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PROGRESS REPORT ON THE INTIB PROGRAMME*

Prepared by

the UNIDO Secretariat

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Introduction

UNIDO is the specialized agency in the United Nations system whose primary objective is to promote and accelerate industrial development in the developing countries. It assists industry as a dynamic instrument of growth and change that is essential to the rapid and balanced socio-economic development of the world. Industry itself, however, is also undergoing a marked change as it gradually transforms from a material-based to an information- or knowledge-based activity.

The industrial and technological scene in the 1990s is very different from that of the 1960s and 1970s when most developing countries started on a conscious quest for strengthening their technological capabilities. Crushing debt burdens, deregulation and the emergence of open industrial regimes, increasing privatization of knowledge, rapid product development and obsolescence, shifting comparative advantages, concern for conservation of energy and environment and for sustainable development constitute the backdrop against which dynamic technological change is taking place. How developing countries and enterprises can manage technological change for the benefit of industrial and economic growth in the 1990s is therefore the central concern of UNIDO's technology development and promotion activities. Since 1988, they have been set in a programmatic framework based on the industrial and technological goals and objectives of developing countries themselves.

Over the years, the UNIDO Technology Programme has contributed significantly to technological progress in developing countries—by promoting the development of technology, assisting in its selection, arranging for its adaptation, promoting innovation, and facilitating its acquisition, transfer and use, by providing access to sources of technology.

These activities complement other UNIDO programmes: Industrial Operations Technology—assistance at the sector level such as engineering, chemicals, metallurgy and agro-industry; Industrial Institutions and Services—assistance to Governments in the areas of industrial strategies and policies, and strengthening of industrial infra-structure institutions; Industrial Operations Support—overall aspects of human resource development. TDP programmes are coordinated with the technology-oriented aspects of Industrial Policies and Perspectives and complement the programmes of UNIDO's other promotional divisions in the Department for Industrial Promotion, Consultations and Technology concerned with industrial investment and North-South consultations at the sector level.

Although UNIDO is not a funding agency, it can also help to mobilize funds through its contacts with funding sources. Special trust fund mechanisms, including trust funds set up by users themselves, are also available.

The Organization has unique skills in identifying, matching and mediating between international partners in the fields of industry and technology. These skills are inseparable from the information resources that INTIB helps to deploy. This fact is inherent in the organizational structure, which places the information Bank within the Department for Industrial Promotion, Consultations and Technology. Just as UNIDO endeavors to promote direct investment and joint ventures on a networking basis, so too, a central part of the INTIB concept is its network. The judicious combination of a central clearing house with decentralization through a global network of information-gathering and

dissemination points is an optimal means of ensuring the effective transfer of information essential to industrial co-operation.

This is particularly important following the enormous changes in the political and economic structures that have occurred in the world in the last few years: the increasing globalization of industrial and technology markets; the reorientation of many countries from centrally planned to market economies; regional market integration movements; and liberalization in investment and technology regimes. UNIDO monitors these major changes and responsively makes corresponding adjustments in its program instruments in order to effectively deal with the challenges of a changing world.

The rapid developments in the fields of communications, information generation and dissemination, the drop in prices of PCs and computer storage facilities lend urgency to the process of considering information as a commodity. In this respect, proper fulfillment of marketing function in UNIDO is crucial.

Advisory Group Overview and Recommendations 1985-1993

The Advisory Group institution was set up in 1985 as a continuing mechanism to review past experience and elaborate proposals for new qualitative and quantitative developments of INTIB. The work of the four previous meetings of the Advisory Group has been very useful and important.

Participation in the work of the Advisory Group by prominent experts from developed and developing countries has made it possible to reflect to a considerable extent the views of the world information community on the activities, strategy and future programmes of INTIB.

All the previous Advisory Group meetings stressed the growing role of INTIB as a valuable source of information on technology choices and INTIB consolidated its activities in the organization of UNIDO in-house information, its collection, storage and dissemination, and also further strengthened the developing countries' capabilities and capacity in information processing and dissemination.

The information "explosion" and dramatic developments in information processing and communication technologies were the basis for the INTIB networking strategy, to manage the increasing flows of information and to answer more efficiently and effectively inquiries from developing countries. The formation of national focal points (NFPs) and the identification of national specialized sources of information (SSIs) that can process inquiries using their own information capabilities and INTIB information resources have assumed special importance. A clear distinction was made between the NFPs as co-ordinating bodies for national efforts and SSIs as specialized operational units for processing and handling specific industrial information.

The first networking experiment was carried out in the framework of an IDDA project in Africa and included ten countries. This was followed by identification and expansion of the INTIB network system in other regions.

Now it can be stated that the medium term programme recommended in 1985 and then developed in 1986 and in 1989 has been mainly implemented. The implementation of this programme has made it possible to:

- Strengthen INTIB as the centre of the global networking interaction among

focal points dealing with industrial and technological information. INTIB successfully continued with the traditional activities of the inquiry service and dissemination of information, and as a clearing house with emphasis on generation of data bases of special interest to SMEs;

- Set-up a global network of regional and national focal points of INTIB;
- Use modern telecommunication techniques to facilitate communication between INTIB and its focal points, and to provide access to external and commercial databases under special arrangements as well as to those of the UN system;
- Develop and implement a programme for human resource development for the staff of focal points in the developing countries.

Review of INTIB Ongoing Activities

The Industrial and Technological Information Bank (INTIB) is the major mechanism and structure through which UNIDO transmits reliable and continuous information to developing countries through an established networking strategy.

INTIB coordinates UNIDO's industrial and technological information activities. It answers inquiries through its Industrial Inquiry Service and actively disseminates information through its network system of focal points and nodes, and its publications. The network enables INTIB to strengthen the systems through which information flows to and from developing countries.

Through these modes of operation, INTIB serves as an interface between users and the wealth of information stored in the data bases of UNIDO, the UN system as a whole, and other systems. INTIB also encourages and assists the establishment of technology data bases in developing countries.

Industrial Inquiry Service

The oldest and most traditional activities of INTIB is the Industrial Inquiry Service (IIS) operated since 1970 and now with special emphasis on SMEs. During the last ten years IIS received about 30,000 inquiries, either directly, from industrialists, government policy-makers and others or routed via INTIB's network of RFPs and NFPs. Unlike most international services, concrete, practical information is supplied, packaged in response to specific needs. Apart from experts' advice and in-house data on a large number of sub-sectors, IIS can tap the resources of 300 network correspondents and on-line data bases.

Looking at future activities of IIS, it is necessary to take into consideration new developments in the demand for information services and the market for this commodity. The first is that INTIB is broadening its activities in new types of services like TECHMART, INTELL and an international information referral system.

A second factor deals with the existence of RFPs, NFPs and SSIs. The idea behind the creation of the INTIB network was to reduce the pressure on IIS from inquiries coming from local users to INTIB. By reducing the number of requests coming directly to INTIB/IIS, more attention is being paid to those requests that have more interest and importance to other services of UNIDO.

The Inquiry service is and will stay an integral part of INTIB's information service. It enhances the possibilities of making effective use of information

acquired at considerable expense of financial and human resources and also provides a basis for evaluating the effectiveness of our technology information service. Without an inquiry service, a technology information service that limits its activities to sourcing, packaging and disseminating information would be no more active than the popular magazines that feature technologies and provide referrals.

The volume and type of inquiries received and being generated provide a feedback on the market demand for UNIDO services within the Member States. It forms the basis for assessing the effectiveness and efficiency of INTIB's operation and for reorienting its activities.

In this respect it should be stressed that industrial inquiries received by INTIB via its networking system are becoming increasingly specialized, problem-oriented towards investment, environmental and operational aspects of technology selection and pertain to advanced technologies, competitiveness, market trends, etc. In order to satisfy this kind of information demand, INTELL (techno-economic intelligence) type information support services must be provided and developing countries helped to set up such services to facilitate decision-making by enterprises themselves.

To improve timeliness and quality of information needed by decisions-makers concerned with industrialization and small-and medium-scale enterprises UNIDO is developing: four computer-linked INTIB regional (Africa, Asia and Pacific, Latin American and Caribbean and Europe) networks; and international sectoral networks in the fields of environment, energy, materials, microelectronics, and biotechnology.

Networking Concept in Operation

The INTIB network of NFPs and SSIs is based on the idea of decentralized data collection and dissemination. These network points are also geared towards providing industrial inquiry services, either locally or regionally with INTIB and its information sources providing support.

In this concept, INTIB is the hub of a networking system of NFPs and RFPs. The NFPs pass inquiries to INTIB or to an RFP, but first have to provide their own answers, tailored to local conditions using SSIs and other resources. An important task of NFPs is that of packaging information in appropriate forms, both for local users and to feed into the central INTIB data bases.

Regional Networks

The first regional networks in *Africa* and *Asia and Pacific* were initiated early in 1985 with organizing all information activities in the regions through the Regional Focal Points: the African Regional Centre for Technology (ARCT,) Dakar, Senegal for Africa; the Asian and Pacific Centre for Transfer of Technology (APCTT), India for Asia and Pacific. RFPs maintain communications with INTIB, build up regional data bases, strengthen the sub-networks within their regions, and provide value added information services to SMEs using the information resources of INTIB.

Latin American Network

As far as regional co-operation is concerned, Latin America differs significantly

from Asia and African regions, where UNIDO has been actively engaged during the last seven years. Numerous regional information networks have already been established or are being set up. Our goal is to unite the efforts of different states in the acquisition, processing, storage and dissemination of information that is important for the development of Latin American countries. For this purpose the project to integrate computerized information in the Latin America and the Caribbean is now under implementation in co-operation with RITLA. The functions of an RFP in Latin America are entrusted to FIESP.

European Network

After the dramatic changes in Eastern Europe and the former USSR, INTIB is rebuilding its network in this region using the existing infrastructure and upgrading services so as to respond to the new needs of eastern European countries, especially SMEs.

Sectoral Networks

Energy and Environment Information Network

Last year INTIB commissioned a study of the energy and environment information situation in relation to small-and medium-sized industries (SMIs) in developing countries. The report concluded that there was a definite gap in the flow of knowledge of the type that UNIDO can provide. UNIDO has put in place a project to address this problem.

The objective of the Energy and Environment Information System (EEIS) project is the establishment within developing countries of sustainable, cost-effective network for industrial environment information management targeted to small and medium-sized industries. EEIS follows a strategy for each country that first identifies the key institutions of one of the chief responsibilities of which is to help build the industrial energy and environment information network within the country by identifying and entering into working arrangements with from ten to fifteen other organizations which have direct association with SMIs. Such organizations include trade associations, Chambers of Commerce local administrative offices and environmental consulting companies. These organizations have access to the information products and services made available from UNIDO/INTIB through key institutions and have the responsibility to assist their member SMIs and entrepreneurs to make use of the information, as appropriate. Thus the network is build.

Biosafety Information and Advisory Network (BINAS)

This network is under development to strengthen national biosafety capabilities and to facilitate international technology transfer by providing the biotechnology industry with time saving access to information on national biosafety regulations and enforcement authorities.

Regional Programme on Co-operation in Informatics and Microelectronics in Latin America and the Caribbean (REMLAC)

The main goal of this programme is to reinforce existing infrastructures and capabilities to absorb sufficiently and use informatics and microelectronics technologies through national action and the expansion of co-operation between the countries of the region. In particular its activities involve collecting and

disseminating information on and giving advice on: informatics dispersion in SMEs; monitoring of economic and technological trends; and design of integrated circuits.

Materials Technology Information Network

It is now universally recognized that new materials form one of the pivots of technological growth for the future—they are essential for engineering structures to fulfil their functions. In this respect, new materials provide the framework for all industrial sectors and represent an essentially enabling technology.

The revolution in materials science highlights the enormous tasks, analytical needs and informational requirements embracing the whole field of materials for both industrial producers and users, beyond the means of a single specialized institution, professional society, industrial enterprise, ministry etc. Therefore, UNIDO is mobilizing international and regional co-operation, including the creation of international centres such as the newly established International Centre for Science and High Technology at Trieste, Italy, which includes the Centre for High Technology and New Materials, and developing networks in various regions.

INTIB's International Referral System

Experience has shown that it is necessary to direct entrepreneurs to external sources of industrial and technological information to obtain satisfactory responses to their inquiries. In the past UNIDO used to access its international network of correspondents. To make the services UNIDO provides to developing countries even more effective and efficient, to promote new types of cooperation and to help more customers, INTIB has started implementing a new International Referral System.

The International Referral System is designed to redirect queries received by INTIB (either in Vienna, or in the National Focal Points) to a wide range of well targeted sources of industrial and technological information. The system provides INTIB's customers with more up-to-date and indeed a wider spectrum of industrial and technological information.

The main tool for this decentralized approach is ad hoc standardized directories of national sources of industrial and technological information. Each member of the referral system is currently described by using a standard matrix that was developed for the production of the national directories. Members are organizations that are capable of replying to a precise inquiry, whether it concerns a raw material, a technology, a supplier, a potential partner, a product or a manufacturing process. The data in the directories are stored in a computerized information system.

Priorities and flexible planning

In order to have a successfully operating INTIB, it is important to have priorities and flexible plan to provide:

- Networking between INTIB and NFPs
- Networking between NFPs and external sources of information
- Networking between NFPs, local entrepreneurs and enterprises
- Access to existing up-to-date electronic mail and computer networks to facilitate communications with all participants of the network.

At the same time, the viability of telecommunication links in the developing regions is the technological wild card. The infrastructure does not exist in most regions to allow for direct computer-to-computer communications. When it does, the potential for downloading information from full text and bibliographic data bases, on a selective basis, could make an enormous difference to the quality of information provision.

INTIB has made considerable efforts during the last two years to choose appropriate techniques and technologies to connect to as many computer data networks as possible to allow National Focal Points flexibility in choosing the Network with which they prefer to communicate.

In doing so, we believe that one day we will become a networked society, where we really will be able to communicate anything, anywhere, anytime.

In accordance with the latest forecasts, networking in the 21st century will be complex yet deceptively simple. It will be as commonplace in our daily lives as electricity, providing as many diverse kinds of applications. Networking makes it feasible for people in organizations to share information freely and frequently, while allowing everyone to participate in a worldwide marketplace and access vast libraries of historical and topical written, visual and oral information. Networking has the potential to connect the world in one global electronic civilization.

We have to be prepared to this change and move from paper/printed information exchange to the delivery of electronic information using external databases, E-mail and computer conferences to be able to provide information needed in no time.

UNIDO's Information Resources

The information resources that INTIB generates are used both by UNIDO's technical staff in the substantive sections (branches of DIO, DIPCT and DPPD) and by RFPs, NFPs, and SSIs. They are present in traditional form as printed publications as well as in machine readable files that are accessible on-line. An internal network to use UNIDO information resources is fully operational already for energy and environment.

UNIDO's Memory

The various data bases on which INTIB draws, and which it develops, can be described as UNIDO's institutional memory. The following brief summary gives an idea of the wealth of information—much of it unique—available through INTIB.

INDIS: The Industrial Information System is a computerized form of the Industrial Development Abstracts (IDA), which contains UNIDO generated information held as over 20,000 titles and abstracts. Some 100 new entries are added each month, covering technical and other reports, feasibility studies, working papers presented at UNIDO meetings etc. Access in on-line.

LINK: The database containing information on how inquiries received by INTIB were handled.

INPRIS: The Investment Promotion Information System (INPRIS) is concerned with investment opportunities and contains information on projects, investors, banks, sponsors and country data.

Technology Supply Data Base: This contains information on technology offers and requests, and joint venture opportunities.

UNIDO Statistical Data Base: This is the central reference point for statistics on the manufacturing sectors of 80 countries.

Specialized data bases, such as on petrochemicals and chemical products and producers, are being established by INTIB.

The importance and global scale of problems concerning energy conservation and environment projection has lead INTIB to start its own innovative approach to these problems, to ensure the collection and dissemination of environmental information in accordance with UNIDO's Environment Programme.

Technology Monitoring

As an integral part of technology monitoring efforts, INTIB publishes four quarterly current awareness bulletins: *Micro-electronics Monitor*, *Genetic Engineering and Biotechnology Monitor*, *Advances in Materials Technology Monitor* and *Marine Industrial Technology Monitor*. UNIDO is also planning to prepare a biennial Global Survey, which will monitor the impact of selected technologies and document the policies and programmes for stimulating the application of new technologies and technological development of both developed and developing countries. Undertaken jointly with a network of six to eight highly qualified specialist institutions in developing countries, the survey will view technological change uniquely from a developing country perspective. To enhance awareness of developing country Governments, institutions and enterprises to the Constantly changing aspects of development and transfer of technology, its trans-sectoral aspects and the industrial context, the Technology Trends series will be continued to be prepared in cooperation with Technology Promotion Branch.

Publication Programme

From the very beginning of its operation INTIB started with a number of publications. These activities have taken a variety of forms. During the first 5-6 years, it was only paper products. Then all information was typeset in machine readable form. In this way the information could be output both on paper and in machine readable form as diskettes.

The publications include *Industrial Development Abstracts*, *Technology Offers/Requests*, *Joint Venture Opportunities*, *Directories/Guides to Information Sources*, *Manuals*, *Guidelines*, and *information packages* on various industries.

During the last two years INTIB began to produce new journals and periodicals. They are *INTIBNET*, *Environmental Awareness Bulletin*; *Energy and Environment Series*; *Industry and Environment (A Guide to Sources of Information)*. All of the INTIB's publications now are being created using DTP techniques. It allows the dissemination of information in both electronic and printed forms, including CD-ROM. Co-operation was started with commercial publishers to minimize in-house cost of publications and to have more efficient marketing and income generation.

Techmart— Information Support to SMEs

UNIDO's yearly Techmarts are open business forums where small- and medium-size industry can find, offer, negotiate and eventually buy and sell the kinds of technology suitable for their scale of operations. Of interest to companies and institutions seeking or offering technology on their own behalf, and to organizations, consultants and brokers representing the, especially from abroad, Techmarts bring entrepreneurs, managers, technology acquisition specialists together in a particular country or sub-region to discuss technology transfer and cooperation. Their basis is a technology compendium prepared and circulated in advance describing several thousands of technologies, many of them in the context of joint venture opportunities, sought or offered by interested parties and identified through UNIDO technology information services. Through Techmarts, therefore, INTIB becomes a vehicle for technology transfer. A Techmart concentrating on engineering technologies, held in New Delhi in 1992 in the context of a specialized trade fair, yielded over 600 contacts for the more than 1,000 registered participants. Of these 180 reached an advanced stage with indications that over 100 would yield practical cooperation agreements.

Future Techmarts will make available on-the-spot services such as investment promotion, prefeasibility and feasibility studies and expert advice on technology negotiations and acquisition, and on project implementation. Applications of new technology of interest to small- and medium-scale will also be featured.

Cooperation with other UN organizations

This is a very important feature in INTIB activities providing mutual access to expertise and information services/products:

- UNEP/ INFOTERRA on environment;
- ITC on trade;
- FAO on agriculture;
- IAEA on energy;
- WIPO and EPO on patents;
- UNESCO on information management;
- UNDP/DEVNET/TIPS on technologies and markets

Vision for the Future

The INTIB strategy for the second half of the nineties could be considered as a combination of traditional activities that have given positive results with some innovative approaches that have been started recently with considerable potential for future development:

- From Industrial Inquiry Service to International Referral System and to Techno-economic Intelligence Centre
- From information gathering to technology transfer, investment promotion and technical assistance demanded by SMEs, using INTIB's networking system of regional and sectorial networks and the Techmart programme
- Rapid and reliable exchange of technology, business and market information using existing telecommunication and computer networks
- From printed to electronic products