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[INDUSTRIAL INFORMATION
A PREREQUISITE FOR APPROPRIATE CHOICE OF TECHNOLOGY]

SUBMITTED UNDER

Item 3 - "Actors" and "factors" responsible for successes
and failures in the implementation of technological choice
and adaptation of programmes

for the

STUDY GROUP

ON

THE CHOICE AND ADAPTATION OF TECHNOLOGY
IN DEVELOPING COUNTRIES

7th - 9th November 1972

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
Development Centre
Paris

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

As mentioned in the Aide-Mémoire on "objectives, provisional agenda and contributions solicited", preparing the meeting of the "Study Group on the Choice and Adaptation of Technology in Developing Countries" this group is requested not to address the general problems related to the application of science and technology to development nor the issue of international transfer of technology in general. It is requested rather to focus on the somewhat more narrowly defined domain of "choice and adaptation of technology" viewed in the context of the industrialization of developing countries.

Referring to these remarks this contribution, prepared by the Industrial Services and Institutions Division of the United Nations Industrial Development Organization (Industrial Information Section), is emphasizing the need for a system of technical and economic information as a precondition to make appropriate choices of technologies. Two annexes are providing a list of major information services provided by UNIDO to this purpose.

In order to make our position clear we may start in explaining that, for practical purposes, "choice of technology" has to be understood in a broader sense. Developing countries in their process of industrialization have to make normally two different kinds of decisions: They have to choose a technology in the sense of "technique", they may have to decide whether they should buy "technology", but more often even they have to make the choice of industrial equipment, machinery and tools, which they have to buy in any case to build up their industrial enterprises.

It is an undisputed fact that still the process of industrialization of developing countries depends on the import of technology and the import of industrial equipment. In both cases the most important decision is the right choice among the wide offers appearing in all industrial sectors. Unfortunately primary information needed to make such choices is often lacking and many enterprises looking for a new production-technology or for industrial equipment do not even know whether such technology can be found, who are the suppliers and on what terms the purchase can be done.

Under these conditions it is more and more recognized that the process of transfer of technology including the purchase of proprietary technology, the

purchase of processing technology and the purchase of industrial equipment of all kind cannot be done without available and accessible industrial information.

There is no choice without alternatives and there are no alternatives without full knowledge of available technologies and equipment.

We think that information is the most valuable and permanent instrument for the transfer of knowledge about existing alternatives and that the lack of information is at the roots of many wrong decisions made during the last twenty years.

Urging the need for information we do in no way under-estimate the value of other instruments for the transfer of technical knowledge and technological know-how such as technical education, industrial training, technical assistance through experts or the services rendered by efficient consulting bureaus. All these instruments, however, are limited in time and have to be supplemented by a permanent flow of information as a continuing instrument.

The most recent publication dealing with these problems is a study prepared by the Advisory Committee on the Application of Science and Technology to Developing Countries for Latin America. In this study the problem is clearly defined that developing countries have less experience as buyers of industrial equipment and of technology and are at a comparative disadvantage in negotiations with respect to the advanced countries, the usual sellers of technology and industrial equipment. Hence the study urges that developing countries should be enabled to establish advisory services for the supply of industrial equipment including information about the sources of supply, provision of information about prices, provision of advice and assistance in drawing up specifications and provision of advice and assistance in selecting equipment that will benefit the country most from the national socio-economic standpoint. The study further recognizes that to improve the process of transfer of technology the development of scientific and technological information systems is imperative because before deciding in favour of a certain technology it is necessary to have information about other possible alternatives and about their economic and social implications. Scientific and technological information constitutes the core of all possible action to improve the transfer of technology.

Confronted with the need for more industrial and technical information for developing countries UNIDO has already established some information services trying to provide information on an ad hoc basis. These services are integrated in what we call the "Clearing-House for Industrial Information". Parallel to this action to bridge the information gap UNIDO is prepared to give assistance to the developing countries who are trying to establish their own industrial information infrastructure through the establishment of information facilities and corresponding human capacities. More and more developing countries came to the conclusion that the traditional methods of technical assistance need a supplementary action to guarantee a continuing flow of information and that major projects of technical assistance should always include an information component which will continue to work once the experts have finished their assignments.

On the following pages UNIDO is providing a short introduction into the services rendered at present through the Clearing-House and into the different problems which we try to overcome in establishing an equipment information service.

UNIDO'S CLEARING HOUSE FOR INDUSTRIAL INFORMATION

A short survey on its activities

The Clearing-House of Industrial Information is a global project of UNIDO institutionalizing and integrating existing and some new activities and services of UNIDO in the field of industrial informations:

- to initiate, stimulate and accelerate the transfer of technical and economic knowledge from industrialized to developing countries and among developing countries and to develop specific transfer media of industrial information appropriate to the present stage of industrialization in developing countries and to their limited financial and human resources;
- to provide to all those involved in the process of industrialization - planning and programming authorities, investors, technical and commercial management - access to those particular pieces of knowledge relevant to their needs and pertinent to the decisions they have to make;
- to encourage the flow of information on industrial opportunities in developing countries to prospective partners and clients in developed as well as in other developing countries as a precondition of stimulating regional and international co-operation.

These objectives of UNIDO's Clearing-House project activities are supplementing UNIDO's efforts to assist developing nations in the establishment and strengthening of local, national and regional industrial information capacity and institutions as part of their basic industrial infrastructure, and to this end, to provide training to upgrade the skill of those handling such activity.

UNIDO's Clearing House of Industrial Information project includes separately identified companies or services established in response to specific requests and recommendations received from developing countries.

Main components of the Industrial Inquiry Service, operational since 1960, represent a major line of communication and assistance between the industrial and underdeveloped countries, providing countries with the accumulated knowledge of industrialized countries. During the last years about 6 000 inquiries have been dealt with. The service has been assisted through this service, dealing with problems of industrial know-how (50%), markets and statistical data (15%), machinery and other industrial equipment (15%), and transfer of technical skills at present between ten and fifteen inquiries per working day.

Only a few of the inquiries can be answered by UNIDO itself. For major problems, especially of technical nature, research or seeking for feasibility studies, a Directory of Consultants was established including at present about 1 600 firms, organizations, companies, enterprises and individuals from over 80 countries. They represent the sources of information or at least transfer of information. They are the most essential partners in the clearing house of information offering more good services to provide industrial information to all States in developing countries. A considerable number of these consultants are offering their services free of charge. Some of them are direct contractors of UNIDO, especially for the more difficult technical and technological information, charging modest fees for the work requested from them.

As another important source of information and know-how a UNIDO Roster of Consultants was established, covering about 1 600 consulting firms and individual consultants from over sixty countries, providing detailed indications on their capabilities, their field of activity and past performance. The written and printed material provided by firms of the Roster is included in the collection of reports and feasibility studies, forming a part of UNIDO's library and Documentation Unit.

The most recent and major project component is UNIDO's Information Service on Supply and Alternatives for the Choice of Industrial Equipment, or shorter: The information service on "Appropriate Choice of Equipment" (ACE) started as a pilot project in January 1972. This service has a long history. Already in November 1961 a group of experts met in New York and recommended the establishment of a UNIDO Advisory Service on the Supply of Industrial Equipment to developing countries covering all aspects of supply including technical, economic and financial, incorporating an information service on sources of supply of industrial equipment. The service should also survey conditions pertaining to the purchase and use of industrial equipment and should maintain a close watch on prices.

The interest in and the need for an equipment information service is in fact enormous. This service may produce a practical solution to many questions connected with the problems of transfer of technology and the choice of appropriate technologies for developing countries. Details on the outline and the progress made in this project are normally included in the Progresses of Work of UNIDO.

The ACE service will provide major assistance to developing countries in making their own choice and to take their own decisions on the most appropriate equipment and technology to be introduced in their industries. As an additional result, the service will establish a platform for the dissemination of information on suppliers of industrial equipment from developing countries also, through which their products may become known to other developing but also to traditional markets. With the growing problem of unemployment and the need to seek out capital saving technologies, the ACE service will be of added importance.

Another component of the Clearing-House project will soon become operational, the Selective Dissemination of Information (SDI) Service which, at the moment, is at the disposal only of UNIDO staff and field personnel. If it proves feasible (and consideration is being given to ways and means) the Secretariat would like to extend the potential of the SDI service to target not only corresponding institutions in its Clearing-House service, but also to other institutions and productive enterprises in the developing nations, possibly on a subscription basis. The SDI

service is supplying to its clients regular information on their specific field of interest collected from periodicals, journals, other printed publications, films, exhibitions, etc.

Supporting activities within the Learning-House project are publications serving the immediate purpose of the Clearing-House. Next to the traditional periodicals (IEDN and Newsletter), the "Industrial Development Abstracts" - covering and documenting generated by UNIDO - and the "Guides on Information Sources", small booklets covering one or a specific branch of industry, have been very successful and have been favorably received by a variety of users. They are still distributed free of charge.

Another instrument to encourage the exchange of industrial information is UNIDO's Register of Industrial Films, useful, inter alia, as training material. Film, plus a variety of other imaginative audio-visual materials and services, appear to offer a rich potential for future useful industrial information services to the developing nations.

UNIDO'S INFORMATION SERVICE ON SUPPLY AND ALTERNATIVES

FOR THE CHOICE OF INDUSTRIAL EQUIPMENT

A Pilot Project

Serving the Appropriate Choice of Equipment (ACE)

It was only after some years of hesitation that UNIDO has started in January 1972 its pilot project for an Information Service on Supply and Alternatives for the Choice of Industrial Equipment. As early as in August 1966 the Economic and Social Council had adopted a resolution (1183 (XLI)) "Flow of external resources to developing countries" requesting, inter alia, the Secretary General to

"study the feasibility of setting up within UNIDO or any other appropriate UN body an advisory service which could provide information to the developing countries on the sources of supply, the costs and the quality of equipment needed for their development."

Since that time several approaches have been made to try out how to implement practically this mandate. Recommendations have been worked out by an Expert Group which met on invitation of UNIDO in November 1967. In the Work Programmes presented to the Industrial Development Board in 1969, 1970 and 1971 some preliminary actions were announced to implement this ambitious project. In 1971 the Advisory Committee on the Application of Science and Technology and the Economic and Social Council resumed the problem and once again ECOSOC recommended to study ways and means in which reliable information on known alternative technologies for selected major industries of interest to developing countries could best be furnished in a systematic way to governments, enterprises and industrial consultants.

However, only in January 1972 implementation of the pilot project to study the feasibility and the problems of an Information Service on Supply of Industrial Equipment was started. As a precondition it was made clear that the aim of such a service could not be to recommend certain types or manufacturers of equipment but to provide developing countries with all the relevant information to assist

them in making their final choice. The pilot project is carried out within a well defined framework and within a limited scope so that a small part of the projected information system can be studied in depth but at minimum expense and risk. Data and specifications including prices from a limited number of sectors of equipment and from a limited number of supplier countries are collected. Equipment data are processed in a few selected subject fields so that the flow of information can be controlled, the procedures and results properly evaluated.

The pilot project will enable UNIDO to gain experience from operational evaluation and feed-back, to establish critical factors, to determine which parameters of equipment are necessary, how they can be collected, correlated and periodically updated and to put these factors on a comparative basis. An attempt is made to engage governments and industrial associations interested in the supply of equipment to contribute to the project. At present manufacturers' associations from six countries have carried out at their expense the collection of equipment data in five industrial sectors, namely textile machinery, selected general machine tools, food processing equipment, welding equipment and leather manufacturing equipment. A pilot dissemination of data sheets for information purposes has also started. Tentatively comparative data sheets for whole production lines and complete plants are prepared for such industries for which data on individual machines are of lesser importance.

In 1973 facts, experience and practical conclusions will be available for realistic planning of the final project and will be presented to a group of independent experts and participants.

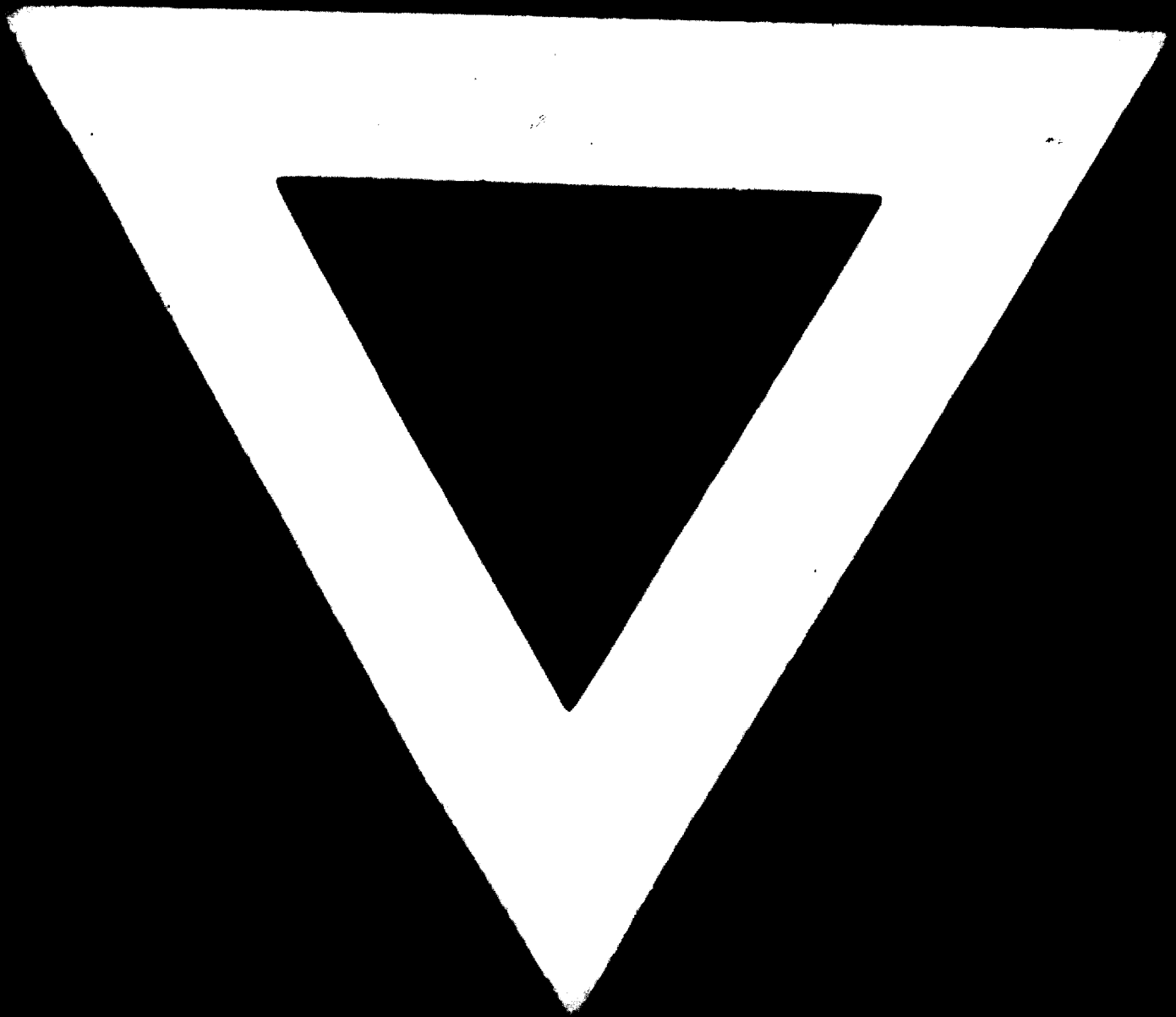
The project meets high interest in supplier as well as in developing countries especially including such developing countries who have started their own production of industrial equipment. For them this new service may become an opportunity to get known especially to other developing countries and to contact prospective markets for their products. Many industrialised and developing countries have expressed their interest and their preparedness to participate. Experts and consultants are already working to analyse and evaluate the application of and

the recommendations on the pilot project, to draw conclusions and to work on recommendations for setting up and running the final project.

There are of course many problems involved. We know, on the one hand, that developing countries need more information in this field than provided hitherto by printed lists of suppliers, directories and similar services. We recognise however, on the other side, that it will never be possible to collect comparative data on all types and models of industrial equipment at present available. Furthermore it is recognized that the inclusion of prices in this information system will provide many additional problems. We may finally arrive at an information system limiting itself to selected prototypes of equipment providing indicative price figures just to allow calculation. To implement a selective method of equipment specification we have, however, to adopt certain criteria having in mind the major needs of developing countries for technology appropriate to their conditions.

The project has also to take into account that in many cases the purchase of industrial equipment is linked with other commercial transactions such as the purchase of proprietary technology, the provision of credit lines and expertise. It would be unrealistic to provide an equipment information service without taking into account these practices.

The project looks enormous and many people may believe at first that it may meet too many obstacles. However, UNIDO is convinced that an information service of this type corresponds to an urgent need. In the long run this service will not only serve the needs of buyers but as well the interest of suppliers. Industrial development is going to open new and large markets for technology and equipment. UNIDO's Information Service on the Supply of Equipment may become a key-factor to bring together the demand for appropriate technologies and appropriate equipment and suppliers of both.



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