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FINAL REPORT ON THE ESTABLISHMENT, STRENGTHENING AND PROMOTION OF LINKAGES BETWEEN NATIONAL, REGIONAL AND SUB-REGIONAL INDUSTRIAL TECHNOLOGICAL INFORMATION SERVICES IN AFRICA AND WITH INTIB*

Prepared by

UNIDO Secretariat**

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INTRODUCTION

BACKGROUND

1. As a result of the Lima Declaration and Plan of Action, Second General Conference of UNIDO, March 1975 and the UN General Assembly Resolution 3507, December 1975, INTIB* was set up in 1977 with the aim of facilitating and accelerating a greater flow of information to developing countries specially in regard to their needs, to have access to specific information on advanced and other technologies as well as on the new uses of existing technologies, new developments, possibilities of adapting them to local needs and to select technologies.

2. Even though the supply of information at the country level in particular for the priority sectors identified by the Lagos Plan of Action is crucial for the success of the Industrial Development Decade for Africa, several African countries do not have an industrial information system themselves and in many cases where they have such facilities, they are mostly in the nature of documentation services. They also suffer from lack of adequate resources to obtain on a systematic basis information from external sources.

3. UNIDO has in the past given technical assistance to national information systems or services in several countries, such as Algeria, Angola, Ivory Coast, Kenya, Libya, Mauritania, Mozambique, Nigeria, Senegal, the Sudan, Togo, Tunisia, Rwanda, Burkina Faso and Zaire. Since the projects in these countries have been completed there is a base that exists but nevertheless needs continuing support not so much by the provision of expert services on a medium or long-term basis but through advisory services and the establishment of adequate links with external sources of information such as INTIB.

4. INTIB provides an international infrastructure on which they would draw up on to strengthen themselves. By establishing links with INTIB selected personnel in the information system and services could also be made familiar

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* INTIB: Industrial and Technological Information Bank

with methods of collecting processing and disseminating problem-oriented information to industry. This process will also result in other advantages. The flow of information among the strengthened national systems and services can be promoted and links also established with possible regional mechanisms such as ARCT*. The preparation of industrial profiles and information packages of INTIB could also be oriented towards the needs identified in Africa.

INITIATION OF THE PROJECT AND METHODOLOGY ADOPTED

5. Realizing these, UNIDO initiated the IDDA** project RP/RAF/85/E-18/REV I. According to this project, 8 countries were selected out of which 3 were to be English speaking, 3 were to be French speaking and 2 were to be Arabic speaking. During the course of the implementation of the project, due to the unexpected and insurmountable difficulties experienced in carrying out the work in Arabic, the Project Activities were confined to English and French speaking countries but the total number of countries were increased to 10 - Five English speaking (ie, Egypt, Kenya, Nigeria, Tanzania and Zambia) and five French speaking countries (ie, Algeria, Cameroon, Ivory Coast, Senegal and Tunisia).

6. A National Expert was identified for each of these countries with a view to identifying the INTIB national focal point and suggesting ways of strengthening the national information systems and services by formulating answers to the following questions.

* What are the existing and potential national information systems, services and networks?
* Who are the existing and potential users of industrial and statistics information?
* What is the nature of the information needs and services required by INTIB users?
* What are the manpower requirements and training needs for the national information systems?

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* ARCT: African Regional Centre for Technology
** IDDA: Industrial Development Decade of Africa

7. The national counterpart report from most of countries were separately published (See Annex I).

8. UNIDO appointed Mr M El Toukhy and Mr A Yudin as UNIDO consustalts for studying the English speaking countries and Mr A Muraszkiwicz and Ms P Tomic as UNIDO consultants for studying the French speaking countries.

9. Accordingly UNIDO field Missions for the English speaking African countries, viz, Egypt, Kenya, Nigeria, Tanzania, and Zambia; and for the French speaking African countries, viz, Algeria, Cameroon, Ivory Coast, Senegal and Tunisia were undertaken and their reports were also separately published (See Annex II).

10. The National Experts with their national reports, the UNIDO consultants with their Mission Reports and the UNIDO officials and UNIDO appointed senior experts met in Vienna from 25 November to 29 November 1985 under the Chairmanship of UNIDO's Chief Consultant for this project Dr H C Visvesvaraya, discussed the contents of these various individual reports and mission reports, exchanged views on how to strengthen the information activity in Africa, the nature and role of UNIDO-INTIB Network and formulated this report.

I CONCLUSIONS AND RECOMMENDATIONS

A. PRESENT STATUS

11. Developing countries have come to recognize and appreciate the importance of industrial and technological information in accelerating and expanding industrial development. The Lagos Plan of Action spell out the long-term measures required for restructuring economies of African countries on the basis of the principles of national and collective self-reliance and self-sustaining development,

the promotion of the physical integration of African economies, and the creation of national, subregional and regional levels of a dynamic, interdependent African economy. Central to the successful implementation of any development strategy, so is to the Lagos Plan of Action for IDDA, is the recognition of the important role played by industrial and technological information services.

12. Planned utilization of industrial and technological information is one of the most important tools in promoting national development. There is a lot of useful information available in these countries, but there is need for establishing appropriate national focal points and systems in order to effectively select what is required for use by the users.

13. All these countries have stressed and attached great importance and allocated finances for the development of information institutions and services, libraries, archives, museums, documentation centres, publishing establishments and manpower training facilities.

14. The services offered by the centres are very many, viz,

* retrospective literataure search;
* compilation of directories of subject specialists;
* compilation of subject bibliographies;
* compilation of directories of on-going projects;
* reference service;
* data base building, retrospective and current awareness data base searching;
* SDI services;
* documents delivery;
* reprographic services;
* repackaging of information.

15. Most of the organizations have introduced micro computers in their information activities.

B. IDENTIFIED NEEDS

16. The countries studied share many common features, problems and needs for industrial and technological information and for information transfer facilities.

17. There is a need for the national authorities to consider the establishment of national industrial and technological information systems based on a national network of well organized information centres.

18. There is need for strengthening the existing international linkages and/or establishing new ones such as with INTIB.

19. Other needs identified are:

- financial assistance towards acquisition of documentary sources;
- sponsorship for training courses and meetings;
- acquisition of INTIB publications;
- participation of INTIB in establishing industrial information systems;
- technical information on the 20 core sectors identified by INTIB;
- information in the areas of standards and patents;
- acquisition of hardware compatible with IBM PC, APPLE II, III;
- organization of joint pilot projects

C. THE STRATEGY FOR MEETING THE IDENTIFIED NEEDS

20. Any approach to strengthening of industrial information activity has to take into account the following basic points:

i/ In order to ensure that the resources spent and efforts put in do not get thinly spread, the entire focus must be on 'industrial information' as distinct from scientific and non-scientific general information. Strengthening industrial information services would automatically have multiplier effect on other types of information services from which the industrial information may draw.

ii/ The developmental level and the nature of information capabilities and needs presently differ from country to country and will continue to differ; African region will be no exception. And hence any network and system has to take into account such variations within the system amongst the nodal points.

iii/ However well equipped and strengthened a national or an international information centre may be, in the context of modern global status and complexities of information aspects, these centres can never consider themselves self comprehensive or self contained to deal with all information needs and therefore, while attempting to make them self-sufficient, they should be made capable of becoming focal nodes for securing information from other sources.

21. It is neither necessary nor feasible to have a perfect national linkage with a single nodal point and a perfect international network. Within the realities of the situation a pragmatic solution has to be worked out for each country; this may result in an international network with multi-nodes in many countries.

22. Whilst there may be no advantage in the present situation to follow a strict heirarchy in terms of international, regional and national organizations, the regional organizations such as for example ARCT could be immediately strengthened in the areas of manpower training, standardization of terminology etc.

D. FURTHER ACTION

At INTIB

23. UNIDO-INTIB should cause and assist in the formulation of the requisite 'Information Policy' in each country. A model frame work may be worked out in consultation with the national counterparts.

24. INTIB should identify the national focal points in consultation with the respective governments which in the first instance assist in developing the information policy and programme and in their implementations and then act as national industrial information nodes linked to INTIB as part of a network.

25. For the INTIB national node network to become effective two basic pre-requisites are:

(a) The national industrial information centres which could be the national nodes should be adequately strengthened;

(b) INTIB itself has to be reoriented to become a strong international information agency with necessary horizontal information linkages including those with external commercial data bases;

(c) Since it is the experience of many information centres in developing countries that on the one hand bilateral arrangements with commercial data bases are too expensive and on the other data bases developed in the context of developed countries are not often in a form appropriate to meet the needs of the developing countries, INTIB should have not only the horizontal linkage with commercial data bases but also the arrangement for sifting and repackaging them in a way suitable for use by the developing countries; and

(d) INTIB should assist the national information centres and the regional centres in strengthening the activities if the respective national institutions would, through their respective governments, secure funding assistance either on bilateral basis through aids such as the Canadian aid or the Norwegian aid or under United Nations Development Programme such as IPF. Under such a programme INTIB can assist in many ways including securing hardware, training of personnel, conducting workshops on use of mini computers, and formulation and supply of software.

<u>At Regional Level</u>

26. The regional information focal points should be strengthened through:

regional standardization of information language within the framework of the international languages;

regional training of manpower;

regional assistance in strengthening national nodes.

At National Level

27. At the national level the national industrial information centres should be strengthened through:

i/ Strengthening the infrastructure - hardware included;

ii/ Training manpower at national level,

iii/ Standardization of information language at national level within the framework of the standardized regional language,

iv/ Compatibility of software and equipment facilities,

v/ Building Information packaging and repackaging capabilities.

28. Wherever the respective governments find it feasible and necessary, they may identify for each country one national focal point whose primary task would be to coordinate and guide the development of the various national institutions dealing with information activity.

29. From the limited study carried out under this UNIDO project, it appears the respective governments may particularly include the following in considering the potential national focal points in the 10 countries selected:

Algeria:	Institute Superieur de Gestion et de Planification (ISGP);
Cameroon:	Centre National d'Assistance aux Petites et Moyennes Entreprises (CAPME);
Egypt:	Egyptian National Scientific and Technical Information Network (EINSTINET)
Ivory Coast:	Service Autonome de Promotion Industrielle et de Documentation au Ministere de l'Industrie (SAPIA);
Kenya:	Kenya Industrial Research and Development Institute (KIRDI)
Nigeria:	Federal Institute of Industrial Research, Oshodi (FIIRO)
Senegal:	Societe Nationale d'Etudes et de Promotion Industrielle (SONEPI);
Tanzania:	Tanzania Industrial Research and Development Organization (TIRDO)

Tunisia: Institut Nationale de la Normalization et de la Propriete Industrielle (INNORPI); and

Zambia: Small Industries Development Organization (SIDO).

30. In order to qualify for being national nodes linked to the INTIB international network, the national institutions should have sufficiently developed and should have reached a critical mass. It is not possible to generalize and define how to measure "sufficiently developed" or "critical mass" but the government in each country may consider all aspects relating to the capability of the institutions and the fact that too many nodes in each country would mean too dilutely spreading the resources and indicate to UNIDO-INTIB the names of such national nodes. From the limited study carried out and the interaction had with the national counterparats, it appears the respective governments may particularly include the following in considering the potential national nodes:

Algeria

i/ Centre Nationale d'Information et de Documentatioon Economiques (CNIDE);

ii/ Centre Nationale d'Animation des Entreprises et de Traitement des Information de Secteur de la Construction (CETI);

iii/ Centre Nationale d'Etudes et de Recherches Integres du Baitiment (CNERIB);

iv/ Organiseme de Controle Technique de la Construction (CTC);

v/ Instituat Algeien de Normalisation et de Propriete Industrielle (INAPI).

Cameroon

i/ Ministere de l'Equipment (MINEQ);

ii/ Ministere de l'Informatique et des Maraches Publics (MINIPAT);

iii/ lMinistere du Plan et de l'Amenagement du Territoire (MINPAT);

iv/ Institut de Recherches Geologiques et Mineres (IRGM);

v/ Chambre d'Agriculture et d'Elevage et des Ferets du Cameroon (CAFE);

vi/ Chambre de Commerce d'Industrie et des Mines du Cameroon (CCIM).

Egypt

i/ Egyptian Documentation and Information Centre for Agriculture (EDICA);

ii/ Centre for Education Technology (CET);

iii/ Engineering and Industrial Design Development Centre (EIDDC);

iv/ National Information and Documentation Centre (NIDOC).

Ivory Coast

i/ Chambre d'Industrie de Cote d'Ivoire (CICIV);

ii/ Chambre de Commerce de la Cote d'Ivoire (CCCI);

iii/ Societe Ivorienne de Technologie Tropicale (ITT);

iv/ Centre d'Assistance et de Promotion de l'Enterprise Nationale (CAPEN);

v/ Banque African de Development (BAD);

vi/ Unite Documentaire de l'Energie Electrique de Cote d'Ivoire (UDEECI).

Kenya

i/ National Council for Science and Technology (NCST)

ii/ Industrial Development Bank Ltd

iii/ Kenya National Chamber of Commerce and Industry;

iv/ Ministry of Commerce and Industry (Information and Documentation Section);

v/ Industrial and Commercial Development Corporation (ICDC);

vi/ Kenya Industrial Estate (KIE);

vii/ East Africa Industries Documentation and Information Centre;

viii/ Egerton College;

ix/ Directorate of Industrial Training Library;

x/ Ministry of Transport and Communications;

xi/ Kenya Bureau of Standardization;

xii/ Kenyatta University College - Appropriate Technology Centre.

Nigeria

i/ Manufacturers Association of Nigeria;

ii/ Nigerian Industrial Development Bank;

iii/ Nigerian Society of Engineers;

iv/ Federal Ministry of Science and Technology;

v/ National Library of Nigeria;

vi/ Federal Ministry of Industries.

Senegal

i/ Zone Franche Industrielle de Dakar (ZFI);

ii/ Chambre du Commerce at d'Industrie de le Region du Cap-Vert (CCI);

iii/ Societe Financiers Senegalaise Pour le Development de l'Industrie et du Tourisme (SOFISEDIT);

iv/ Conseil National des Employeurs du Senegal (CNES);

v/ Institut de Technologie Alimentaire (ITA).

Tanzania

i/ Tanzania Industrial Studies and consultancy Organization (TISCO);

ii/ Ministry of Industries and Trade;

iii/ Institute for Production and Innovations;

iv/ National Institute for Productivity;

v/ Metal Engineering Industries Development Association;

vi/ Tanzania Development Finance Company Ltd;

vii/ Small Industries Development Organization (SIDO);

viii/ Tanzania National Research Information Service (TANRIS)

ix/ National Central Library (TLS)

x/ Tanzania Bureau of Standards (TBS)

Tunisia

i/ Agence de Promotion des Investissements (API);

ii/ Centre National des Etudes Industrielles (CNEI);

iii/ Institut National de la Statistique (INS);

iv/ Ministere de l'Economic Nationale, Direction de l'Organisation et du Traitement de l'Information (MEN).

Zambia

i/ National Council for Scientific Researach - Documentation and Scientific Information Centre (NCSR);

ii/ Technology Development and Advisory Unit of the University of Zambia (TDAU);

iii/ Institute of African Studies of the University of Zambia;

iv/ Ministry of Commerce and Industry;

v/ Development Bank of Zambia;

vi/ Zambia Industrial and Commercial Association (ZINCOM);

vii/ Zambia Standards Institute;

viii/ National Food and Nutrition Commission

ix/ Village Industry Service Information Unit (VIS)

At Institutions and Organizations related to Industrial Information

31. At each of the national focal point and the national node, the existing infrastructure should be so strengthened as to take increased responsibility towards processing and dissemination of information to enlarged clientele. For packaging and repackaging information subject specialists will be needed. If these specialists are recruited as part of the regular manpower of the information centre, there is the danger of these specialists becoming obsolete in course of time due to want of advancement and new exposures in subject speciality. Therefore while information scientists may essentially man the information centre, strong, active, day-to-day linkages should be established with other organizations covering subject specialization.

32. Computer hardware/software should be provided if not already available with the centre and the system should be compatible to the system existing in INTIB.

33. Standardised classification scheme, IDA* Thesaurus developed by UNIDO must be used.

34. Manpower training should be undertaken to provide the existing staff wide exposure in processing and dissemination of information on modern principles and practices.

35. Telecommunication links should be strengthened as much as possible.

36. In the case of the National focal points it should be ensured that they have in their possession the following equipment in good working order at all times:

Micro-fiche camera
Micro-fiche reader cum printer
Automatic plain paper copier
35 mm slide projectors
Overhead projector
Video Cameras, TV
Mini-computer/Personal computer

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* IDA: Industrial Development Abstracts

37. In the case of national nodes, it should be ensured that they have in their possession the following equipment in good working order at all times:

Micro-fiche reader cum printer,
Automatic Plain Paper Copier
35 mm slide projectors
Overhead Projector
Television with Video Casette Player

At the End Users of Industrial and Technological Information

38. Continuous training of the users in order to make them information conscious and to accurately identify the information needed should be done.

39. It is also essential that the users should be trained in regard to how to make use of the information available.

E. PROJECT PROPOSAL

40. Of the 47 countries in Africa, the present study has covered only 10 countries. Even though most of the conclusions and recommendations may by and large be equally valid for many of the remaining countries, a general comparison has shown that there are countries with substantial differences. It would therefore be necessary to formulate and execute a similar project as a second stage of the endeavours towards establishing an INTIB-African ccuntries linkage in the most appropriate way. Moreover, for any such linkage to be effective, many of these African countries information activities must be made to feel that they have also participated in the formulation of the final scheme. Keeping this in view it is proposed that the second phase of the project should cover all the remaining 37 countries. Of this, only 12 countries need be visited and studied while the situation in the remaining 25 may be studied, as best as possible, through

communications. Of the 12 countries to be visited and studied, 9 may be the least developed ones and 3 the relatively most developed.

II. DEVELOPMENT AND IMMEDIATE OBJECTIVES

DEVELOPMENT OBJECTIVES:

41. The Development objective is to assist developing countries in strengthening national information systems to support the development of their scientific and technological capabilities for the development of their industry and to promote their links with external sources of information.

IMMEDIATE OBJECTIVES

42. The immediate objective is to assist selected African countries in strengthening national information systems and services in the generation, collection, processing, evaluation, analysis, validation and dissemination of relevant industrial and technological information and particularly to provide through INTIB an inexpensive access to external sources of information and to promote the exchange of industrial and technological information among developing countries.

43. The role of 'Information' as an important input in the developmental processes, like in all other countries of the world, is being increasingly realised by all the Governments in Africa and in this background all those connected with information programmes, systems, activities and services should utilize every available opportunity both nationally and internationally to demonstrate in appropriate ways to the respective governments the value of good information programme, system and service and thus secure increasing governmental support to both national and international information activities.

III. SUMMARY OF COUNTRY REPORTS

FRENCH SPEAKING AFRICAN COUNTRIES (ALGERIA, CAMEROON, IVORY COAST, SENEGAL AND TUNISIA)

44. UNIDO has been involved in the establishment or strengthening of different industrial and technological information facilities in developing countries and in the training of industrial information personnel. Its own industrial inquiry services and the INTIB are intended to serve and support facilities through the creation and maintenance of effective linkage with them.

45. UNIDO in the past has given technical assistance to national information systems in countries like Algeria, Cameroon, Ivory Coast, Senegal and Tunisia. Since the project in these countries have been completed there is a base that exists, but still they need continuing support especially in advisory services and the establishment of national information systems and adequate links with external sources of information such as INTIB.

46. The Mission had studied the existing information systems available in Algeria, Cameroon, Ivory Coast, Senegal and Tunisia.

47. The Mission made use of the questionnaire designed by INTIB specialists and carried out a series of meetings and interviews in these countries. The questionnaire (Annexure IV) was used in 58 institutions. About 100 persons were interviewed and they included officials responsible for national development in the field of industrial and technological information, actual and potential major users of information, specialists like documentationalists, engineers, programmers etc.

Information Users and their Needs in these African Countries

48. The basic industrial and technological information needs expressed by the users deal with knowledge of the market; products design; product manufacture; quality control; standards; marketing; and technological information for innovation and improvements. The main sources of information requested are: patents, standards, statistics, bibliographic data bases, technical reports, import/export data, characteristics of local equivalents of raw materials, data on foreign manufacturers etc, etc. There exists some disparity in the quantity and the degree of sophistication of the industrial and technological information required in these countries due to priorities in the national economy and the developmental level attained.

49. Examination of users needs as well as the forms of the information presentation shows that the users are vitally interested in selective dissemination of information. Unfortunately, this kind of service is very rare in the countries in question.

50. Estimates of manpower, technical and financial resources as collected by the UNIDO Field Mission are as follows:

i/ Manpower:

Category \ Country	Algeria	Cameroon	Ivory Coast	Senegal	Tunisia
Specialists	NA	50	34	38	260
Assistants	NA	30	17	10	85

NA : Data not available

ii/ Hardware and Software:

Country	Hardware	Software
Algeria	C 11 HB 66/05 BURROUGHS 6900 IBM 370/145 IBM 370/148, HP 3000 HP 250, VAX 750 BULL MINI 6, PDP 11/23 BULL MITRA 625	TPL, PVS, TPS 6, MINISIS, IDS DEF 2 and Some in house packages
Cameroon	IBM 4361, IBM 4381, 2 x IBM PCXT, 2 IBM PC ITT 3030, MICROMEGA 16 The public data transmission network CAMPC is being implemented in Cameroon	ADS (Applied Data Reach - France) d BASE II, BASE III WORDSTAR and some in-house packages
Ivory Coast	IBM 4341, IBM PC The public data transmission network SYTRANPAC is to be operational soon in Ivory Coast	PFS File d BASE III and some in-house packages
Senegal	2 x IBM 4341, BURROUGHS 96 APPLE LISA, MITRA 82 IBM/PC XT, IBM PC	LISA 7/7 CDS ISIS
Tunisia	BULL DSP 8, IBM 34 BURROUGHS 800 HP 3000/37 XE BURROUGHS 1955 HP 9826, HP 9835 5 x IBM PC XT A project of a public data transmission network is to be started in Tunisia soon	MISTRAL, MINISIS d BASE II, d BASE III and some in-house packages

iii/ Annual Budget (in US Dollars)

Country	Budget
Algeria	NA
Cameroon	NA
Ivory Coast	NA
Senegal	$ 320,000
Tunisia	$ 1,450,000

NA : Data not available

51. Contributions expected from INTIB : The UNIDO Field Mission to Algeria, Cameroon, Ivory Coast, Senegal and Tunisia assessed the expectations from INTIB in these countries as follows. That INTIB should -

assist the countries in question in elaborating the national information policies; in particular, Tunisia requires an expertise and assistance in the establishment of the national industrial and technological data bank;

make services of INTIB and INTIB itself more known (promotion) and to make the users better aware of INTIB features and possibilities;

prepare an exhaustive documentation (in French) on INTIB and to send it as soon as possible to all interested persons;

organize demonstrations involving the INTIB data banks in order to provide the users with an opportunity to verify INTIB's credibility;

equip all the national focal points with microcomputers compatible and comparable with the IBM PC XT (AT) machines;

provide the institutions having an appropriate hardware with an information retrieval software; and

organize training courses dealing with the use of the proposed software.

52. Examination of indexing methods and information retrieval features applied in information centres and libraries shows the tremendous divergence of information languages used.

53. Lack of coordination and bilateral links between the country information systems presented above was recognized during study by the UNIDO Field Mission. Thus, the building of the national industrial and technological information systems is considered as a very important task to be accomplished.

54. Lack of national industrial and technological information policy is considered by specialists in the field of information as main constraint which makes the information system implementation impossible.

55. When establishing the INTIB national node network linkage in the countries in question, one has to take into account that telecommunication circuits (networks) are of poor quality. Moreover, as far as manpower is concerned only in Algeria and Tunisia the quantity of skilled information personnel seems to be satisfactory. Unfortunately, this is not the case in Cameroon, Ivory Coast and Senegal.

56. Traditional statistics such as gross output, value added, employment, wages and salaries, production indices etc, as well as compilation of published statistical information, viz, input-output tables, industry census, annual survey of industries etc, are often requested by industrial and technological information end-users as well as the systems.

(Mission Report on the industrial and technological information systems in Algeria, Cameroon, Ivory Coast, Senegal and Tunisia prepared for the UNIDO Industrial Information section, by M Muraszkewiez and F Tomic.)

ENGLISH SPEAKING AFRICAN COUNTRIES (EGYPT, KENYA, NIGERIA, TANZANIA AND ZAMBIA

57. The UNIDO Field Mission felt that the identification of national focal points of INTIB in these African countries was the first important task of the Mission. The Mission used the questionnaire (Annexure IV) in 37 institutions and

carried out a series of interviews and meetings with 50 specialists in these countries.

58. Availability of information at the country level, particularly in the priority sectors identified by the Lagos Plan of Action, though recognized as crucial for the success of the IDDA programme, is inadequate in many cases. Several African countries do not have an industrial information system themselves and in a few countries where such facilities exist they are mostly in the nature of documentation services. They also suffer from lack of adequate resources to obtain on a systematic basis information from external sources.

59. The main problems faced by the organizations in Egypt, Kenya, Nigeria, Tanzania and Zambia were identified by the UNIDO Field Mission, as:

i/ lack of statistical and patent information;

ii/ lack of hardware and software for processing and analysis of data;

iii/ availability of trained manpower;

iv/ local market not being able to satisfy demand for right types of technical and general literature on small industries;

v/ lack of sources of information;

vi/ acquisition of latest information materials;

vii/ formulation of specific information, answers to queries;

viii/ small collections of different data bases;

ix/ response time from some countries is very long;

x/ collection of information from the metal industries;

xi/ lack of general information policy;

xii/ lack of information on availability of appropriate technologies, machinery and markets;

xiii/ lack of enough funds for expansion and improvement;

xiv/ lack of effective utilization of available information by the users;

xv/ total absence of organized information systems and services;

xvi/ lack of funds for computer equipment;

xvii/ high turnover of qualified staff due to low salaries.

60. The main tasks of the information centres in these countries consist in providing necessary industrial and technological information to specialists in the field of management, R&D, Policy lmakers, Planners, Trade, Industry, and Selection Systematization, storage and retrieval of primary documents; dissemination of industrial and technological information to users.

Information Users and their Needs in these African Countries

61. The end users of industrial and technical information are : engineers, R&D organizations, information and documentation centres, consultants, farmers, planners, government ministries etc.

62. The information needs in these countries cover economic development, technical know-how, technology packages, availability of processed raw materials; investment procedures; marketing techniques; engineering design; industrial profiles; process technology, agro and industrial production statistics; patents; appropriate technology, standards, specifications, information on new innovation (local as well as international); latest books; indices; technical reports; directories.

63. Estimates of manpower, technical and financial resources as collected by the UNIDO Field Mission are :

i/ Manpower:

Country / Category	Egypt	Kenya	Nigeria	Tanzania	Zambia
Professional	NA	43	76	20	20
Non-professional	NA	157	152	13	13

NA : Data not available.

ii/ Hardware and Software :

Country	Hardware	Software
Egypt	AT & T 3 B 5 mini computer	UNIX OS BRS DB System BASIC, Shell Commands (UNIX)
Kenya	IBM/PC, SPECTRUM ZX, ICL ME 29/B7 IBM SYSTEM 34, IBM PC 526, WANG PC x 4	CDS/ISIS, BASIC, COBOL
Nigeria	WANG PC x 2, SIRIUS	COBOL, RPG, BASIC LOTOS
Tanzania	TEXAS INSTRUMENT (On-line terminal) APPLE III, WANG-2200, APPLE II E x 2	BASIC, COBOL, ALGOL
Zambia	HEPAS, COMMODOR IBM PC	COBOL, BASIC

iii/ Annual Budget (in US Dollars) :

Country	Budget
Egypt	NA
Kenya	$ 185,000
Nigeria	$ 250,000
Tanzania	$ 55,000
Zambia	$ 300,000

NA : Data not available

64. The support expected from INTIB in these countries, according to the UNIDO Field Mission are :

- financial assistance for the acquisition of documentary sources;
- sponsorships for international courses and meetings;
- acquisition of the INTIB publications;
- participation of INTIB in establishing industrial and technological information systems;
- financial support of information projects;
- technical information in the twenty areas of INTIB information activity;
- acquisition of information in the field of standards and patents;
- acquisition of computers compatible with IBM/PC and APPLE II, III;
- organization of joint pilot projects;
- all possible assistance in improving the industrial and technological information systems.

(Mission Report on the Industrial and Technological Information Systems in Egypt, Kenya, Nigeria, Tanzania and Zambia, prepared for the UNIDO Industrial Information Section by M El Toukhy and A Yudin.)

65. Contributions expected from INTIB : The UNIDO Field Mission to Egypt, Kenya, Nigeria, Tanzania and Zambia assessed the expectations from INTIB in these countries as follows. That -

- the creation of INTIB national focal points network requires the computerisation of INTIB focal points. Computerisation could be started on-line when most of all focal points have their computers.

- the development strategy should be within the general framework of cooperation and aimed at final computerisation of national focal points. In the initial stage of development strategy, the basis for information exchange and search must be established. And this development strategy should solve three problems :

i/ The classification system of industrial information must be in accordance with INTIB activities.

ii/ The minimum set of data must be in accordance with INTIB activities.

iii/ Computer format of the data to be according to the system followed in INTIB.

- it is necessaray to solve these problems at the international level taking into consideration ISO standards in the field of exchange of data by magnetic tapes, disks and on-line access, and in this :

Stage 1 could start with one operating central Computer in INTIB headquarters answering the requests from national focal points and disseminating information according to the established profiles.

Stage 2 commences when, besides the INTIB Computer, there are other computers at national nodes but without on-line links between them.

Stage 3 is reached when all the national nodes which have computers are connected on-line to the INTIB Computer. As a result, for these nodes, no mailing is needed and files of INTIB and Computers at the nodes could be searched and exchanged.

- it is necessary before purchasing a computer system, to make a detailed study to determine its configuration and software requirements.

A MODEL NATIONAL INFORMATION SYSTEM FOR AFRICAN COUNTRIES

66. Whilst the model for a national system of information in each country may vary from country to country, the Egyptian National Scientific and Technical Information Network (ENSTINET) may be cited as a good workable model.

67. ENSTINET is a component of a larger programme called Applied Science and Technology Programme. Structurally ENSTINET is a Network of distributed

information services, not a centralised system. Its components are -

a/ sectoral information services,

b/ the coordinating agency.

68. The functions of ENSTINET are :

- To raise public awareness of the utility of information;
- To organize Egypt-produced S&T literature;
- To facilitate access to available information resources in Egypt and abroad;
- To market information services;
- To train Egyptian manpower in information work and technology;
- To coordinate international programme in the information field.

69. The overall structure of ENSTINET is guided by a number of principles, such as :

- ENSTINET is a network of information services, not resources;
- ENSTINET is based on the sectoral principle, with each network node serving a specific socio-economic community;
- Each sectoral information service mode is autonomous;
- Each sectoral node is an independent cost centre;
- A coordinating body (focal point) manages the network;
- Public services are rendered through the sectoral nodes, not the coordinating body;
- Within the general guidelines, each sectoral node has the prerogative of setting its own organizational structure, depending on type of activities, the size and capacity of the node, the size of the target community, etc.
- ENSTINET operations should conform to international standards and practices.

IV. EXISTING AND POTENTIAL USERS OF INDUSTRIAL INFORMATION AND THEIR NEEDS

70. The studies conducted by the various UN Missions commissioned for this Project, reveal the presence of a wide variety of information users.

a/ The most common of them are : Planners, decision makers who are engaged in coordinating the development activities in science and technology at the local, national and international levels; R&D institutions, Government Institutions, small and medium scale industries, consultancy organizations.

b/ The potential users of information identified are scientists and engineers engaged in teaching in universities; development banks; food processing industries; agricultural industry; automobile industry; petro-chemical industry; paper industry; sugar industry; cement industry; pharmaceutical industry; water supply and development industry; materials handling equipment manufacturers; laboratory equipment manufacturers; mining industry; those involved in energy management;

c/ As development progresses in these countries, the potential users are also bound to expand covering almost all the economic sectors.

INFORMATION NEEDS :

71. The nature of information needs vary according to the needs of individual groups in relation to their interests and special fields of engagement. Keeping this in view the Survey has identified the following areas in which information is needed.

72. They are alternate technologies; Development projects; Product profiles; Marketing data; Bibliographical data; New materials; Modern equipment; Technical reports; Manufacturing processes; Development of manufacturing equipment; Development of flow sheets; Collection and processing of industrial and technological information on innovations and improavements; Standard specifications; Low and high precision machines; Semi and fully automatic machines as well as information on systems of manufacturing; Manufacturing technology; Information on raw materials; Technology transfer packages; Government

legislation; Equipment suppliers; Consultants; Productivity enhancement; Market statistics; Patent information; Engineering design; Industrial profiles; Industrial licences; Standardization and quality control of raw materials; Commercialization of R&D results.

73. These information needs are important in that they will help INTIB users be they Government or Private sector in the following areas :

i/ Pre-investment studies covering existing state of art, levels of production and costs etc., to decide the feasibility of the proposition;

ii/ Examination of the range of technologies available;

iii/ Choice of technology with all the details of know-how, engineering and modifications to suit the needs and situation;

iv/ Projection of improvement needed to update the technology in the future;

v/ Listing the requirements of spares and strategic raw materials and their supply;

vi/ Study of the raw materials available and their costs;

vii/ Collection of information on the present and future demand and supply position, realisable price and competition;

viii/ Estimation of the production costs and returns;

ix/ Selection of plant and its installation and consideration of its adverse effects if any, on the industrial supply to the consumers and on the environment.

V. STATUS OF STATISTICAL INFORMATION LINKING WITH STATISTICS AND SURVEY UNIT

74. Information is needed by policy and decision makers for guidance in the establishment of production units both in the Government sectors and Private sectors in regard to a wide variety of statistical data.

75. Traditional statistics such as gross output, value added, employment, wages and salaries, production indices, mineral data, agricultural data, input-output tables, annual survey of industries, import-export data etc, are quite often

required by industrial and technological information end-users. This calls for establishing links with organizations processing this type of information. As it is, there is no evidence of any survey having been conducted by any agency to identify such organizations having this type of information. It will be useful to have such a survey conducted, so that linkages could be established with the industrial information system and services and the organizations having statistical information in every country.

VI. PROJECT OUTPUTS

76. The Project has resulted in

a/ identification of the existing and potential information systems services and networks in the 5 English speaking countries Egypt, Kenya, Nigeria, Tanzania and Zambia, and 5 French speaking countries Algeria, Cameroon, Ivory Coast, Senegal and Tunisia has been done (Annexure II-A and II-B). The modalities of harmonising the industrial and technological information activity within each country has been identified and discussed in this Report. The national focal point as well as the national nodes for the network linkage with INTIB have also been identified (Ref. Items 29 and 30), but the final decision has been left to be taken by the concerned Governments of the countries.

b/ identification of existing and potential users of industrial information and their specific needs have been done as detailed in Item 70. Steps to promote information awareness amongst users and encouragement of usage of available information and documentation services have been discussed in detail with the national representatives both during the visit of the UNIDO Field Mission to these countries and also during the final meetings in Vienna. A continuous programme in this connection has also been recommended (Items 38 and 39).

c/ the nature of information and services required from INTIB have also been identified as detailed in Items 23 to 25.

d/ Whilst the manpower status in these countries and the training needs have been identified, a detailed assessment of the manpower requirements in each of the countries as well as at INTIB is proposed to be taken up in Phase II of the Project.

e/ Strengthening the linkages between INTIB and the information unit of African Regional Centre for Technology (ARCT) has been recommended. Joint projects specially relating to standardization of the information language and training of the manpower have been identified.

f/ the national Directors of the selected information centres from these 10 countries have been exposed to the information activities in a number of countries and also at INTIB and have thus gained familiarization. The UNIDO Field Missions have also, to an appreciable extent, provided opportunities for familiarization of the information specialities. All the participants have been given a comprehensive and exhaustive presentation on INTIB by the Chief of INTIB Dr. H W Pack.

g/ users of traditional statistics such as gross output, value added, employment, wages and salaries, production indices, have been identified as many and sources few in these countries. Suggestions have been made to strengrthen these activities.

VII. PROJECT ACTIVITIES

77. The two UN Missions - one to the English speaking African countries and the other to the French speaking African countries, prepared an inventory of the existing industrial and technological information systems, making use of the INTIB Questionnaire to elicit relevant information.

As per the findings of the Mission, 36 existing industrial information systems have been identified in English speaking African countries (Egypt - 5, Kenya - 11, Nigeria - 7, Tanzania - 6 and Zambia - 7); and 39 in French speaking African countries (Algeria - 8, Cameroon - 10, Ivory Coast - 9, Senegal - 7, and Tunisia - 5).

Further, the Mission had discussions with several experts and heads of these organizations. The observations of the Mission have already been discussed earlier.

The two UN Field Mission reports comprising Mr M El Toukhy and Mr A Yudin to the English speaking countries and Mr A Muraszkewicz and Ms P Tomic to the French speaking countries and the individual country reports were discussed

in a meeting by an expert group, in Vienna between 25 November and 29 November 1985 under the Chairmanship of Dr H C Visvesvaraya.

78. The work of the Project was carried out in 1985 and comprised the following:

(a) an inventory of the existing and potential information systems, services and networks in the selected 10 countries has been prepared as at Annexures II-A and II-B

(b) The needs and problems of the services in the selected countries have been identified as at Items 51, 52, 54, 59, 62, and 64

(c) The basic principles of information flow between possible sources
(d) of information, national services and the users have been formulated as reflected from Fig. 1.

(e) During the course of the interaction between INTIB and the selected African countries, extensive discussions were held which have resulted in special links being established in the selected African countries in regard to -

i/ increasing the numbers and enhancing the quality of industrial technological information

ii/ preparation of information packages in response to the needs of end-users

iii/ Searches of data bases;

iv/ Familiarizing information specialists with INTIB activities including handling inquiries from users and others and packaging and repackaging.

(f) The potential users of traditional statistics such as gross output, value added, employment, wages and salaries, production indices, etc, have been identified.

VIII. ACTION ORIENTED PROGRAMME

STRENGTHENING AND UPGRADING OF EXISTING AND POTENTIAL INFORMATION SERVICES/SYSTEMS NETWORKS.

79. Each Unit : With the technical assistance from UNIDO, national industrial information systems have been established in several countries such as, Algeria, Angola, Ivory Coast, Kenya, Libya, Mauretania, Mozambique, Nigeria, Senegal, the Sudan, Togo, Tunisia, Rwanda, Burkina Faso, and Zaire. Since the Projects in these countries have been completed, there is a base that exists but nevertheless, needs continuing support. Similarly a good base exists in countries like Egypt, Kenya, Tanzania. But these units need to be strengthened.

80. Familiarization with INTIB : The services and activities of INTIB should be propagated in all these African countries for creating an awareness of INTIB; its features and possibilities, among them. This can be achieved by preparing a comprehensive documentation on INTIB (both in French and English), its activities and how to use its resources. The documentation should be circulated to all the industrial information centres in Africa. The Thesaurus of industrial development terms elaborated by UNIDO should be sent to each unit. Periodical bulletins giving information about achievements in INTIB; development and activities should be circulated.

Added to this, demonstrations may be organized on use of data stored on diskettes for actual and potential users of INTIB services. This will give an opportunity to verify the credibility of INTIB data banks.

81. Linking them amongst themselves nationally, regionally and internationally : It must be ensured that all the information systems at national or regional levels should be compatible for effective linkage. Compatibility is achieved by the commonness of their organizational structures, uniformity of information retrieval language, uniform method of collection and processing of information.

A national information system itself will consist of sectoral or discipline oriented information systems in the form of national focal points (NF) or national nodes (NN).

The Schematic Network is illustrated in Fig 1 which is self-explanatory.

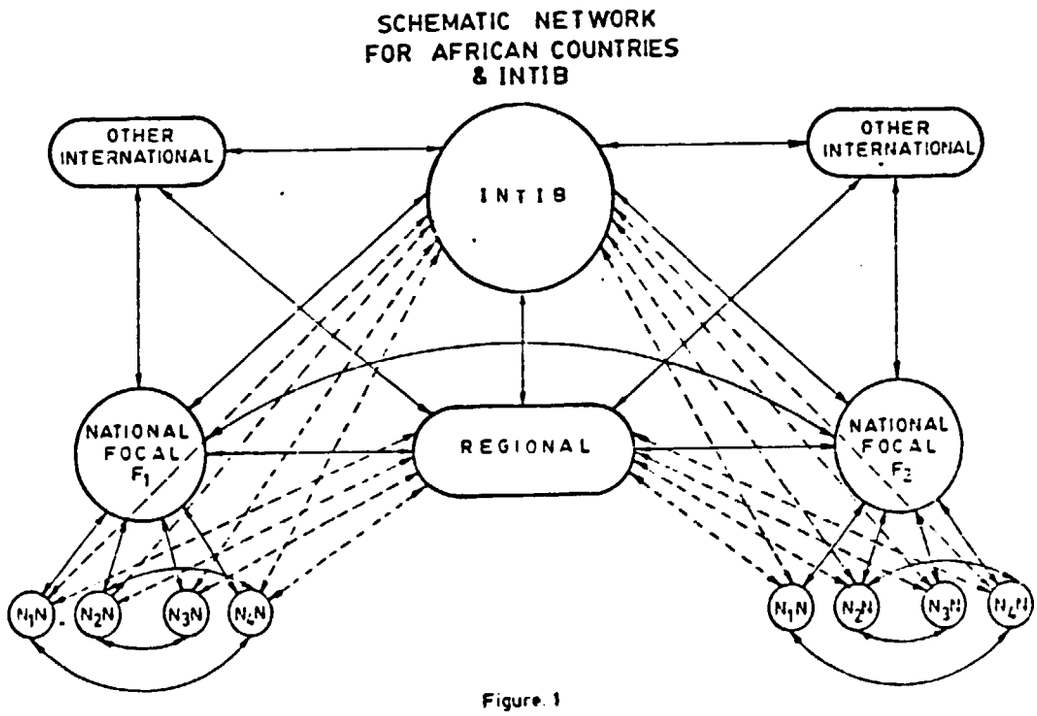

Figure. 1

82. Successful linkages can be achieved through provision of hardware and software at both the national and international levels. The existing facilities at each of the national nodes should be not only strengthened but also computerised data base management system should be taken forthwith at these points, the pre-requisite for which is the compatibility of the hardware, software systems obtained at these levels.

For this linkage to be effective, the necessary efficient communication systems between the national node and the international information system should also be established.

Strengtheniung Linkages Between INTIB and the Information Units of African Regional Centre for Technology (ARCT)

83. The African Regional Centre for Technology (ARCT) is an inter-governmental body created by African Heads of States and Governments under the auspices of the Organization for African Unity (OAU) and the United Nations Economic Commission for Africa (ECA).

The mission of ARCT, as defined by its Statutes, consists in :

(a) advising the national institutions of its member States in matters of selection of adequate technologies;

(b) identifying and placing at the disposal of the member States, which so desire, consultants specialized in matters relating to technology; and

(c) extending to member States who wish, a support in matters of identification of alternative sources of technology in various fields.

The programme of consultancy and advice prepared by ARCT for African countries revolves therefore around the objectives mentioned above. This programme has been designed in such a way as to serve as an additional and not as a competitive structure to the national consultancy institutions.

Range of Services Proposed by the Centre

- preparation of initial feasibility reports of projects which will enable to assess their advantages and the approximate cost.

- evaluation of feasibility study proposals and final implementation; providing consultancy services in matters of tender for equipment supplied.

- carrying out studies and research relating to acquisition and transfer of technology;identification of technologies, alternative sources of technology; and adaptation of these technologies and sources of technology to production and maintenance at the local level.

- providing information and industrial documentation and details on patents and patent rights.

- identification of consultants and consultancy organizations for carrying out works ordered by governments or public or private companies.

Fields of Specialization and Centres of Interest of Works under Execution

Feasibility studies

- Carrying out feasibility studies of projects from the economic and technical point of view;
- Pre-investment and planning of projects;
- Advisibility studies, profiles of projects and reports which will enable to facilitate decision making on investments.

Design Services

- Definition of manufacturing process or selection of suitable technologies; basic design, choice of methods of production; manufacturing plans, choice of materials and products design;
- Evaluation and providing consultancy services regarding project proposals; identification and choice of technologies; evaluation of tenders for equipment supplies;

Sectoral Studies

- Choice of technologies for the use of food and agricultural industries; industrial processing of food products, agricultural products and by-products.
- Consultancy services relating to the use of new and renewable energies.
- Development of rural industries.

Information Services

- Providing information and supporting services to consultancy organizations.
- Providing information on patents, patent rights and trade marks.

84. A joint meeting of the ARCT and UNIDO was held in Dakar from 1 to 3 October 1985, on the pilot project for Information Exchange in Africa (AFRICA TIES).

The objective of the meeting was to discuss the modalities for setting up AFRICA TIES and to work out a detailed plan of action as well as the necessary means for carrying out the planned activities.

The Technological Information Exchange System (TIES) set up by UNIDO is one of the rarest operational information exchange systems among developing countries. 35 ccuntries are taking part in it of which only 3 are from Africa (Egypt, Ethiopia and Nigeria).

The African participation in TIES is low in view of the type of technological information required by the system and of the modalities of participation. TIES network is reported to have achieved good results in the assistance provided to national companies and institutions in the negotiation of technology contracts. Its success justifies the actions undertaken for the regionalization of the system. It is in this context that efforts are being made for the creation of SAIT (Andean Technological Information System) for the Andean countries, RITLA (Latin American Information Network on Technology), ASEAN Regional Project on Technology Transfer Information Exchange, and the African Regional System.

The UNIDO-ARCT meeting of October 1985 enabled bringing out the following points:

- The absence of a technology transfer regulating body is very harmful to African countries, which should make a big effort to improve their capability for negotiating technology contracts.
- The need for an African system which will enable its member countries to share their experience and to help one another in establishing national structures for the regulation of technology transfer.
- The need for a legislative framework and administrative provisions which will give to the technology transfer centres the authority required for carrying out their task.

85. The field of interest of the ARCT network will be that of the priority sectors, defined under the Lagos Plan of Action. The exchange of information will concern the terms and conditions for acquisition of technology as well as the financial, legal and technical aspects of technology transfer.

At the national level, a focal point will be identified for coordinating the task of collecting technological information and for participating in the activities of the system.

At the regional level, ARCT will constitute the focal point of the system. ARCT will be in charge of coordinating the activities of the national focal points.

UNIDO, as well as the other interested organizations, would be called upon to lend their support to ARCT in its efforts to set up the system and to coordinate its activities.

The network is open to other information systems and regional or international networks the access to which may be useful to member countries.

86. In order to properly launch the ARCT Network system, the following activities have been planned for the pilot phase over a period of twelve months.

(a) <u>At the National Level</u>

i/ Confirmation of the national focal points. A letter will be sent to ARCT by each participating country.

ii/ Laying down of administrataive and statutory provisions for the operation of the focal points.

iii/ Participation in the proposed training programme in Nigeria.

iv/ Organization of a national register.

v/ Collection of information at the national level.

vi/ Exchange of information among countries and with the regional focal point.

vii/ Participation in the annual meeting of the member countries of the system.

(b) <u>At the Regional Level</u>

ARCT will take the following actions:

i/ Contact countries which did not attend the meeting.

ii/ Preparation and proposal of a format for exchange of information

iii/ Publication of a liaison bulletin.

iv/ Participation in the training seminar in Nigeria.

v/ Supply of information services from data bases installed at ARCT.

vi/ Organization of the coordination committee meeting.

vii/ Organization of the meeting of the member countries of the system.

(c) at UNIDO

Taking into account its experience of the world TIES System, UNIDO is to extend its help in carrying out the following actions aimed at supporting the efforts of the member countries and secretariat.

i/ Advice and assistance for the implementation of national registers on request.

ii/ Support for organising the training seminar.

iii/ Assistance and support for the organization of the next annual meeting.

iv/ Participation in the meeting of the Coordination Committee.

87. It is very clear from the aims and objectives of ARCT, that ARCT has more technology regulatory functions and concentrates essentially on technology transfer. ARCT as a regional focal point in the UNIDO-INTIB Information Network needs strengthening in the area of

(a) Standardization of Information language in the countries covered in the region, and

(b) training of manpower in the region.

MANPOWER TRAINING

88. The individual country reports, the report by the two UN Field Missioons, and the Expert Group that met at Vienna, are all unanimous in that there is a dearth of trained manpower available in the existing information centres/systems in Africa. And as such, full support must be given to these countries in training of their manpower.

89. Training should include computerisation specialisation, ie, training in software.

90. In industrial information it is not enough just to provide bibliographical information to the users. Information should be analysed, systhesised, packaged, repackaged keeping in view the user's requirements. That means, information staff should be trained analysts. Here the need is to have not only Information Scientists but also Subject Specialists. In order to ensure that factual information is provided in a professional manner rather than just providing bibliographical information, Information Scientists should be trained to have at least some familiarity with subject specialities and the Subject Specialists should know some basics of Information packagaing and re-packaging. Whilst Information Scientists will be from within the National Information Nodes the Subject Specialists will generally be from technical organizations dealing with the subject speciality with whom the information centre would have established linkage. Both these types of manpower need training in their own areas.

IX. PROPOSAL ON THE FOLLOW-UP OF IDDA PROJECTS

91. UNIDO has given technical assistance to national information systems and services in countries such as Algeria, Angola, Ivory Coast, Kenya, Libya, Maritania, Mozambique, Nigeria, Senegal, The Sudan, Togo, Tunisia, Rwanda, Burkina Faso and Zaire. Now that the status inmformation system in the ten countries viz, Algeria, Cameroon, Egypt, Ivory Coast, Kenya, Nigeria, Senegal, Tanzania, Tunisia, and Zambia have been studied in details under the IDDA-INTIB Project RP/RAF/85/E-18/REV I, the objectives UNIDO has set would be effectively met if

(a) UNIDO causes further actions to be taken at the National, Regional and International levels as indicated in items 23 to 30 in this Report.

(b) UNIDO continues the study covering the other African countries for which purpose a second phase of the present project should be initiated and implemented. A Project Proposal is therefore covered in Section X.

X. PROJECT PROPOSAL FOR SECOND PHASE OF STUDY IN AFRICA

92. Of the 47 countries in Africa, the present study has covered only 10 countries, ie, Algeria, Cameroon, Egypt, Ivory Coast, Kenya, Nigeria, Senegal, Tanzania, Tunisia and Zambia. Even though most of the conclusions and recommendations may by and large be equally valid for many of the remaining countries, a general comparison has shown that there are countries with substantial differences. It would therefore be necessary to formulate and execute a similar project as a second stage of the endeavours towards establishing an INTIB-African countries linkage in the most appropriate way. Moreover, for any such linkage to be effective, many of these African countries information activities must be made to feel that they have also participated in the formulation of the final scheme. Keeping this in view it is proposed that the second phase of the project should cover all the remaining 37 countries. Of this, only 12 countries need be visited and studied while the situation in the remaining 25 may be studied, as best as possible, through communications. Of the 12 countries to be visited and studied, 9 may be the least developed ones and 3 the relatively most developed within the African region.

ANNEX I

NATIONAL COUNTERPARTS REPORT

1. National counterpart report on the industrial and technological information systems in Zambia (UNIDO/IS/R.20)

2. National counterpart report on the industrial and technological information systems in Tanzania (UNIDO/IS/R.21)

3. National counterpart report on the industrial and technological information systems in Kenya (UNIDO/IS/R.22)

4. National counterpart report on the industrial and technological information systems in Egypt (UNIDO/IS/R.23)

5. National counterpart report on the industrial and technological information systems in Tunisia (UNIDO/IS/R.24)

6. National counterpart report on the industrial and technological information systems in Algeria (UNIDO/IS/R.25)

7. National counterpart report on the industrial and technological information systems in Senegal (UNIDO/IS/R.26)

8. National counterpart report on the industrial and technological information systems in Ivory coast (UNIDO/IS/R.27)

9. National counterpart report on the industrial and technological information systems in Cameroon (UNIDO/IS/R.28)

ANNEX II

COUNTRY REPORTS

1. Country report on the industrial and technological information systems in Nigeria (UNIDO/IS/R.29)

2. Country report on the industrial and technological information systems in Zambia (UNIDO/IS/R.30)

3. Country report on the industrial and technological information systems in Tanzania (UNIDO/IS/R.31)

4. Country report on the industrial and technological information systems in Kenya (UNIDO/IS/R.32)

5. Country report on the industrial and technological information systems in Egypt (UNIDO/IS/R.33)

6. Country report on the industrial and technological information systems in Tunisia (UNIDO/IS/R.34)

7. Country report on the industrial and technological information systems in Algeria (UNIDO/IS/R.35)

8. Country report on the industrial and technological information systems in Senegal (UNIDO/IS/R.36)

9. Country report on the industrial and technological information systems in Ivory coast (UNIDO/IS/R.37)

10. Country report on the industrial and technological information systems in Cameroon (UNIDO/IS/R.38)

FIELD MISSION REPORTS

1. Field mission report on the Industrial and Technological Information Systems in Nigeria, Zambia, Tanzania, Kenya and Egypt (UNIDO/IS/R.39)

2. Field mission report on the industrial and technological information systems in Tunisia, Algeria, Senegal, Ivory Coast and Cameroon (UNIDO/IS/R.40)