

The project in Malaysia envisages assistance to the Government in the establishment of an Institute for Scientific and Industrial Research, which is expected to facilitate industrial development in the country by solving, through research, existing and future problems relating to the engineering, production and marketing of processed and fabricated industrial products.

The project will also assist in the formulation of a general industrial research programme and policy within the overall planning and will review and advise on various aspects of the implementation of the government's industrialisation programme, as requested.

At the beginning of next year a new four-year Special Fund Project - Libyan Centre for Industrial Research - is expected to be launched.



After its establishment, the Centre will provide technical and industrial services to existing and potential industrial enterprises, both public and private and will assist the government in quality control, investment promotion and research programmes related to the utilisation of local materials and products.

- b. UNIDO's technical assistance often takes the form of sending a team or, more frequently, individual experts for providing advisory services on a variety of technical problems.

Financed by the resources of the UNDP/Technical Assistance (TA) Section and the United Nations Regular Programme, such experts, whose services can be provided for a period of a few months to a year, or even more, are often attached to a government authority which is directly responsible for the development of specific or overall aspects of industrialization.

For example, a UNIDO expert of this type terminated in July 1970 an assignment in Iran where he had assisted, for more than a year, the staff of the Institute of Standards and Industrial Research of Iran (ISIRI) in the formulation of short and long range research programmes and the implementation of selected research projects.

He was also assigned to advise the management of ISIRI on the selection, purchase, installation and operation of equipment as well as train local research and allied personnel.

- c. In order to assist the developing countries to urgently bridge the gaps arising in the production sectors as well as in industrial research activity, UNIDO, upon request, provides teams or individual experts to a country to serve for relatively short-term periods. These services are financed by a recently established Special Industrial Services Programme (SIS) and can be given on relatively short notice.

The SIS Experts' conclusions and recommendations may often lead to more adequate formulation of requests for further, broadened and more meaningful United Nations assistance.

A UNIDO applied industrial research adviser is now implementing his one-year assignment in Taiwan, under the general guidance and supervision of the Ministry of Economic Affairs. He is expected, inter-alia, to review

the present programme of research and particularly its orientation towards practical needs of local industries, as well as to establish and maintain contact with those industries both public and private which require the research services of the Institute. The adviser's findings and recommendations will be, to a great extent, incorporated in the governments anticipated request for UNDP Special Fund Project, directed at establishing close contacts with local industries and to the corresponding re-orientation of the research programme to be geared to industrial calls.

Another UNIDO SIS expert is expected to assist in reviewing the present programme of industrial research and its relation to industry in Pakistan, as a basis for the formulation of a National Programme aimed at improving and strengthening applied industrial research activities.

It is worth noting that operational activities in the field of industrial research and other industrial services have been growing at a steady rate. As already shown above, the total number of UNDP/SF projects is increasing. During 1969 there were 37 individual experts in the field and their number is expected 50 in 1970 and 1971.

## II. STANDARDIZATION AND QUALITY CONTROL

It is difficult to over-estimate the importance of having properly defined standardization and quality control systems for the newer economies. Industrial standards supplemented with specifications play an important part in ensuring a smooth and efficient flow of production, maintenance and development of markets, a meeting of competition, and for the rational administration of import and export trade. Quality control systems are accountable for ensuring that raw materials, intermediates and finished products meet required standards and specifications.

The ECAFE region has recently been the area where UNIDO's operational activities have gained momentum.

A special fund project on standardisation and metrology in Iran, undertaken jointly with UNESCO, was approved by UNDP in June 1969 and has already become operational. The project stipulates the establishment of a metrology centre within the framework of the existing Institute of Standards and Industrial Research (ISIRI) for execution of applied

metrology, materials testing and quality control activities, in order to further strengthen and enhance standardization and quality control activities in the country to cope with ever-increasing industrialization demands.

Another large SF project will be implemented this year in Thailand. Its purpose is to assist the government in establishing the Thai Industrial Standards Institute as an official, effective and central body for the execution of standardization and certification activities in order to facilitate a further increase in the quality of commodities, both locally-produced and imported. In particular, the project is expected to contribute to solving the problem of rapid development of export-oriented industries in order to improve the balance of payments of the country, which at present is very important.

The services of a regional adviser on industrial standardization were provided to the ECAFE developing countries during the August 1967 - December 1969 period, and were considered to be of great value to the countries, especially while formulating official requests for UNIDO's technical assistance. The expert's sound recommendations, and particularly those proposing more comprehensive and coordinated standardization activities on a regional basis, are of special significance for the respective countries pending their implementation.

There also exists strong indications of the development of two special fund projects of a regional character in the near future.

The total number of individual technical assistance experts who carried out their duties in the developing countries during 1969 amounted to 14, and is expected to reach 20 in 1970/1971.

In Thailand the expert has participated in the drafting of standards and the promotion of their application in commerce and industry. In addition he gathered all background data and assisted in the preparation of a request to UNDP for more sustained help to the newly-established Thai Industrial Standards Institute. The expert attached to the Institute of Standards and Industrial Research of Iran (ISIRI) has contributed to the preparation of a number of standards. He has also undertaken the preparation on "Manual of Administrative Procedures" for standards in Iran. This manual might serve as a basis for compiling a similar one in other developing countries.

It should also be noted that good contacts were established with the Regional Economic Commissions, including ECAFE and UNESOB, through exchange of planned activities in this field and adequate reporting of UNIDO regional advisers, so that UNIDO and the Commissions coordinate their efforts and cooperate in their respective activities.

### III. INDUSTRIAL INFORMATION

One of the assigned functions of UNIDO is to disseminate technical, managerial and economic information in order to accelerate the industrialization process in the developing countries. There is an enormous reservoir of accumulated industrial knowledge and experience available that is relevant to the needs of the developing countries: Some of this information is immediately applicable; some may require adaption to fit local needs or materials. In any case, access to this data is of great potential benefit to industrial managers and entrepreneurs in the developing countries. UNIDO disseminates technical, business and economic information in the following ways:

The Inquiry Service - this service relies on two sources of information (a) the internal sources of UNIDO, comprising of its own experts at headquarters, the Industrial Documentation Unit and the specialized data collections ; and (b) the service's network of suppliers of information in some seventy countries. The service has already established contact with a wide variety of sources of information and is drawing on an international reservoir of existing knowledge that will eventually cover the field of industrial development throughout the world.

Advisory Service - the aim of the Advisory Service is to assist developing countries to procure industrial plant and machinery. It provides inquirers with comprehensive or selective lists of suppliers of equipment and with the ranges of their products. Additional information supplied by this service covers such questions as general price ranges of equipment, quality, the formulation of specifications and terms of delivery and payment. It may be possible to broaden the scope of the Advisory Service by identifying and collecting studies, catalogues and other available material on prices and price trends of selected types of industrial equipment and making them available to purchasing personnel in developing countries.

In response to specific requests, UNIDO also provides experts to advise government authorities on setting up national centres for purchasing industrial equipment and train personnel in the techniques of purchasing. In this connexion UNIDO is publishing a manual on Industrial Equipment Purchasing in Developing Countries.

Register of Industrial Consultants - UNIDO has recently established a register of organisations that are in a position to provide consulting and technical services to the developing countries. Requests currently averaging ten per month, received from developing countries for information on the availability of specific skills and services, are answered by reference to this internationally based roster. The system is at present being developed and processed for the computer storage and retrieval of the roster data. Apart from permitting more effective comparative evaluation of the capabilities of the organisations on the roster, Electronic Data Processing facilities will also lead to a wider utilisation of the data collection.

Industrial documentation unit and specialised data collection - The Industrial Information Service collects specialised data in areas of particular relevance to the work of UNIDO and where no systematised information is readily available from other sources. Besides such specialised collections, the intake of material also includes: publications (directories, catalogues, bibliographies, abstracts); reports and studies, especially those issued by the United Nations system; works of reference and books on industrial economics and technology; data and publications relating to industrialisation in developing countries; and periodicals, of which approximately 1,000 are received and scanned annually.

Audio-visual aids - A large part of the population all over the world is informed, educated and trained today by a wide variety of audio-visual aids. Besides films, these aids include slides, film loops, magnetic bands, flannel graphs, exhibitions, photographs, radio tapes and discs. Audio-visual aids are particularly suited for use in developing countries. They can often achieve in weeks what books, pamphlets or leaflets cannot do in months. Moreover, the sound tracks can be dubbed in regional languages. UNIDO is, therefore, compiling from national and international sources, a comprehensive register of industrial films, indexed by source, subject, language, technical data and conditions of availability and plans to establish a library of them for use by developing countries.

Industrial undertakings, non-profit bodies, national and international organisations producing industrial films will be approached for a gift or loan of films.

Publications Unit - The Publications Unit issues a quarterly bulletin and a monthly newsletter. The "Industrial Research and Development News", published quarterly in English, French and Spanish, has a circulation of 3,000. The magazine is directed to those concerned with industrial growth in developing countries, particularly those engaged in industrial research. Besides regular features, such as the 'Research Projects' and 'Answers to Industrial Inquiries', it includes articles contributed by experts from different countries; each issue contains a special feature on a current problem, such as financial planning of development projects.

The "UNIDO Newsletter" is published monthly in English, French and Spanish. The present circulation of 12,000 will increase in the near future when the Newsletter will be available in Russian, Arabic and German. With the aim of keeping a wide audience informed of the current activities of UNIDO, this publication contains brief reports on field projects, meetings, missions, new publications and other items of general interest.

UNIDO Industrial Information Service Field Activities - IIS field activities are oriented to assisting developing countries in the creation and strengthening of their national information systems. The type of assistance that can be provided includes provision of experts to advise in the field, the award of fellowships and the building up of local institutions with grants from the United Nations Development Programme/Special Fund.

Expert Advice in the field - At the request of Governments, UNIDO experts are provided to advise on such questions as the establishment and operation of industrial documentation, information and extension services; the organisation of specialised information centres, e.g., analysis centres for different industries or libraries of industrial films; and the setting up of purchasing centres. Experts are also provided to assist local authorities and industrial enterprises to select industrial equipment, formulate specifications, prepare tenders and evaluate offers. UNIDO experts may also be requested to supervise the application of information provided by the Industrial Information Service (IIS).

Special Fund Projects - This type of assistance permits a more comprehensive approach to be adopted in the building-up and organisation of local information facilities.

Two current (1970) projects of the UNIDO IIS will serve as examples of this type of activity: At the request of member states in the region, an expert will spend six weeks with the Industrial Development Centre for the Arab States (IDCAS) to carry out a preliminary study on the establishment of a regional industrial information and documentation centre. IDCAS recognizes that the constant flow and feedback of industrial information to and from the Arab states, other developing countries, industrialized countries and international organisations is an absolute necessity if it is to fulfil its aim of promoting political, economic social and cultural co-operation among its fourteen member states with a view to increasing the rate of development of the region.

The heads of state of the Common Afro-Malagasy Organisation (OCAM) have expressed interest in the establishment of a similar documentation centre, which it is felt would promote and strengthen international co-operation within the region (15 member states).

Both of the above-mentioned regional industrial information and documentation centres will be based on a network of specialised sub-centres and in addition to encouraging the regional pooling of information, will co-ordinate activities such as translating and training in order to avoid a duplication of efforts in the area. Other functions of the centres would be: to operate an inquiry service; to organise an industrial extension service; to establish collections of technical assistance reports and feasibility studies concerning industrial projects in the region.

#### IV. INDUSTRIAL CONSULTING SERVICES

The concept of bringing outside consultants into a host firm or organization on a temporary contractual basis to provide consultancy services is firmly established. In many developing countries there are few, if any, local facilities for industrial consulting services of any kind; hence, reliance is necessarily placed on consultants from industrially advanced countries.

UNIDO aims at assisting developing countries in the hiring of industrial consultants, and in the development of local consulting establishments. It will assist developing countries in the setting up of

local consulting organisations by providing, through operational funds, experts and consultants to assist in the establishment of local industrial consulting offices.

Similar in intent, but of a different organizational pattern, are government-sponsored or government-supported advisory extension services. These services which have been proved their worth in giving advice and assistance in the fields of management and of product or process improvement in a number of countries, are usually more effective and acceptable to local entrepreneurs when they are attached to already existing national or local institutions. These may be industrial development banks, industrial research institutes, productivity centres, or industrial development institutes depending upon the primary purpose of the extension services themselves. UNIDO is providing expert assistance in launching such services or in strengthening those that already exist.

## V. INDUSTRIAL TRAINING

a. In-plant Training: UNIDO has recognised the need to provide intensive systematic and closely supervised short-term practical training to engineers in applying basic scientific principles to the many practical problems arising daily in industry. Especially in the developing countries there is a gap between the knowledge and skills required by industry and the skills acquired by engineers through the existing educational system. UNIDO has therefore initiated in-plant group training programmes which have proved to be an effective way to help engineers acquire the needed practical skills in the shortest possible time.

UNIDO has launched an integrated programme for in-plant group training of engineers on a long-term basis. Programmes are carried out on three levels:

- i. Basic level programmes for newly graduated engineers as a pre-employment training in industry to be carried out in the developing countries themselves.
- ii. Middle level programmes for engineers who already have several years of experience in industry in their home countries. These programmes of a duration of 3 to 5 months are mainly carried out in industrialised countries.
- iii. Top level programmes for senior engineers who in the near future will assume an overall managerial position in their enterprises. The duration of these programmes is 4 - 6 weeks and they are used for intensive training in general managerial subjects.



The basic level, of pre-employment training programmes are carried out on request of the developing countries as UNDP Special Fund projects and have then a duration of several years. Under the UNDP/TA programmes, UNIDO is in a position to provide expert assistance to introduce in-company training schemes in an industrial enterprise or group of enterprises.

The middle level in-plant group training programmes have originally been organized on a sectorial basis only and programmes are carried out in fields such as Diesel Engineering (CSSR), Electrical Industries (Sweden and Netherlands), Food Processing (UK), Iron and Steel Industry (USSR), Metalworking Industry (USSR), Pulp and Paper Industries (Sweden) and Textile Industries (Poland). Recently new programmes on a cross-industry or functional basis have been initiated such as Maintenance Systems (Sweden) and Standardisation in Manufacturing Industry (USSR). Some of the middle level programmes on a sectorial basis will be shifted to relevant developing countries with adequate facilities for in-plant training.

**b. Fellowship Program** UNIDO is providing approximately 500 fellowships annually in the field of industrial development financed under the different United Nations programmes of Technical Assistance. Fellowships are awarded independent from other technical assistance programmes or as an integral part of such programmes. The latter is for example, when a fellowship is granted to national counterparts of Technical Assistance experts to enable them to eventually take over the functions of the expert.

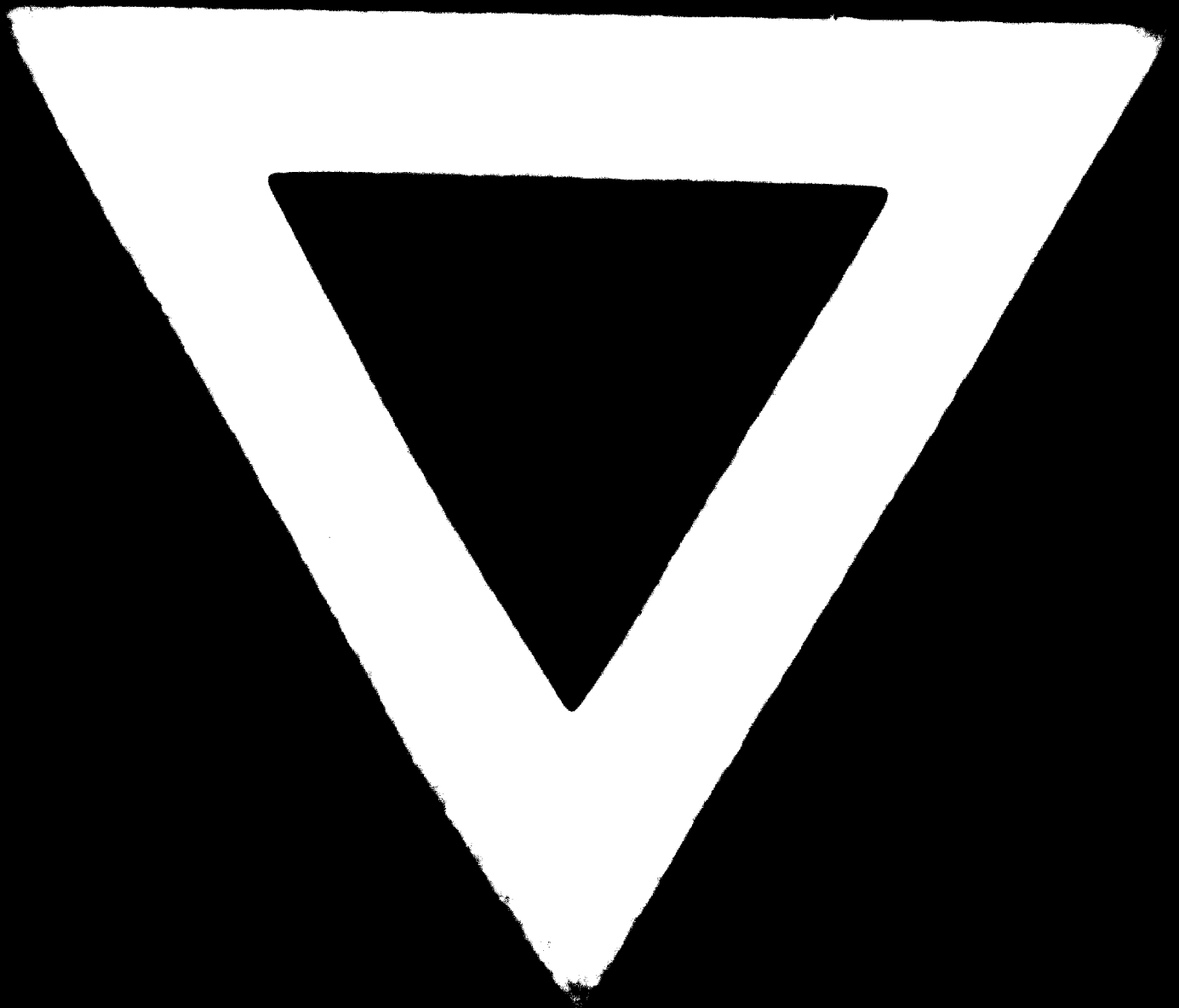
Fellowships are awarded to nationals of developing countries, upon specific request of the government concerned, for the studies in countries where special facilities exist for training of a kind which will benefit recipient home countries. Awards are for study in industry, industrial institutions (e.g. research institutes), industrial development institutes, government or semi-government institutions dealing with industrial development, etc. in the fields of industrial development, planning and programming, industrial finance, industrial technology, management of industrial research, industrial administration, industrial legislation, industrial information, small-scale industry, industrial estates and industrial management and training.

Fellowships are intended to give persons already holding, or soon to be entrusted with, functions important in the industrial development of their countries, the opportunity to broaden their professional

knowledge and to obtain practical experience in the specific field of their training. For example fellowships are offered to documentation, information and extension officers and purchasing managers for training in industrial information and purchasing techniques. Consequently, fellowships are not awarded merely for the pursuit of academic studies leading to degrees or diplomas. The main purpose of awards is to enable holders to derive from the training, an increased ability to solve concrete problems on their return home.

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