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UNIDO INDUSTRIAL AND TECHNOLOGICAL INFORMATION PROGRAMME:
PRESENT STATUS AND FUTURE DEVELOPMENT*

Prepared by
UNIDO Secretariat

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I. INTRODUCTION

The 1980s have been a period of uncertainty, instability and difficult adjustment for the world economy.

Despite considerable achievements on the part of some developing countries, the technological development efforts of developing countries in general have been less than commensurate with their relatively limited industrial development efforts. Their research and development efforts, limited as they are, have not resulted in the development and industrial application of technologies suited to their needs. The majority of them still lack the critical elements of a technological system essential to industrial development.

The period 1990-1995 will be a critical phase in the industrial and technological development of developing countries. New technologies will broadly affect industries and services, the organization of production and the pattern of comparative advantage. Technological advances in fields such as biotechnology, microelectronics, telecommunications, new materials, fine chemicals, marine industrial technology, energy and manufacturing technology bear far-reaching implications for the industrial and technological development of developing countries. Such advances need to be closely monitored and applied to upgrade the industrial and technological development of those countries, whilst avoiding any adverse industrial, economic and social impact.

The role played by information in the selection and application of specific technologies and in the formulation of policies and strategies for industrial and technological development will become more crucial in the context of technological change. The problem is not only one of an increasing volume of diverse information, but also of the capacity to enjoy access to it through modern information transfer techniques and to analyse it so as to turn it into an effective decision-support resource. Developing countries lack these capacities and the well-structured information systems and services that can serve both enterprises and Governments.

To help overcome these difficulties, the activities of the Industrial and Technological Information Bank (INTIB) will be substantially re-oriented, broadly basing its operations on a network of national focal points, developing and promoting relevant data bases, and establishing on-line communication with information sources and users wherever possible. INTIB will also assist information professionals from developing countries in the use of modern information-handling techniques and in gaining direct access to computerized sources of information. The specific information needs of small- and medium-scale enterprises related to industrial energy conservation and "clean" technologies will be addressed, and links established or strengthened with regional networks. Information on the impact of new technologies on the twenty INTIB sectors will be compiled in the form of sectoral dossiers and awareness bulletins, in addition to those on microelectronics, genetic engineering and biotechnology, and new materials.

II. REVIEW OF INTIB ONGOING ACTIVITIES

UNIDO's industrial and technological information bank (INTIB) is the developing countries' window on technology. Set up in 1977 after UNIDO's landmark General Conference in Lima, and later endorsed by a United Nations General Assembly resolution, INTIB generates a flow of specific information needed by developing countries to select the right technology for their own industrial development.

Today INTIB provides a comprehensive service offering a combination of on- and off-line information, technical assistance, access to databases and several series of related publications. Its overall task is to compile and disseminate information requested by developing countries and to help strengthen their own industrial and technological information systems. INTIB will search in any field of industrial technology but concentrates on technologies and equipment for 20 selected industrial sectors. INTIB also co-operates with other UN organizations to develop specialized information systems and databases.

INDUSTRIAL INQUIRY SERVICE

The INTIB Industrial Inquiry Service (IIS), popularly known as UNIDO's mail order technical assistance, is a developing country industry's link with both the wealth of information maintained by UNIDO as a whole and the large number of data banks and information sources around the world to which UNIDO has access. INTIB's objective is to ensure a quick, easy flow of information to people who require it when selecting technology. Compared to most other, bibliography-dominated, information services, IIS is nearly unique in providing concrete, practical packaged information for industrial enterprises in response to specific queries and needs.

INFORMATION SYSTEMS AND DATABASES

Technology-related information is held by UNIDO in the following systems and databases:

The Industrial Information System (INDIS) – computerized form of the Industrial Development Abstracts (IDA), UNIDO-generated information held as some 16,000 titles and abstracts. Some 100 new entries each month; covers technical and other reports, feasibility studies, working papers presented at UNIDO meetings etc. Access is on-line.

The On-Line Information Key (LINK) – directories of research and development institutions for specific topics or sectors such as metallurgy, non-ferrous metals, industrial biomass, solar energy; gives access to information generated outside UNIDO.

Technological Information Exchange System (TIES) – information abstracted from technology transfer agreements of the participating countries. The information is only accessible to institutions offering similar data on a confidential, reciprocal and mutually beneficial basis.

INTIB'S INDUSTRIAL INQUIRY SERVICE

The Industrial Inquiry Service (IIS) handles some 1,500 inquiries annually. Most arrive by mail, telex or telephone. An increasing number are addressed through the growing network of INTIB focal points and nodes in developing countries themselves.

The bulk of the requests are for information on specific manufacturing processes and know-how; one third seek information on suppliers of equipment and machinery.

Nearly half come from industrial enterprises or from information service agencies requesting information on their behalf. Other users include engineering and consulting firms, R and D institutions, government policy-makers, universities and professional organizations.

The bulk of the inquiries received relate to three subject areas:
• industrial chemicals, petrochemicals and pharmaceuticals
• agro-industries and food processing
• capital goods, fabricated metal products

INTIB's answers rely on its own and other UNIDO databases, and on its extensive access to databases and information systems around the world.

Energy Information System – on-line database with an established thesaurus of energy key words. It contains periodical reports on UNIDO's energy activities.

Technology Supply Database – offers of technology, joint venture opportunities and requests for technology.

External Databases – access to bibliographic and directory-type databases.

Through INTIB, inquirers from developing countries may also gain access to other UNIDO data bases, namely:

UNIDO Statistical Database – central reference point for statistical data in the manufacturing sectors; information on 80 countries.

Investment Promotion Information System (INPRIS) – five computerized data files:

- project file – data on over 2,700 industrial investment project proposals in developing countries
- investor file – a directory of over 3,000 public and private enterprises
- bank file – directory of some 600 development finance institutions
- institution file – ministries of industry, investment promotion agencies etc.
- sponsor file – developing country firms potentially interested in redeployment possibilities
- country investment profiles – general country data.

NETWORKING, ADVISORY SERVICES, TRAINING AND TECHNICAL ASSISTANCE

INTIB technical assistance develops linkages and communications with end-users in developing countries and enhances their capabilities in the systematic handling of industrial information. It also promotes the availability and utilization of technological information in decision-making processes in industrial development, in which technology selection plays an important role.

End-user linkages enabling exchange and transmission are organized as an INTIB network made up of national focal points (NFPs) and nodes – information sources specializing in industry and technology – chambers of commerce, associations of small and medium industries, research and development institutions, engineering consulting firms, development banks, technology transfer promotion agencies etc. Plans are in hand to link NFPs and nodes on-line with UNIDO. For this purpose, INTIB initiated and successfully implemented projects for DPRK and Mongolia in establishing on-line access to different world-wide databases including UNIDO's own; for various countries in Europe and Africa in introducing electronic mail techniques (in co-operation with IBM). INTIB assistance is also used to encourage and develop rational industrial information policies and to train industrial information specialists. INTIB advises developing country institutions and policy-makers on technological information and organizes training workshops.

Specialized databases, for example on petrochemicals and pharmaceuticals, are being produced in co-operation with the System of Consultations. Similar specialized networks are being developed in conjunction with projects in the Department of Industrial Operations on fertilizers, agricultural machinery and implements, pesticides, energy conservation and environmental technologies.

INTIB also encourages and helps developing countries to set up their own industrial and technological databases, either nationally or regionally.

JOINT PROGRAMMES AND CO-OPERATION AGREEMENTS

INTIB is engaged in joint programmes and co-operation agreements with specialized information systems of United Nations agencies, for example with the United Nations Environment Programme (UNEP) in its International Referral System for Sources of Environmental Information, with the United Nations Development Programme (UNDP) in the Technological Information Pilot System, with the International Labour Organisation (ILO) in a joint publication on Technical Memoranda and with the Food and Agriculture Organization of the United Nations (FAO) in the International Information System for the Agricultural Sciences and Technology. There are other joint programmes include one with the United Nations Educational, Scientific and Cultural Organization (UNESCO) in the Energy Conservation Technology Information Exchange System, with the World Intellectual Property Organization (WIPO) in the patent information system and with the International Atomic Energy Agency (IAEA) in the International Nuclear Information System.

INTIB also co-operates with WHO, ECE, ISO, IDRC and FID and on a regional level with ICSTI, APCCT, ARCT, CARIRI, ALIDE and WAITRO.

PUBLICATION PROGRAMME

UNIDO's printed publications supporting and emanating from the development and transfer of technology programme include newsletters, serials and special reports, directories and abstracts.

Newsletters

- *The UNIDO Newsletter* (monthly, in Chinese, English, French, Russian and Spanish) – in addition to UNIDO-wide news, contains information on resources sought by developing countries, resources available to them from industrial enterprises world-wide, and lists of UNIDO publications and reports. Its readership is over 30,000.

- *Genetic Engineering and Biotechnology Monitor* (quarterly, in English) – contains articles and news for developing country specialists and policy-makers on policy, national developments, research, applications, patents and intellectual properties issues and bio-informatics.

- *Microelectronics Monitor* (quarterly, in English) – covering microelectronics and informatics technology, contains articles and news for developing country specialists and policy-makers on new developments, market trends and company news, legislation and standardization, socio-economic implications, applications, software, national news, robotics and factory automation and recent UNIDO publications.

- *Advances in Materials Technology* (quarterly, in English) – covering mainly advanced materials (new alloys, composites, ceramics, plastics), contains articles and news for developing country specialists and policy-makers on recent developments, market trends, publications and coming events.

- *TIES Newsletter* (quarterly, in English) – news and developments in technology acquisition, legislation, national registries and the UNIDO Technological Information Exchange System.

Directories and information sources

- *Guides to information sources*. Covering over 40 subject areas, they list organizations, societies, information sources, directories, statistical and market data sources, books and monographs, reports and periodicals.

- *Sectoral directories of technological and related institutions*. These emphasize developing country organizations; listings include areas of interest, staffing, budget, publications and joint projects.

INDUSTRIAL DEVELOPMENT ABSTRACTS DATABASE

Industrial Development Abstracts database is a specialized guide to UNIDO documentation on industrialization in developing countries, much of which is unpublished. They index major studies and reports, publications in series, and selected articles, reports and proceedings of expert working groups, workshops and seminars, internal studies, and reports related to technical assistance.

IDA comprises four sections: a subject index, and author index, a document number index and bibliographic abstracts. The descriptors are taken from the UNIDO *Thesaurus of Industrial Development Terms*.

Abstracts

- *Industrial Development Abstracts*. This series contains abstracts of the latest UNIDO publications and reports, including field reports on implemented technical co-operation projects.

Guidelines for policy- and decision-makers

- *Development and Transfer of Technology*. Series of over 24 publications dealing with issues such as technology policy, strengthening national capabilities and technology acquisition; offers state-of-the-art surveys in specific industrial technologies. Recent topics include brickmaking plant (industrial profile), iron and steel industry (technological profiles) and guidelines for evaluation of transfer of technology agreements.

- *Technology Trends*. Trends in processes, equipment and the industry sector; trends in national policy; technology flow and collaboration; market trends; institutional linkages, government-university-industry relationships, R and D arrangements; manufacturers market strategies.

Guidelines for entrepreneurs

- *Sectoral dossiers*. Detailed specialist-level information for technology decision-makers in industrial sectors and subsectors, e.g. iron and steel; emphasis on the impact of new technology on developing country operations (available at INTIB nodes only).

- *Technological Information Packages*. Compilations of material giving basic information on technological choices in selected areas, with emphasis on the experience of developing countries, e.g. mini-steel, -cement or -fertilizer plants. Describes raw material preparation, production and processing methods, machinery and equipment requirements and covers technology, economic and financial aspects of particular projects. Includes lists of process and equipment supplies, and a bibliography.

- *Guidelines on technological and information policy*. Practical considerations for policy-makers and senior executives. Series includes guidelines on formulating a national industrial information policy based on country-experiences, and advice on industrial and technological information centres, their redesign and

selection of minicomputers and software for them.

● *Technology Profiles.* Technological and economic information on selected industrial processes, including descriptions of developing country experience, quality and environmental control aspects and technology transfer considerations.

● *Technical Memoranda.* Appropriate technology choices in critical and priority areas for small- and medium-scale industries. Series covers tanning, footwear, weaving, vegetable oil extraction, brick-making, maize milling and paper making (jointly published with ILO).

● *How to Start Manufacturing Industries.* Brief descriptions of manufacturing processes, machinery and equipment, labour, investment and production costs. (Designed to stimulate project promoters and sponsors in developing countries and help them identify products for local manufacture.)

III. MEDIUM-TERM PLAN FOR INTIB (1990-1995)

Following a decision of UNIDO's Industrial Development Board (IDB) and recommendations of INTIB's Advisory Group, a medium-term plan for INTIB's development in the period 1990-1995 has been worked out and endorsed by IDB.

Essential elements of the approach for the future include:

(a) Continuation of the Industrial Inquiry Service but with greater emphasis on networking through national focal points and nodes;

(b) Introduction of modern data processing techniques in INTIB and the training of the relevant staff in their use;

(c) Building up of an internal network of information activities within UNIDO, including interlinkages with investment information;

(d) Establishment of on-line electronic mail connections with national information centres (requests for which have considerably increased over the last two years);

(e) Strengthening of national industrial information infrastructures, including the training and education of information specialists and the promotion of skills using industrial information;

(f) Development of a database on technology suppliers in place of the *ad hoc* collection of information in response to requests;

(g) Preparation of self-contained sectoral dossiers that can be used by INTIB and its nodes and that will include sources of information in specific sectors, the impact of new technology on those sectors etc.;

(h) Continuation of industrial technology publications and current awareness services, in particular the *UNIDO Newsletter* and the *Microelectronics Monitor*, the *Genetic Engineering and Biotechnology Monitor*, and *Advances in Materials Technology: Monitor*,

(i) Continuation of industrial development abstracts and the maintainance of the Industrial Information System (INDIS) data base;

(j) Co-operation with other United Nations organizations and other international organizations.

(k) Strengthening of the capacity of INTIB to provide advisory services and support to National Focal Points and nodes and information services.

(l) Ensuring a greater role for INTIB in a global network of industrial and technological information.

IV. CONCLUSIONS

Industrial and technological information is largely recognized as one of the resources indispensable for national economic and industrial development. This has brought remarkable changes in the attitude of most countries towards information over the past two decades in establishing national information policies, the main aims of which focused on:

- Access to, availability and use of information;
- Appropriate organization and management of national systems and services;
- Current and future development of information systems and services.

The above covers practically the whole spectrum of information collection, processing and transfer as well as supporting activities such as development of information capabilities, training and research.

The main goal of the UNIDO Industrial and Technological Information Programme is to assist member countries in the generation, processing and utilization of industrial and technological information as an essential element of national industrial development and in the improvement of international co-operation in this field.

The draft of the Industrial and Technological Information Programme concentrates on the priority activities aiming at the improvement of UNIDO ongoing activities in the field of information, taking into account the medium-term plan (1990-1995) of UNIDO and recommendations/guidance received from UNIDO governing bodies and the INTIB Advisory Group.

WHAT DOES INTIB OFFER?

- selected, analysed and annotated information on 20 industrial sectors on alternative technology based on users' needs and priorities;
- information to facilitate acquisition of technology;
- data on equipment and prices;
- information on How to start Manufacturing Industries;
- advisory services on information policy and design;
- information on training needs and opportunities;
- data on research and development activities;
- how to contact industrial information experts.

INTIB COVERS 20 INDUSTRIAL SECTORS

- Food processing (with special emphasis on vegetable oils and fats)
- Fertilizers
- Leather and leather products
- Capital goods (with special emphasis on energy-related equipment and technology)
- Petrochemicals
- Building materials
- Fisheries
- Industrial manpower training
- Agricultural machinery
- Non-ferrous metals
- Iron and steel
- Pharmaceuticals
- Industrial financing
- Wood and wood products
- Textile and wearing apparel
- Electronics
- Agro-industry
- Low-cost transport
- Pulp and paper
- Energy: new and renewable sources of energy, non-conventional sources of energy, energy for rural requirements