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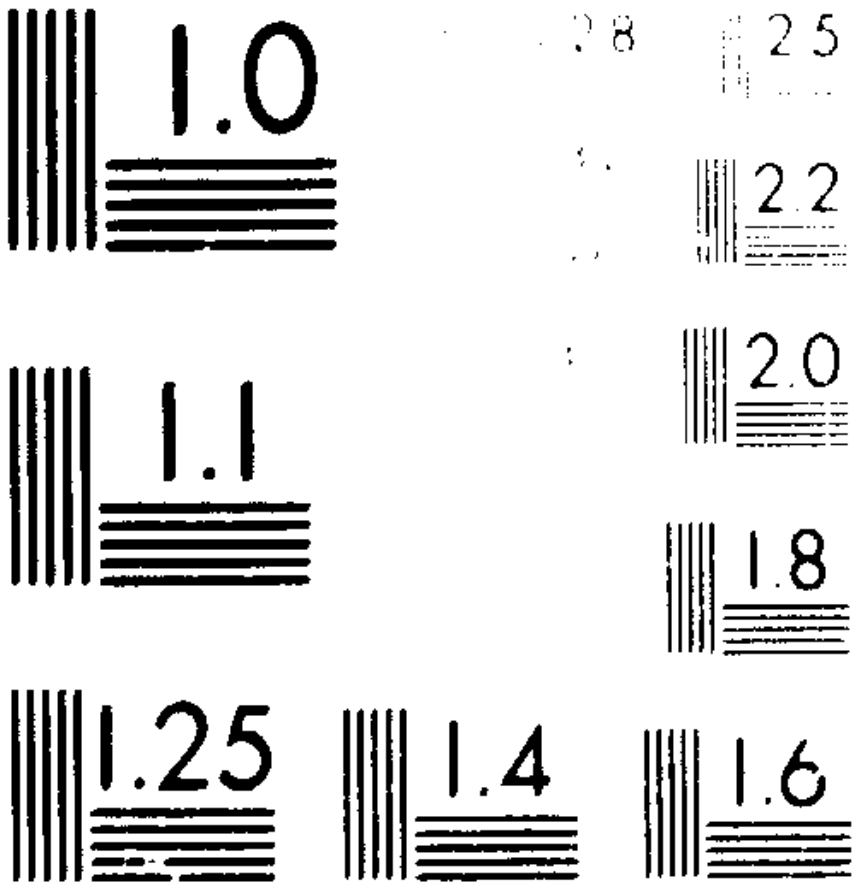
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DEVELOPMENT OF AN INDUSTRIAL INFORMATION CENTRE AT THE FEDERAL INSTITUTE OF INDUSTRIAL RESEARCH OSHODI, LAGOS

DP/NIR/75/059/11-02/D/31.3.B

N I G E R I A,

Technical report: Development of a training programme and a training centre for industrial information

Prepared for the Government of Nigeria
by the United Nations Industrial Development Organization
Executing Agency for the United Nations Development Programme

Based on the work of

P. Lázár
Expert in Industrial Information Training

United Nations Industrial Development Organization
Vienna

A B S T R A C T

The project on industrial information training (DP/NIR/75/069/11-02/D/31.3.B) aimed at development of a training programme and a training centre for industrial information at the Federal Institute of Industrial Research (FIIRO), Oshodi, Lagos.

During the three months of project activities a two weeks training course in industrial information was prepared, organized and run with the objective to promote the use of industrial information by industries in Nigeria and to make them aware of the capabilities and services of industrial information which is needed for accelerating industrial development. Both, the participants and the lecturers of the course were mainly senior staff of industrial firms, research and development organizations and Government departments and agencies involved in industrial development.

As a possible Phase II of the project a plan of a System and Centre for Manpower Development in Industrial Information in Nigeria was worked out. The plan recommends the establishment of the Centre at FIIRO with the functions of designing the system of manpower development, planning the activities of the system, co-ordinating and management, and education and training.

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Annexes:

DEVELOPMENT OF A TRAINING PROGRAMME AND A
TRAINING CENTRE FOR INDUSTRIAL INFORMATION

I. INTRODUCTION

The project of setting up an Industrial Information Centre at the Federal Institute of Industrial Research (FIIRO), Oshodi, Lagos, started in 1978 with the mission of Mr. S. Parthasarathy, UNIDO expert, was extended in 1980 to include a training element as well.

The purpose of the present project (Annex 1) was to develop a training programme in industrial information and establish a training unit at FIIRO under the supervision of the project manager, Mr. S. Parthasarathy, who took up a six months follow-up mission in February 1981. In particular, a two months training course was expected to be organised and run and course materials prepared.

The project was implemented in March - May 1981 by Peter Lázár, UNIDO expert, in close co-operation and consultation with Dr. O.A. Koleoso, Director of FIIRO, Mr. R.O. Sodipe, Assistant Chief Research Officer, in charge of the Library and Documentation Section and his staff.

Practical consideration concerning the state of communication and transport facilities have led to the conclusion that the organization of a two months course during a three months mission was not feasible. The efforts of the expert, the project manager and FIIRO were concentrated on organizing and running a two weeks course in May according to the work plan submitted to and accepted by UNIDO (Annex 2).

In order to extend international relations of FIIRO and to broaden the scope of the course, background materials and documents have been requested from international organizations (Annex 5) for distribution to the participants and the lecturers.

In addition to the training course, the expert prepared a plan for manpower development in industrial information in Nigeria (Annex 6).

The report intends to sum up project activities and recommendations which resulted from project activities. It may be used as a basis for proposals and actions which may lead to the extension of the project by initiating Phase II (Annex 3).

II. RECOMMENDATIONS

1. Phase II of the project should be planned as a project on manpower development in industrial information with the aim to support industrial development of the country.

2. The new project should be included into the National Development Plan of Nigeria and the UNDP country programme.

3. The funds needed for the establishment and operations of the system should be provided by Government and UNIDO. In view of the general approach of the system and its importance to and expected impact on scientific and technological development, the UN Interim Fund for Science and Technology for Development (IF/STD), Unesco, and also WIPO, could be expected to join efforts with UNIDO in covering parts of the costs in developing and operating the system.

4. A Centre for Manpower Development in Industrial Information should be established by Government at the Federal Institute of Industrial Research, Oshodi, Lagos.
   The Centre shall fulfill the following main functions:
   (a) Design of the system;
   (b) Short-term and long-term planning;
   (c) Co-ordination and management;
   (d) Education and training with both national and regional vocation.

5. The Centre and the system should be built up gradually, according to well defined system design and planning.

6. The Centre should be set up by Government as rapidly as possible. For the first two years of operation the following minimal provisions will have to be made for the Centre:

   (a) Staff

   One Officer-in-Charge;
   Five qualified professionals (engineers, information specialists, a computer specialist);
   Administrative and supporting reprographic and other technical staff.

(b) Premises

Conference room for 30 - 35 persons;
Library and information centre on manpower development in industrial information;
Mini-computer facilities, to be linked to the Computer Centre of the University of Lagos;
Office space;
Reprographic shop and audio-visual centre.

(c) Library

Subscription to about 200 professional journals and periodicals dealing with information work; acquisition of textbooks, handbooks, scripts, research reports, training programmes and schedules, teaching aids etc; commissioning of translations of non-English language materials into English.

(d) Minicomputer

Input-output peripheries, terminals.

(e) Reprography

Modern copying, photocopying, printing equipment.
Facilities for preparing and using microforms (micorfilms, microfiche, microcards, strips, jackets, etc.).

(f) Audio-visual Techniques

Equipment, materials, teaching aids (films, slides, etc.)

7. First priority should be given by the Government to provide the Centre with adequate means of communication and transportation facilities the lack of which can impede the success of the whole project.

8. Planning and design of a building for the Centre should be initiated by Government very soon. The building should accomodate the offices, the library, the supporting equipment facilities needed for demonstration and training (computer, reprography, audio-visual techniques), classrooms and conference rooms, premises for demonstrations and exhibitions. A hostel for 50 students and 10 teaching staff would allow to run two courses (eventually a long course and several short courses) in parallel and to accomodate students and teaching staff from within the country and from abroad.

III. REPORT ON PROJECT ACTIVITIES

A. Main duties of the job description

According to the job description, the expert was specifically expected to:

1. Prepare detailed course material for a training course in industrial information planned to have a duration of two months;
2. Organize and run the above mentioned course with the assistance of two research officers to be recruited by FIIRO.

To organize a two months course during a three months mission is not feasible quite independent from the level of development of the country involved. In developing countries where communication facilities are inadequate, where contacts can hardly be made by phone, where the mail service is rather slow, where invitations to institutions, lecturers and participants, on the one hand, and the acceptation or rejection of those invitations and, consequently, all changes concerning the organization of the course (date, time and place, speakers, lecturers, institutions involved, participants, tec.), on the other, have to be passed by personal visit or messages, months are needed to plan and consolidate the programme of and the participation in a training course, be it short or long.

Difficulties of organisation increase with the lack of adequate transportation facilities because this hinders or slows down considerably the activities needed for the preparation of the training course by contacting institutions and persons.

Most unfortunately both types of difficulties have to be faced when organizing a training course in Nigeria.

Because of the impossibility to organize properly a three months course a two weeks course was considered and planned at the beginning and implemented in the last month of the mission.

In the planning of the course due consideration was given to industrial liaison and extension services (Annex 4), a special type of industrial information services most helpful to small-scale and

medium-scale industrial firms which, usually, have neither the personnel able to retrieve, locate and utilize industrial information even if available in the country, nor the financial means to build up their own information services.

A possible Phase II of the project should include a strong component of information extension services (Annex 3).

The recruitment of two research officers by FIIRO, stipulated by the job description, was planned, the posts have been widely announced and advertized, but because of the lack of suitable candidates the posts were not filled until the end of the mission. The staff of FIIRO, especially the staff of the Information and Documentation Division has, nevertheless, coped with the tasks of the administrative organization of the course.

B. Analytical account of activities

1. Training course in industrial information

(a) Objective

The primary objective of the course was to promote the use of industrial information by industries in Nigeria and to make them aware of the capabilities of industrial information, which is needed for accelerating industrial development.

The course was intended mainly for actual and potential users of industrial information, such as policy-makers, decision-makers and problem-solvers in industrial firms, research and development institutions and Government agencies.

As an indirect effect the course was intended to strengthen the links of FIIRO with industry and industrial development agencies, on the one hand, and universities, learned and professional societies etc. on the other.

To build up and develop the international relations of FIIRO in the field of information was an additional objective.

(b) Planning of the programme of the course

The programme was drafted by the project manager (attached to Annex 2) and was finalised upon the advice of the expert who suggested to invite additional lecturers from the representative of the Nigerian Society of Engineers, National Member of Nigeria in the Committee on Engineering Information of the World Federation of Engineering Organizations, on the role of the engineering societies in the generation, handling and use of industrial information, the Librarian of the International Institute of Tropical Agriculture (Ibadon) on information services for agriculture and the agro-industries and the Director of the National Library of Nigeria on the General Information Programme of Unesco.

These suggestions were aimed at helping FIIRO as the national centre of industrial information to widen the scope of its information activities, broaden its contacts with industry and open up its contacts with national and international organizations able and willing to co-operate with FIIRO in the development of industrial information in Nigeria.

Because of the change of the originally planned dates of the course to 4 - 15 May some minor changes had to be made in the final programme taking into account the availability of the invited speakers at the changed dates (Annex 7).

(c) Preparation of course materials

Materials for the course were prepared by the invited lecturers (Annex 7). Contents and form of the contributions have been discussed in advance with most of the lecturers.

The expert prepared a paper on "International information systems" (Annex 8) and a background document containing excerpts from the Vienna Programme of Action included in the Report of the UN conference on Science and Technology for Development held in Vienna from 21 to 31 August 1979 (Annex 9).

In addition he draw up the outlines of the lectures on the general introduction to industrial information, sources of industrial information and industrial information services.

(d) Providing links to and background materials from international organizations

In order to overcome the dangers of "information provincialism" and to provide an insight into the information activities of a few international organizations heavily engaged in various aspects of information development and information services, the expert contacted, upon consultation with the project manager, international organizations (Annex 5), informed them about the objectives and the programme of the training course and asked them to provide documents and publications on their information activities to be distributed to the participants and the lecturers of the training course.

Another objective, equally important, of this approach was to help FIIRO to establish and develop direct contacts with international organizations which may provide support to the Institute by providing either scientific, technical, industrial and economic information or publications needed or methodical guidance in industrial development.

Most of the organizations addressed responded favourably to the request and dispatched background documents and publications which were distributed to the participants and lecturers. In addition, copies were deposited in the Library of FIIRO and, in some cases, in other important libraries of the country.

UNIDO is expressing its appreciation to all international organizations which provided background papers to the course.

In addition to providing for FIIRO materials from and links with international organizations active in the field of information, the expert helped FIIRO to apply for associate membership of the International Federation for Documentation (FID) and to nominate a member into the Committee "Information for Industry" of FID.

(e) Evaluation

A questionnaire, prepared by the expert (Annex 10- was distributed to the participants and used for evaluation of the

feedback of the participants.

The course proved to be stimulating and useful. Industrial policy, planning and development, with a slant towards small-scale industries, and information on these subjects was covered by 18 lectures, 8 further lectures were devoted to sources of and services in industrial information.

Four lectures scheduled according to the original programme had to be omitted because the invited speakers could not comply with the modified dates of the course. Major elements of these subjects have been included, nevertheless, in the other lectures.

The target of 30 participants has been attained. Besides 20 registered participants from various institutions 17 members of the staff of FIIRO, mainly engineers and scientists attended the course as well.

The breakdown of the number of the participants shows that their majority consisted of senior officials from industries, development organizations and ministries:

Industry	5
Development organizations (out of which FIIRO)	17 (13)
Federal and state ministries	4
Librarians (out of which FIIRO)	10 (3)
Total	36

With adequate communication facilities and a longer period for the preparations for the course the participation of industry might have certainly been increased.

The course helped to create awareness of information among prospective end-users of industrial information. For the librarians and information specialists it provided a deeper insight into and understanding of the real needs of information end-users and useful facts about indigenous, foreign and international sources of industrial information.

The questions and comments which the participants addressed to the speakers following each lecture, and the general discussion on the contents of the course were concentrated, in general, around two main areas of interest.

Problems concerning information for the development of small-scale industries and for the benefit of industrialists were raised throughout the course indicating the big interest in this field and the manifest need for such information.

On the other hand, a very broad interest in information about sources of industrial information was expressed by most of the participants. In addition to facts about indigenous information sources presented in nearly all of the lectures, the information sources available at FIIRO and FIIRO's industrial information services, on the one hand, and the information sources and services provided by international organizations were subjects of highest interest to all participants. In this respect the availability and accessibility of UNIDO documents and publications was repeatedly mentioned by participants and explained by the UNIDO experts.

As a further result of the course it became clear to all participants and lecturess that there is a pressing need for co-operation among the various Nigerian institutions providing industrial information, and some sort of co-ordination of their activities, in order to avoid both unnecessary duplication of efforts and still existing lacuna of information.

The programme structure of the course and the lectures can be used when the training course will be repeated in Lagos and some other places of the country. They could serve as the basis for the institutionalizing of such a training course which could easily provide a transition to Phase II of the project.

For further use some of the lectures could be further developed and improved, especially in view of the need to harmonize and co-ordinate the contents of the lectures, eliminate unnecessary repetitions and arrange the sequence of the lectures in a more logical order.

At subsequent courses participants should be invited to contribute more actively to the course by presenting short reports, forming discussion groups etc.

The use of modern audio-visual techniques will certainly help to increase the impact of the course.

2. Phase II of the project: Manpower development for industrial information in Nigeria

The impact of one training course is very important from the point of view of initiating a process of education and training. But without well-planned follow up and further actions even the results of the impact of the first course might be lost.

In order to educate information specialists and users, in order to provide the basis of human elements, pillars of any information development, a system for manpower development in industrial information has to be designed, established and developed as Phase II of the project (Annex 6).

The system and the suggested Centre for Manpower Development in Industrial Information in Nigeria will not only broaden the basis of industrial information services both on the supply and on the demand end, but will also institute mechanisms of users' feed-back which will allow to evaluate the satisfaction or dissatisfaction of the users with the existing services and adjust and improve information services accordingly.

The system should be designed to allow for the systematic education and training of the following three categories of specialists:

(a) End-users of information including actual and potential users, especially university students of engineering factulties;

(b) Information specialists, personnel of information centres and special libraries;

(c) Information officers, that is liaison and extension workers, advisers and consultants acting as intermediaries between the end-users and the information centres and other information resources (groups (a) and (b).

If the system should be effective, it will be necessarily a complex system with a multitude of interlinked elements such as research and development organizations, industrial firms, universities, government departments and agencies, professional organizations, and learned societies etc.

The elements of the system will have to co-operate according to a well outlayed pattern, based upon efficient planning, co-ordination and management.

The Centre, the optimal location of which should be in FIIRO, will have to implement the following main functions:

(a) System design;
(b) Short-term and long-term planning;
(c) Co-ordination and management;
(d) Education and training.

C. Achievement of immediate objectives

The objectives of organizing and running a training course and preparing materials for the course were achieved by the mission.

D. Utilization of project results

The results of the project will be fully utilized when Phase II of the project will be started.

The experience in preparing and organizing a training cours acquired by the staff of FIIRO will provide a most valuable basis for taking up and continuing activities in industrial information training.

The course materials prepared for this course are available for further training activities. With some adjustions, amendments and, eventually, revisions, these texts may be used for other courses as well.

The newly established direct links with international organizations active in the field of information will helps FIIRO to improve its own information services and to support industrial information services of other institutions in the country.

ANNEX 1

UNITED NATIONS

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO 6 June 1980

PROJECT IN THE FEDERAL REPUBLIC OF NIGERIA

INTERNAL

JOB DESCRIPTION

DP/NIR/75/059/11-02/D/31.3.E

Post title Expert in Industrial Information Training

Duration Three months

Date required As soon as possible

Duty station Lagos, with travel within the country

Purpose of project To set up an Industrial Information Centre at the Federal Institute of Industrial Research (FIIRO), Oshodi, Lagos. The services of an expert in industrial information training are required to develop a training programme and establish a training unit at FIIRO.

Duties

The expert will be attached to FIIRO and will work under the supervision of the senior industrial information expert, who is responsible for the co-ordination of activities of the project, in particular the work of the short term experts. The expert will specifically be expected to:

1. Prepare detailed course material for a training course in industrial information planned to have a duration of two months.
2. Organize and run the above mentioned course with the assistance of two research officers to be recruited by FIIRO.

The expert will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

..../..

Applications and communications regarding this Job Description should be sent to:

Project Personnel Recruitment Section, Industrial Operations Division
UNIDO, VIENNA INTERNATIONAL CENTRE, P.O. Box 300, Vienna, Austria

Qualifications: University degree or equivalent in engineering or information science with a wide experience in the establishment and operations of industrial information services in developing countries.

Background Information: The Federal Institute of Industrial Research (FIIRO), Oshodi, Lagos, shall be responsible for the project. FIIRO is a research institute of the National Science and Technology Development Agency of the Federal Government.

The FIIRO has five divisions, the Industrial Analysis Division, Food Science and Technology Division, Engineering Division and Administrative Division. It has a total staff of about 250, one-fifth of which are in the professional status. Facilities are available for research in the areas of Food Science and Technology, Industrial Chemistry, Industrial Economics, Marketing and Business Management.

A major factor in the development of industrial information services in Nigeria is the shortage of trained manpower. There are at present training facilities for Library Science in Universities. The training is intended for public and academic librarians mainly and to some extent to special librarians. There is no facility for training specialists in industrial information. Most of the students are deputed by their institutions and after training go back to their institutions. The number of trained persons available in the open market is therefore limited. It is therefore urgent for the Industrial Information Centre to develop a training programme and set up a Training Unit. The professional manpower in the field of industrial information required during the next ten years will be about 50 for the Industrial Information Centre and another 20 for its sub-centres. For manning the Information Units of the industries, about 200 trained persons will be required.

NO CANDIDATES REQUIRED AT THIS TIME

ANNEX 2

Post: DP/NIR/75/069/11-02/D
March 13, 1981.

P. Lazar
Expert in Industrial Information
Training
FIIRO,
Lagos.

Work Plan

For March - May 1981

Based upon the preliminary arrangements of the project manager - a training course in industrial information will be prepared and organised. The course is intended to train high ranking specialists, and a selected number of information specialists and librarians, from industrial establishments, research and development organisations, and Universities in the aims, sources, methods and services of industrial information.

The number of participants will be 30 persons.

The course will be conducted in the Federal Institute of Industrial Research, Oshodi in the first weeks of May.

The preliminary breakdown of the contents of the course is shown in Annex 1, Annex 2 lists those institutions the co-operation of which is being sought in the preparation and delivery of lectures and organising visits.

Time Schedule

1. Sending out invitations, briefing invited speakers 31st March.
2. Editing the contributions of invited speakers 15th April.
3. Detailed programme of the course, distribution of the programme, 30th April.
4. Printing and distribution of the papers - 30th April.
5. Detailed planning of Area 2 and Area 3 (organisation of Industrial Information, Industrial Systems), breakdown of the subjects, selecting speakers, bibliographies - 31st March.
6. Preparing, editing and printing the texts under 5. 30 April.
7. Preparation of visits of the attendants of the course to relevant institutions - 15th April.
8. Design a form for getting feedback on the course from the participants - 30th April.
9. Inauguration of the course - about 1 May.

.../2

10. Running the course - about 1-15th May.

11. Evaluation of the course - 15th May.

12 Preparation of the final report, recommendations - 16th May

2 Annexes

cc:

1. Director, FIIRO
2. Resident Represent. of UNDP, Lagos.
3. Junior Proj. Officer, UNDP, UNIDO, Lagos.
4. Mr. Parthasarathy, Project Manager.
5. Mr. Soede, UNIDO, Vibima.

FEDERAL INSTITUTE OF INDUSTRIAL RESEARCH, OSHODI
(Federal Ministry of Science and Technology)
P. M. B. 21023, IKEJA LAGOS NIGERIA.

SHORT TRAINING COURSE IN INDUSTRIAL INFORMATION

Venue: Federal Institute of Industrial Research, Oshodi.

Duration: 11 - 22 May 1981
(Tentative date)

Courses of Lectures

Area 1: INDUSTRIAL POLICY, PLANNING & PROGRAMMES

1.1 Industrial Policy

1.2 Fourth Development Plan

1.3 Industrial Regulations

1.4 Industrial Financing

1.5 Investment Information

1.6 Procedures for Setting up Small Scale Industries: Documentation.

1.7 Organising Infra-structures for Small Scale Industries.

1.8 Small Scale Industries Development: Problems and Prospects.

1.9 Feasibility Study

1.10 FIIRO in the Service of Industry

1.11 Industrial Liaison

1.12 UNDP Country Programme

1.13. Management Information Systems

1.14. Indigenisation of Industries.

1.15 Joint Ventures.

Area 2: ORGANISATION OF INDUSTRIAL INFORMATION (10 Lectures)

2.1 Sources of Information

R & D, Techno-Economic, Marketing & Management

2.2 Information Tools

2.3 Information Services

.../2.

Area 3: INTERNATIONAL SYSTEMS

3.1 International Industrial Information Services

3.2 Global Information Networks

In addition, there will bevisits to relevant Institutions.

Number of Participants: 30

INSTITUTIONS

Invited to provide lectures and lecturers

UNDP, Lagos
Federal Ministry of Industry
" " " Planning
" " " Trade
Federal chamber of Commerce
Nigerian Industrial Development Bank
Nigerian Investment Centre
Centre for Management Development
Nigerian Society of Engineers
University of Lagos, Department of Computer Science
University of Ife
Nigerian Institute of Social and Economic Research
Manufacturers' Associations
UNIDO Project Team, Oshogbo (Industrial Development Centre)
Federal Institute of Industrial Research, Oshodi.

ANNEX 3

Note for the file

Subject: Briefing of Mr. P. Lazar, Post DP/NIR/75/069/11-02/D.

Mr. P. Lazar, Industrial Information Training Expert, was briefed on 3 March 1981 prior to his 3 month assignment to the Federal Institute of Industrial Research under project DP/NIR/75/069.

The terms of reference of Mr. Lazar's assignment were thoroughly discussed. Particular emphasis was placed on the following points:

i) Close consultations and co-operation shall be ensured with the project co-ordinator, Mr. Parthasarathy, who is at present carrying out the second part of his mission until August 1981. Also co-operation shall be ensured with the expert in computer programming, who is scheduled to start his 3 month assignment shortly;

ii) Mr. Lazar will send us within 2 weeks a detailed work plan of his activities after consultation with the project co-ordinator and the Nigerian officials concerned;

iii) The question of the possible extension of his assignment should be discussed with the project co-ordinator, the Resident Representative and the Nigerian officials concerned as soon as possible after the work plan has been agreed upon, in order to perform the relevant project budget revision in due time;

iv) Also the question of a possible Phase II of the project, as was already discussed with the project co-ordinator during his briefing last month, should be discussed with the Resident Representative and the Nigerian officials concerned in due time. In this connexion, emphasis was placed on the advisibility of including in Phase II of the project, if approved, a strong component of information extension services.

P. Ghelardoni
5 March 1981

cc: Mr. Soede
Briefing Office
Mr. R. Milley, Resident Representative a.i.
Mr. S. Parthasarathy
Mr. P. Lazar

cc: Mr. Parthasarathy, c/o UNDP

UNIDO

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

VIENNA INTERNATIONAL CENTRE
P.O. BOX 300, A-1400 VIENNA, AUSTRIA
TELEPHONE: 26 310 TELEGRAPHIC ADDRESS: UNIDO VIENNA TELEX: 135612

REFERENCE:

25 March 1981

Dear Mr. Lazár,

Thank you for your kind letter of 13 March 1981 enclosing the work plan for the period March - May 1981 which was prepared after consultation with the Project Co-ordinator, Mr. Parthasarathy, and the Director of the Federal Institute of Industrial Research, Mr. Koleoso.

We are pleased to hear that the information received during your briefing in Vienna proved to be "most valuable" when you took up your duties in Lagos.

With regard to the submitted work plan, we fully endorse it. We think it covers all elements of the Training Course. We would appreciate it if the part dealing with liaison with industry (extension services) would be given special attention. As we discussed during your briefing here, we favour particularly this type of activities, which constitutes one of the most efficient instruments in the field of industrial information promotion, especially in a country like Nigeria where R and D institutions are already actively engaged in industrial development.

With best regards.

Yours sincerely,

F.J. Soede
Officer-in-Charge
Institutional Infrastructure Branch
Division of Industrial Operations

Mr. P. Lazár
Expert in Industrial
Information Training
c/o Federal Institute of Industrial
Research (FIIRO), Oshodi
P.M.B. 21023, Ikeja Airport
Lagos
Nigeria

ANNEX 5

25 March 1981

International organizations
invited to provide documents and
publications to the Training Course

1. Commission of the European Communities (CEC),
Scientific and Technical Information and Information Management
Directorate, Luxembourg

2. International Centre for Scientific and Technical Information,
Moscow

3. International Federation for Documentation (FID),
The Hague

4. Organization of Economic Co-operation and Development (OECD),
Development Centre, Paris

5. UN Inter-Organization Board (IOB),
Geneva

6. United Nations Environment Programme (UNEP),
Nairobi - Paris

7. United Nations Scientific, Educational and Cultural Organization
(UNESCO), Division of the General Information Programme,
Paris

8. United Nations Industrial Development Organization (UNIDO),
Industrial Information Section,
Vienna

9. All-Union Institute of Scientific and Technical Information (VINITI),
Co-ordinating Centre of the International Information Subsystem on
Published Literature of the International Information System for
Science and Technology of the Socialist Countries,
Moscow

10. World Intellectual Property Organization (WIPO),
Geneva

ANNEX 6

System and Centre for Manpower Development in Industrial Information in Nigeria

Description and recommendations

by

Peter LAZAR
UNIDO Expert

Oshodi, Lagos
May 1981

Contents

1. Introduction

For developing countries information manpower development is the crucial point of the development of industrial information.

In order to be effective, manpower development should cover three basic human elements of industrial information:

(a) the users needing information;

(b) information personnel collecting, handling and providing information;

(c) information officers fulfilling extension and liaison functions by transfering information from information centres and special libraries to the users.

These main target groups and the basic elements of the system of manpower development for industrial information are described in the Annex "The system of manpower development for industrial information".

The description of the Centre for Manpower Development for Industrial Information, the core element of the system, and the main recommendations are contained in Chapters 2 and 3 respectively.

2. Centre for Manpower Development for Industrial Information

2.1 The need for a Centre

Owing to the complexity of industrial development and industrial information, manpower development in the field of industrial information needs a systematic approach (see Annex).

If the system should be effective and provide results as early as possible, it will be necessarily a complex system with a multitude of interlinked elements which have to co-operate according to a well outlayed pattern, planning, and efficient co-ordination and management.

In order to establish, manage and develop the system a Centre for Manpower Development for Industrial Information needs to be established. Its main functions will be:

(a) System design;

(b) Short-term and long-term planning;

(c) Co-ordination and management;

(d) Education and training.

The Centre should be established as early as possible, with limited but highly qualified staff, and should be extended and developed gradually.

A Board consisting of representatives of the main groups of system elements should also be established which will have to guide the Centre in its operations.

2.2 Main functions of the Centre

2.2.1 System design

The main features and components of the system as set out in the Annex may serve as the basis for the detailed design of the system.

The importance of system design, especially its completeness, that is its covering all important present and future elements of the system cannot be overemphasized. Such elements include, in one way or the other, practically all institutions engaged in or related to industrial policy, industrial development and industrial production such as:

industrial firms,
government agencies and offices,
R and D institutes,
development banks,
universities,
profesional organizations of engineers,
professional organizations of manufacturers and other specialists etc.

System design should clarify and define the aims, tasks and responsibilities of these groups of elements within the system and should indicate the ways and means how these groups interlink and co-operate in order the achieve the expected results from the system.

The design should be prepared by the Centre which has to co-operate with the representatives of the groups of elements of the system in order to provide a solid basis for systems design.

2.2.2 Short-term and long-term planning

Along the broad lines of the design of the system the Centre should immediately start short-term planning of the establishment and operations of the systems. Staff limitation and other constraints will not have to deter the Centre from starting manpower development through on a modest scale, but according to a pattern and short-term plans conform to the system design.

A limited number of well planned and effective actions, duly prepared and carefully organized education and training facilities will help to affirm the authority of the Centre and the system, and may trigger a development of the system according to the "multiplier effect".

Strategic planning for longer periods will be needed for the systematic development of the Centre and the system conform to the systems design. Medium-term planning for a period of 4 - 5 years should form part of the national planning exercise. It should take into account economic, industrial and information policy goals of Goverment.

2.2.3 Co-ordination and management

The multipilicity of the system elements and their different character, organizational set-up and working methods demand effective co-ordination of their activities.

Co-ordination and management of the system should be mainly based upon voluntary co-operation of the system elements. It would be, nevertheless, necessary to invest the Centre with administrative co-ordinative powers, at least concerning national planning and registration of the activities of the system. The Board is expected to support with special emphasis the co-ordinating and managing activities of the Centre.

Inventories of planned and impoemented education and training

facilities, courses, conferences, meetings, fellowships, study trips etc. will help the Centre in fulfilling its co-ordinative and management functions. Such national inventories as well as inventories of teaching staff and trainees should be established and maintained by the Centre.

2.2.4 Education and training

The Centre should immediately begin to organize training facilities as specified in the system design, assuming the co-operation of system elements and using the facilities at its disposal.

Some training activities, especially those concerning development of industrial extension manpower, should receive high priority from the beginning.

For the development of the training activities the Centre will need suitable premises, including a hostel for at least 50 students and 10 teaching staff. This will enable the Centre to run long-term courses (1 - 2 years) and short courses, seminars, workshops in parallel.

For demonstration and training purposes the Centre should be equipped with:

(a) minicomputer facilities which should be linked to the Computer Centre of the University of Lagos;

(b) most up-to-date reprographic facilities;

(c) modern audio-visual equipment.

Provision should be made to accomodate these facilities in the new building which would serve the Centre.

The education and training functions of the centre could transbord national limits by inviting highly qualified teaching staff and information specialists from abroad to join the Centre for a short period or a longer term. The Centre could also be developed into a Regional Training Centre in Industrial Information by accomodating trainees from various countries of Africa and contributing thus to the industrial development of the Region.

2.3 Location of the Centre

The Centre should be set up in the frame of the Federal Institute of Industrial Research, Oshodi, Lagos.

FIIRO has a national vocation in industrial research and development which implies by itself a national vocation in industrial information as well. In addition, an ongoing UNIDO project on industrial information development is already being implemented since 1975. As a part of the project, a training course in industrial information has already been prepared and organized in May 1981 the elements of which can be further developed for inclusion into the training materials to be worked out for the system.

The links of FIIRO with the academic community and various professional organizations will be important assets when setting up the Centre with the funtions defined above.

3. Recommendations

3.1 Manpower development in industrial information should be planned in the development plan of Nigeria and the UNDP country programme with the aim to support industrial development of the country.

3.2 A system of manpower development in industrial information should be designed.

3.3 The funds needed for the establishment and operations of the system should be provided by Government and UNIDO. Because of the general approach of the system and its importance to and expected impact on scientific and technological development, the UN Interim Fund for Science and Technology for Development (IF/STD), Unesco, and also WIPO, could be expected to join efforts with UNIDO to cover parts of the costs involved in developing and operating the system.

3.4 A Centre for Manpower Development in Industrial Information should be established at the Federal Institute of Industrial Research with the following functions:

(a) Design of the system;

(b) Planning, short-term and long-term;

(c) Co-ordination and management;

(d) Education and training.

3.5 The Centre and the system should be built up gradually, according to well defined systems design and planning.

3.6 For the first two years the following provision should be made for the Centre:

(a) Staff: One officer-in-charge;
Five qualified professionals (engineers, information specialists, a computer specialist);
Administrative and supporting staff.

(b) Premises: Conference room for 30 - 35 persons;
Office space;
Library and information centre on manpower development in industrial information;
Mini-computer facilities, to be linked to the Computer Centre of the University of Lagos.
Reprographic shop and audio-visual centre

(c) Library: Subscription to about 200 professional journals and periodicals dealing with information work acquisition of text-books, handbooks, scripts, research reports, training programmes and schedules, teaching aids etc.

(d) Minicomputer: input - output peripheries, terminals.

(e) Reprography: Modern copying, photocopying, printing equipment. Facilities for preparing and using various microforms (microfilms, microfiche, microcard, strips, jackets, etc).

(f) Audio-Visual: equipment and aids

3.7 Planning and design of a building for the Centre should be started very soon. The building should accomodate the offices, the library, the supporting equipment facilities (computer, reprography, audio-visual equipment), classrooms

and conference rooms, premises for demonstration and exhibitions, a hostel for 60 persons.

Annex

The system of manpower development for industrial information

1. Why manpower development for industrial information?

To develop understanding and receptivity for an awareness of information among the actual and potential users of information, on the one hand, and to develop proper manpower for information system design and management and information handling, on the other, is important for every country aiming at developing and using information services. For developing countries and, especially, for those where information infrastructures have not yet been adequately built up, information manpower development is the crucial point of information development. Within this broad field of information development, the development of industrial information is the field where manpower development has to be assigned first priority. This is justified because of two main reasons:

(a) Information needed by industry is an extremely complex notion, which includes, besides traditional scientific and technical information, various sorts of economic, marketing, legal, social, political etc. information;

(b) Consequently, the information to be provided by industrial information services must be complex, reaching from fundamental sciences through applied sciences and technology to social sciences, on the one hand, and it must be offered in a form readily acceptable and usable for the users, especially those in small-scale and medium scale industries. Such ready-made information is analysed, evaluated, assessed and, usually, repackaged information.

To eliminate the lack of adequate R&D infrastructure and the lack of adequate information infrastracture takes a long time, wh whereas the objective need for industrial information exists (even if the subjective demand of information is non-existent or rather week). Information manpower development will help not only satisfying existing industrial information requirements, but will, in addition,

stimulate subjective information demand adequate to the objective information needs and contribute thus to the strengthening of the information and the R&D infrastructures.

The mechanisms of industrial information services include three basic human elements:

(a) the end-users who need information for various purposes;

(b) the personnel of information resources: information specialists in institutions (information centres, university libraries, special libraries, R and D institutes, government offices etc.) holding the information sources and making them available to users;

(c) intermediaries who transfer information from the resource centres directly to the end-users: information officers attached either to information resource centres or to advisory and consultancy services or similar public or private institutions.

2. The main target groups and the system of manpower development

2.1 End-users

The target population of end-users is already existing and potentially expecting to benefit from information services and information, with the ultimate aim of transforming the knowledge and experience imbedded in information into action.

(a) This is obvious both for actual entrepreneurs and staff of industrial firms and for prospective end-users such as students of engineering and technological faculties of universities, on the one hand, and would-be enterpreneurs intending to engage themselves in industrial operations, on the other.

(b) In addition to these sub-groups, manpower development plans have to take into consideration high-level policy-makers and decision-makers in Government and these in important national bodies like research councils, R and D institutions, public utilities etc. who objectively need to understand the awareness of information, the complexity of industrial information, and its utility for industrial development of the .

country.

2.2 Information specialists

The target population of information specialists has to be extended and strengthened considerably during the next years in order to select from the enormous mass of accumulated knowledge and experience available and accessible in Nigeria and abroad the information needed for industrial development and the transfer of appropriate technologies. This implies the development of education and training facilities for information specialists whose educational background will be partly librarianship and information, partly science, technology, economics etc.

2.3 Information officers (extension workers)

The target population most effective from the point of view of the transfer of information to end-users is the group of the intermediaries who are themselves users of information and professional disseminators of information at the same time. Their educational and professional background presupposes:

(a) University education mainly in engineering or other technology fields, eventually in science or social sciences (especially economics, business administration and management). Complex education in engineering and economics and business administration may provide economic engineers with the most suitable educational background for extension and liaison work;

(b) Long experience in industry, in the technical and economic aspects of industrial production and marketing.

In addition, the information officer should be able to obtain the confidence of his clients and information suppliers, he should show initiative in calling upon industries and offering his services, he should perfectly know the industrial and administrative environment in which his clients are working, he should know enough of research and science as well as of information techniques to be able to formulate and pose requests for knowledge, identifying information sources for relevance and evaluate information in a language comprehensible to his clients.

2.4 Priorities?

It is difficult to assign different priorities to the target groups and subgroups specified above. It is true that information officers may render the most effective services to industry, but only if industry is receptive to information, on one hand, and information specialists in information centres are able to provide a sound basis for the operation of information officers. Both conditions involve the intellectual, moral and material support of high-level policy-makers and decision-makers. Education and training of university students is an investment which will bear its fruits after some years.

2.5 The system of manpower development

Because of the complexity of the problems involved and the interrelations of the specified target groups, manpower development for industrial information has to be considered a complex system of interlinked elements. The system needs, like any other complex systems, careful system design, long-term and short-term planning, effective operational management, and evaluation and control.

An institutional set-up has to be provided, in addition to the organizational frameworks needed for the planning and management of individual elements of the system, for:

(a) the detailed design of the system covering
the description of its elements,
their interrelations, interactions and responsibilities,
ways and means of directing and managing the system and co-ordinating the activities of its elements,
dimensioning the system,
financial and manpower implications,
equipment, premises, communication and transportation facilities;

(b) co-ordination and management;

(c) short-term and long-term planning and preparation and co-ordination of work plans.

3. Basic elements of the system

3.1 Education and training of end-users of information

The heterogeneous population of end-users can be subdivided into two main groups:

(a) Present actual and potential end-users:

Industrialists, entrepreneurs, managers, engineering and other technical staff of industrial undertakings and R and D institutions, economists and other professionals, government officials etc. in need for industrial information for problem-solving and decision-making;

(b) Prospective end-users:

Students of universities and other institutions of higher education.

Both groups have to be subdivided into sub-groups according to subject speciality (field of technology, specific activities).

3.1.1 Present end-users

(a) Target population:

Problem-solvers and decision-makers in industry or industrialization, including managers, R and D staff, economists, government officials etc.

(b) Objectives:

to raise the level of information awareness and receptivity;

to promote the conversion of latent information needs into manifest demand;

to improve the information use capabilities.

(c) Functions:

to accelerate industrial development, technology transfer and innovations;

to increase productivity and efficiency;

to support problem-solving and decision-making on all levels.

(d) Basic contents:

Information as a management tool, as an ingredient to problem-solving and decision-making in industrial development;

Management information systems (MIS) and industrial

information;

Analysis of the technology transfer process and the innovation process and their information requirements;

Main sources of industrial information (patents, licenses, standards, trade catalogues, conference papers, journals, advertisements, technical and business data, statistics etc.);

Main information resources (information and referral centres, R and D organizations, development banks etc.) in Nigeria and abroad;

Industrial extension and liaison services, advisory and consultancy services;

Formulation of questions and queries, interpretation of information received;

Capabilities of modern information technology (application of computer technology and reprography to information work);

Case studies in the application of information and extension services.

(e) Methods:

Short training courses and seminars

with limited attendance and special emphasis to well defined subgroups of users selected on a subject-approach basis (for instance fields of food processing, electrical engineering etc.) or a mission-approach basis (for instance entrepreneurs, design engineers, investment specialists), or a combination of both;

Conferences, meetings

on specific topics with well selected audiences;

Special contributions

to scientific and technical meetings in universities, learned and professional societies:

lectures on industrial information pertaining to the main programme of the meeting, exhibition of information sources and facilities etc.

(f) Organizational set-up

There are three types of institutions which may serve as centres for such type of manpower development:

The Federal Institute of Industrial Research (FIIRO), Oshodi, Lagos;

other R and D institutions;

Universities, especially university libraries with the support and the co-operation of the faculties and departments involved.

3.1.2 Prospective end-users

(a) Target Population:

Students of universities and other institutions of higher education studying any branch of technology, engineering, economics, sociology etc. potentially relevant to industrial development.

(b) Objectives:

to train in and accustom to the use of industrial information;

to promote the conversion of latent information needs into manifest information demand;

(c) Functions:

to provide knowledge and experience of retrieving, processing and using information for problem-solving during the university studies;

to make better use of the existing information facilities in the country and to urge continuous development of these facilities.

(d) Basic contents

(to be differentiated according to faculties and/or departments):

The information cycle and the role of information in R and D (generation-processing-adaptation-generation);

The role of information in industrial development;

Industrial information and scientific and technical information;

Analysis of the process of technological innovation and its information requirements;

Sources of industrial information;

Information analysis and processing (abstracting and indexing, evaluation and assessment, repackaging);

Handling of numerical data (technical, economic, statistical);

Information retrieval, formulation of questions and queries, retrieval languages;

Information resources and services (indigenous and foreign);

Modern information technology, especially the application of computer technology and reprography to information work.

(e) Methods:

Lecture courses;

Practical work:

in the university library on abstracting, indexing and information retrieval,

in the faculty on evaluation and assessing of information;

in an industrial firm or R and D institute on retrieving, evaluating, assessing and repackaging informati n.

(f) Organizational set-up

University libraries and departments of library studies are ideal centres for the basic training of students in information, provided they are ready to teach elements and practice of industrial information. The co-operation and support of the faculties and departments involved, on the one hand, and of industries and R and D organizations located in the environment and maintaining links with the university, on the other, is a conditio sine qua non of such training. Universities may also provide additional training facilities in foreign languages the knowledge of which extends the individual's scope in retrieving and using information available in languages other than English (for instance German, French, Russian etc.).

3.2 Education and training of information personnel

(a) Target population:

Information specialists and special librarians in

industrial firms, R and D organizations, government offices etc.

(b) Objectives:

to improve the information service capacities for the benefit of the end-users, especially the staff of the mother organizations;

(c) Functions:

to explain and clarify the specificities of industrial information;

to develop and strengthen the abilities to handle and promote national and international co-operation of industrial information services.

to promote national and international co-operation of industrial information services.

(d) Basic contents

(in addition to the traditional courses on library and information science):

The role of information in industrial development;

Industrial information and scientific and technical information;

Management information systems (MIS) and industrial information;

Users of industrial information, analysis of their needs and habits, user studies;

Sources and resources of industrial information (types of documents and institutions);

Processing industrial information (abstracting, indexing, evaluation and assessment, repackaging), both textual and numerical;

Formulation and interpretation of user queries, formulation of user profiles;

Information retrieval, methods, techniques tools, retrieval languages;

Industrial extension and liaison services, organization and methods;

and methods.

Design and management of industrial information systems;

Feedback of users. Evaluation of information services;

Information and referral centres and other information resources in Nigeria and abroad;

Modern information technology, especially the application of computer technology and reprography to information work.

(e) Methods:

University courses

for students in library and information science, with special emphasis on industrial information;

Long training courses (1-2 years)

for special librarians and information specialists (mainly junior staff), organized in a well selected centre;

Short training courses (1-3 months)

for special librarians and information specialists (mainly senior staff) for continuous education and on special subjects, organized in a few selected centres;

Short training courses, seminars, work-shops (1-3 weeks)

on selected topics, organized locally in various places based upon pilot courses which may be repeated under local contions;

Fellowships, scholarships, study tours

sponsored by national and foreign agencies and international organizations;

Conferences, meetings

on selected subjects.

(f) Organizational set-up

University departments of library studies may take care of the university teaching of industrial information and

co-operate in the planning and organizing of long and short training courses, seminars, workshops, provided they acquired the necessary expertize in industrial information. Universities can also help substantially in teaching major foreign languages the knowledge of which is highly important for information personnel.

FIIRO may organize and host long training courses and pilot short courses, with the co-operation of both university departments and other R&D institutes.

Short courses, seminars and workshops may be organized by FIIRO, by universities, by other R&D institutes, by industrial undertakings, professional organizations etc.

Professional organizations of librarians and information specialists should be involved in the planning and organization of this type of training.

3.3 Education and training of information officers (extension workers)

(a) Target population:

Highly qualified and experienced engineers, technologists, economists and other subject specialists acting as intermediaries between end-users and information resources (information centres, special libraries etc.). They may be on the staff of information centres providing industrial extension services, or they may be independent consultants or advisers, or staff members of institutions providing advisory and consultancy services (R and D organizations, university departments, consultancy firms, consulting engineers etc.).

(b) Objectives:

to promote the establishment and development of industries by advising entrepreneurs and industrial firms through direct liaison;

to promote the implementation of the industrial Policy of government.

(c) Functions:

to explain and clarify the mechanisms of establishing confidence and other interactions with end-users;

to stimulate and mobilize information centres and other information resources in the country to improve industrial information service capacities;

to influence problem-solving and decision-making of end-users in support of the industrial policy of government.

(d) Basic contents:

The economic and social role of industrial information;

Government information policy;

Economic and industrial structure of Nigeria;

Information as a management tool;

Technology transfer and information transfer;

Management information systems (MIS) and industrial information;

Analysis of user needs, demand and habits, user studies;

Interpreting, establishing, improving user queries and user profiles;

Sources of industrial information (types of documents), indigenous and foreign;

Information resources, services, systems, networks, indigenous and foreign;

Information analysis, abstracting and indexing, evaluation and assessment of information;

Repackaging and presentation of industrial information;

Psychology of oral and written communication;

Audio-visual methods and means of communication;

Users feedback and evaluation of information services;

Economic value of industrial information;

The role and tasks of industrial extension services and information officers;

Case studies in industrial estension services.

(e) Methods:

Highly qualified and experienced staff will hardly be available for long training course. With high level professional knowledge, there will be no need for long courses in the specific information aspects of extension work.

Short Training courses (2-6 weeks);

Seminars, workshops;

Conferences, meetings;

Fellowships, scholarships, study tours.

(f) Organizational set-up

Training courses may be centralized in FIIRO and a few selected other R&D organizations. Seminars, workshops, conferences, meetings may be organized centrally or locally, according to the needs and circumstances. Fellowships, scholarships, study tours may be organized according to the prevailing pattern, underlining the importance of visiting and studying the very well developed industrial extension services both in developed countries (Canada, Denmark etc.) and in developing countries (India, Mexico, Philippines etc.).

ANNEX 7

FEDERAL INSTITUTE OF INDUSTRIAL RESEARCH, OSHODI

SHORT TRAININGS COURSE IN INDUSTRIAL INFORMATION

4 - 15 MAY 1981

P R O G R A M M E

4th May 1981

10.00 - 12.00	INAUGURATION AND TOUR OF FIIRO
13.00 - 15.00	E. C. Ayo Federal Ministry of National Planning. THE 4TH NATIONAL DEVELOPMENT PLAN

5th May 1981

9.00 - 10.30	Federal Ministry of Industries. INDUSTRIAL POLICY
10.30 - 12.00	Federal Ministry of Industries. INDUSTRIAL REGULATION
13.00 - 15.00	Federal Ministry of Industries. INVESTMENT INFORMATION

6th May 1981

9.00 - 10.30	R. O. Sodipe Head Information and Documentation Division FIIRO. INDUSTRIAL INFORMATION SERVICES
10.30 - 12.00	Dr. U. O. Eleazu, Executive Director, Manufacturers' Association of Nigeria. INDIGENISATION OF INDUSTRY
13.00 - 14.30	Dr. A. Abdulai, Abdulai, Taiwo & Co.; Solicitors. JOINT VENTURES
14.30 - 16.00	GENERAL DISCUSSION

7th May 1981

9.00 - 12.00	Dr. F. Agbalajobi, Head, Department of Computer Science, University of Lagos. APPLICATION OF COMPUTER TECHNIQUES TO INDUSTRIAL POLICY, PLANNING AND INFORMATION (LECTURE AT THE UNIVERSITY OF LAGOS) VISIT TO THE COMPUTER CENTRE AT THE UNIVERSITY.
14.00 - 16.00	E. M. Krishna, Senior Research Officer, FIIRO. RESEARCH AND INDUSTRIAL DEVELOPMENT

8th May 1981

9.00 - 10.30	Engr. J. O. Osibamowo, Managing Director, Engineering Ltd. THE ROLE OF THE ENGINEERING PROFESSION IN THE GENERATION, STORAGE, RETRIEVAL AND UTILISATION OF TECHNOLOGICAL INFORMATION.
10.30 - 12.00	A. B. Ladipo, Senior Research Officer, RIIRO. INDUSTRIAL LIAISON AND EXTENSION WORK
13.00 - 16.00	R. O. Sodipe, Head, Information and Documentation Division, FIIRO. INDUSTRIAL INFORMATION SOURCES

11th May 1981

9.00 - 10.30	Professor P. Wasserman, College of Library and Information Services, University of Maryland, U.S.A. BUSINESS AND ECONOMIC INFORMATION
10.30 - 12.00	Alhaji A. Abdulkabir, Managing Director, Nigerian Industrial Development Bank. INDUSTRIAL PROMOTION
13.00 - 14.30	M. A. Oluyomi, Senior Consultant, NISER, AND B. U. N. Igwe Head, Business and Industrial Consultancy Division, Nigerian Institute of Social and Economic Research (NISER). FEASIBILITY STUDIES IN THE CONTEXT OF PROJECT DEVELOPMENT
14.30 - 16.00	Dr. U. Udo-Aka, Director General, Centre for Management Development. MANAGEMENT INFORMATION SYSTEMS

12th May 1981

9.00 - 10.30	A. O. Oyenuga, Director, Small-Scale Industries Division, Federal Ministry of Industries. PROCEDURES FOR SETTING UP SMALL-SCALE INDUSTRIES

12th May 1981 (Cont'd)

10.30 - 12.00	Dr. Edet, Centre for Management Development. THE ACTIVITIES AND OBJECTIVES OF THE NIGERIAN ASSOCIATION OF SMALL SCALE INDUSTRIALISTS
13.00 - 14.30	Professor R. O. Ekundare, Head, Department of Economics, UNIFE Director, Industrial Research Unit, University of Ife. DEVELOPMENT OF SMALL-SCALE INDUSTRIES: PROBLEMS AND PROSPECTS
14.30 - 16.00	O. A. Kayode, Director, Industrial Development Centre, (Federal Ministry of Industries), Oshogbo. ORGANISING INFRASTRUCTURES FOR SMALL-SCALE INDUSTRIES

13th May 1981

9.00 - 10.30	Dr. P. Lazar, Consultant, United Nations Industrial Development Organization (UNIDO). INTERNATIONAL INFORMATION SYSTEMS
10.30 - 12.00	S. B. Aje, Director, National Library of Nigeria. THE GENERAL INFORMATION PROGRAMME OF UNESCO.
13.00 - 14.30	T. O. Odeinde(Mrs.) Librarian, University of Ibadan. UNIVERSITY LIBRARIES - FACILITIES AND SERVICES FOR INDUSTRIES.

13th May 1981 (Cont'd)

14.30 - 16.00	S. M. Lawani, Librarian, International Institute for Tropical Agriculture. INFORMATION SERVICES FOR AGRICULTURE AND AGRO-INDUSTRIES.

14th May 1981

9.00 - 12.00	S. Parthasarathy, Senior Industrial Information Adviser, United Nations Industrial Development Organization (UNIDO). UNIDO AND ITS ACTIVITIES IN THE FIELD OF INDUSTRIAL INFORMATION
13.00 - 16.00	GENERAL DISCUSSION

15th May 1981

9.00 - 10.00	Visit to FIIRO Information and Documentation Division, Demonstration of the Keydex System and other Information Services.
10.00 - 12.00	GENERAL DISCUSSION. EVALUATION OF THE COURSE
14.00 - 15.00	CLOSING SESSION.

Federal Institute of Industrial Research,
Oshodi, Lagos.

Short training course in industrial information, 4 - 15 May 1981.

P. LAZAR, UNIDO Expert

International information systems

Contents

1. [illegible]

The subject of this Lecture is much too broad to be covered during a short presentation. Time limit and other aspects tend to [illegible] more closely the scope of the paper.

Information systems, usually commercial undertakings, which either claim to be [illegible] or parts of international distribution [illegible]. There are information systems like the Chemical Abstracts Service (USA), INSPEC (UK) or LEIS (USA). Some of these systems and services will be mentioned in the paper in [illegible].

The [illegible] is proud by the number of international [illegible] which are the product of [illegible] organizations, be they inter-governmental (regional or regional) or non-governmental. The [illegible] only provide a very selective picture of the activities [illegible] information systems and [illegible] are also [illegible] involved in information [illegible]. The [illegible] will be limited mainly to the information activities of the United Nations Organization, the UN agencies. Besides mentioning other intergovernmental organizations and their main [illegible] in information development, a short passage on [illegible] non-governmental organizations (NGOs) engaged in information development will close the paper [4].*

2. [illegible]

It is obvious that the process of social and economic, scientific and [illegible] development needs continuous input of various kinds of information. Investment in development is also dependent upon [illegible]. The aspect of information [illegible] as the control of the development process provides the basis for the activities of the UN in information development.

It is [illegible] that scientific and technological knowledge, [illegible] and [illegible] components and the sources of scientific and [illegible] knowledge and experience are extremely [illegible] in [illegible] countries. Most of the expenditure and [illegible] in research and development are concentrated in [illegible] countries [illegible] developing countries [illegible] [illegible] of scientific and technological [illegible] and manpower [1].

According to [illegible] of the Statistical Office of Statistics, the [illegible] R&D [illegible] are [illegible] among advanced and [illegible] [illegible] [illegible] [illegible] [illegible] imbalance in favour of the [illegible]. The [illegible] are data and estimates from [illegible] [3].

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*See [illegible]

		Advanced Countries	Developing Countries	World total
(a)	Number of R&D scientists and engineers.	[illegible]	[illegible]	3 million
(b)	Number of scientists and engineers for each million of population	2,600	98	
(c)	Global R&D expenditure	97,4%	2,6%	102 million US$
(d)	Average percentage of Gross National Product devoted to R&D	[illegible]	0,33	
(e)	Average R&D expenditure per R&D scientists or engineers, in 1,000 US$.	35,4%	1[illegible],5%	

One of the means to improve this situation is to provide access to developing countries to the achievements of science and technology and to information about such achievements.

"For developing countries to attempt, as an alternative, to generate all the scientific and technological knowledge required for their development without making full use of the relevant knowledge already available, through the work of scientists and technologists all over the world, would not only be a task of extreme difficulty but would also be wasteful and unreasonable. It would not only extend beyond acceptable limits the time-frame in which these countries could hope to achieve their development goals but also, if adopted universally, it would retard technological progress in all countries, including the most advanced".

This statement appraising, among others, the paramount importance of information was made by the United Nations Conference on Science and Technology for Development (UNCSTD) held in Vienna from 20 to 31 August 1979 [4].

It took more than one and a half decades to arrive at this general appreciation of the role of information in development.

2.1 The UN Conference of 1963

The role of the family of the organizations of the United Nations in the development of science and technology for the benefit of the developing countries became manifest on a very broad scale at the UN Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas, held in Geneva in 1963 (5).

This intergovernment Conference discussed in depth the problems of the transfer of technology from developed to developing countries. One of the main areas of the Conference was devoted to scientific and technical information where contributions from information specialists from various countries and from some international organizations have been presented and discussed.

The increasing involvement of the UN in information

During the years following this conference the UN commitment to the development of information programmes, systems and services increased very rapidly. The UN organizations became aware of the fact that in order to provide information for their own activities, on the one hand, and to assist developing countries in the access to information available throughout the world, on the other, they have to engage themselves in scientific, technical, social science and other fields of information.

During these 16 years from 1963 to 1979 many international information systems, networks and services have been set up by UN organizations.

2.3 Unesco

The United Nations Educational, Scientific and Cultural Organization developed, at the initiative of the International Council of Scientific Unions (ICSU), the UNISIST programme intended to develop the world wide exchange and flow of scientific and technical information. This programme was adopted at the UNISIST Intergovernmental Conference in 1971 and adjusted at the Second UNISIST Conference in 1979 which discussed especially the role of information in the development process.

By the combination of the UNISIST programme and other elements of the information programme of UNESCO, especially its programme on strengthening the information infrastructure of developing countries, the General Information Programme of UNESCO was born in 1976.

Unesco also developed specialized international information systems in education, social sciences, culture, communication, science policy, hydrology and, last not least, in research in documentation, information and library science (ISORID), the last one in co-operation with the International Federation for Documentation (see chapter 6.1).

Information on ongoing and terminated research is another field in which Unesco has taken the initiative to build up and publish an international inventory of national research information systems and data bases. An international directory was published in 1977, the second revised edition of which is planned to be available by the end of 1981.

A separate lecture will deal in detail with the [illegible] of UNESCO and the UNISIST programme.

2.4 UNIDO

The establishment of the United Nations Industrial Development Organization was one of the main results of the 1965 UN Conference. Since its inception this organization has been very big [illegible] to promote the development of information services to industry and in assisting developing countries to build up their capabilities in industrial information.

Another paper will deal in extenso with the various services and activities of UNIDO including its Industrial Enquiry Service,

the Industrial Technological Information Bank, (INTIB), various publications such as the Industrial Development Abstracts, the Series of UNIDO Guides to Information Sources in various industries, the Development and Transfer of Technology Series on various types of technologies etc.

2.5 INIS

During 1968-1969 the International Atomic Energy Agency (IAEA) in Vienna developed the methodology and the structure of an international information system in the field of the peaceful use of nuclear energy which became operational in 1970 under the name of INIS (International Nuclear Information System).

The system was conceived to obtain regular input from national liaison offices according to strictly standardized methods and procedures. This decentralized input consists of titles and abstracts of national literature (both printed and non-printed) on nuclear energy and its peaceful applications, on the one hand, and of copies or microcopies of non-printed literature, on the other. National input is being channelled regularely to the Central Processing Unit in Vienna where the INIS Headquarters maintain a computer readable data base of all consolidated input (with an annual increament of about 70,000 items) and a file of microcopies of literature difficult to access. An abstract bulletin, both in printed form and on magnetic tapes, provision of copies of the source items at its file, answers to enquiries, referral service on the location of the items processed but not available in Vienna are the services which INIS provides.

The system itself is being continously maintained and developed with the advice of the regular annual meetings of the national liasion officers appointed by Member governments. A subject classification system, a very detailed thesaurus, instructions for cataloguing, authority lists of institutions in the field, guidelines for computer handling of the data form part of the system documentation [6].

The system is an open one, its services are available to anybody. INIS will charge for its services to all users, except the national liasion offices.

INIS relies upon the co-operation of national agencies and may be characterized by decentralized national input and centralized international output and services.

In order to be effective, such a co-operative system has to be designed very carefully, all information handling procedures have to be standardized very strictly and, what is most important, the system standards, instructions and guidelines have to be followed by the national input centres with special care and high accuracy. To facilitate co-operation of national input centres an extensive training programme is organized by INIS, in addition to consultations with national liasion staff locally or in Vienna.

INIS is a remarkable example of a co-operative information system on international scale. It was the first of such ventures. It was highly successful because of the very careful design of the system and its specific subject with rather concentrated institutional structures and information services on the co-operating

countries' level.

Similar design pattern has been followed by other international information systems.

2.6 ILO

The International Labour Organization (ILO) elaborated a system for indexing literature and set up a data base for internal use but which is accessible to other interested users as well. In addition, ILO was one of the first agencies of the UN to apply computer technology for processing, storing and retrieving information. Its Information and Library Branch developed the ISIS system which developed into a complete software package available for other users as well. Unesco has also adapted ISIS for its internal information processing needs.

2.7 FAO

The indexing method of ILO has been applied by the Food and Agricultural Organization (FAO) of the UN since the late sixties with the aim to develop an international information system for agriculture. AGRIS was designed according to a pattern similar to INIS, based upon national input centres and central processing and disseminating of the information processed by indexing and abstracting services and magnetic papers. Because of the much bigger volume of literature concerning agriculture and allied fields, and the fact that the sources of information are obviously widely scattered in all Member States of FAO, the system was designed to have two stages, AGRIS containing information on agriculture in general, whereas the information on agricultural research has been separated and organized in a different, though equally co-operative, system called CARIS.

2.8 WIPO [7]

From the point of view of industrial development the information activities of the World Intellectual Property Organization are of paramount importance. Within the UN family of organizations WIPO is responsible for the problems of patent documentation and information (in addition to copyright problems). The Organization established a Permanent Committee on Patent Information (PCPI) to provide guidance and advice in questions of methodology and organization of patent documentation and information.

Serious attention is paid by WIPO and its Member States to the maintaining and continuously updating the International Patent Classification (IPC) which sub-divides technology into 8 sections, 20 subsections, 118 classes, 617 subclasses and over 54,000 groups. The IPC is an effective search tool for the retrieval of relevant patent documents to establish the novelty and to evaluate the inventive step of patent applications. It also serves as an instrument for the orderly arrangement of patent documents to facilitate the access to the technological information contained in those document The IPC is now applied by over 40 National Patent Offices which, taken together issue about 90% of the patent documents of the world.

Under an agreement between the Austrian Government and WIPO, the International Patent Documentation Centre (INPADOC) was created in 1972 in Vienna. INPADOC stores in a machine readable data bank the most important data elements of each patent document, that is the

[illegible] of the [illegible], its classification symbol, relevant dates, names and addresses.

The data bank of INPADOC receives currently input data of patent documents published by 48 countries. It is growing at a weekly rate of 10,000 patent documents representing more than 90% of the world total. The complete stock of information in the data bank contained over 7 million documents in January 1980.

To replace the burdensome scanning of various patent gazettes published by many countries, INPADOC publishes the weekly INPADOC Patent Gazette on microfiche. It consists of three basic indexes, that is, by number, by classification symbol, and by standardized applicant's name, respectively, each containing references to all patent documents stored in the data bank in the previous week.

WIPO is also organizing, promoting and supporting training courses and seminars on patent documentation and information in its Member States.

2.9 Other UN agencies, Regional Commissions

Other UN agencies have also developed significant activities in the field of information. As examples

(a) the international information system on architecture, urbanism, housing and construction designed under the auspices of the UN Centre for Human Settlements (Habitat),

(b) the International Register of Potentially Toxic Chemicals (IRPTC) and

(c) the Industry and Environment Information Service, both operated by the United Nations Environment Programme (UNEP) [8],

(d) the specialized information services of the World Health Organization,

(e) the information services of the World Bank, an important agent of technological development might be mentioned.

The Regional Commissions of the UN (Economic Commissions for Africa, Asia, Latin-America, Europe) perform important activities in the field of industrial development and information. There is a very strong trend to extend the information activities of the UN Regional Commissions in the future.

2.10 International referral systems of UN Agencies

Whereas information systems provide the users with information or, at least, with main data as to the contents and location of the information sources, referral systems refer the users to institutions or individuals holding the information required.

2.10.1 UNEP - INFOTERRA [9]

The Secretariat of UNEP established INFOTERRA according to a recommendation of the UN Conference On the Human Environment held in Helsinki in 1972 in order to facilitate the exchange of environmental information within and between nations by providing referral information.

INFOTERRA is a decentralized network of environmental information systems operating through:

(a) National Focal Points designated by governments;

(b) Regional Focal Points designated by inter-governmental agreements;

(c) Sectoral Focal Points designated by UNEP and concerned with international aspects of specific environmental topics; and

(d) The INFOTERRA Programme Activity Centre at UNEP Headquarters in Nairobi.

The main functions the Focal Points fulfil can be summarized as follows:

(i) to inventory environmental information sources and register them with the INFOTERRA Programme Activity Centre;

(ii) to provide referral services to users by referring an enquirer to the sources best able to provide the information sought;

(iii) to assist in monitoring and evaluating the effectiveness of the system.

The International Directory of Sources of Environmental Information incorporates the information collected by Focal Points and is available in both printed and machine readable form for consultation by Focal Points and the users.

In order to participate actively in INFOTERRA, countries must develop their own national information systems on environmental topics. Thus, the system promotes also self-reliance in information.

INFOTERRA has been fully operational since 1977. According to 1980 figures 109 member states are participating in the system which is storing over 8,000 sources of environmental information.

2.10.2 UNDP - TCDC/INRES [10]

Based upon resolutions of the UN general Assembly, the United Nations Development Programme (UNDP) designed in 1976 the referral system TCDC/INRES for the purpose of collecting and disseminating information on capacities that are available in developing countries for technical co-operation activities with other developing countries through bilateral and multilateral arrangements.

Capacities on education and training, research and technological development, expert services, consultancy services and information services were registered in the data base which was published in 1977 as the first edition of the Directory of Services. It listed 900 organizations from 67 countries.

The main headings have been changed later by combining consultancy services and expert services into one category and including two more categories, namely equipment producers and suppliers, on the one hand, and scientific and technical information centres and patent organizations, on the other.

Due to special encouragement given to countries that had not registered any available capacities for inclusion in the first edition of the Directory of Services, the TCDC/INRES data base was updated and expanded in 1978. According to the second edition of the Directory of Services the number of registered organizations increased from 900 to 1,400 and the number of participating countries from 67 to 89. The UN Regional Commissions increased their contribution of registered regional capacities from 37 to 50 and the UN Specialized Agencies increased the number of registered sources from 37 to 97.

TCDC/INRES is a referral system providing the basic data furnished by an organization and the services for technical co-operation it offers. Users can obtain detailed information by directly contacting the source organizations.

The system involves the sharing of capacities, skills and experience between developing countries, it supports building collective self-reliance of the developing countries by closing the information gap arising because of the lack of awareness of the capacities developing countries can offer to one another.

The system is operated by UNDP's Special Unit for TCDC which also acts as a clearing house for collected data.

The Resident Representative is the UNDP focal point for TCDC at the country level. Most co-operating governments have established national focal points which channel into the system both data on organizations for registration, and inquiries and answeres.

Plans for the future development of the system call basically for two things:

(a) the further improvement and expansion of TCDC/INRES through appropriate linkages with information systems of other organizations of the UN development system;

(b) the improvement and expansion of the Inquiry System which is, at the present time, semi-automated by manually searching the computer-produced listings of the data base at the Special Unit.

3. Network for the exchange of technological information

The UN general Assembly adopted in 1975 a resolution by which the Secretary General of the UN was requested, in collaboration with the United Nations Conference on Trade and Development (UNCTAD) and UNIDO, to establish an inter-agency task force, which should undertake

a comprehensive analysis with a view to the preparation of a plan for the establishment of a network for the exchange of technological information.

The Inter-Agency Task Force on Information Exchange and the Transfer of Technology tested during its sessions from 1975 to 1979 the concept of a network against the findings of its studies at the national, regional and international levels and concluded that the concept was valied and that the establishment of such a network was feasible.

The progress reports [11] and the final report of the Task Force [12] may be considered as preliminary reports to the UN Conference on Science and Technology for Development, held in 1979, concerning the establishment of a global and international information network (see Chapter 4 of this paper).

As a result of the activities of the Task Force a Directory of United Nations Information Systems and Services was compiled and published by the Inter-Organizational Board for Information Systems (IOB) in 1978 in Geneva. It lists more than 100 information sources such as libraries, documentation services, clearing house and referral centres, inventories and data banks and over 2,500 local information centres in 155 countries, and national organizations contributing information to the various UN systems [13].

The final report of the Task Force considered four principal activities for further work towards the establishment of a network for the exchange of technological information [14]:

(a) Compilation of a computer-based analytical directory of information services in Member States and international organizations;

(b) Development of referral points at the regional commissions and in Member States and their tying into a network with major national and international information services;

(c) Establishment of problem-oriented sub-networks;

(d) Formulation of network protocols for the efficient transfer of information requests and responses using a limited electronic mail facility, to be designed and operated under UN auspices.

4. The United Nations Conference on Science and Technology for Development (UNCSTD), Vienna, 20 - 31 August 1979

4.1

The widening technological gap between the advanced countries and the developing ones, the distorted world balance of scientific and technological capabilities impelled the UN General Assembly in 1975 to decide to hold in 1979 an Intergovernmental Conference on Science and Technology for Development with the main objectives of:

(a) strengthening the technological capcity of developing countries to enable them to apply science and technology to their own development;

(b) adopting effective means for the utilization of scientific and technological potentials in the solution of development problems of regional and global significance, especially for the benefit of developing countries;

(c) providing instruments of co-operation to developing countries in the utilization of science and technology for solving socio-economic problems that could not be solved by individual action, in accordance with national priorities.

In the opinion of the developing countries, expressed at the general debate, the Conference was taking place at a time when the world situation was characterized by acute inequalities. These inequalities were especially reflected in the scientific and technological dependence of developing countries. With the object of reversing this imbalance, they advocated global and fundamental structural changes in the existing distribution of scientific and technological capacities in the world in order to ensure an increased participation by the developing countries in the benefits of new scientific and technological knowledge.

It was observed that the maldistribution of expenditure on research and development was aggravated by the concentration of over 90 per cent of the whole world's research and development effort in the advanced countries, and that only a small fraction of total resources was being devoted to this purpose in the developing countries. The concentration of scientific expertise and technology in a few industrialized countries is one of the basic factors underlying the imbalance in economic and cultural relations in the world. The existing international relationship in the field of science and technology is biased in favour of the developed countries, and therefore there is a need to change the nature of the relationship through new forms of co-operation.

Many of the participants drew attention to the opportunities and potential offered to developing countries through co-operation with each other in the economic, scientific and technological fields. Such co-operation would serve the dual purpose of strengthening the collective self-reliance of developing countries, and so lessening their dependence on industrialized countries, and of making optimum use of complementary human and material resources.

One of the recurring themes in the statements of many delegations concerned the contribution made in the past, and the prospects of a much greater contribution in the future, by the academic community, scholars and learned institutions to the advancement of scientific knowledge and to the application of technological know-how in the service of development. Nor should the efforts and potentialities of non-governmental organizations be underestimated in the common endeavour to promote the development of the developing countries.

Scientific and technological information was one of the main issues of UNCSTD; its prominent role in providing a firm basis for social, economic, scientific and technological development clearly appears from the resolutions and decisions adopted by the conference.

Many speakers stressed that it was a pre-condition of the utilization of scientific and technological knowledge that the

should [illegible] unimpeded access to such knowledge. Many speakers stressed the important questions of information. The representatives of developing countries considered that the existing international flow of information was inadequate for these countries and that the unrestricted exchange of scientific and technological knowledge and experience was an essential element of any strategy for integrated development. They suggested that a centre for the dissemination of information about science and technology should be established under the auspices of the United Nations, supplemented by national and regional networks.

4.2 The Vienna Programme of Action [16]

The conference adopted a programme of Action which is concentrating on three main areas:

(a) Strengthening the science and technology capacities of the developing countries;

(b) Restructuring the existing pattern of international scientific and technological relations;

(c) Strengthening the role of the United Nations System in the field of science and technology and the provision of increased financial resources.

The Programme of Action sets forth the requirements for specific action at the national, subregional, regional, interregional and international levels, inter-alia, on the following:

(a) Creation and/or strengthening of the policy-making capacity of developing countries in scientific and technological matters;

(b) Promotion of the self-reliant efforts of the developing countries to strengthen their scientific and technological capacity;

(c) Strengthening of the scientific and technological capacity of developing countries, inter-alia through external support and assistance, to generate scientific and technological knowledge in those countries and to enable them to apply science and technology to their own development;

(d) Restructuring of existing international co-operation so as to promote a better distribution of world production and research in the fields of science and technology;

(e) Allocation of adequate financial resources for the development of science and technology in and for the developing countries;

(f) Strengthening of scientific and technological co-operation among developing countries;

(g) Adoption of special measures in the field of science and technology in favour of least developed, land-locked and the most seriously affected developing countries;

(h) Strengthening of co-operation between developing and developed countries in the application of science and technology to development.

These aims indicate that scientific and technological information has to play an important role in the implementation

of the recommendations of the Programme of Action and, thus, a considerable part of these recommendations is devoted to scientific and technological information.

Excerpts from the Programme of Action, as contained in the Report of the United Nations Conference on Science and Technology for Development, concerning scientific and technological information have been assembled in a separate background document of the Course.

4.3 Recommendations concerning scientific and technical information [17]

The Programme of Action recommends to developing countries that national scientific and technological information systems should be formulated as an integral part of the over-all national development plans, including responsibilities of planning, programme development, co-ordination and stimulation of information activities. Strengthening and co-ordinating agricultural and industrial extension services is strongly advocated in order to achieve a more effective and more efficient transfer of information to the end-users, and to allow feedback to the research and development institutions concerned.

On the regional level, developing countries should establish interlinked information networks and data bases for the exchange of information and should share among themselves information and experience in agriculture, industry, communications, health etc.

The recommendations [illegible] both on the national and the regional level the importance of the awareness, on the part of the public, of the role of science and technology in the development process and underline the role of scientific and technical publications, the mass media, science museums etc. in promoting this awareness.

On the international level, international organizations should act as a tool for systematic exchange of information on experiences of different countries in all fields pertaining to the application of science and technology for development. This calls for the restructuring of the international scientific and technological information system relevant to the needs of the developing countries.

A global and international network for science and technology should be established which should be designed to meet particularly the needs of the developing countries.

The network should consist of national focal points - each country acting as national referral centre. A global central focal point will provide information-on-information to all national focal points.

Users should be able to obtain information from their national focal points and from other national focal points either directly or through their own national focal points.

The recommendations advise repeatedly all countries drawing up national scientific and technological policies and plans to include in them the development of programmes and activities for national information systems and networks.

The network should be developed in an evolutionary fashion. As priority objectives it should ensure for developing countries the maximum availability of information such as:

(a) Information required for development of science and technology;

(b) Information regarding the national capacity in science and technology;

(c) Technological information contained in patent documents;

(d) National programmes in science and technology.

The recommendations emphasize the role of national information systems in stimulating endogenous development and national capacity for innovation and in supporting the assessment, transfer and adaptation of technology. In order to be able to fulfil the task to ensure access to and facilitate utilization of national and international sources of information on science and technology, national information systems and networks require:

(a) The training of specialized information manpower;

(b) The development of information infrastructures, including information centres, data banks, libraries, back-up literature, communication and computer facilities;

(c) The development of procedures and techniques, tools, methods, standards and norms of information handling.

The existing information systems within the UN and other international bodies should form an integral part of the proposed network. All countries should participate in, and make better use of, the existing scientific and technical information systems and facilitate their own information systems to be linked to the global and international network.

The recommendations of UNCSTD on scientific and technological information represent a landmark in the involvement of UN organizations in information development. In addition, they require the full involvement of governments in developing national information systems and networks and in interlinking these among themselves and coupling them to the global and international network. Other international organizations are also invited to participate in the efforts of establishing and developing the global and international network.

4.4 Implementation of the recommendations of UNCSTD

The UN General Assembly endorsed the Vienna Programme of Action and established an Intergovernmental Committee on Science and Technology for Development with the main terms of reference the co-ordinated implementation of the Programme of Action, on the one hand, and formulating policy guidelines for the harmonization of policies within the UN system in the field of science and technological activities, with a view to contributing to the establishment of a new international economic order [illegible].

The resolution of the General Assembly [illegible] for financing the first stage of the implementation of the Programme of Action [illegible]. An [illegible]

Technology for Development (IF/STD) has been set up which is being administered by UNDP [19.20].

Information in support of science and technology is one of the priority areas of IF/STD.

As the first step in the implementation of the recommendations concerning scientific and technological information Unesco has launched, in co-operation with IF/STD, fact finding missions in various developing countries with the aim to prepare analytical case studies. The specific purpose of these case studies will be:

(a) to assess the major national development goals, the main categories of user information needs and the types of information required to support the goals;

(b) to assess the most important information services and sources (national regional, international) available at the national level and their adequacy in meeting these requirements;

(c) to conclude ways to remedy or improve the national situation, in particular through use of UN information systems and channeling UN assistance.

The studies will be summarized and presented to the IF/STD on which IF/STD will, in part, base funding decisions on information for development projects.

5. Other intergovernmental organizations (IGO's)

During the last two decades other IGO's, especially regional organisations, got involved in developing and maintaining, or supporting, information systems and services and activities aimed at information development, such as education and training of information manpower etc.

5.1 CEC

The Commission of European Communities (CEC), an organization of the Western European countries, initiated a broad range of mission-oriented information services which have been designed, set up and operated by its various agencies in the fields of iron and steel, coal, nuclear energy etc. EURATOM was operating already in the early sixties; its role have been taken over later by IRIS so that the system ceased to exist.

The Commission, through its Directorate for Scientific and Technical Information and Information Management, has initiated and designed EURONET, an interactive computerized system of the Member States based upon the interlinkage and distant interrogation of decentralized data bases available in their information centres.

Research information is another field in which the organs of the community were especially active.

Acknowledging the usefulness of patent documents for industrial development, the Commission engaged recently, in co-operation with WIPO, in promoting patent documentation and information [21]. A current journal on patent information will be started this year jointly by the CEC and WIPO.

In addition to studies and guidelines on information methodology and on the future development of information services [22], the CEC is

exploring the possibilities of computer aided translation to facilitate the work of its organs which have to use the various languages of the Community Members [25].

The Centre for Industrial Development (CID), established by the European Economic Community, includes among its major objectives assistance to developing countries by providing information necessary for industrial development.

5.2 OECD

The Organization for Economic Co-operation and Development, an organization of the Western European countries, USA, Japan and Yugoslavia, has also promoted, especially through its Development Centre, information systems and services and methodological tools of information.

The OECD Development Centre has been the main collaborator in the preparation of a thesaurus for various aspects of development, based upon the initial efforts of ILO and FAO to provide a tool for their indexing procedures. The Macrothesaurus [24] was the result of initial co-operation of the OECD Development Centre with several UN agencies (ILO, FAO, Unesco etc.) and national development agencies.

The Development Centre established and maintained a Question - Answer Service, intended mainly for users in developing countries. This service has been taken over in the early seventies by the Industrial Reading Service of UNIDO and the Paris Office of the International Bureau for Development.

Publication of directories of research intitutions in developing regions, covering the African region as well, was another important feature of the information activities of OECD.

5.3 CMEA

The Council of Mutual Economic Assistance of the Socialist Countries has been, since its inception, heavily involved in providing assistance to its Member States by information system design, methodological guidance and execution and training in information.

In 1970 an International Information Centre for Science and Technology was established in Moscow as a joint venture of the Socialist Countries, and the design and establishment of an International Information System for Science and Technology (ICISST) was started.

Various subsystems of the System are already operating, such as the subsystems for patents, industrial catalogues, scientific and industrial research activities, scientific and technical journal articles, scientific and technical films, on the one hand, and subsystems for various industrial sectors such as electrotechnique, chemistry, metallurgy, building materials and construction etc., on the other. Subsystems of the first type, organized according to main sources of information, are expected to process information for the service of the sectoral subsystems [25].

The System is a co-operative international information system based upon decentralized national input and centralized, international output organized in independent subsystems. For every subsystem one output centre is designated, located in one of the

[illegible] The United [illegible] to coordinate the activities [illegible] of the United Nations [illegible] in [illegible] countries.

5.4 OPS

[illegible] Pan American Sanitary Bureau [illegible] Regional Office for the Americas [illegible] Washington, D.C. [illegible] Pan American Health Organization [illegible] Organization [illegible] information [illegible].

In 1977, [illegible] Development [illegible] program [illegible] in the Organization [illegible].

The main [illegible] the program [illegible] the formulation [illegible] programs. [illegible] and Trade, [illegible].

5.5 IDB

The Inter-American [illegible] result of [illegible] held in Rome [illegible] involved [illegible] appraisals [illegible]. Within [illegible] appraising [illegible] information.

6. [illegible]

6.1 ECA

The United [illegible] to 1955 [illegible] Development [illegible] and Trade [illegible] by resolution [illegible] 5 [illegible] is located [illegible].

The [illegible]

The principal [illegible] treated in [illegible] of regional [illegible].

Planning and management of the Federation's work programme has been reorganized recently according to "A New Programme Structure for FID" adopted by the General Assembly of the Federation in 1978. The first one of the 4-year Medium Term Programmes (MTPs) have been adopted by the last FID General Assembly in 1980 [27]. The MTPs have to be updated currently and reformulated biannually.

Committees work, in most cases, both on the central and the regional level, in the following subject fields [28]:

FID/II: Information for Industry.

FID/ET: Education and Training in Information.

FID/CR: Classification Research;

FID/CCC: Central Classification Committee, responsible for the maintenance and development of the Universal Decimal Classification (UDC);

FID/BSO: Panel on the Broad System of Ordering;
FID/RI: Theoretical Foundations of Information;

FID/DT: Documentation Terminology

FID/LD: Linguistics in Documentation;

FID/PD: Patent Documentation;

FID/SD: Social Science Documentation;

FID/IM: Informatics (application of mathematics to information), established in 1980.

In addition, about 40 classification committees are active in various subject fields which continuously revise the respective tables of UDC and submit revision and extension projects to FID/CCC.

FID has acquired unique expertise in the theory and practice of classification. In addition to classification research, publishing comparative studies of existing classification schemes and organizing international study conferences on classification [29], FID developed under a contract with Unesco a Broad System of Ordering [30], intended as a roof classification, a switching mechanism to be used for the transition of one classification system to the other.

UDC is a classification system embracing all fields of human knowledge and activities. It contains approximately 130 000 entries arranged according to decimal notation [31]. It is the classification system most widely used internationally, especially in the fields of science and technology where its tables are fairly well developed. Considerable and successful efforts have been made in the last 20 years to improve the social sciences part of UDC.

FID is co-operating very closely with UNESCO, WIPO, UNIDO, other UN organizations and internal bodies.

The Federation has designed ISO/TC 46 and is operating the system according to a contract with UNESCO.

The efforts of FID in industrial information, geared ready for the needs of small-scale and medium-scale industries, and in education and training in information have been especially successful. The annual meetings of the relevant committees produce papers of general interest [32].

The Federation offers a forum for international co-operation of professionals in the information field. Its committees help to exchange knowledge and experience in various fields of information work.

FID lays special emphasis on providing support to developing countries in the development of their information infrastructures. From 1966 to 1977 the FID Committee for Developing Countries (FID/DC) was mainly responsible for providing such support. After developing Countries were represented in the majority of the National Members, and FID Council replaced FID/DC and instructed all committees and bodies of the Federation to promote the interests of developing countries.

Developing countries, among them Nigeria, are well represented at the FID Council and the Executive Committee (EC).

Current publications of FID are the monthly FID News Bulletin and the quarterly multilingual journal International Forum on Information and Documentation (IFID), which are published for FID by the All-Union Institute of Scientific and Technical Information (VINITI), Moscow, the National Member for the USSR. FID and its National Members are editors and publishers of the authentic tables of the UDC. Publishing the proceedings of FID meetings, directories, manuals form also part of the publishing programme of the Federation [54].

6.2 WFEO/CEI

The Committee on Engineering Information of the World Federation of Engineering Organizations, established in 1968, is a body representing national engineering organizations, members of WFEO, in matters of engineering information [55].

Developing countries, among them Nigeria, are fairly well represented in WFEO/CEI [56], the main activities of which include preparing analytical studies on various aspects of engineering information, submitting recommendations to national engineering organizations, national authorities and international organizations, organising annual international conferences and congresses.

WFEO/CEI prepared in 1974-1975 for Unesco a study on the establishment of a Regional Technological Data Bank for Africa and submitted relevant recommendations for the implementation of the project and its location in Nigeria. A bilateral agreement for the establishment and operation of the project as a pilot project was signed in 1978 by the Nigerian Government with Unesco and the University of Ife was designated as the operational basis of the project [57].

WFEO/CEI is working according to its Long Range Plan adopted in 1977 [58]. The plan is presently being revised and updated, taking into account the needs of the National Members of WFEO and the working contacts of the Committee with Unesco, UNIDO, WIPO, UNEP, UNDP and other international organizations, especially FID and its committee FID/II.

The Committee, a body representing the community of users of engineering information, devoted considerable efforts to study the needs and habits of engineering information users and prepared surveys and studies on this broad subject, some of them commissioned by Unesco.

The conference on Delivery Mechanisms for Engineering and Technological Information held in 1960 in Budapest [39], the Seminar on Engineering Information Needs held in Jakarta in 1979, the Symposium on Engineering Information, and Ingredient of Industrial Development held in 1976 in Ottawa and The Symposium on Engineering Information and Its Users held in 1977 in Sofia [40] were the most recent international meetings convened by WFEO/CEI.

For 1981 an international conference or symposium is being planned in Buenos Aires on the subject Information for Innovation in Industry.

6.3 ICSU

The International Council of Scientific Unions and its Member Unions and subsidiary bodies are heavily engaged in promoting information and developing information programmes and systems.

ICSU was the initiator of the UNISIST Programme of UNESCO and has since the inception of the Programme shown interest in the implementation of its various phases.

6.3.1 ICSU/AB

ICSU has established a co-operative body of the major abstracting services of the world in science and technology such as Chemical Abstracts (USA), Biological Abstracts (USA), Referativny Zhurnal (USSR), Bulletin Analytique (France) etc. The ICSU Abstracting Board (ICSU/AB) is promoting co-operation of its members and offers them a forum for the exchange of experience and a mechanism to undertake joint investigations into various aspects of abstracting, and the editing and publishing of abstracting journals.

6.3.2 CODATA [41]

Another important aspect of the information activities of ICSU is information on scientific and technical data. Data generation, collection, evaluation and dissemination are very closely related, especially in scientific disciplines. Numerical data handling in science and technology, as distinct from numerical data handling in statistical offices and bureaux, requires special skill and knowledge.

The Committee on Data for Science and Technology (CODATA) was established by ICSU in 1966 and supported by Unesco within the UNISIST framework and the Unesco General Information Programme. Its main concern is to improve the quality, reliability, or accessibility of data of importance to science and technology, to promote and encourage on a world wide basis the production and distribution of collections of critically selected numerical values of properties of substances of importance to science and technology.

Data handling is taken by CODATA to include all steps of intellectual and physical manipulation involved in recording the results of observation (in laboratory, observatory, or field), interpreting and refining those results, reporting them, publishing and disseminating the report, improving accessibility to that report, reanalysing and evaluating the results where necessary, compiling them, and delivering the data to a user for final application in solving some problem.

Originally conceived to concentrate on physics and chemistry, it has broadened its scope to include non-numeric data and time- and space-dependent data in the biosciences and geosciences as well.

It is especially concerned with data of interdisciplinary significance. Recently CODATA established an Advisory Panel on Data for Industry (APODFIN).

CODATA is governed by a General Assembly with delegates from 16 member countries and 14 ICSU Scientific Unions which meets biennially. In conjunction with these meetings CODATA organizes a series of biennial International Conferences, the last one in 1980 in Tokyo.

At its Paris Headquarters CODATA has established, with the initial help of the Soviet World Data Referral Centre (WDRC) with a view to providing a direct back-up to existing local referral data services and also include referral information on institutions holding data files.

CODATA publications include the current Bulletin and CODATA Newsletter, the International Compendium of Numerical Data Projects (published in 1980, a new edition is in preparation), CODATA Special Reports etc.

6.3.3 COSTED

The ICSU Committee on Science and Technology for Developing Countries has been established in 1966 with the task to study problems of developing countries related to science and technology. The major problem areas of COSTED include, among other, information services as well.

The Committee prepared reports on the subject of information development and organized an International Conference on Science and Technology in Developing Countries, which reviewed various issues of scientific and technical information [42].

6.4 ISO [43]

The International Organization for Standardization is, together with the International Electrotechnical Commission (IEC), the main institution to prepare and issue international standards with the co-operation of the national standards organisations and international Technical Committees (TC) established according to main subjects.

Technical Committee TC/46 Documentation, and other technical committees involved, have prepared a series of standards pertaining to library and information work [44].

In addition to providing information on international standards, ISO has organized ISONET, a network of national information centres on standards, located in general in the national standards organisations. ISONET members provide information on national and international standards and serve users with the texts of these standards as well.

6.5 AALTO

The main objectives of the Association of African Industrial Technology Organizations, established recently under the aegis of the Organization of African Unity and acting as the technical arm of the Scientific Council of Africa and the Scientific Technical and Research Commission of the OAU, include the promotion of international co-operation of industrial and technological research institutions in Africa and their co-operation with similar institutions in other regions in order to strengthen existing institutions

in Africa and promote the establishment of new ones with a view to contribute towards the co-ordination and planning of industrial and technological research in Africa and the effective transfer of industrial technology.

Information plays an eminent role in the activities of the Association. Its Statutes call, among others, for collecting information on a regional and world-wide basis relevant to the activities of the Association and disseminating such information among its member institutions.

The Association plans to prepare and publish periodically directories on various aspects of industrial and technological research in Africa, such as institutions, research programmes, facilities, information centres, training programmes and personnel.

To increase the awareness for the protection of industrial property is another important function of the Association by which the procedures of handling patent documents, patent documentation and information will also be vigorously enhanced.

Last, but not the least, the organisation of regional and subregional meetings on general and selected aspects of industrial and technological research and development in Africa will continuously generate valuable information the dissemination of which will also be the task of AAITO and the information centres of its member institutions.

7. Conclusions

The role of international information systems and the activities of international organizations in the field of information, their role in information development is steadily growing. The members of the UN family of organizations and other IGOs are increasing and diversifying their involvement in information development. Several NGOs, non-governmental professional organizations are also setting up international information systems and networks, elaborate theoretical issues and practical guidelines for information work and provide professional forum for the exchange of knowledge and experience in various fields of information handling.

International information systems and networks can only be effectively used by a country if adequate national information infrastructures have been built up. Without an infrastructure and a machinery to handle information and to make it accessible within the country, in the form required by the different user groups, no country can benefit from the efforts made by international organizations to help, through international information systems and networks, channelling the necessary information at the right moment to the users.

A considerable part of the activities of international organizations is devoted, therefore, to promoting the development of national information infrastructures, particularely in developing countries by technical assistance, by guidelines for information policy, planning and management, by methods and norms, by education and training of information personnel and user groups.

The summary table in Annex 2 presents some examples of international information systems and programme activities of UN organization, IGOs and NGOs.

Developing countries may make much better use of the information available in international information systems and international organizations. This information will contribute to scientific and technical, economic and social development of the Third World.

Annex 1

Notes and References

(1) An excellent paper on "Scientific and technological information systems for development" has been commissioned by Unesco and prepared by Mrs. J. Wesley-Tanaskovic which was submitted to the International Colloquium on Science, Technology and Society: Needs, Challenges and Limitations, sponsored by the UN Advisory Committee on the Application of Science and Technology for Development (ACAST), held in Vienna from 15-17 August 1979 with the intention to discuss main issues of development, including information systems, with representatives of the international community of natural and social scientists and engineers in order to provide recommendations which will be used in the debates of UNCSTD and in the implementation of the recommendations of UNCSTD. The paper deals, of course, with international information systems as well. A copy of the paper is available in the FIIRO Library.

(2) Report of the United Nations Conference on Science and Technology for Development, Vienna, 20 - 31 August 1979. United Nations, New York, 1979. Doc. A/CONF. 81/16. p. 18, para. 70.

(3) Estimation of human and financial resources devoted to R&D at the world and regional level. Study prepared by the Unesco Office of Statistics. A review of the study is published in the Bulletin of the Unesco Regional Office for Science and Technology for Africa, Vol. 15, No. 2. April - June 1980, p. 3-5.

(4) Report of UNCSTD, p. 51, para. 17.

(5) The Proceedings and the Reports of the Conference have been published by the UN and are available at the UN Libraries in New York and Geneva and in some of the UN depesit libraries in Member States.

(6) Available from the INIS Section of IAEA in Vienna.

(7) This Chapter is based upon "Patents and patent documentation and information: Their specific role and use in the development process" by Dr. F. A. Sviridor, Deputy Director General of WIPO, a paper submitted to the International Conference on Delivery Mechanisms for Engineering and Techelogical Information, Budapest, 3 - 5 November 1980, organised by WFEO/CEI. The Proceedings of the Conference are expected to be published in Spring 1981. Copies of the papers are available at FIIRO and the Library of the University of Ibadan.

(8) Both information systems are described in detail in "An Overview of the United Nations Environment Programme Information Systems", a paper presented by M. May Htun, C. S. Pierson and S. Sutton on behalf of the Industry and Environment Office, J. Huismans on behalf of IRPTC and T. Manetic on behalf of INFOTERRA of UNEP to the WFEO/CEI Conference mentioned in (7).

(9) This Chapter is based upon the paper of M. May Htun et. alii mentioned in (8).

(10) This Chapter is based upon "Information Referral System for Technical Co-operation Among Developing Countries - TCDC/INFRES", a paper presented by D. Lawson on behalf of UNDP to the WFEO/CEI Conference mentioned in (7).

(26) For a description of the OAS programme to develop specialised information networks for Central America and the Caribbean see the second publication mentioned in (32).

(27) The MTP for 1981-1983 has been issued by FID. A report on the MTP will be published in INFID, the scientific journal of FID.

(28) Details about the structure of the Federation, national and associate members of the governing bodies and committees, officers of the Federation are given in the FID Directory available in the FIRO Library.

(29) 1959 in Dorking, 1964 in Elsinore, 1975 in Bombay.

(30) Published in 1979.

(31) The English Full Edition and Abridged Edition are published as British Standards by the British Standards Organisation. Full and abridged editions are also published in German, Russian, French and several other languages. Besides the English Edition, the German and the Hungarian Full and Abridged Editions are also being published as national standards. A Standard Medium Edition, selected for the use of average size information centres and libraries, has been published in German. The English Version is in preparation.

(32) The 1981 meeting of FID/ET is scheduled from 6 to 9 May in Ibadan, at the Department of Library Science of the University of Ibadan. The last two volumes of papers presented at FID/ET meetings are

Education and training: Theory and provision. Papers presented at the FID Pre-Congress Seminar, Edinburgh, 18-21 September 1978, organised jointly by Aslib, FID/ET and FID/II. FID, the Hague, 1979.

Education and training for information services in business and industry in developing and developed countries. Papers presented at the FID/ET Workshop, Minneapolis, Minnesota, 11-12 October 1979. FID, The Hague, 1980.

(33) Mr. M. H. Wali, Deputy Director, National Library of Nigeria has been elected member of the FID Council at the 1980 General Assembly in Copenhagen.

(34) The list of publications of the Federation is available from the FID Secretariat, The Hague.

(35) Brochures and folders on the activities of WFEO/CEI are available from the WFEO/CEI Secretariat, Budapest.

(36) Mr. J. O. Oribamowo is representing the Nigerian Society of Engineers in WFEO/CEI.

(37) See the report on "Regional datatank on technologies in Africa"in the Bulletin of the Unesco Regional Office for Science and Technology for Africa, Vol. 12, No. 2, April - June 1980, p.6-8.

(38) Available from the WFEO/CEI Secretariat, Budapest.

(39) Proceedings are in print. Distributor: TECHNOINFORM, the Foreign Trade Department of the Hungarian Central Technical Library and Documentation Centre, Budapest.

(40) Proceedings available from the WFEO/CEI Secretariat, Budapest.

(41) This Chapter is based upon information contained in "Data Handling for Science and Technology", published by North-Holland Publishing Co. Amsterdam, in 1980 for CODATA and UNESCO, especially in the Introduction by S. A. Rosmussoler (p. 1 - 5) and in the Chapter on Accessibility and Dissemination of Data by D. G. Watson (p. 131-137).

(42) The Proceedings of the Conference have been mentioned in (11).

(43) A detailed description of the information activities of ISO is presented in "Organization and availability of standards and information on standards" submitted by E. J. French to the WFEO/CEI Conference mentioned in (7).

(44) The following publication of ISO presents a collection of the full texts of ISO Standards for information work: Information Transfer. ISO, Geneva, 1977. (ISO Standards Handbook 1).

Annex 2

International information systems and programmes

(Selected list of examples)

		UN organisations		Other IGOs		NGOs	
1.	International information systems						
1.1	Designed and maintained by international organizations	UNIDO	INTIB	CMEA	IISST	FID	UDC
			TIES				ISORID (Unesco)
			Industrial Enquiry Service			CODATA	WDRC
		FAO	AGRIS			ISO	ISONET
		IAEA	INIS				
		UNDP	TCDC/INRES				
		UNEP	INFOTERRA				
			IRPTC				
			Industry and Environment				
		Unesco	SPINES				
		WIPO	IPC				
1.2	Sponsored by international organizations	Unesco	ISDS	CEC	EURONET	ICSU	WDRC
			ISORID(FID)				
		WIPO	INPADOC				
2.	International information programmes	UN	Global and international scientific and technical information network	CMEA	IIST		
				CAS			
2.1	General	Unesco	GIP				
			UNISIST				

		UN organizations	Other IGOs	NGOs
2.2	Policy guidelines	Unesco FAO WIPO	CEC OECD	FID ICSU/AB WFEO/CEI
2.3	Methods and norms	Unesco WIPO	CMEA	ISO FID ICSU/AB WFEO/CEI
2.4	Manpower development	Unesco IAEA UNEP UNIDO WIPO	CMEA OAS	FID WFEO/CEI
2.5	Technical assistance for information infrastructure building	Most organizations	Most organizations	

Annex 3

Abbreviations and acronyms used in the paper

AAITO	Association of African Industrial Technological Organisations
AGRIS	Agricultural Information System (FAO)
APODFIN	Advisory Panel on Data for Industry (CODATA)
BSO	Broad System of Ordering (FID)
CARIS	Co-operative Agricultural Research Information System (FAO)
CEC	Commission of European Communities
CID	Centre for Industrial Development (CEC - EEC)
CMEA	Council of Mutual Economic Assistance
CODATA	Committee on Data for Science and Technology (ICSU)
COSTED	Committee on Science and Technology in Developing Countries (ICSU)
EEC	European Economic Community (CEC)
EURATOM	Former nuclear information system of CEC
EURONET	The interactive information and communication system of CEC Members
FAO	Food and Agricultural Organization of the UN
FID	Federation Internationale de Documentation - International Federation for Documentation
FID/CCC	Central Classification Committee
FID/CR	Committee on Classification Research
FID/DC	Committee on Developing Countries
FID/DT	Committee on Documentation Terminology
FID/ET	Committee on Education and Training
FID/II	Committee on Information for Industry
FID/IM	Committee on Informatics
FID/LD	Committee on Linguistics in Documentation
FID/PD	Committee on Patent Documentation
FID/RI	Committee on the Theoretical Basis of Information
FID/SD	Committee on Social Sciences Documentation
GIP	General Information Programme (Unesco)

IAEA	International Atomic Energy Agency
IBI	International Bureau of Informatics
ICSU	International Council of Scientific Unions
ICSU/AB	Abtracting Board (ICSU)
IEC	International Electrotechnical Commission
IFID	International Forum for Information and Documentation (FID)
IF/STD	Interim Fund for Science and Technology for Development (UN)
IGO	Intergovernmental Organisation
IISST	International Information System for Science and Technology of the Socialist Countries
ILO	International Labour Organisation
INFOTERRA	International Referral System of UNEP
INIS	International Nuclear Information System
INPADOC	International Patent Documentation Centre (WIPO)
INSPEC	Information Service in Physics, Electrotechnical and Control Engineering.
INTIB	Industrial and Technological Information Bank (UNIDO)
IOB	Inter-Organisational Board for Information Systems (UN)
IPC	International Patent Classification (WIPO)
IRPTC	International Register of Potentially Toxic Chemicals (UNEP)
ISDS	International Serial Data System (Unesco)
ISO	International Organisation for Standardisation
ISO TC/46	Technical Committee on Documentation of ISO
ISONET	Information network of ISO member bodies
ISORID	Information System on Research in Documentation (Unesco - FID)
MTP	Medium-Term Programme (FID)
NGO	International Non-Governmental Organisation
NTIS	National Technical Information Service
OAS	Organisation of American States

OAU	Organization of African Unity
OECD	Organization for Economic Co-operation and Development
PCPI	Permanent Committee on Patent Information (WIPO)
R&D	Research and development
SPINES	Science Policy Information System (Unesco)
STRC	Scientific, Technical and Research Commission of the OAU
TCDC	Technical Co-operation Among Developing Countries
TCDC/INRES	Information Referral System for TCDC (UNDP)
UDC	Universal Decimal Classification
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNCSTD	United Nations Conference on Science and Technology for Development
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
UNISIST	Unesco Programme for the promotion of the international exchange of scientific and technical information and the establishment of a voluntary network of information systems and services in order to facilitate information transfer
VINITI	All-Union Centre for Scientific and Technical Information
WDRC	World Data Referral Centre (CODATA)
WFEO	World Federation of Engineering Organizations
WFEO/CEI	Committee on Engineering Information of WFEO
WHO	World Health Organization
WIPO	World Intellectual Property Organization

Report of the United Nations Conference
on Science and Technology for Development
Vienna, 20-31 August 1979
UN Document A/CONF.81/16, New York, 1979

EXCERPTS

From Chapter VII: Vienna Programme of Action concerning scientific and technological information

Prepared for the
Short Training Course in Industrial Information
Federal Institute of Industrial Research, Oshodi, Lagos
4 - 15 May 1981

I. STRENGTHENING THE SCIENCE AND TECHNOLOGY CAPACITIES OF THE DEVELOPING COUNTRIES

RECOMMENDATIONS

A. National level

...

2. Major elements of science and technology policy for developing countries

20. The science and technology components should be included in national development plans or strategies as basic instruments for achieving the different objectives and goals contained in them; these plans should also include specific requirements at the sectoral and intersectoral levels for the generation, mastery, transfer, acquisition, local dissemination, assimilation and utilization of science and technology, including know-how.

21. An effective science and technology policy should embrace elements such as:

...

(b) Survey of the state-of-art in each science and technology sector and assessment of the availability of national resources and science and technology potential;

...

(f) Establishment of a national capacity for assessment, selection, acquisition and adaptation of foreign technology and expertise taking fully into account prevailing economic, social, cultural and environmental conditions;

...

(h) Diffusion of science and technology among all sectors of the economy, their corresponding programmes, and their continued review, appraisal and adjustment at the macro and micro level;

(i) Promotion of communication and co-operation among government agencies, research institutions, professional societies and technology users;

...

3. Measures and mechanisms for strengthening the scientific and technological capacities of developing countries

Institutional arrangements

23. Each developing country, as may be required, should establish one or more bodies for science and technology policy-making and implementation, supported at the highest level. They should have intimate linkages not only with research and development, but also with their mechanisms for evaluating, monitoring, screening and regulating the transfer of foreign technology, with science and technology information services, with the sources of funding and the productive sector. Such bodies should be as broadly based as possible and include respresentatives of all parties interested in the scientific and technological development process.

Their functions should cover, inter alia, the following:

...

(d) To promote regional and international co-operation in science and technology, and in particular to strengthen scientific and technological co-operation among developing countries;

...

26. (a) Additionally, developing countries, in setting up a national system of science and technology, should consider the establishment of appropriate institutional structures such as:

...

(ii) Scientific and technological information networks;

(iii) Specialized institutions in consultancy, design and engineering, pre-investment and feasibility studies and management, administration and marketing;

...

(b) The national science and technology system should have, among others, the following objectives:

...

(iii) Creation and strengthening of national capacity to render consultancy, preinvestment and feasibility studies, administration and marketing services;

...

Transfer, acquisition and assessment of technolgy

27. Each developing country should formulate a policy on transfer and acquisition of technology as an integral part of its national policy for scientific and technological development. Such a policy should provide for a technological spectrum ranging from the most simple to the most advanced technologies and for the assimilation and adaptation of imported technology.

28. Further, developing countries should strengthen their capacities for the assessment of technologies from the point of view of their national development objective.

...

Scientific and technological information systems

30. National scientific and technological information systems should be formulated as an integral part of the over-all national development plans. This should include responsibilities such as planning, programme development, co-ordination and stimulation of information activities. Such systems should also include among their functions the appropriate co-ordination with the international information networks.

31. Developing countries, in order to improve and intensify the exchange of information through person-to-person contacts, should promote and support scientific and professional associations.

32. Developing countries should [illegible] and co-ordinate their agricultural and industrial extension services in order to achieve [illegible]

the end-users, particularly in the rural areas, and to allow feedback to the research and development institutions concerned.

33. Special attention should also be paid to the establishment of comprehensive mechanisms to utilise mass media for bringing about a scientific temper and awareness of scientific knowledge as well as the promotion of creativity and innovation among the population. These should include, inter alia:

(a) Setting up of science museums, science and technology fairs and hobby centres, and releasing publications for children; all sectors of society should benefit from these activities;

(b) Publication and release of scientific and technological journals and books for the public and students at all levels;

(c) Public broadcast programmes, with the active participation of the scientific community.

...

B. Subregional, regional and interregional levels

1. Scope and dimensions of scientific and technological co-operation policy

36. Collective self-reliance among developing countries is a multidimensional process requiring the adoption of policies and action-oriented measures that are both bilateral and multilateral in scope, with a view to strengthening the internal capacities of developing countries and improving their bargaining position. Accordingly, this concept entails:

...

(b) The adoption of policies to encourage greater co-operation among themselves in establishing inter linked scientific and technological institutions, not only as a means to enhance absorptive capacity but also as a condition for undertaking joint programmes and projects;

...

2. Major elements of science and technology co-operation policies

37. Subregional, regional and interregional co-operation aimed at increasing the scientific and technological capacities of developing countries should take into account the following elements:

...

(f) Channelling of information on scientific knowledge and technological invention achieved in the developing countries, as well as a better system of information stemming from all the industrialized countries;

(g) Promotion of scientific and technological meetings, which can give rise to further action;

(h) Need to prepare a set of measures with a view to enhancing the co-operation among all the developing countries in the different regions, including possible enlargements of existing mechanisms for such co-operation.

Measures and mechanisms for strengthening the scientific and technological capacities of developing countries at subregional, regional and interregional levels.

38. In order to strengthen and safeguard their legitimate scientific and technological interests and increase national and collective self-reliance, developing countries should, to the maximum extent possible:

....

(d) Stimulate and promote the transfer of scientific knowledge and technology among the countries of the subregions and regions;

...

Institutional arrangements

39. Developing countries should strengthen and promote their own scientific and professional associations.

40. Developing countries should set up, as appropriate, a network of scientific and technological institutions or agencies with would carry out, in a co-operative manner, activities related to the whole gamut of scientific and technological activities, such as development of an endogenous scientific and technology base, promotion of technological innovation and research and development programmes, training, information systems, or negotiations with technology suppliers, including transnational corporations.

...

43. Developing countries should use, strengthen and, when necessary, set up subregional, regional and interregional centres for the transfer and development of technology. Linkages between subregional and regional organizations dealing with the transfer and the application of technology should be stimulated.

Scientific and technological information system

44. (a) Measures should be adopted with a view, inter alia, to organizing appropriate forms of awareness, on the part of the public, of the role of science and technology in the development process on the basis of, for instance, achievements of other developing countries as well as promoting subregional and regional scientific and technical publications;

(b) Measures should also be taken by developing countries to raise the awareness of the public at large in the developed countries of the problems experienced by developing countries in the process of achieving scientific and technological development.

45. In accordance with national laws and regulations, developing countries should establish suitable interlinked information networks and data banks which would,

inter alia, enable exchanges of information on science and technology and on training and education programmes, conditions for the transfer of technology, terms of foreign investment, and activities of national and transnational corporations and enterprises in the field of science and technology. Such networks should provide for adequate co-ordination with international information networks.

46. Developing countries should share among themselves information and experience in the most relevant fields, such as agriculture, health, communications, industrialisation and the like. They should establish co-operative arrangements and technical and managerial skills for sharing this information.

Development of human resources

44. Developing countries, in the framework of subregional regional and interregional co-operative efforts, should;

(a) Strengthen the exchange of scientific and technological knowledge through co-operative projects, seminars, conferences, graduate studies, programmes and the like which involve scientific and technological work of intrinsic value to scientists from all the countries of a particular region;

(b) Develop appropriate linkage of scientists and technologists with the world scientific community, in order to stimulate and foster scientific and technological activities;

...

(e) Create subregional, regional and interregional training vocational, professional, research and technological centres,

...

C. International level

1. Role of developed countries in the process of strengthening the scientific and technological capacities of developing countries

Major elements of scientific and technological co-operation policies

....

52. New forms of co-operation that reflect the interests and aspirations of developing countries should be promoted. Such an approach should include an intensive participation and initiative of developing countries in the designing, orientation and implementation of science and technology co-operative activities. It could materialize in comprehensive agreements, including long term agreements, covering technology, finance, production and trade.

53. This approach to international co-operation should be translated into the adoption of action-oriented measures by developed countries with the following objectives:

(a) To make available in a systematic manner, in accordance with their national laws and regulations, the results of their research and development relevant to the social and economic development of developing countries;

...

Institutional arrangements

...

57. Co-operation between the sciantific and technological associations of developed and developing countries should be encouraged.

Scientific and technological information system

58. Information systems and networks to be established at subregional, regional, and international levels should ensure close linkages with the national information systems to provide all support for strengthening the national science and technology information capacity, including systems to facilitate access to technology information contained in patent documents, through training, institution building and intergovernmental co-operation in classifying, publishing and exchanging such documents.

...

2. Role of international organizations

61. International organizations, and especially those of the United Nations system, should support, on a subregional, regional and interregional basis, the establishment, strengthening and development of the science and technology capacities of developing countries.

Institutional arrangements

62. International organizations should:

(a) Provide for meaningful consultations and exchanges of experience at the international forums on science and technology policies and planning;

...

Technology transfer and assessments

63. Organizations within the United Nations system should harmonize their efforts and co-ordinate their activities so as to proceed to the rapid implementation of recommendations and decisions of the United Nations system regarding the strengthening of the technological capacity of developing countries.

Scientific and technological information systems

65. International organizations should act as a tool for systematic exchange of information on experiences of different countries in all fields pertaining to the application of science and technology for development. In this connexion, continuing consideration should be given to the establishment of a global and international information network, within the United Nations system, where emphasis will be placed on priority needs of the developing countries. An outline of such a network is contained in section II.

...

II. RESTRUCTURING THE EXISTING PATTERN OF INTERNATIONAL SCIENTIFIC AND TECHNOLOGICAL RELATIONS

RECOMMENDATIONS

A. Acquisition and transfer of technology

Action by developing countries

66. Developing countries should:

(a) Share their experience and co-ordinate their policies for the selection, acquisition, adaptation, assessment and development of technologies, as well as their domestic legislation on industrial property, foreign investments and transnational corporations;

...

Action by developed countries

67. Developed countries should take adequate specific measures in order:

...

(b) To co-operate with developing countries according to the priorities of the latter in strengthening the capacities of their institutions and enterprises to assist their technology needs and select, acquire, generate and apply technologies.

Action at the international level

68. Organizations within the United Nations system should play a more active role in informing, advising and assisting developing countries in any region or subregion on all aspects related to the transfer of technology so as to enable them to obtain more favourable terms and conditions. Other international organizations should consider adopting a suitable policy. Measures should, inter alia, be taken:

(a) To provide assistance, including experienced personnel, to developing countries at their request, either singly or jointly, in the formulation, negotiation and implementation of projects for the transfer of technology, and to establish training and exchange programmes for nationals of those countries, in order to develop endogenous capacities in dealing with the transfer of technology, including negotiating and bargaining skills, technology assessment and information retrieval skills;

(b) To asist developing countries, at their request, in setting up suitable institutions to deal with the transfer of technology;

(c) To assist in the establishment, especially on a regional basis, of data banks and centres for the transfer and development of technology in order to supplement national capacities to assess, select, adapt, diffuse and create technologies suitable for developing countries, including the capacity to establish effective linkages between and within research and development and the productive sector.

B. Restructuring of the international scientific and technological information system relevant to the requirements of the developing countries

Action by developed countries

69. Developed countries should:

(a) In view of the accumulation of scientific and technological knowledge in these countries, make those information resources which are readily accessible to their own nationals also readily accessible to users from developing countries;

(b) In regard to commercially available information, adopt measures and arrangements allowing developing countries to use their specialized information systems and acquire their publications at reasonable cost and, whenever possible, in local currency or free of charge;

(c) Provide the fullest possible access to available information on technologies, terms and conditions of supply, local technical and management requirements, and activities of transnational corporations and enterprises in the fields of science and technology.

Establishment of a global and international network

70. The scientific and technological international information network should include the following features:

(a) The network should be designed to meet particularly the needs of the developing countries and to provide access to information for users who contribute to problem-solving activities and decisions relating to development;

(b) The network should operate, inter alia, as a channelling mechanism facilitating contact between users and suppliers of information;

(c) In each country there should exist one national focal point for its different subnetworks while at the same time there should be, at the world level, under the auspices of the United Nations, a global centre focal point.

(d) Each national focal point should have the information-on-information for its country; the global central focal point should have the same for the world;

(e) The global central focal point will provide information-on-information to all national focal points. Users should be able to obtain the needed information, or information-on-information, normally from their national focal point and from other national focal points either directly or through their own national focal point;

(f) In cases of difficulty of obtaining a response from any other national point, the global central focal point should take measures to ensure the required information is provided;

(g) The global central focal point and individual country focal points should be managed by qualified personnel capable of easily, promptly and clearly understanding the requests for information and of directing the requests to the appropriate source;

(h) Each focal point should have the appropriate communication facilities so as to be able to receive or supply information as fast as needed, either directly through the individual national focal point or through the global one.

71. In establishing the international information network outlined above, all countries drawing up national scientific and technological policies and plans should include in them the development of programmes and activities for national information systems and networks.

72. National information systems and networks should aim to ensure access to and facilitate utilization of national and international sources of information on science and technology in order to stimulate endogenous development and national capacity for innovation and to support the assessment, transfer and adaptation of technology. This requires inter alia:

(a) The training of specialized manpower:

(b) The development of infrastructures, including communication facilities, data banks, libraries, documentation centres, archives, back-up literature, hardware and software;

(c) The development of the necessary information-handling procedures and techniques, tools, methods, norms and standards:

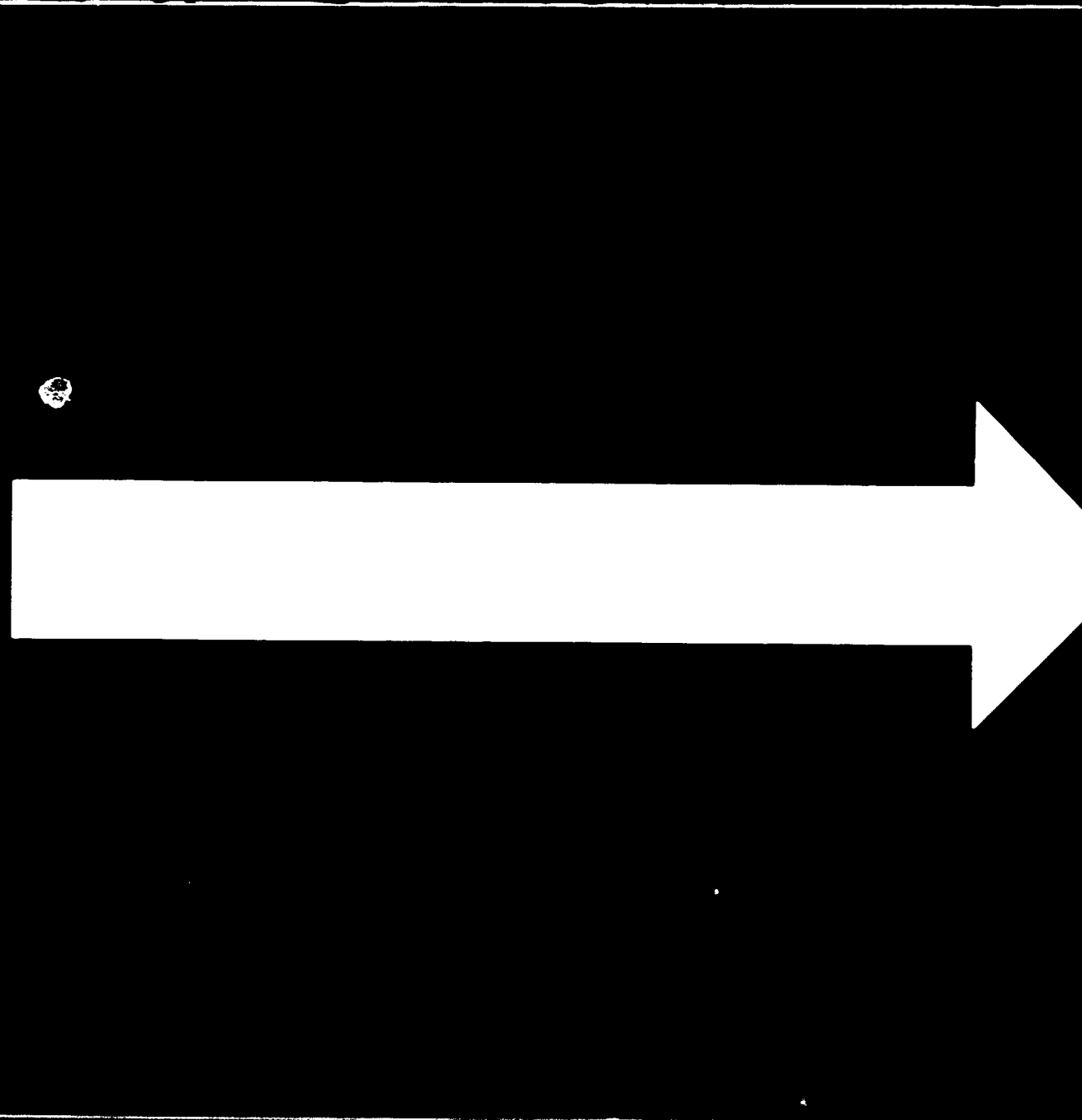
(d) The improvement of the stock of primary documents in developing countries, taking into account the establishment, when this proves necessary, of central libraries or documentation centres;

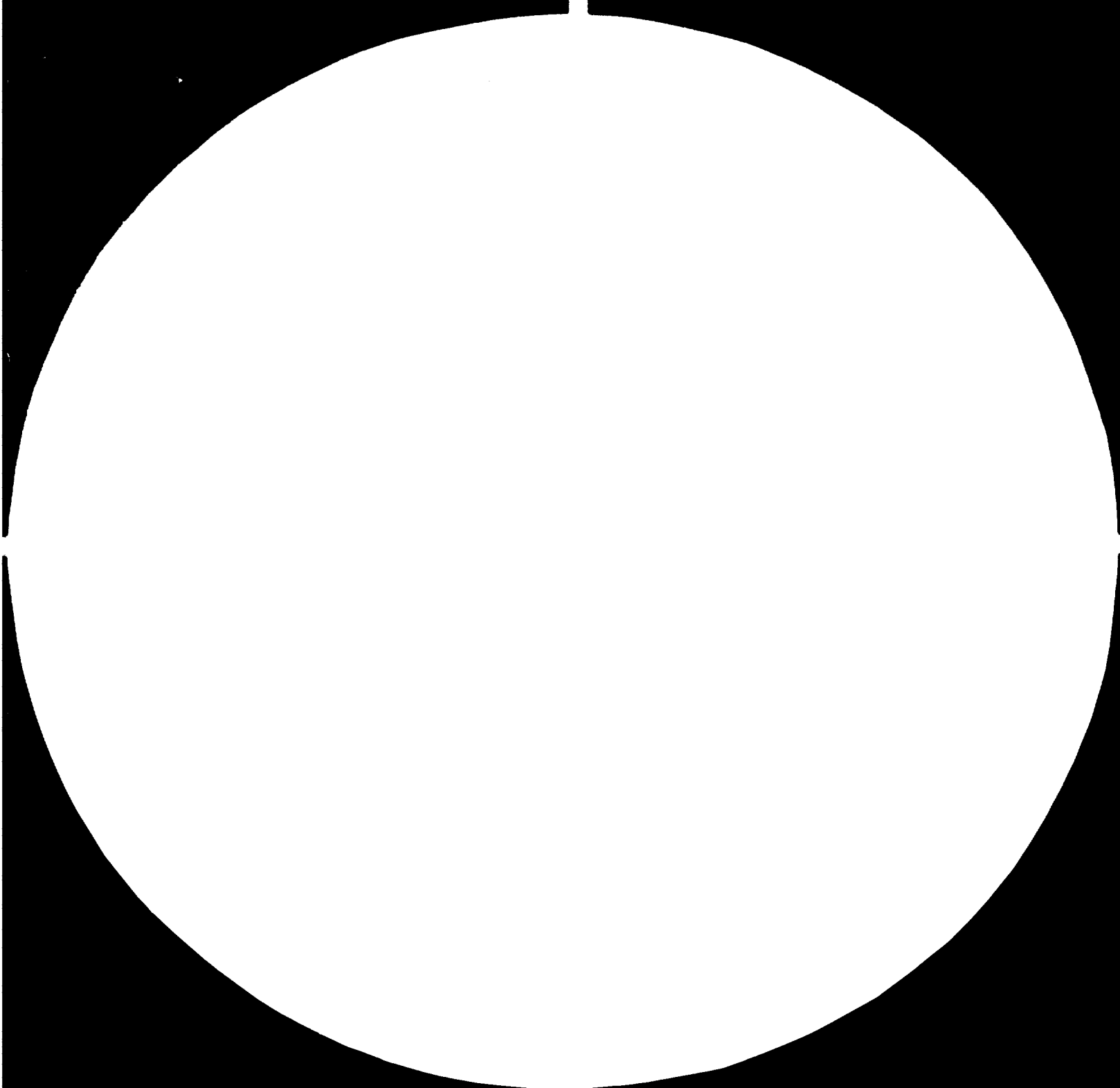
(e) That care should be taken that all countries should have access to the information systems of developed countries permitting research "on line".

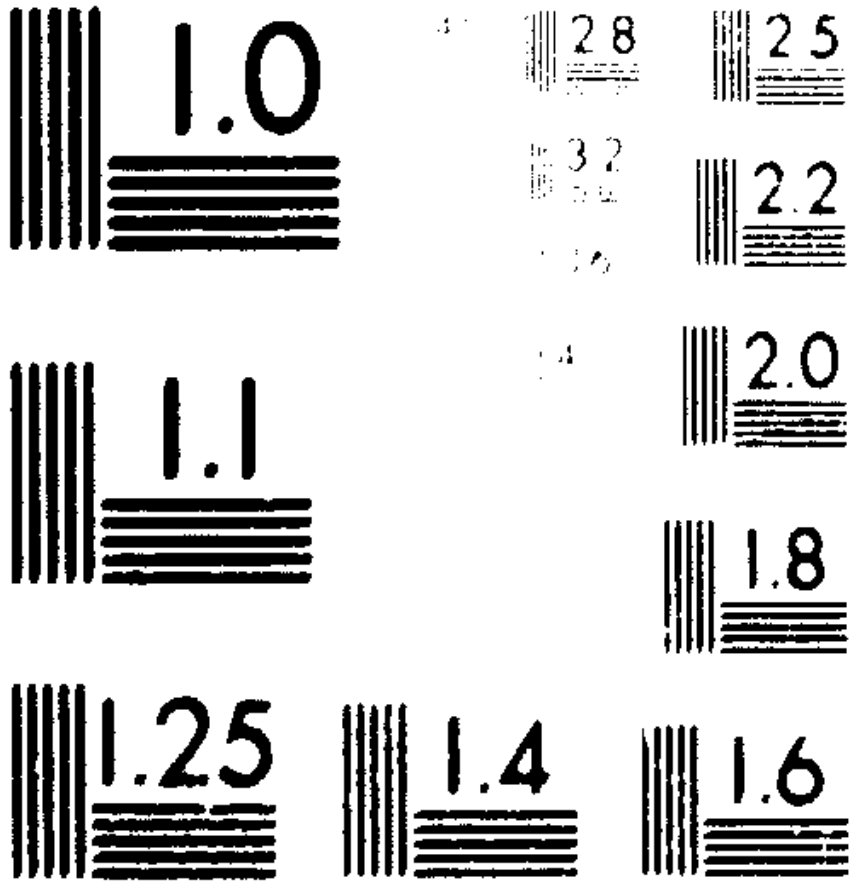
73. Taking into account the urgency of the task, the scientific and technological international information network should be developed sequentially and in an evolutionary fashion so as to meet particularly the needs of the developing countries ensuring the maximum availability of information such as:

(a) Information required for development of science and technology;

(b) Information regarding the national capcity in science and technology;







(c) Technological information contained in patent documents;

(d) National programmes in science and technology.

74. The global and international information network should be so developed as to meet particularly the needs of the developing countries. Priority should be given to covering scientific, technical, socio-economic, legal and other aspects needed for decision-making in the selection and transfer of technology. The existing information systems within the United Nations and other international bodies set up for the exchange of scientific and technological information and which are also serving as industrial technology data banks should form an integral part of the proposed global network. Data from the developed and the developing countries on available technologies, conditions of licensing, identification of suitable experts, engineering and consultancy services and the like should be widely available so as to promote their effective utilization, thereby strengthening the concept of the global international network.

75. The developing and the developed countries should participate in, and make better use of, the existing scientific and technical information systems and take such steps as would enable their own information systems to be coupled to the global information network and ensure that all support is provided for the effective use of this global network.

C. Promotion of international scientific and technological co-operation for development

Elements of international co-operation in science and technology

76. The following arrangements for effective international co-operation should be encouraged:

(a) Co-operative activities aimed at the development of mutually beneficial and user-oriented information systems in areas of major scientific and technological concern, which are of particular importance to developing countries, at the subregional, regional, interregional and international levels;

(b) Bilateral scientific and technological co-operation arrangements providing for the exchange of scientific and technical personnel between institutions with the same objectives or activities; information about such bilateral co-operation should also be exchanged;

(c) Personal contacts and continuing working relationships between scientists and technologists and between scientific and technological societies and associations of developed and developing countries.

Action by developing countries

77. Developing countries cover a wide spectrum of development needs and scientific and technological infrastructure and capacities. They can learn much from each other's experience in applying science and technology to development. To enhance their science and technology co-operation, developing countries should:

(a) Promote mutual consultation and systematic exchange of information concerning their experience in science policy and planning, building scientific and technological infrastructure, and the acquisition, development and application of scientific and technological knowledge;

(b) Strengthen the existing and establish, develop and promote new consulting firms and services relevant to the area of science and technology;

(c) Make arrangements to facilitate the dissemination and exchange of science and technology knowledge and experience originating in the developing countries so that the comparative advantages and specializations of various countries or sectors can be fully utilized;

...

(g) Compile inventories of their science and technology resources and capacities for collective self-reliance in science and technology for development, and encourage their exchange.

...

D. Institutional arrangements to implement the structural transformation to be effected in international scientific and technological co-operation

Methodology for the implementation of an international co-operative programme for the application of science and technology

80. International co-operative programmes should be jointly designed and agreed upon by planners and scientific and technical specialists, appointed by the appropriate national authorities, and should be executed by institutions selected by them, drawing mainly upon the manpower capacity of participating countries. Project execution and institutional build-up projects may call for different funding procedures. These programmes and projects should, inter alia, be of the following kinds:

...

(d) Promotion of specific activities such as information and technical assistance, services, and management of technology training operations:

...

III. STRENGTHENING THE ROLE OF THE UNITED NATIONS SYSTEM IN THE FIELD OF SCIENCE AND TECHNOLOGY AND THE PROVISION OF INCREASED FINACIAL RESOURCES

RECOMMENDATIONS

A. Policy formulation and guidelines

...

93. The over-all efficiency and effectiveness of the system should be achieved by effecting, inter alia, the following changes in the system:

...

(e) Increasing the effective participation of developing countries in international organizations concerned with the application of science and technology to development, including the holding of interregional meetings on science and technology, in accordance with their established procedures and practices.

94. (a) Developing countries should be able to play a more effective role at the decision-making level in international organizations dealing with science and technology for development:

(b) Developing countries, similarly, should be better represented, in accordance with the principles of the Charter of the United Nations, in particular at the executive and decision-making levels, in the various secretariats and secretariat organs in charge of the planning and execution of scientific and technological projects.

...

C. Scientific and technological information systems

96. There is a need for strengthening the existing and developing new information centres and networks in developing countries. These activities could be effectively pursued withing the organs, organizations and bodies of the United Nations system. The establishment of a global network of scientific and technological information should be carried out as specified in paragraphs 70 to 75 above.

97. The organs, organizations and bodies of the United Nations system should improve the existing information services and provide measures to co-ordinate their effective utilization in the field of science and technology.

98. The organs, organizations and bodies of the United Nations system should further develop and co-ordinate their scienctific and technological publications services in order to make available the most important world publications in the various scientific and technological disciplines, including publications for the popularization of science and technology, in all the official languages of the United Nations.

...

E. Institutional arrangement and structural transformations

...

106. Further, the organs, organisations and bodies of the United Nations system should take the necessary measures to achieve, inter alia, the following objectives of particular importance to devloping countries:

...

(b) Strengther existing and develop new research and development and consulting institutions in order to increase the generation and transfer of scientific and technical knowledge to developing countries;

...

(f) Facilitate the access of developing countries to technical information already existing in documents such as those concerning patents and other information important to the transfer and use of technology.

FIIRO
Oshodi,
Lagos.

4 May 1981

Short Course in Industrial Information 4 - 15 May 1981

Evaluation of the Course

To Participants of the Course!

1. You are kindly requested to fill in the attached questionnaire and return it to Mr. Sodipe on 14 May.

2. The answers may be anonymous. You are not supposed to put your name and signature at the end of the questionnaire.

3. Most of the questions have to be answered by putting a cross in the respective field. [X]

4 Some questions require formulating your opinions and reasonings.

5. The completed questionnaires will be processed in the evening of 14 May. The answers will be evaluated at the morning session on 15 May.

6. Your thoughtful answers and returning the questionnaire in time will contribute to the evaluation of the course and to further planning of industrial information training.

Annex: Questionnaire

To be returned to
Mr. Badipe on 7th May

QUESTIONNAIRE

1. Your general comments, views and impression on the Course

2. Did the Course achieve its primary objective (to promote the use of information by the industries in Nigeria and to make them aware of the sources of information)?

   (a) Fully ☐
   (b) To a large extent ☐
   (c) Partially ☐
   (d) No ☐

Please, explain your rating:

3. Did you find the Course useful?

(a) Highly useful ☐

(b) Partly useful ☐

(c) Not useful ☐

4 If you found the Course useful, was it because

(a) you gained a comprehensive view of Industrial information? ☐

(b) you received information which you may use directly in your work? ☐

(c) you received information about information sources available for you or problem solving and decision-making? ☐

(d) you acquired knowledge about methods and tools of industrial information? ☐

(e) of other reasons? (Please, specify)..... ☐

_____

_____

_____

_____

_____

5. Shortcomings of the Course

(a) Programme, structure of lectures ☐

(b) Contents of lectures ☐

(c) Presentation ☐

(d) Papers distributed ☐

(e) Other (Please, specify)..... ☐

_____

_____

_____

_____

_____

6. Which lectures do you rate first?

1. ----------

2. ----------

3. ----------

7. Which lecture (lectures) do you consider as superfluous because of

(a) lack of valuable information?

(b) not pertaining to your field of interest?

(c) not pertaining to industrial information?

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8. Would you suggest

(a) to repeat the Course (aa) in Lagos? ☐
(ab) in other places? ☐

(b) to extend the Course to become a permanent one? ☐

9. In order to develop the Course into a permanent one, to be repeated regularly in predetermined intervals

(a) no substantial change is needed in the course programme and structure ☐

(b) the course should be differentiated according to various user groups (managers, technical staff, information staff etc.) ☐

(c) other changes are necessary (please specify):..... ☐

Would you persuade or advise your business or office colleagues and partners to attend the Course?

Yes ☐ No. ☐

Federal Institute of Industrial Research,
Oshodi, Lagos.

Short Training Course in Industrial Information
4 - 15 May 1981

Address on the scope of the training course
at the Inauguration Ceremony
4 May 1981

by P. LAZAR
UNIDO Expert in Industrial Information Training

Mr. Chairman,

The Permanent Secretary of the Federal Ministry of Science and Technology,

The Director of FIIRO,

Distinguished guests, lecturers, participants of the course, Ladies and gentlemen,

It is my honour and my pleasure to welcome you on behalf of UNIDO and the UNIDO experts who were involved in the preparation of this two weeks training course which forms part of the UNIDO project on the development of industrial information facilities in Nigeria.

The primary objective of the course is to promote the use of information by industries in Nigeria and to make industries aware of the capabilities of industrial information which is needed for accelerating industrial development.

It is expected that the course will help to fill the information gap between the source institutions of industrial information in the country and the potential users of information, on the one hand, and the information gap between the indigenous sources and the foreign and international sources of industrial information, on the other. In this last respect I would like to express my appreciation and, with your kind permission, the appreciation of all of us towards those ten international organizations which I requested to supply instructional background and information documents and publications to our training course. I am most glad to be able to

.../2

inform you that most of these international organizations responded favourably to my request and we already received books, other publications and documents in the value of about US $6,000. The arrival of such materials still continues.

The lectures of the course will present main fields of industrial information to an audience which was planned to consist chiefly of users of industrial information, users who need information for policy-making decision-making and problem-solving at the Government level and at the level of the management of industrial research and development, production and marketing.

In addition, a selected number of librarians and information specialists have also been invited. The course will certainly help them to get better known to the basic fields and problems of industrial information. This may facilitate their active contribution to servicing users of industrial information.

The programme of the course intends to emphasize specifically the information problems of the small-scale and medium-scale industries.

Within this setting the programme aims at familarizing the participants with the following areas:

1. Sources of information generated by Government departments and agencies concerned with industrial development in Nigeria;

2. Information on policies, plans, programmes and regulations emanating from Government relating to industrial development;

3. Opportunites - incentives, credits and institutional facilities - provided by Government for stimulating industrial development;

4. Major sources of industrial information available in Nigeria;

.../3.

5. Overview of the international sources of industrial information which can be used by industries in Nigeria; and

6. Ranges of information services that can be used by industries.

Thus, the scope of the course is rather broad. This is a direct consequence of the broad scope of industries and industrial activities, on the one hand, and information sources, resource centres and services, on the other.

Like any other industrial operation such as investment, research and development, production, maintenance and sales etc., industrial information is a highly complex activity which needs funds, qualified manpower and which deserves not only attention but wholehearted support from Government, industries and all other users of information.

I very strongly hope that the training course will not only help to increase the information awareness of the actual and potential users of industrial information but may convert users who consider industrial information with some interest, or even in an indifferent way, into enthousiastic supporters and exploiters of industrial information, contributing thus to the development of one of the most effective tools of industrial development, namely: information.

Thanks for your attention!

Daily Times, 15 April 1981, p.20.

Course on industrial information planned

THE Federal Industrial Research, Oshodi (FIIRO) Lagos plans to hold a short term training course in industrial information. FIIRO is organising the course under the National Industrial Information Centre, a centre which was set up to hasten the country's process of economic growth.

The training course is being organised in keeping with the objective of the centre, which among others, is to prepare and execute a development programme for the centre to enable it provide governments (Federal and State) and Industry with the necessary scientific, economic and other relevant information on industrial development.

Lectures will cover topics in industrial policy, planning and programmes, organisation of industrial information, and international systems.

The training course will come up from May 11 — 22 1981, and will take place at the institute.

FOR sometim — now, there ha been a mild epidemi of an eye trouble popularly calle "Apollo". The vic tims of this eye infla mation carry swollen, watery and somewhat reddish eyes. Although the epidemic is dying down gradually we have gone to the Federal Epidemiological Unit, Onikan, Lagos to get some information on the disease — its causative agents,

FIIRO COURSE FOR MAY

A SHORT-TERM course on industrial information comes up next month at the Federal Institute of Industrial Research Oshodi (FIIRO).

It will run from May 4 to 15. The course is tailored to meet the needs of industries, institutes, and government departments, according to an official of FIIRO, Mr. R.O. Sodipe

"The services of two experts from the United Nations Industrial Development Organisation (UNIDO) are available, for conducting the course while there will also be lectures by specialists", he added.

FIIRO is currently undertaking a UNIDO project on industrial information.

The Punch, 15 April 1981