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# FIELD MISSION REPORT ON PROMOTION OF INDUSTRIAL INFORMATION NETWORKING IN BURUNDI, MALI, MOROCCO, MADAGASCAR AND RWANDA*

Prepared by

UNIDO Secretariat**

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* This document has not been edited.

** Based on the work of M. Muraszkiewicz and D. Wilson, UNIDO consultants.

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## Explanatory Notes

Value of the local currency (May 1989)

Morocco : US $ = 8.24 Dhr
Mali : US $ 1 = 312 FCFA
Rwanda : US $ 1 = 80,9827 FRW
Burundi : US $ 1 = 162,81 FBU
Madagascar: US $ 1 = 1634 Fmg

## Abbreviations

| | |
|---|---|
| AGRIS | Agriculture Information System |
| ALDOC | Arab League Documentation |
| ANAIS | African Network of Administrative Information System |
| CARIS | Current Agriculture Information System |
| EEC | European Economic Community |
| ESA/IRS | European Space Agency/Information Retrieval System |
| INFOTERRA | International Environmental Information System |
| INTIB | Industrial and Technological Information Bank |
| NFP | National Focal Point |
| PADIS | Pan African Development Information System |
| RESADOC | Réseau Sahélien d'Information et de Documentation Scientifique et Technique |
| SATIS | Socially Appropriate Technology International Information Services |
| WHO | World Health Organisation |

## Abstract

Promotion of Industrial Information Networks among five African countries (XA/RAF/88/684)

The main objectives of the project "Promotion ot industrial information networks in 5 African countries" are as follows: (i) assist Morocco, Mali, Rwanda, Burundi and Madagascar in the establishment of the National Focal Points of the Industrial and Technological Information Bank (INTIB), (ii) reinforce the national information systems and services in these countries.

The mission was carried out by the experts from 7 May to 17 June 1989, during which the following National Focal Points were identified:

- Centre National de Documentation (Morocco)
- Centre d'Etudes et de Promotion Industrielles (Mali)
- Rwanda-SOFT/Ministry of Industry (Rwanda)
- Centre de Promotion Industrielle/Ministry of Industry (Burundi)
- Ministry of Industry, Energy and Mines (Madagascar)

The major issue of the mission concerns UNIDO contribution to the establishment of the network, as follows:

(a) purchase of computers and telecommunications equipement if required, as well as supply of INTIB data base and data bank management software (for further information on hardware and software, see annex 5);

(b) individual and group training, seminars and on the job training;

(c) expertise in industrial information systems; more specifically, in complement to point (b), the assistance of a consultant during the installation of INTIB databases at the NFP seems to be necessary in order to help the local staff become familiar with the system and to train the future end-users.

The future UNIDO's technical assistance is outlined in the report.

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## INTRODUCTION

The main objectives of the project "Promotion of Industrial Information Networking among Selected African Countries" (XA/RAF/88/684) were the following: (i) to assist the following African countries, i.e. Morocco, Mali, Rwanda, Burundi and Madagascar in the establishment of the Industrial and Technological Information Bank (INTIB) national focal points; (ii) in strengthening national information systems and services in these countries.

The experts on design of industrial information services and on hardware and software applications (later on, called experts) carried out the mission from 17 May to 17 June, 1989 as follows:

| | |
|---|---|
| Morocco: | 20-23 May, 1989 |
| Mali: | 23-26 May, 1989 |
| Rwanda: | 27-31 May, 1989 |
| Burundi: | 2-5 June, 1989 |
| Madagascar: | 5-8 June, 1989 |

The methodology adopted by the experts in performing the mission included, *inter alia*:

(i) analysis of documents related to the aims formulated in the job descriptions;
(ii) designing a questionnaire, its dissemination and evaluation of the data collected;
(iii) personal visits to some institutions;
(iv) interviews and consultations.

* * *

For any country to become economically self-reliant, it is essential to establish a sound technological base. This is possible through development of industries and the builing up of a strong indigenous R + D infrastructure to sustain them. For effective coupling these two sectors, however, the media of technology

transfer operations, including effective industrial information systems, become especially important.

In recent years information has increasingly been considered as a major commodity, and as a valuable national resource, and information transfer has become a major field of activity. The governments and information specialists of the visited countries recognize that industrial and technological information is a key element in strengthening and accelerating the process of industrial modernization. The present level of industrial and technological information infrastructure is lower than needed, therefore substantial changes are necessary.

While designing, implementing and developing the industrial information systems one should take into account, *inter alia*, the following paradigms:

1. The system must pattern actual procedures, information flows and processes dealing with the industrial and technological information. Although these requirements seem to be obvious, they are not always fulfilled in practice.

2. To make available adequate, accurate and timely industrial and technological information, it is necessary that the system be consistent, flexible, modular and susceptible to future changes and innovations. Moreover, the system has to provide a multilevel data protection mechanism according to categories of users.

3. All the existing organizational and information facilities which have been developed and successfully used so far should be employed in the best way in the new system.

Thanks to the wide experience of INTIB and its services the industrial and technological infrastructure and data resources available in the countries in question can be strengthened and fully developed as a backbone to the industrial activities.

* * *

In order to fulfill the above mentioned objectives, the Industrial and Technological Information Bank INTIB offers a choice of servives to the member countries as follows: bibliographic and factual industrial information; international netwoek of industrial information; expertise in industrial information; inquiry service; training of personnel and supply of computers and software.

* * *

Acknowledgments

A great deal of very helpful opinions and suggestions, and valuable contributions were received from the counterpart specialists, decision makers, etc.; some of their proposals have been incorporated into the present document. The final conclusions and recommendations of the mission, however, reflect the views of the experts only.

Special thanks are addressed to: D. Saramboudou (CEPI, Mali), T. Muvunyi (Rwanda-SOFT), A. Nbonimpa (Ministry of Trade and Industry, Burundi), C. Razakandraina (Fivoarana, Madagascar) who have made great efforts to give remarkable assistance to the experts in the course of their assignment.

## CONCLUSIONS AND RECOMMENDATIONS

1 The major conclusion is that countries visited by the experts share common problems and needs with regards to industrial and technological information as well as information transfer facilities.

2. Since the establishment of an industrial information system is a long-term, complex, multivalent and expensive enterprise, therefore, it has to be designed and implemented under the auspices of the government concerned.

3. It is necessary for the government to elaborate a national industrial information policy as a framework for designing and using the industrial information system.

4. In planning and developing a national industrial and technological information system it is necessary to pursue an appropriate coordination of all the national entities concerned and to work in close collaboration with the major users. This applies particularly to INTIB.

5. An exhaustive and reliable industrial and technological information system that could be used for management and coordination of industrial activities does not exist as a substantive facility in the countries in question. In most cases the elements of such a system are scattered among a number of information units.

6. The categories of users of industrial information services are policy makers, administrators, development engineers, factory supervisors, consultants, sales managers, researchers, workers, teachers and students.

7. The needs of users cover information on: management, products, production, technology transfer, finance, markets, employment, legislation, spare parts, raw materials, quality control, patents, standards, skills training, commercialization of R + D results and craft.

8. Descripencies in the information languages used in industrial information systems have been noted. This could be an obstacle to the good running of the system. Therefore, it would be advisable to standarize the indexing and search languages throughout in using for example a single thesaurus such as the UNIDO thesaurus. However, as it stands, the UNIDO thesaurus needs revising.

9. The suggested NFPs are as follows:
   - Centre National de Documentation (Morocco)
   - Centre d'Etudes et de Promotion Industrielles (Mali)
   - Rwanda-SOFT/Ministry of Industry (Rwanda)
   - Centre de Promotion Industrielle/Ministry of Industry (Burundi)
   - Ministry of Industry, Energy and Mines (Madagascar)

10. As the equipment at the disposal of information centers which are to be NFPs is in some cases rather modest and the staff has not always got the desired level of experience in designing and establishing INTIB network, UNIDO assistance is necessary. It should cover:

   (a) purchase of computers and telecommunication equipment, if required, along with appropriate software, for implementing the system and the INTIB databases and databanks (for further details on hardware and software see Annex 5);

   (b) individual and group training, study tours and on-the-job training;

   (c) expertise in industrial and technological information systems; more specifically, in addition to p. 10b, the assistance of a consultant to install INTIB databases at the NFP seems to be necessary in order to assist the local staff in becoming familiar with the system and to train the future end users.

11. It would be advisable to improve INTIB software to make it more efficient and more user friendly. This comment applies to users manuals.

Furthermore, INTIB software is not entirely available in French; part of it is in English, the worksheets in particular. The users of the visited countries often have problems understanding the English language, therefore, a French version of INTIB software should be produced.

This could be carried out in the frame of the ATHOS project.

12. In order to avoid the information noise and to improve the quality of the system it would be a good thing to establish a procedure to select data and to provide semantic control when entering data.

13. Generally speaking, power cuts and fluctuation of voltage often happen and it is necessary to provide the computers with power stabilizers.

14. Promotion of INTIB services is of crucial importance. This could be carried out through, *inter alia*

(a) organization of demonstrations of INTIB databases in INTIB HQ and in the field;

(b) preparation of an exhaustive documentation in English and in French on INTIB and regular dissemination to appropriate centers;

(c) establishing INTIB (regional) users' groups;

(d) promotion of new information technologies such as CD-ROM.

(e) dissemination of INTIB certificates to training seminar participants.

15. The quality and relevance of INTIB databases can only be improved if an evaluation is carried out periodically, including the qualitative and quantitative assesment of the system.

16. Some countries such as Morocco, Burundi and Madagascar have a good telecommunication infrastructure. This could encourage th creation of a pilot national center for on-line data transmission. Furthermore, as strong links exist between

countries like Rwanda, Burundi and Zaire or Maghreb countries, INTIB network could become a regional network.

# I. ACTIVITIES

## 1.1. Objectives

According to the job descriptions the experts were expected to assess the situation on technology and industry information in the countries required for planning and implementing the programme on INTIB networking based on the national survey conducted by national experts of the project. Towards this end, they were required to undertake the following:

1. Briefing at UNIDO HQ for 2 working days;
2. Three weeks mission in Morocco, Mali, Rwanda, Burundi and Madagascar in order to:
   - 2.1. Assess the existing and potential information systems, services and networks in the countries;
   - 2.2. Assess national focal points of INTIB on their specialized field of industrial and technological information activities;
   - 2.3. Assess existing and potential users of industrial and technological information based on their specific needs and priorities;
   - 2.4. Assess the nature of information services required from the INTIB in detail as well as modalities linkages and communications with INTIB HQ;
   - 2.5. Advise on the expansion of the existing industrial and technological information service system, including selection of software and hardware as well as assessment of manpower requirements and training needs for the information systems.
3. Debriefing at UNIDO HG for one working day and 4 working days to prepare a report (approximately 50 pages) on the findings of the fields mission in English and French.

## 1.2. List of activities

Below is a list of general activities carried out during the

mission.

1. As preparatory work the experts identified and studied documents related to the goal of the mission. References to these documents are given in Annex 1.

2. In order to collect information relevant to the aims of the mission a questionnaire (see Annex 2) was designed by the experts. The questionnaire was approved by UNIDO and the counterpart specialists. Next, 27 questionnaires were completed during the personal visits in order to evaluate the data at a later stage. Results of the evaluation are presented in Section II. For the names of interlocutors and the names and addresses of the visited institutions see Annexes 3 and 4, respectively.

   The filled out questionnaires are available at Mr. Carrier's office, Industrial Information Section, UNIDO.

3. During the mission, documents of INTIB were distributed (see Annex 1 and 6) and, whenever possible, a demonstration of INTIB software and databases was carried out.

4. Ad-hoc consultations and advice concerned with hardware and software for information purposes were given. In particular, some technical details were discussed as far as the microISIS package, ver 2.3 is concerned.

5. Intensive discussions with information specialists involved in various aspects of industrial and technological information activities, in the context of the INTIB system, took place, including:

   - problems of adequacy and availibility of information in relation to the local needs, in particular access to factual data;
   - costs of information *per se* and the costs involved in disseminating, generating, packaging and repackaging it, etc.
   - isssues dealing with the compatibility of the various systems implemented in the way of technique, hardware and software;

- problems of education and upgrading and training of the specialized staff;
- standarization of information languages;
- access to international information resources;
- promotion of the industrial information services to the end users;
- financial issues;
- continuity of the implementing and exploitation of the infomation systems.

Activities specific to each country were as follows:

Morocco

1. The experts visited 3 institutions (see Annex 4).
2. Two questionnaires were filled in.
3. Centre National de Documentation (CND) have agreed in principle to identify a national expert in order to prepare the report on the development of the industrial and technological information systems in Morocco.
4. The experts were introduced to the internal and external databases available at CND and to the statistical information system dealing with exportation and importation exploited at the Ministry of Commerce and Industry.
5. The experts initialized the process of identifing nodes to co-operate with NFP.
6. Two major drawbacks to the efficiency of the work of experts were the lack of time and lack of national expert's report. Out of 4 days actually spent in Morocco only one was a working day.

Mali

1. The experts visited 4 institutions (see Annex 4).
2. Four questionnaires were filled in.

3. The experts initialized the process of identifing nodes to co-operate with NFP.

4. One major drawbacks to the efficiency of the work of experts were the lack of time. Out of 3 days actually spent in Mali only one was a working day.

Rwanda

1. The experts visited 7 institutions (see Annex 4).

2. Seven questionnaires were filled in.

3. The experts initialized the process of identifing nodes to co-operate with NFP.

4. One major drawback to the efficiency of the work of experts was the lack of time.

5. The demonstration of INTIB software and databases was carried out at the UNDP office.

Burundi

1. The experts visited 7 institutions (see Annex 4).

2. Seven questionnaires were filled in.

3. The experts initialized the process of identifing nodes to co-operate with NFP.

4. One major drawback to the efficiency of the work of experts was the lack of time.

5. The demonstration of INTIB software and databases was carried out at the UNDP office.

6. It should be noted that Centre National de Promotion Industrielle has benefited from UNIDO support (project no. BDI/81/008).

Madagascar

1. The experts visited 7 institutions (see Annex 4).

2. Seven questionnaires were filled in.

3. The experts initialized the process of identifing nodes to co-operate with NFP.

4. Two major drawbacks to the efficiency of the work of experts were the lack of time and the lack of national expert report.

5. The demonstration of INTIB software and databases was carried out at the Ministry of Industry, Energy and Mines and Center for Scientific and Technical Information.

## II. OUTPUTS

The following general comments concerned all visited countries:

1. INTIB software is not entirely available in French, but part of it is in English, the worksheets in particular. In view of language problems encountered in most French speaking countries it is essential to produce an entirely French version.

2. Generally speaking, power cuts and voltage fluctuations are a problem; therefore, all computers should be equiped with stabilizers.

3. There exists a historical and economic link between Rwanda, Burundi and Zaire. This should be taken into consideration when establishing the INTIB network.

4. The evaluation of equipment, staff and finances, based on the information collected in the questionnaires, which is used in information services at national level is only partial.

More specific comments apply to the countries individually:

Morocco

1. The industrial and technological information system as a substantive entity has not yet emerged on the Moroccan scene.

2. The Centre National de Documentation (CND) plays a major role in the field of scientific, technical and other types of information in the country. It is a large, well equiped and well staffed center. The center was created in 1966 and has been informatized ever since 1968 with access to international information services such as ESA/IRS, QUESTEL, ALDOC and belongs to international networks like ANAIS, PADIS, AGRIS, CARIS, INFOTERRA. Moreover, CND is NFP of INFOTERRA and AGRIS. CND has been developing a number of domestic computerized databases.

3. CND acts as the major coordinator of the various information services scatterd throughout the country which consist in about 500 units in the public sector alone.

4. Intellectual and technical capacities of CND are good. Out of the total staff (120 employees) they have 37 librarians and 4 computer specialists.

5. CND has the following computers:

   HP 3000/58
   HP 150 (micro-computer)
   2 IBM PCs XT with hard disks of 20 MB
   5 IBM PCs are expected, soon

   The main software used:

   MINISIS
   MICRO CDS ISIS, ver 2.0
   dBASE III
   FRAMEWORK
   MULTIPLAN

6. CND has developed a good reprographic service.

7. The categories of users of CND services are mostly researchers and also include policy makers, administrators, development engineers, factory supervisors, consultants, sales managers, workers, teachers and students.

8. The needs of users cover information on: management, products, production, technology transfer, finance, markets, employment, legislation, spare parts, raw materials, quality control, patents, standards, skills training, commercialization of R + D results and manuscripts.

9. A national public telecommunication system is expected to be implemented in 1990.

10. CND has been identified as the information center which could play the role of NFP in Morocco.

11. The 3 following information centers were identified as potential nodes:
    - Office du Développment Industriel (ODI)
    - Confédération Générale des Entrepreneurs Marocaines (CGEM)
    - Ministère du Commerce et de l'Industrie.

Mali

1. The industrial and technological information system has not yet emerged as an integrated system in Mali.

2. Although the Centre d'Etudes et de Promotion Industrielles (CEPI) has limited equipment and few specialised employees, it plays an important role on the industrial information scene.

3. The outcome of the meetings held at various information services is that CEPI is in a good position to become NFP.

4. The following centers, which have been identified by the national expert (see bibliography, annex 1), could become nodes:

    - Institut du Sahel: this is a regional centre which is well equiped (1 HP 3500/37, 2 IBM-PC XT with hard disk, CD-ROM planned for October 1989; MINISIS and Micro-ISIS software); it also is RESADOC focal point.
    - Centre National de la Recherche Scientifique et Technologique
    - Laboratoire de l'Energie Solaire
    - Chambre de Commerce et d'Industrie du Mali
    - Direction Nationale du Plan.

5. The categories of users of CND services are mostly engineers, researchers, consultants policy makers, teachers, students and sales managers.

6. The needs of users cover information on: management, technology

11. The 3 following information centers were identified as potential nodes:
    - Office du Développment Industriel (ODI)
    - Confédération Générale des Entrepreneurs Marocaines (CGEM)
    - Ministère du Commerce et de l'Industrie.

Mali

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    - Centre National de la Recherche Scientifique et Technologique
    - Laboratoire de l'Energie Solaire
    - Chambre de Commerce et d'Industrie du Mali
    - Direction Nationale du Plan.

5. The categories of users of CND services are mostly engineers, researchers, consultants policy makers, teachers, students and sales managers.

6. The needs of users cover information on: management, technology transfer, commercialization of R + D results, raw materials, products, production, market and finance.

7. Some information centers in Mali have good co-operation with international institutions, like UNIDO, UNESCO, FAO, WHO and EEC.

Rwanda

1. The industrial and technological information system has not yet been established in the country.

2. Although logically, either the Ministry of Industry , Mining and Craft or the Chamber of Commerce and Industry should become NFP, it seems that the private company Rwanda-SOFT is in a better position to be a NFP. It has good equipment (many computers) and qualified staff.

   Actually, the Ministry of Industry does not have a centralized information center, but has a number of information units dispersed in the various departments. As far as the Chamber of Commerce is concerned, it is not ready to fulfill the duties of NFP.

3. The outcome of the meetings held at various information services is that Rwanda -SOFT is in a good position to become NFP on a short term basis. However, this would be a temporary situation in order to allow the Ministry of Industry or eventually the Chamber of Commerce to get better organized and take over from Rwanda-SOFT.

4. The following centers, which have been identified by the national expert (see bibliography, annex 1), could become nodes:

   - Association Rwandaise pour la promotion du Développement Integré;
   - Chambre de Commerce et de l'Industrie du Rwanda.

5. The categories of users of CND services are mostly engineers, researchers, consultants, policy makers, teachers, students and sales managers.

6. The needs of users cover information on: management, technology transfer, commercialization of R + D results, raw materials, products, production, market and finance.

7. Some information centers in Rwanda have good co-operation with international institutions, like UNIDO, UNESCO, FAO, WHO. Association Rwandaise pour la promotion du Développement Integré is part of SATIS which is an adopted technologies network of information.

8. Two months warning should be given to training seminar participants as civil servants require government authorization to go abroad.

Burundi

1. The industrial and technological information system has not yet been established in the country.

2. The outcome of the meetings held at various information services is that Centre de Promotion Industrielle (CPI) is in a good position to become NFP on a short term basis. At present, CPI has an operational and well organized information service. Other information services exist elsewhere, but none of them is sufficiently established.

   However, this would only be a temporary situation in order to allow the Ministry of Industry to get better organized and take over from CPI.

3. The following centers, which have been identified by the national expert (see bibliography, annex 1), could become nodes:

   - Service National des Etudes Statistiques,
   - Chambre de Commerce, d'Industrie d'Artisanat du Burundi,
   - Banque de la République du Burundi.

4. The categories of users of CND services are mostly engineers, researchers, consultants, policy makers, teachers, students and

sales managers.

5. The needs of users cover information on: management, technology transfer, commercialization of R + D results, raw materials, products, production, market and finance.

6. Some information centers in Burundi have good co-operation with international institutions, like UNIDO, UNESCO, FAO, CCI and French Cooperation.

7. A meeting with ONATEL allowed to find out about the good quality of the national communications network.

Madagascar

1. The industrial and technological information system is being established in agreement with the national information policy defined by the law of January 1988.

2. The intellectual and technical capacities of the information service of Direction de la Programmation du Ministère de l'Industrie, de l'Energie et des Mines (MIEM) are excellent. Out of the total staff they have 8 professionals. The service which was recently computerized produces a large database on companies and on industrial production factors.

3. MIEM has the following computers:

   2 PCs 386 - SMT GOUPIL, hard disk of 160 MB

   6 PCs AT 286 - SMT, hard disks of 40 MB

   The main software used:

   dBASE III+

   SYCERO

   TEXTO

   WORDSTAR

   WORD IV

4. The outcome of the contacts established with various specialised information centers is that MIEM has adequate resources to become NFP.

5. The following centers have been identified as potential nodes:

   - Banque de Données de l'Etat,
   - Centre d'Informations Scientifiques et Techniques,
   - Chambre du Commerce et de l'Industrie

6. The categories of users of CND services are mostly researchers and also include policy makers, administrators, development engineers, factory supervisors, consultants, sales managers, workers, teachers and students.

7. The needs of users cover information on: management, products, production, technology transfer, finance, markets, employment, legislation, spare parts, raw materials, quality control, patents, standards, skills training, commercialization of R + D results and craft.

8. During a meeting held with Societé des Télécommunications Internationales, the national and international telecommunications infrastructure were discussed. Madagascar has a packet switch network (INFOPAC) which allows to establish on-line communications worldwide.

9. A number of information centres in Madagascar cooperate with international orginisations such as UNIDO, UNESCO, FAO, CCI, World Bank and French Cooperation.

## III. ACTION PROGRAMME (FOLLOW-UP)

On the basis of the findings presented in Section II, the following measures apply to all visited countries:

1. It is necessary for the government to elaborate a national industrial information policy as a framework for designing and exploiting industrial information systems.

2. Discrepancies in the information languages used in industrial information systems have been noted. This could be an obstacle to the good running of INTIB data bases. Therefore, it would b

   advisable to standarize the indexing and search languages throughout by using, for example, a single thesaurus such as UNIDO thesaurus. However, as it stands, this thesaurus is incomplete and needs revising.

3. The proposed NFPs are as follows:
   - Centre National de Documentation (Morocco)
   - Centre d'Etudes et de Promotion Industrielles (Mali)
   - Rwanda-SOFT/Ministry of Industry (Rwanda)
   - Centre de Promotion Industrielle/Ministry of Industry (Burundi)
   - Ministry of Industry, Energy and Mines (Madagascar)

4. In view of the sometimes poor equipment available in the information centers, which are to become NFPs, and the tremendous differences in the level of training and experience of their staff required for the establishment of INTIB network, UNIDO assistance is vital and should include:

   (a) purchase of computers and telecommunication equipment, if required, along with appropriate software, for implementing the system and INTIB databases and databanks (for further details on hardware and software see Annex 5);

   (b) individual and group training, study tours and on-the-job training;

   (c) expertise in industrial and technological information systems; more specifically, in addition to p. 10b, the

assistance of a consultant to install INTIB databases at the NFP seems to be necessary in order to assist the local staff in becoming familiar with the system and to train the future end users.

5. It would be advisable to improve INTIB software, ie. to make it more efficient and more user friendly. This comment applies to users manuals.
Furthermore, INTIB software is not entirely available in French; part of it is in English, the worksheets in particular. The users of French speaking countries often have problems understanding the English language; therefore, a French version of INTIB software should be produced.
This could be carried out in the frame of the ATHOS project.

6. In order to avoid information noise and to improve the quality of the system, it would be a good thing to establish a procedure to select data and to provide semantic control when entering data.

7. Generally speaking, power cuts and fluctuation of voltage often happen and it is necessary to provide the computers with power stabilizers.

8. Promotion of INTIB services is of crucial importance. This could be carried out through, *inter alia*:

(a) organization of demonstrations of INTIB databases in INTIB HQ and in the field;

(b) preparation of an exhaustive documentation in English and in French on INTIB and regular dissemination to appropriate centers;

(c) establishment of INTIB (regional) users' groups;

(d) promotion of new information technologies such as CD-ROM.

(e) dissemination of INTIB certificates to training seminar participants.

9. The quality and relevance of INTIB databases can only be improved if an evaluation is carried out periodically,

including a qualitative and quantitative assessment of the system.

10. Some countries such as Morocco, Burundi and Madagascar have a good telecommunication infrastructure. This could encourage th creation of a pilot national center for on-line data transmission. Furthermore, as strong links exist between countries like Rwanda, Burundi and Zaire or Maghreb countries, INTIB network could become a regional network.

More specific remarks concerned with the visited countries are as follows:

Morocco

1. The Terms of Reference of the national expert are to be simplified to reflect better the general aspect of the report. A copy of the redefined Terms of Reference should be sent by fax (212-7-73134) to the Director of CND, as soon as possible.

2. Considering the good telecommunication infrastructure in Morocco national network with on-line data transmission could be envisaged.

Rwanda

1. In the immediate future, the Ministry of Industry is not in a position to manage the NFP. However, long term, the NFP should be transferred from Rwanda-SOFT to the Ministry of Industry or to the Chamber of Commerce.

Burundi

1. In the immediate future, the Ministry of Industry is not in a position to manage the NFP. However, long term, the NFP should be transferred from Centre de Promotion Industrielle to the Ministry of Industry.

2. Considering the good telecommunication infrastructure in Burundi national network with on-line data transmission could be envisaged.

Madagascar

1. The revised Terms of Reference of the national expert, including the duration of the contract, are to be sent by fax to the Ministry of Industry. The contract should be established in the name of Cabinet FIVOARANA and not in the name of the expert Mr. C. Razakamdraima.

2. Considering the good telecommunication infrastructure in Madagascar, a national network with on-line data transmission could be envisaged; on this occasion UNIDO could organize a seminar including a demonstration of on-line data transmission between Madagascar and UNIDO, via satellite.

Annex 1

## DOCUMENTS USED


1. Bańkowski J., Wysocki A., Guidelines for the Establishment or Redesign of Industrial and Technological Information Service System, including Selection of Software and Hardware, UNIDO/IS.597, Jan.15, 1986.
2. Hyung Sup Choi, Guidelines for the Formulation of a Basic Policy and Development Plan for Science and Technology, UNIDO/IS.554, Aug.12, 1985.
3. INTIB NET, UNIDO, vol.1, no.1, 1989.
4. Mbonimpa A., Etude sur les systèmes d'information industrielles et technologiques du Burundi, Bujumbura, Avril, 1989.
5. Muvunyi T., Information Industrielle et Technologique au Rwanda, Kigali, Mai, 1989.
6. Nolan R.J., Informatics for Industrial Development, UNIDO/IS. 415, Nov.25, 1983.
7. Role of INTIB. Round Table Discussion of an Advisory Group of INTIB Users, UNIDO/ID/WG, Sept.20, 1985.
8. Sarambounou D., Etude rélative à la situation de l'information industrielle et technologique au Mali, Bamako, Mai, 1989.
9. Sung Jin Choi, Guidelines for the Formulation of National Industrial and Technological Information Policies, UNIDO/IS.596, Jan.15, 1986.
10. Technological Services Delivery System (TSDS), prepared by Development and Transfer of Technology Branch, UNIDO/IS.424, Dec.6, 1983.
11. Third Meeting of the Advisory Group of the Industrial and Technologicql Information Bank (INTIB), Vienna, Austria 13-17 March, 1989, ID/WG.
12. Visvesvaraya H.C., Establishment, Strengthening and Promotion of Linkages between National, Regional and Sub-Regional Industrial, Technological Information Services in Africa and with INTIB, UNIDO/IS/R.41, March 4, 1986.
13. Workshop for UNIDO/INTIB National Focal Points on Industrial

Information Networking and Co-operation, Moscow, USSR, 30 May-3 June, 1988, ID/WG.474/3.

14. Wysocki A., UNIDO Industrial Information Medium Term Programme, UNIDO, Jan., 1986.

Annex 2

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

May 1989

# QUESTIONNAIRE

*Objective:* identify and assess existing industrial information needs, users and facilities

*Instructions:*

1. Try to answer the questions shortly and precisely; when in doubt about the meaning of a question, consult Ms./Mr. , tel.:

2. Often, the answer consists in choosing one or more options from many. Indicate relevant option(s) by putting a mark (e.g. a cross) in the apprppriate box. If none of the options is applicable, add items according to your knowledge.

3. Questions irrelevant to your institution should be skipped.

Thank you for your co-operation.

## I. GENERAL DATA ABOUT YOUR INSTITUTION

1. Name:

2. Address:

3. Telephone: Fax: Telex: Cable:

4. Name of the director and/or interviewee:

5 Type of institution:

☐ information center ☐ library

☐ archives

other:

6. Objectives/Functions of the institution:

7. Yearly budget:

8. Name of the mother organization, if any:

9. Name of the supervising ministry or another governmental body:

## II. RESOURCES AND INFORMATION ACTIVITIES OF YOUR INSTITUTION

1. Number of information staff (e.g. documentalists, librarians, information officers, information-retrieval programmers, etc.)

   professionals:

   supporting personnel:

2. Equipment and software (in use; planned for 1990):

   (a) computers (give full configuration):

   (b) information-retrieval and text-processing software packages:

   (c) machines for photocopying and micrographying:

   (d) other:

3. Information service activities:

   (a) names and domains of the subject-oriented and document-oriented information systems utilised at your institution (e.g.: tractors' spare-parts databank, bibliographic system on unpublished scientific reports ):

   (b) type of information activities

(c) type an approximate volume of the primary documents used (put numbers into boxes rather than crosses):

- ☐ published
- ☐ unpublished
- ☐ periodicals (journals, newspapers, etc.)
- ☐ monographs (books, handbooks, etc.)
- ☐ statistics
- ☐ standards
- ☐ authority regulations
- ☐ business catalogues
- ☐ factual databases (specify names and domains):

- ☐ films/video tapes

other:

(d) type and approximate volume of secondary documents used

- ☐ catalogue cards
- ☐ abstracts journals
- ☐ newsletters
- ☐ bulletins
- ☐ bibliographic databases (specify names and domains):

other:

(e) processes performed on primary documents:

- ☐ classification
- ☐ indexing
- ☐ abstracting
- ☐ translating
- ☐ analyzing/evaluating/repackaging
- ☐ factual databank establishing (specify names and domains):

other:

(f) processes performed on secondary documents:

☐ cataloguing (manual/computer catalogue establishing and maintenance)

☐ translating ☐ retrieval ☐ editing

☐ disseminating

☐ bibliographic database establishing (specify names and domains):

other:

(g) information language(s) used:

☐ Dewey Decimal Classification

☐ Universal Decimal Classification

☐ thesaurus

☐ key-words

other:

(h) inquiry service:

number of queries per month:

character of queries (subjects):

sources used for answering:

form and means of quering:

☐ verbal ☐ written ☐ on-line

other:

form of answering:

☐ verbal ☐ written ☐ SDI

other:

(i) distribution of languages of primary documents (put percentages into boxes rather than crosses):

☐ English

☐ French

☐ German

other:

(j) list of publications issued by your institution and their circulation

4. Users

(a) approximate number of users per month:

(b) types of users (put either absolute numbers or percentages into boxes rather than crosses):

☐ policy makers

☐ administrators (managers)

☐ development engineers

☐ factory supervisors

☐ researchers

☐ consultants

☐ sales managers

☐ workers

☐ teachers

☐ students

other:

5. Needs of users

- ☐ management
- ☐ products
- ☐ production
- ☐ technology transfer
- ☐ finance
- ☐ markets
- ☐ employment
- ☐ legislation
- ☐ spare-parts
- ☐ raw-materials
- ☐ quality control
- ☐ patents
- ☐ standards
- ☐ skills training
- ☐ utilisation of R & D results

other:

6. Applications of computers, if any

- ☐ creating databases and/or databanks
- ☐ handling databases and/or databanks
- ☐ SDI
- ☐ library service

other:

6. Information supporting activities carried out at your institution

- ☐ training of information specialists
- ☐ training of users
- ☐ research in the field of information

other:

7. Linkages between your institution and other domestic and foreign organizations

domestic:

foreign

- ☐ UNIDO
- ☐ UNESCO
- ☐ FAO
- ☐ WHO
- ☐ FID
- ☐ IFLA
- ☐ ISO
- ☐ ISTIC (in Moscow)

other:

## III. MISCELLANEOUS DATA

1. Requirements of your institution for specialized

(a) information manpower:

(b) equipment:

(c) software:

(d) other:

2. Main problems faced by your institution:

- ☐ lack of qualified personnel
- ☐ lack of equipment
- ☐ lack of space
- ☐ shortage of funds

other:

3. Expectations from UNIDO, if any

- ☐ expertise on:
- ☐ consulting on:
- ☐ technical assistance concerned with:
- ☐ access to UNIDO information resources:
- ☐ equipment:
- ☐ software:
- ☐ training:

other:

Annex 3

## PERSONS CONTACTED

The list below contains some of the expert's interlocutors who provided them with valuable information and opinions.

Morocco

| | |
|---|---|
| Mr. A. Fassi-Fihri | Directeur du Centre National de Documentation |
| Mr. K. Saad | Chef du Service Questions/Réponses<br>Centre National de Documentation |
| Mr. M. Mounji | Chef du Service de Gestion Informatique<br>Centre National de Documentation |
| Mr. Ben Omar | Directeur de la Planification<br>Ministère du Commerce<br>et de l'Industrie |
| Mr. F. Alyoussoufi | Chef Département Informatique<br>Ministère du Commerce<br>et de l'Industrie |
| Mr. A. El Caïdi | Chef du Service du Plan<br>Ministère du Commerce<br>et de l'Industrie |
| Ms. D. Haeringer | Consultant |
| Ms. M. Herbert | Junior Professional Officer<br>UNDP |

Mali

| | |
|---|---|
| M. O. Sako | Chargé du Programme<br>PNUD |
| M. D. Sarambounou | Economiste<br>CEPI |
| M. Sy Sada Diane | Directeur General Adjoint<br>CEPI |
| M. Yeya Tiemoko Toure | Directeur Général<br>CNRST |
| M. Samba Aw | Coordinateur<br>Institut du Sahel |
| M. Zoumana Bamba | Chef du centre de documentaion<br>Institut du Sahel |
| M. Cheickna Traore | Directeur<br>Institut de l'Energie Solaire |

Rwanda

| | |
|---|---|
| M. F. Sanon | JPO<br>PNUD |
| M. A. Tossou | Représentant<br>FAO |
| M. T. Muvunyi | Directeur<br>Rwanda-SOFT |
| M. C.Mhambara | Chef de Division "Comptes des Entreprises non financières"<br>MINIPLAN |

| | |
|---|---|
| M. J.B. Sebalinda | Directeur de la Planification<br>MINIMART |
| M. J. Turatsinze | Responsable des Etudes Agro-Industrielles<br>ARDI - ITARA |
| Mme. M. Mukaruoniza | Documentaliste<br>ARDI - ITARA |
| M. C. Demokarasi | Responsable de la Documentation<br>CCIR |
| M. S. Habumuremyi | Responsable de la banque de données énergétiques<br>MINITRAPEE |
| M. A. Kabera | Directeur du Service Technique<br>MINITRANSCO |

Burundi

| | |
|---|---|
| M. C. Paulet | Représentant Résident Adjoint<br>PNUD |
| M. P-M. Biabatantou | Représentant<br>FAO |
| M. P. Karorero | Chargé de Programme<br>PNUD |
| M. A. Mbonimpa | Expert national<br>DEDI |
| M. J-M. Bukware | Conseiller au Département<br>DEDI |

| | |
|---|---|
| M. J-B. Habonimana | Conseiller au Département<br>DEDI |
| M. M. Ndikumwami | Chef du Service Etudes et<br>Réalisation CPI |
| Mme. B. Boyayo | Documentaliste<br>CPI |
| M. B. Ciza | Directeur des P.M.E. -<br>Projet APEX, CCIB |
| M. E. Ntitebirageza | Directeur<br>SNES |
| M. M. Baregeya | Directeur Adjoint<br>CNI |
| M. C. Budigiye | Conseiller Technique<br>ONATEL |
| M. F. Mutamberezi | Directeur des Etudes<br>BRB |

Madagascar

| | |
|---|---|
| M. J. Frippiat | Représantant Résident<br>PNUD |
| M. M. Dukuray | JPO<br>ONUDI/PNUD |
| M. C. Razakandraina | Consultant en Audit et Etudes<br>Cabinet FIVORANA |
| M. A. Pierre Bernard | Directeur de la Programmation<br>MIEM |

| | |
|---|---|
| M. J-H. Rasamison | Chef du Service Central de l'Information et de la Statistique<br>MIEM |
| M. A. Randrianarivony | Directeur Général<br>BDE |
| M. R. Ramanana-Rahary | Conseiller Technique Principal<br>Projet PNUD/ONUDI/MAG/82/010<br>Ministère du Plan (détaché) |
| M. E. Rakotomaria | Directeur<br>CNRIT |
| Mme. J. Ratsimandrava | Directeur<br>CIDST |
| M. A. Razanatsehene | Président<br>Chambre de Commerce, d'Industrie et d'Agriculture |
| M. D. Rakotofiringa | Directeur<br>STIMAD |

Annex 4

## NAMES AND ADDRESSES OF THE INSTITUTIONS

Below is a list of the names and addresses of the visited institutions.

Morocco

Centre National de Documentation
B.P. 826, Rabat, Maroc
Tel. 731-51; Tlx. 310-52; fax: 212-7-73134

Ministère du Commerce et de l'Industrie -
Direction du Commerce Extérieur
Charia Ma'a Alainaine, Haut Agdal, Rabat, Maroc
Tel. 74944

Ministère du Commerce et de l'Industrie -
Direction du Commerce du Planning
Charia Ma'a Alainaine, Haut Agdal, Rabat, Maroc

Mali

Centre de Promotion et d'Etudes Industrielles (CEPI)
B.P. 1980 Bamako, Mali
Tel: 22.22.59; 22.22.79, Tlx: 445

Centre National de la Recherche Scientifique et Technologique (CNRST)
Immeuble Dionke N'Diaye Lafiabougou rue 408 B.P. 3052 Bamako, Mali
Tlx: 2602 MJ

Institut du Sahel, RESADOC
B.P. 1530 Bamako, Mali
Tel: 22-21-78, Tlx: 2432

Laboratoire de l'Energie Solaire
Route de Sotuba B.P. 134 Bamako, Mali
Tel: 22-30-41; 22-78-03

Rwanda

Association Rwandaise pour la Promotion du Développment Integré
(ARDI - ITARA)
Rue du Mont Huye, B.P. 1295 Kigali, Rwanda
Tel: 7-39-61

Ministère de l'Industrie, des Mines et de l'Artisanat
(MINIMART)
B.P. 23 Kigali, Rwanda
Tel: 7-60-44

Ministère du Plan
(MINIPLAN)
B.P. 46, Kigali, Rwanda
Tel: 7-51-13

Rwanda-SOFT
B.P. 1641 Kigali, Rwanda
Tel: 7-20-73

Chambre de Commerce et d'Industrie du Rwanda
(CCIR)
B.P. 319, Kigali, Rwanda
Tel: 7-23-19, Tlx: 22662 CRIC RW

Ministère des Travaux Publics, de l'Energie et de l'Eau
(MINITRAPEE)
B.P. 27, Kigali, Rwanda
Tel: 8-37-20, Tlx: 537

Ministère des Transport et des Communications
(MINITRANSCO)
B.P. 1332 Kigali, Rwanda
Tel: 7-55-20, Tlx: 22573, Fax: 7-31-10

Burundi

Centre National de l'Informatique
(CNI)
Chauséé Prince Louis Rwagasore, Bujumbura, Burundi
Tél: 2-50-05; 2-37-24

Centre de Promotion Industrielle
(CPI)
B.P. 1370, Bujumbura, Burundi
Tél: 2-35-27; 2-40-37; Tlx: 5107 CPI BDI

Office National de Téllécommunication du Burundi
(ONATEL)
B.P. 60, Bujumbura, Burundi
Tél: 2-31-96; Tlx: 6158

Banque de la République du Burundi
(BRB)
B.P. 705, Bujumbura, Burundi
Tél: 2-27-44

Chambre de Commerce, d'Industrie, d'Agriculture et d'Artisanat du Burundi
(CCIB)
B.P. 313, Bujumbura, Burundi
Tél: 2-22-80; Tlx: 5145 CCI BDI

Service National des Etudes et Statistiques
(SNES)
B.P. 1156, Bujumbura, Burundi
Tél: 2-26-35; 2-67-29;

Ministère du Commerce et de l'Industrie,
Département des Etudes et de la Documentation Industrielles
(DEDI)
B.P. 492, Bujumbura, Burundi
Tél: 2-50-19; 2-59-53; Tlx: 5117 HINICI BDI

Madagascar

Ministère de l'Industrie, de l'Energie et des Mines
(MIEM)
B.P. 527, Antananarivo, Madagascar
Tél: 255-15; Tlx: 22 540 MIEM MG

Banque des Données de l'Etat
(BDE)
B.P. 485, Antananarivo, Madagascar
Tél: 216-52

Centre National de Recherches Industrielles et Technologiques
CNRIT
B.P. 3330, Antananarivo, Madagascar
Tél: 217-18

Ministère du Plan
B.P. 485, Antananarivo, Madagascar
Tél: 304-63

Centre d'Information et de Documentation Scientifique et Technique
CIDST
27 bis rue Fernand Kasanga, Antananarivo, Madagascar
Tél: 332-88; Tlx: 22539 MRSTD MG

Cabinet FIVOARANA
B.P. 3854, Antananarivo, Madagascar
Tél: 219-25(26)

Chambre de Commerce, d'Industrie et d'Agriculture
B.P. 455, 10 rue Pasteur Emile Rajohnson, Antananarivo, Madagascar
Tél: 232-37; Tlx: 22340 RAMEX

Société des Télécommunications Internationales
(STIMAD)
B.P. 763, Antananarivo, Madagascar
Tél: 426-62; Tlx: 22398; fax: 42654

Annex 5

## Hardware and Software

The hardware recommended for NFP is as follows:

IBM PC XT/AT or compatible with

- RAM minimum 640 KB
- hard disk minimum 20 MB
- monitor, minimum monochrome (Hercules)
- 2 floppy disk drives of 5,25 "
- 1 printer ("dot printer")
- 1 keyboard QWERTY
- 1 reader Cd-Rom
- 1 stabiliser

A modem is necessary if on-line transmission is to be the case.

Supplementary equipment:

- 2 diskette boxes
- 5 ribbons
- 100 floppy disks
- 10 boxes of wide format paper
- 10 boxes of A4 format paper

The software proposed is as follows:

- MS DOS 3.3
- PCTOOLS de Luxe
- SIDEKICK
- INTIB software based on MICRO ISIS, version 2.3
- word processors, such as WORDSTAR 4, WORD PERFECT
- dBASE III+
- SYMPHONY

For on-line communication the CROSSTALK package is recommended.