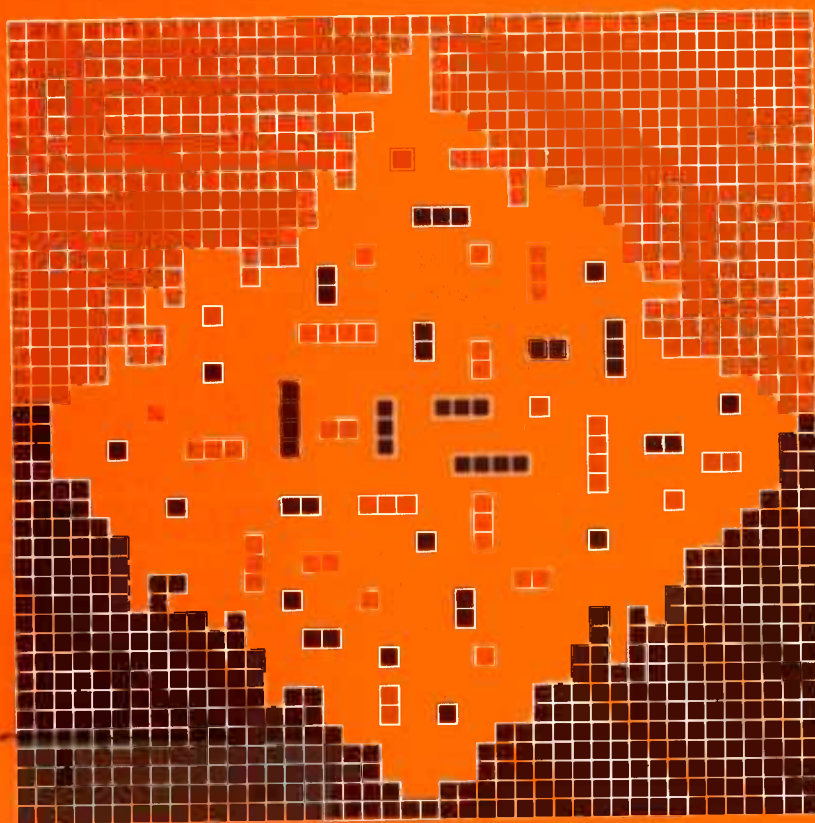


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# International Cooperative Information Systems

Proceedings of a seminar held in Vienna, Austria, 9-13 July 1979

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by the International Development Research Centre  
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## **UNIDO Helps Developing Nations Choose Technology**

Roch T. de Mautort

*Industrial Information System, United Nations Industrial Development Organization, Vienna, Austria*

Technology, often the result of massive research, has created one of the world's multibillion dollar industries through the demand for its transfer to industrial operations. The United Nations Industrial Development Organization (UNIDO), committed to the industrialization of the developing countries and aware that financial problems make knowledge of processes a prerequisite for their wise selection, created the Industrial and Technological Information Bank (INTIB).

INTIB came into existence in 1977 by decision of UNIDO's 45-nation policymaking Industrial Development Board for an 18-month trial. As with many other current UNIDO activities, the decision was a direct result of the Second General Conference of March 1975 in Lima, Peru, and of the Declaration and Plan of Action then adopted. Within the main objective of bringing the share of developing countries in world industrial output to 25% by the year 2000, UNIDO was expected to use resources provided by a new Industrial Development Fund for, among other things, intensification of activities in the development and transfer of technology.

Having completed the pilot stage with results described to the Board as substantial both in volume and quality, INTIB is now a permanent activity engaged in consolidating its work and extending its activities within the Industrial Information Section. Due note was taken by the Board of the views of an independent group of experts that met in February 1979 to review progress. The group, composed of recognized authorities chosen in their own rights from 12 countries, stressed that the achievement of INTIB tasks and the realization of its mode of operations called for the allocation of sizable technical and financial resources. In hopes that such resources would be allocated, the group described INTIB activities as being "in a crucial field in which its services are urgently required."

### **In perspective**

When INTIB was first proposed by the executive director of UNIDO, Abdel Rahman Khane, he suggested that initial operations be tied in with activities in the industrial sectors outlined at Lima "and perhaps extend to areas in which consultation meetings are planned, since, taken together, they fall within the perspective outlined in the Lima Declaration."

The establishment of a system of international consultations to help bring about a relocation of productive capacities within developing countries and a new system of international economic relations was another of the innovations resulting from the 1975 Conference.

Sectors emphasized at Lima were those processing raw materials exported by developing countries or consuming "vast quantities of energy." Those suggested for INTIB's trial were iron and steel, fertilizers, agroindustries, and agricultural machinery. UNIDO's integrated effort would thus be reflected both in the systematic and continuous collection, retrieval, and dissemination of information and in the processing of the information.

In addition to the systematic collection of information available within UNIDO, action was immediately taken to prepare technological profiles and manuals; to prepare and dispatch questionnaires; to send missions to selected countries to study existing facilities; and to draw up agreements for cooperation with intergovernmental organizations.

Approaches differed for each industrial sector, according to the nature of the sector, the depth of UNIDO's work in it, and the complexity of issues involved. Approaches to ascertaining the most critical areas of user requirements for decision-making information also had to be varied. This aspect has been continuously monitored so that an information service could be developed linking with other UNIDO activities and leading eventually to the formulation of technical assistance programs. The emphasis on user requirements in developing countries was performed influenced by limited resources, which had to be used to bridge the gaps in supply rather than to duplicate the abundant supply already available on general economic, scientific, trade, and technical matters.

Profiles on technologies possibly providing alternatives cheaper, simpler, or more appropriate to circumstances than those in advanced countries have been prepared in each of the sectors, and a network of contacts between information centres has grown considerably. A questionnaire sent to institutes active in selected sectors has established links between them and users of information; a preliminary inventory of indigenous technologies has been made; a roster of technologies available in some branches of industry has been prepared; and a clearinghouse has been set up for information on matters related to contracts.

## **Sectorial activities**

In the various sectors there have been other results as well.

*Iron and steel:* Some information profiles have been prepared on iron and steel making and on iron and steel casting (including continuous casting), though lack of staff has caused discontinuation of the abstracting service. Information gleaned by UNIDO has been reproduced internally and important publications added to the library.

Information requirements were broadly indicated at the first iron and steel consultation meeting (February 1977 in Vienna, Austria). Technological profiles were subsequently prepared as a result on iron making, steel casting, and iron-ore. They were published in the *Development and Transfer of Technology* (DTT) series and submitted to the second consultation meeting at New Delhi, India, in January 1979. The first consultation also showed requirements for:

- Regular exchanges of information between R&D institutes and laboratories of developed and developing countries working on adaptation of steel technology;
- Information about contract procedures and guarantees related to the construction and operation of steel plants and intended to protect the interests of all parties;
- A survey of techniques, including coal gasification processes, which might replace coking coal by other fuels and reductants; and
- Promotion of common, regional research facilities to ease free exchanges of information and experience.

*Fertilizers:* Two profiles relating to process technologies for nitrogenous and phosphate fertilizers were published (DTT series) as recommended by the first consultation meeting. They included description of process flowcharts, comparison of processes, ownership of proprietary processes, and licences needed. In addition, a revised fertilizer manual has been updated for publication.

Requirements emerging from the consultations and the worldwide study are:

- Information on processes, plant, equipment, and costs of projects and equipment;
- Facilities for exchanges between developing countries of experience in adoption or adaptation of processes and equipment;
- Information on the extent and causes of consequential losses in plants and on reduction of plant costs; and
- Information on contracting conditions or other aspects of negotiations.

*Agricultural machinery and implements:* DTT profiles have been prepared on manufacture of hand tools and implements for crop production and on tractor assembly. Requirements vary considerably according to individual stages of technological progress and different agricultural practices. A questionnaire to entrepreneurs and research institutes engaged in design and manufacture showed that information is wanted on designs, new equipment and developments, contracts, consultancy and advisory services, process technologies as for casting and forging machinery, and marketing assistance. An ad hoc Expert Group Meeting on Pilot Activities (November 1977, Vienna) listed information needs as also including technology for upgrading industries; links between institutes and countries engaged in R & D on design and manufacture; and investment, licencing, subcontracting, and transfer of technology.

The same group considered that INTIB should attempt to define what was being done, by whom, and where, in technological development and manufacture. At the same time, INTIB should identify organizations and consultants able to assist in the final selection of technologies appropriate to particular situations. These views were largely supported at the International Forum on Appropriate Industrial Technology organized at expert and ministerial levels by UNIDO and the Government of India at New Delhi and Anand in November 1978.

*Agroindustries:* Many technologies are applied in subsectors of industry related to agriculture, dependent on the raw materials and products involved. INTIB assesses specific needs on a geographic basis, using some results of previous UNIDO work. As a result of a study mission to the Andean Pact countries, a study was prepared for internal use on information and consultancy services dealing with the food industry. Besides indicating needs for information on raw materials, process know-how, markets, equipment, and R & D information



exchange, it showed that the problem should be dealt with at international and regional levels. Other studies, on processing cottonseeds and groundnuts, as well as a report of a regional preparatory meeting for the first consultation on vegetable oils, also added useful pointers. The regional report called for:

- Dissemination of information on agricultural techniques in the region;
- Regional experience-sharing on processes, technological developments, and manufacture of equipment; and
- Collection and dissemination of technoeconomic information on product derivatives.

## **TIES to extend services**

With the creation of TIES, a Technological Information Exchange System, INTIB has added to its system the cooperation of 15 countries for special purposes. The TIES project aims at obtaining access to specialized information related to the terms and conditions of technology contracts approved by government regulatory agencies in selected developing countries and at making this information available to other developing countries on a reciprocal basis.

Heads of technology-transfer registries who met in Vienna early in 1978 agreed to exchange information through UNIDO and to promote further cooperation among government agencies with direct responsibility for decisions about technology and investments.

TIES has become an informal association, making UNIDO the focal point for the collection, analysis, and organization of the material required and for its retrieval and dissemination among the participating agencies of member countries. By 1979 information on more than 4000 technology contracts registered in various countries had been subjected to the agreed processing.

In February 1979 another meeting of heads of national technology registries or similar institutions was held in Caracas, Venezuela, under the auspices of the home government. Here it was agreed that additional information be exchanged on policies governing the promotion and regulation of technological transactions in various countries.

TIES thus constitutes a significant component of INTIB, providing information valuable to the decision-making process in developing countries.

## **Joint patents program**

Patent documents contain much industrial information. UNIDO and the World Intellectual Property Organization (WIPO) have undertaken a joint action program with the basic aim of establishing links between INTIB and other systems dealing with this prolific source.

In a further development, UNIDO, WIPO, and the Austrian Patent Office completed negotiations providing UNIDO with access to a state-of-the-art search program using patent information to answer industrial inquiries. Previously this was conducted by the Austrian Patent Office in cooperation with WIPO alone. UNIDO's efforts with WIPO are strongly reinforced by the fund of patent information stored at the International Patent Documentation Center (INPADOC), Vienna.

Future INTIB activities related to identification of technologies, particularly advanced technologies, obtainable from patent documents, will continue in close collaboration with WIPO.

### **New energy sources**

Growing emphasis on the advantages of developing nonconventional sources of energy has generated calls for applied research and development on, and the commercial application of, energy potentials such as wind, sun, biomass, wood, etc. As a modest beginning, INTIB undertook exploratory work from which results have included publications entitled *Guide to Information Sources on Non-Conventional Sources of Energy* (English with French, Russian, and Spanish introductions) (UNIDO/LIB/Ser.D/30) and *Technology for Solar Utilization* (DTT series no. 5).

Collection and preliminary analysis have also been undertaken of data from selected developing countries, as a follow-up to recommendations of the Expert Group Meeting on Research and Development in Non-conventional Sources of Energy held in Vienna in May 1977 by the Advisory Committee on the Application of Science and Technology to Development.

### **Cooperation arrangements**

When deciding to initiate a pilot phase of INTIB, the Industrial Development Board (decision V[XI] 1977) requested that maximum advantage be taken of information and expertise available in other United Nations organizations and other national and international bodies and that the activities be coordinated with those undertaken in respect of an international network for the exchange of technological information required by resolution 31/183 adopted by the United Nations General Assembly on 21 December 1976. The Board's decision was endorsed by the General Assembly in resolution 32/178 of 19 December 1977.

Arrangements for cooperation have accordingly been made with a number of organizations, among them the International Labour Organisation (ILO), WIPO, the Centre for Transnational Corporations, the Organization of American States (OAS), and the Regional Centre of Transfer of Technology (RCTT) of the Economic and Social Commission for Asia and the Pacific. RCTT, which is at Bangalore, and other United Nations regional centres for transfer of technology when operational, will be part of the INTIB network.

UNIDO, in cooperation with ILO and with the assistance of the Swedish International Development Authority (SIDA), is planning a series of joint technical memoranda on selected industrial sectors.

### **Finance decision-making**

Arrangements are also being made to establish links, particularly for dissemination of information, with development finance institutes. Such institutes in developing countries have expressed a desire for access to independent and reliable sources of information and advice on the comparative costs and qualities of machinery and equipment, which are the capital component of projects. In other countries, institutes have suggested that reliable information on

alternative technologies, with advice on conditions for their acquisition — or the know-how fee — would be a great help in assessing financial requirements for projects for which imported technology has to be used.

At a global symposium of industrial development bankers, organized in Zurich in June 1979 by UNIDO and the World Bank, one subject of discussion was the lack of information on alternative technologies, the price of equipment, and the terms through which technology can be acquired.

### **Future factors**

“Analysis of needs and priorities in each sector is a continuous process in a continuously changing and dynamic situation.” This was the view, reported to the Board by the executive director, of the Expert Group. It sums up the influence that, in future, will form INTIB’s policies and actions, which are bound to be closely related to the gathering momentum of industrialization in the developing countries.

Given appropriate resources, INTIB will expand the number of sectors in which it has been acquiring and assessing technological information and will aim to provide the follow-up action called for during the consultation meetings on sectors and on issues affecting all major industries.

The fact that INTIB deals with access to technologies and to the selection process at the stage preceding acquisition and operation is a distinguishing characteristic. The role of providing selected, analyzed, and annotated information on available alternatives can best be performed when there is dialogue and negotiation between the technology provider and the user. Although outside the decision-making process or project implementation, INTIB can increasingly provide criteria and parameters to aid selection and perhaps to influence planning of a project. It can also help negotiations by providing information on contractual implications. Where technology is included in a package deal, appropriate information from INTIB can improve the ability of a developing country to separate the cost of know-how from that of hardware, engineering, and other elements.