Regional Co-operation in Scientific Information Exchange in the Western Indian Ocean Region (RECOSCIX-WIO)

Kenya Marine and Fisheries Research Institute

Limburg University Centre

Intergovernmental Oceanographic Commission

RECOSCIX-WIO ANNUAL REPORT

1994

RECOSCIX-WIO is a development project subsidised by the "Algemeen Bestuur voor Ontwikkelingssamenwerking" (ABOS) and the "Vlaamse Vereniging voor Ontwikkelingssamenwerking en Technische Bijstand" (VVOB) and is executed by the "Limburgs Universitair Centrum" (LUC) in the "Kenya Marine and Fisheries Research Institute" (KMFRI), in collaboration with the "Intergovernmental Oceanographic Commission" (IOC) (UNESCO).

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Contents

I. GENERAL INFORMATION

1. Period covered by report: 1 January 1994 to 31 December 1994

2. Project identification:
   Name: **Regional Co-operation in Scientific Information Exchange in the Western Indian Ocean region (RECOSCIX-WIO)**
   Country: **Kenya**

   Co-ordinating institution: **Limburg University Centre (LUC)**
   Universitaire Campus
   3590 DIEPENBEEK (Belgium)
   tel: (32 11) 268121
   fax: (32 11) 268126

   Belgian Project Director: **Prof. Dr. L. EGGHE**, Chief Librarian LUC

   Partner institution: **Kenya Marine and Fisheries Research Institute**
   P.O. Box 81651
   MOMBASA (Kenya)
   tel: (254 11) 475151-5
   fax: (254 11) 472215

   Kenyan Project Director: **Dr. E. OKEMWA**, Director KMFRI

3. Duration: 4 years (with prolonged first year);
   start: 1 August 1991; foreseen end date: 31 December 1995

II. PROJECT INPUT

A. Through funds of the Belgian Government

The Belgian project funding is administered by the General Administration for Development Co-operation (GADC = ABOS : Algemeen Bestuur voor Ontwikkelingssamenwerking). Apart from the project funds, an expert is provided through the Flemish Association for Development Co-operation and technical Assistance (VVOB : Vlaamse Vereniging voor Ontwikkelingssamenwerking en technische Bijstand).

1. Finances
   - Total allowance: BFr 14,464,012 (US$ 399,558)
   - Annual allowances: year 1: BFr 7,895,738 (US$ 218,114)
     year 2: BFr 2,827,088 (US$ 78,096)
     year 3: BFr 1,886,482 (US$ 52,113)
     year 4: BFr 1,854,704 (US$ 51,235)

The budget allocation over the years and headings is given in Annex 1.

2. Personnel
   - Expert on site: Dr. Peter REYNIERS, project manager, with a VVOB contract from 9 January, 1992, to 8 January, 1994
   - Visiting expert: Dr. Richard PHILIPS, System Manager of the VUBIS Network at the University Institution Antwerp (Belgium), who was in Kenya between 8 and 22 February, 1994, to check the telecommunication on the UNIX server in the RDC (see Annex 14 for his report).
   - Co-ordination visit: Prof. Dr. Leo EGGHE, Chief Librarian LUC, part-time Professor at the University Institution Antwerp, 8 to 22 February, 1994 (see Annex 13 for his report).

3. Funds for operation costs

The following subdivisions are also used as headings in the financial report in Table I and in the budget overview in Annex 1.

- Telecommunication: telephone, telefax, electronic mail (GreenNet), information retrieval from DIALOG databases
- Mailing, including courier services and distribution of newsletter WINDOW
- Reproduction: printing of newsletter WINDOW
- Computer: consumables and maintenance
- Periodicals: starting from 1992 the project is subscribed to the following periodicals through project funds:
  + Bulletin of Marine Science
  + Current Contents - Agriculture, Biology and Environmental Sciences
  + Indian Journal of Marine Sciences
  + Journal of the Marine Biological Association of the United Kingdom
  + Limnology and Oceanography
  + Mahasagar
  + PSZNI - Marine Ecology
  + Nature
  + Science
- Document delivery through the Belgian co-ordinating institution: interlibrary lending requests through the LUC (see Annex 4 for further details)
- Document delivery through other libraries than the LUC (for statistics: see Annex 4)
- Personnel: regional and international travel for RDC staff
- Visits: 1 visiting expert and the Belgian project director
- Training: the internships planned for the first year were started during the second year and will continue during the third year

TABLE I. FINANCIAL OVERVIEW OF THE THIRD YEAR OF THE PROJECT (IN BFR)

	RECEIPTS	EXPENSES	BALANCE
1. Equipment			
Photocopier			
Software		117.431	- 117.431
Hardware		546.854	- 546.854
Total/year		664.285	- 664.285
2. Operation costs			
Telecommunication	244,608	520.523	- 275.915
Mailing	102,400	258.396	- 155.996
Reproduction	128,000	256.591	- 128.591
Computer consumables	160,000	237.794	- 77.794
Periodicals	52,500	88.133	- 35.633
Doc delivery Belgium	450,000	508.863	- 58.863
Doc delivery (other)	262,500	212.832	49.668
Total/year	1,400,008	2.083.132	- 683.124
3. Personnel			
Regional travel	160,000	27.873	132.127
International travel	55,000	12.491	42.509
Total/year	215,000	40.364	174.636
4. Visits			
Co-ordinator per diem	76,734	31.349	45.385
Expert per diem			
Travel	55,000	101.396	- 46.396
Total/year	131,734	132.745	- 1.011
5. Training			
Internships		30.291	- 30.291
Travel		57.176	- 57.176
Workshop			
Total/year		87.467	- 87.467
Administration	69,870	77.002	- 7.132
Sundry	69,870	69.883	- 13
GRAND TOTAL/year	1,886,482	3.154.878	- 1.268.396

B. Input by the Kenyan partner institution

1. Personnel
   - Dr. Peter REYNIERS: information services manager and financial manager (see also II.A.2; general management of the RDC and tasks taken from the scientific manager: management of information services; co-ordination of WIODIR and WIOLIB; edition of newsletter; contacts with the nodes of the co-operation; participation in meetings relevant to the project)
   - Mr. Mika O. ODIDO: scientific manager (due to training abroad and other commitments Mr. Odido could not spend all of his time with the project)
   - Mr. Sam O. NG'ETE: technical manager (management of the computer system; training and assistance on computer related matters in the co-operating institutes; technical aspects of WIODIR and WIOLIB; participation in technical meetings relevant to the project)
   - Mr. Kennedy O. ONYANCHA: librarian (bibliographic information retrieval; follow-up of document requests; WIOLIB database maintenance)
   - Mrs. Jane NZAU: secretary (administration of correspondence and mailing of document requests; data input in WIODIR)
   - Ms. Phyllis MUTERE: DTP (Desk Top Publishing) Manager (preparation of camera-ready copy of the bulletin WINDOW)
   - Ms. Catherine M. KAUMBUTHU: input staff (input in WIOLIB and WIODIR databases)
   - Mr. Michael M. MOSOTI: library assistant (processing of document requests)
   - Mr. Steve WANJAU: photocopier
   - Mr. Willy MWANGI: messenger and assistant photocopier
2. Infrastructure

   Two offices, a photocopying room, store room and toilet (all together approximately 120 sq. m; the rooms form a unit and before were guest rooms on top of the institute)

C. External contributions

In the past year the RECOSCIX-WIO project received another grant of the Intergovernmental Commission of UNESCO (IOC of UNESCO), to allow the Technical Manager to travel to the University of Antwerp for an additional training in UNIX system management (see Annex 8).

Ms. Kaumbuthu received a GADC grant to participate in the MIST (Management of Information in Science and Technology) course at the Free University of Brussels (see Annex 9).

The Limburg University Centre sponsored a two months' stay in Belgium for Ms. Mutere, to allow her an additional French course with the Alliance Française de Bruxelles and a training in Desktop Publishing with the Centre for Multimedia Training at the Limburg University Centre, Diepenbeek (Belgium) (see Annex 10).

As happened in previous years also in 1994 the project was donated books and volumes of periodicals by libraries abroad. Even if they are secondhand material, they are of great benefit to the project that is able to fill an increasing number of requests from its own collection (see Annex 4).

III. ACTIVITIES AND RESULTS

1. Training

Training of librarians and documentation officers from co-operating institutes through internships in the Regional Dispatch Centre (RDC) in Mombasa was continued in the past year. This programme is as well a follow-up of the August 1992 workshop through cataloguing under supervision, as an acquaintance with the daily activities in the RDC.
The following colleagues were guests in the RDC: Mr. John Kiiru Thuku (Kenyatta University, Nairobi, Kenya) from 18 to 29 April; Mr. Gajendranatha Ramsaha (Albion Fisheries Research Centre, Albion, Mauritius) from 17 to 27 October; Ms. Judy Cedras (Department of the Environment, Victoria-Mahé, Seychelles) from 7 to 18 November; and Ms. Willy Rachel Raniriarison (Centre National de Recherches Océanographiques, Nosy-Bé, Madagascar) from 21 November to 2 December.
The interns' activities mainly consisted of input in the WIOLIB (MIBIS) of periodical articles and books, assigning keywords from the ASFA thesaurus, i.e. activities they have to perform in their institutes as a contribution to the project (as well as to the development of their library of course). Special attention went to the PASCAL programme for global change of records, i.e. a programme that allows to put the same field content in a series of selected records. This method is time saving and assures the consistency of input in analytical descriptions.

2. Services, public relations and follow-up

The objectives of the RECOSCIX-WIO project are information provision and exchange, as well within the Western Indian Ocean region, as between the region and the rest of the aquatic sciences community.
The project is a co-operation of institutions for marine/aquatic sciences and fisheries in 8 countries along the East African coast and the island states (see list in Annex 2). A distinction is now being made between **associated institutes**, i.e. institutes (and scientists) that only make use of the project's information services, and **co-operating institutes**, i.e. institutes that also contribute to the project's objectives through delivery of data for the collective catalogue.
The information provision to the scientists in the region mainly consists of scientific literature. The project also gathers data on the region that can be of interest to the scientists within the region as well as the ones abroad. The promotion of the project is essentially based on its newsletter.

2.1. Information provision

The first part of the information provision process consists of **information retrieval**. The project uses two instruments to reply to the demand of scientific literature references. In 1994 it took a subscription to the database Aquatic Sciences and Fisheries Abstracts (ASFA) on CD-ROM. This information source may be supplemented with data from from related areas from databases accessed through DIALOG Information Services. In 1994 there were 102 searches, resulting in 15,857 document citations sent to the requesting

researchers. This was a slight decrease compared to the results of 1993 (see table II). The number of citations per request however was higher: 155.46 in 1994 compared to 103.55 in 1993. Yet the same policy regarding the quality of the result was maintained: if the number of citations was high enough, the results were limited to English literature (for English speaking scientists), unless the researcher has expressed his knowledge of other languages. In the past year however, there were some requests for extended literature overviews on specific topics and the available database has become larger: the ASFA disks now hold data from 1978 up to 1994, while the previous edition used started only from 1981.
The table in Annex 3 offers a detailed overview of the number of requests per month and per institute for the year 1994. The external persons to receive services are visitors to the institute.

Table II. Overview of literature searches in the past years

	1990	1991	1992	1993	1994
Number of searches	149	61	84	112	102
Number of citations	12,575	5,150	6,430	11,598	15,857
Number of citations/search	84.40	84.43	76.55	103.55	155.46

Scientists are provided with (copies of) publications through the **document delivery** service. Once they have made their selection from the list of citations resulting from a literature search, or citations they found in other publications, they send their document requests to the Regional Dispatch Centre (RDC) in Mombasa. To fill these requests the RDC relies on the collaboration of some twenty co-operating libraries around the world (mainly America and Europe). The received documents - mostly copies of journal articles - are copied before they are sent to the scientists. That way the "original" copy remains in the RDC for future reference, in case another request for the same document is received. The RDC is also capable of filling an increasing part of the requests from its own collection, grown from the donations.
A detailed overview of the document delivery service is given in Annex 4.

In 1994 the **current awareness** was continued: since 1992 the project is subscribed to a number of periodicals, namely the ones for which there were most requests received in the period 1990-1991 and that were affordable within the project budget. Over these few years there has been no change in the subscriptions. On the one hand these periodicals remain in high demand and the other frequently requested journals are too expensive; on the other hand this policy ensures the continuity of the collection.
Periodically the contents tables of the received issues are copied and sent to the institutes in the region, so that the scientists can make a choice from the most recent literature available in the RDC. Also the RDC is subscribed to Current Contents - Agriculture, Biology and Environmental Sciences. Each issue is screened for articles of potential interest to the scientists in the region and reprints are requested from the authors. There is a good reply and not seldomly the authors send more than the requested material: in 1994 306 reprints were requested and 643 were received.

2.2. Collection of information

The first gathering of information on the region is the **WIODIR**, a directory of aquatic and fisheries scientists. The computer database contains data of practical (name, studies, place of work, how to be reached) and scientific (research topic) nature and is regularly updated. In April 1994 the update forms were distributed, but the response was very low and two reminders were needed to stimulate a reasonable number of scientists to return the form. Later in the year the newly published standard directory structure developed by IAMSLIC (International Association for Marine Sciences Libraries and Information Centers) was adopted by the project. Because of the differences with the previously used database structure the new database was inputted anew, by one staff member -because the local network was not operational- and not even full-time, so that it took some months (while update forms kept coming in) to finish the work. Because by now some of the data are almost one year old and some data required for input in the new database were not requested before, a new update has been proposed before distribution the database to interested parties.

The **WIOLIB** is becoming the collective catalogue of the libraries of the co-operating institutes in the region. The August 1992 workshop in automated library management and the supply of computer equipment to the institutes that sent a participant, served this purpose. The contributions of the co-operating institutes are coming in slowly, but the internship programme has been stimulating the co-operation.

2.3. Public relations

The newsletter **WINDOW** is an important instrument to promote the project. It includes articles and general information of interest to the scientists in the region, but also information on the region for the aquatic scientists all over the world: announcements and reports of meetings, congresses..., training opportunities, information on projects and research, activities concerning the project... It has to be noted however that more contributions from the institutes in the region would still increase the usefulness of the newsletter. Three issues were published in 1994, in March, June and December (though the last one was only distributed in the first quarter of 1995). The December issue was mailed to 1218 addresses in 87 countries (see Annex 5 for further details).

Furthermore the project is promoted with **visitors** to the institute. The visitors get a presentation of the project and a demonstration of ASFA on CD-ROM. Visiting scientists usually request a literature search at that occasion.

Following visitors were received in 1994 (in chronological order):

- Dr. Peter Verity, Skidaway Institute of Oceanography, Savanah GE (U.S.A.);
- students of the School of Environmental Sciences, Moi University, Eldoret (Kenya);
- Prof. dr. H. Martens, Vice-Chancellor; Prof. dr. F. Dumortier, Deputy Vice-Chancellor; Prof. dr. H. Gevaerts, Departement of Zoology, Limburg University Centre, Diepenbeek (Belgium);
- Mr. Wakungu, Kenya Forestry Research Institute, Nairobi (Kenya);

- students of the Kenyatta University, Nairobi (Kenya);
- Dr. P. Hockey, University of Cape Town (South Africa);
- Ms. R. Van Moll, student Psychological and Social Sciences, Free University of Brussels (Belgium);
- students of the Baraton University, Eldoret (Kenya);
- the participants of the workshop of the Group of Experts - Ocean Sciences in relation to Living Resources (GE-OSLR), Mombasa (Kenya);
- Ms. Catherine Vits, Laboratory for Remote Sensing, University Gent (Belgium);
- Dr. E. Martens and Dr. P. Erftemeijer, Kenya Wildlife Service - Marine Parks and Reserves, Mombasa (Kenya).

The project is also promoted at other occasions, such as (inter)national meetings and visits to other institutions. In 1994 the project was represented in the Seminar on National Networking of Science and Technology Information Systems, Nairobi (Kenya) and in the Workshop on Databases: the Needs and Contributions of African Researchers, Addis Ababa (Ethiopia).

On 27 and 28 January the National Council for Science and Technology of Kenya organised a seminar on National Networking of Science and Technology Information Systems. Topics were a state of the art of networking in different scientific institutions in the country and discussions on future options and policy. As a frequent user of telecommunication the RECOSCIX-WIO project was invited to represent the KMFRI to this meeting. In Annexes 7 and 8 you will find a report and the contribution of the Information Services Manager who participated in the seminar.

The American Association for the Advancement of Science, Sub-Saharan Program, organised a seminar on databases and their relation to African scientists. The meeting was held from 10 to 12 October in Addis Ababa (Ethiopia). As the project through the WIOLIB and the WIODIR, is active in this field, RECOSCIX-WIO was invited to this workshop. Report and contribution to the workshop are included in Annexes 11 and 12.

IV. PLANNING FOR THE IMMEDIATE FUTURE

With regard to the **information services** the objectives do not differ from the ones of last year. The quality has to be kept to the current level, possibly raised. More emphasis has to be placed with recent literature, e.g. through publicising the available periodicals to which the project is subscribed and through requesting of reprints.

The **WIOLIB** has to become the instrument to trace the available literature in the co-operating institutes and in that way to create some self-support within the region. The co-operating institutes have to be requested more regularly to send their input to the RDC, where the necessary efforts will be made to ensure the quality of the database.
A new objective has been created through the acceptance of RECOSCIX-WIO as a regional ASFA input centre during the ASFA Board Meeting in China in October 1994. The necessary actions have to be taken to obtain from the publishers the publications that are relevant for

input in the database. And an new database structure, i.e. ASFISIS, has to be adopted in accordance with the other ASFA input centres.

The **WIODIR** has to be updated regularly to keep the data in accordance with the reality, especially when the database will be distributed on diskette by UNEP. Twice a year the available data will be presented to the scientists for correction. Beside those planned updates the local co-ordinators should inform the RDC on any changes within their institute.

A telecommunications consultant in 1994 advised to replace the server of the local network that will also be the central node for telecommunication between the marine institutions in the region. The computer arrived in the RDC only late in the year. Installation and testing of the server is one of the major priorities of 1995.

The activities ensuing from the above objectives necessitate further **training**. In follow-up of the 1992 workshop the librarians of the co-operating institutes will be invited to Mombasa for another workshop. Main topics will be the use of ASFISIS and electronic communication through the RDC.

ANNEX 1. PROJECT BUDGET (IN BFR)

YEAR	1991/92	1993	1994	1995	TOTAL
1. Equipment					
Photocopier	300,000				300,000
Software	1,870,000				1,870,000
Hardware	1,890,000				1,890,000
Total/year	4,060,000				4,060,000
2. Operation costs					
Telecommunication	436,800	349,440	244,608	195,686	1,226,534
Mailing corresp.	160,000	128,000	102,400	81,920	472,320
Reproduction	200,000	160,000	128,000	102,400	590,000
Computer consumables	160,000	160,000	160,000	160,000	640,000
Periodicals	52,500	52,500	52,500	52,500	210,000
Doc delivery Belgium	900,000	600,000	450,000	300,000	2,250,000
Doc delivery (other)	525,000	350,000	262,500	262,500	1,400,000
Total/year	2,434,300	1,799,940	1,400,008	1,155,006	6,789.254
3. Personnel					
Regional travel	160,000		160,000		320,000
International travel	55,000		55,000		110,000
Total/year	215,000		215,000		430,000
4. Visits					
Coordinator per diem	76,734	76,734	76,734	102.312	332,514
Travel	55,000	55,000	55,000	110,000	275,000
Expert per diem	78,834				78,834
Travel	55,000				55,000
Total/year	265,568	131,734	131,734	212,312	741,348
5. Training					
Internships	256,000	256,000			512,000
Travel	80,000	80,000			160,000
Workshop		350,000		350,000	700,000
Total/year	336,000	686,000			1,372,000
Total/year	7,310,868	2,617,674	1,746,742	1,717,318	13,392,602
Administration	292,435	104,707	69,870	68,693	535,705
Sundry	292,435	104,707	69,870	68,693	535,705
GRAND TOTAL/year	**7,895,738**	**2,827,088**	**1,886,482**	**1,854,704**	**14,464,102**

ANNEX 2. LIST OF COOPERATING AND ASSOCIATED INSTITUTIONS

This list contains an enumeration of institutes that are part of the RECOSCIX-WIO network, either as Cooperating Institute, i.e. an institute that has received computer equipment through the project and supplies input in the WIOLIB database, or as Associated Institute, i.e. an institute whose scientists make use of the project's information services or are in the project's scientists' directory WIODIR.

Eritrea

ER/ASMUNI/MBF	Asmara University, Marine Biology & Fisheries Department

Ethiopia

ET/ADDUNI/BIO	University of Addis Ababa, Department of Biology

Kenya

KE/CORECO	Coral Reef Conservation Project, Mombasa
KE/FISDEP/NAB	Fisheries Department, Nairobi
KE/EGEUNI/BOT	Egerton University, Department of Botany, Njoro
KE/EGEUNI/NRE	Egerton University, Department of Natural Resources, Njoro
KE/EGEUNI/ZOO	Egerton University, Department of Zoology, Njoro
KE/FISDEP/NAB	Fisheries Department, Nairobi
KE/KEFORI	Kenya Forestry Research Institute, Nairobi
KE/KEMFRI/BAR	Kenya Marine and Fisheries Research Institute, Lake Baringo Centre, Kampi ya Samaki
KE/KEMFRI/KEG	Kenya Marine and Fisheries Research Institute, Kegati Centre, Kisii
KE/KEMFRI/KIS	Kenya Marine and Fisheries Research Institute, Kisumu Centre
KE/KEMFRI/MOM	Kenya Marine and Fisheries Research Institute, Mombasa Centre
KE/KEMFRI/NAB	Kenya Marine and Fisheries Research Institute, Nairobi Centre
KE/KEMFRI/NAV	Kenya Marine and Fisheries Research Institute, Lake Naivasha Centre
KE/KEMFRI/SAN	Kenya Marine and Fisheries Research Institute, Sangoro Centre, Pap Onditi via Ahero
KE/KEMFRI/TUR	Kenya Marine and Fisheries Research Institute, Turkana Centre, Lodwar
KE/KENUNI/BOT	Kenyatta University, Department of Botany, Nairobi
KE/KENUNI/ENV	Kenyatta University, Department of Environmental Sciences, Nairobi
KE/KENUNI/ZOO	Kenyatta Univeristy, Department of Zoology, Nairobi
KE/KEWEWG	Kenya Wetlands Working Group, Nairobi
KE/KEWISE/MPR	Kenya Wildlife Service, Marine Parks and Reserves, Mombasa
KE/LBDEVA	Lake Basin Development Authority, Kisumu
KE/MASUNC/ZOO	Maseno University College, Department of Zoology
KE/MOIUNI/FIS	Moi University, Department of Fisheries, Eldoret
KE/MOIUNI/TOU	Moi University, Department of Tourism, Eldoret
KE/MOIUNI/ZOO	Moi University, Department of Zoology, Eldoret
KE/NAMUKE	National Museums of Kenya, Nairobi

KE/SAFICF	Sagana Fish Culture Farm
KE/UNINAI/BOT	University of Nairobi, Department of Botany
KE/UNINAI/GEO	University of Nairobi, Department of Geology
KE/UNINAI/VET	University of Nairobi, Faculty of Veterinary Sciences
KE/UNINAI/ZOO	University of Nairobi, Deparment of Zoology

Madagascar

MG/CNRENV	Centre National de Recherches sur l'Environnement, Antananarivo
MG/CNRONB	Centre National de Recherches Océanographiques, Nosy-Bé
MG/IHSMTO	Institut Halieutique et de Sciences Marines, Tuléar

Mauritius

MU/ALBION	Albion Fisheries Research Centre
MU/FAIRAD	Food and Allied Industrial Ltd., Research and Development, Moka
MU/METSER	Meteorological Services, Vacoas
MU/UNIMAU	University of Mauritius, Marine Science Unit, Réduit

Malawi

MW/ICLARM/AFR	International Center for Living Aquatic Resources Management - Africa Center, Zomba
MW/ICLARM/GTZ	International Center for Living Aquatic Resources Management - National Aquaculture Center, Domasi

Mozambique

MZ/EMUNIV/BIO	Eduardo Mondlane University, Department of Biological Sciences, Maputo
MZ/INIPES	Instituto de Investigacao Pesqueira, Maputo
MZ/NATECO	National Environment Commission, Maputo

Seychelles

SC/DEPENV	Department of the Environment, Victoria - Mahé
SC/ORSTOM	Antenne ORSTOM aux Seychelles, Victoria - Mahé
SC/SEYFIS	Seychelles Fishing Authority, Victoria - Mahé
SC/TESUPS	Ministry of Industry - Technological Support Services Division

Tanzania

TZ/NATMUS	National Museum of Tanzania, Dar es Salaam
TZ/TAFIRI/DAR	Tanzania Fisheries Research Institute, Dar es Salaam Centre
TZ/TAFIRI/KYE	Tanzania Fisheries Research Institute, Kyela Centre
TZ/TAFIRI/MWA	Tanzania Fisheries Research Institute, Mwanza Centre

TZ/UNIDAR/BOT	University of Dar es Salaam, Department of Botany
TZ/UNIDAR/GEO	University of Dar es Salaam, Department of Geology
TZ/UNIDAR/IMS	University of Dar es Salaam, Institute of Marine Sciences
TZ/UNIDAR/ZOO	University of Dar es Salaam, Department of Zoology

Uganda

UG/FIRIJI	Fisheries Research Institute, Jinja
UG/MAKUNI/ZOO	Makerere University, Department of Zoology, Kampala

Zimbabwe

ZW/LKAFRI	Lake Kariba Fisheries Research Institute,
ZW/UNIZIM/LKA	University of Zimbabwe, Lake Kariba Station,

LITERATURE SEARCHES IN 1994

The results are represented as follows: number of request (number of citations delivered)

Institute	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total/inst
KE/CRCPMO									1 (32)				1(32)
KE/EGEUNI/NRE									1 (69)				1(69)
KE/FISDEP/NAB						1 (3)					1 (547)		2(550)
KE/KEMFRI/BAR											1 (641)		1(641)
KE/KEMFRI/KIS		1 (24)	1(305)					2(286)	1(170)	2(383)			7 (1,168)
KE/KEMFRI/MOM	3(458)	3 (490)	6(444)	3 (199)	5(620)	7(484)	2 (109)	9(2264)	6(1669)	1(147)	6 (665)	1(53)	52 (7,602)
KE/KEMFRI/NAB					1(126)								1 (126)
KE/KEMFRI/SAN												2(705)	2 (705)
KE/KENUNI/ENV											1 (119)		1 (119)
KE/KENUNI/ZOO	1(134)								1(9)		1 (303)		3 (446)
KE/KEWEWG												1(200)	1 (200)
KE/MASUNC/ZOO								1(436)					1 (436)
KE/MOIUNI/FIS	1 (36)												1 (36)
KE/MOIUNI/ZOO	1 (12)											1 (2)	2 (14)
KE/UNINAI/ZOO	1 (78)	2(374)				1(32)		2(300)	1(23)	1(49)	1(62)		9(918)
SC/DEPENV											1(25)		1 (25)
SC/SEYFIS							1 (33)		1(297)				2(330)
TZ/UNIDAR/IMS	3(590)					1(24)				1(28)			5(642)
TZ/UNIDAR/ZOO		1(38)											1 (38)
UG/MAKUNI/ZOO					1(28)							2(110)	3 (138)
ZW/LKAFRI						1(17)							1 (17)
EXTERNALS			1(136)		1(1301)	2(168)							4 (1605)
Total/month	10(1308)	7(926)	8(885)	3(199)	8(2075)	13(728)	3(142)	14(3286)	12(2269)	5(607)	12(2362)	7(1070)	102 (15,857)

ANNEX 4. DOCUMENT DELIVERY IN 1994

With a total of 2310 document request received in the RDC there seems to have come a halt to the increase (stabilisation?) in the number of document requests we have known over the past three years (see Table I). The results of 1995 have to be awaited to see how the trend will be. Meanwhile the receipt of 1597 documents meant a fill rate of 69.1%, which is comparable to the figures of the last two years.

TABLE I. DOCUMENT REQUESTS RECEIVED OVER THE YEARS

1990	1386
1991	785
1992	1537
1993	2476
1994	2310

TABLE II. REQUESTS PER INSTITUTE

For an explanation of the institute codes, see Annex 2 of this report. The two letter codes are used in the graphs.

CODE	INSTITUTE	REQUESTS	PERCENTAGE OF TOTAL
KM	KE/KEMFRI/MOM	1093	47.32
KK	KE/KEMFRI/KIS	308	13.33
KZ	KE/UNINAI/ZOO	250	10.82
KS	KE/KEMFRI/SAN	138	5.97
KB	KE/KEMFRI/BAR	69	2.99
TI	TZ/UNIDAR/IMS	66	2.86
KU	KE/KENUNI/ZOO	60	2.60
EX	EXTERNALS	58	2.51
KT	KE/KEMFRI/TUR	55	2.38
KC	KE/CORECO	47	2.03
KV	KE/UNINAI/VET	34	1.47
MU	MU/UNIMAU/SCI	32	1.39
TZ	TZ/UNIDAR/ZOO	27	1.17
SE	SC/DEPENV	23	1.00
KP	KE/KEWISE/MPR	12	0.52
UZ	UG/MAKUNI/ZOO	11	0.48
KF	KE/MOIUNI/FIS	8	0.35
KG	KE/KEMFRI/KEG	7	0.30
SF	SC/SEYFIS	6	0.26
KW	KE/KEWEWG	3	0.13
MC	MG/CNRONB	3	0.13

Again the KMFRI (headquarters in Mombasa and the different substations) is by far the largest user of the project's services, filing 72.29% of the requests. It is worrying to notice that the number of requests from the institutes in the other countries in the region is dropping. It seems an agressive publicity campaign in the region is needed to stimulate the scientists to make full use of the services offered by the project.

In 1994 the RDC received on average 193 document requests per month with a maximum of 292 in March and a minimum of 113 in December (when most people take their leave). An overview is given in Table III.

TABLE III. MONTHLY NUMBER OF DOCUMENT REQUESTS

January	159	July	127
February	174	August	230
March	292	September	172
April	220	October	218
May	210	November	130
June	265	December	113

The five most important (potential) document suppliers in 1994 were:

1. RDC	604	26.15%	(of the total number of requests)
2. LUC	534	23.12%	
3. NIO	297	12.86%	
4. RSMAS	259	11.21%	
5. Chiromo	156	6.75%	

The RDC has been consolidated as the main document supplier and has indeed been taken care of an increasing number of requests in recent years (cf. Table IV).

TABLE IV. PERCENTAGE OF DOCUMENT REQUESTS HANDLED BY THE RDC

1990	6.18%
1991	14.96%
1992	21.85%
1994	26.15%

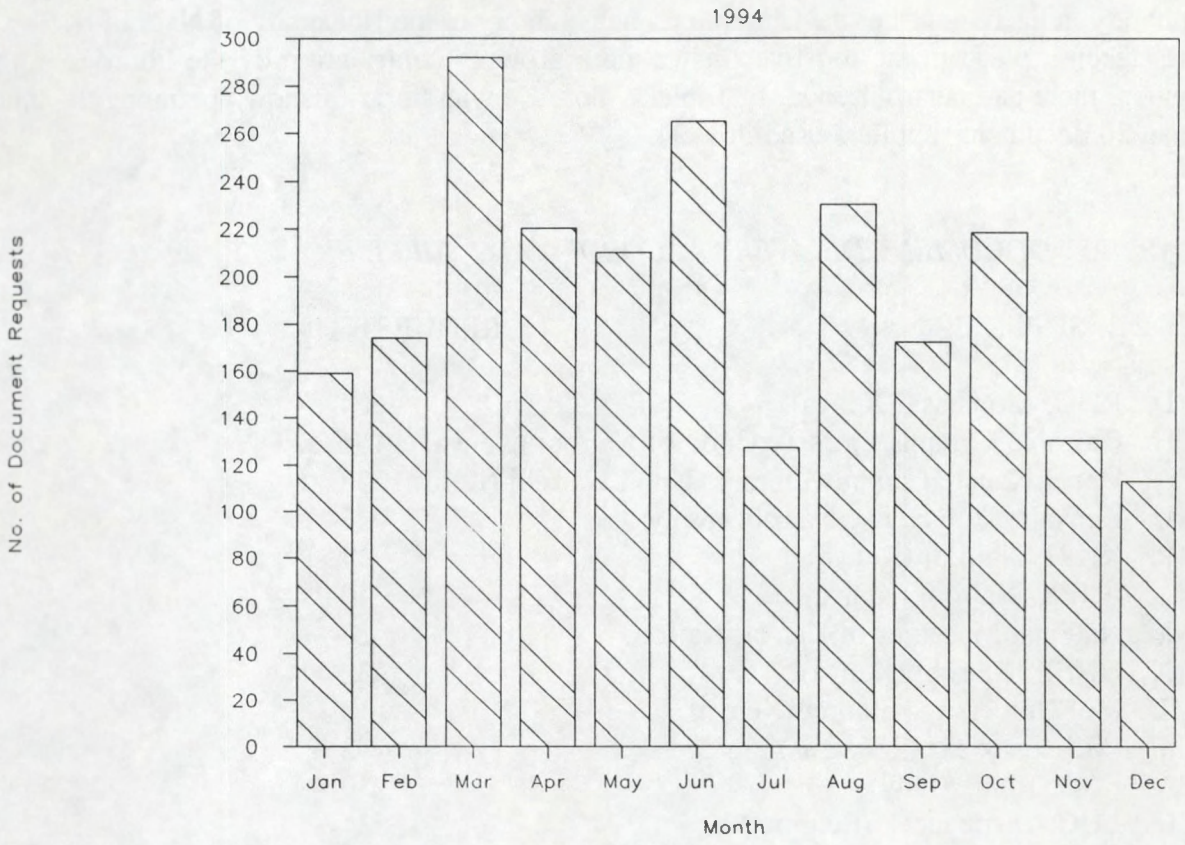
For the rest the top four of document suppliers remains the same as last year. It is pleasing that a library in the region, i.e. the Chiromo Campus Library of the University of Nairobi (Kenya), has taken a place in the top five, indicating a growing contribution by the libraries in the region, more particularly Kenya. In Table V more Kenyan libraries show up among the more than 20 document suppliers used in 1994.

TABLE V. DOCUMENT DELIVERY ACCORDING TO SUPPLIER

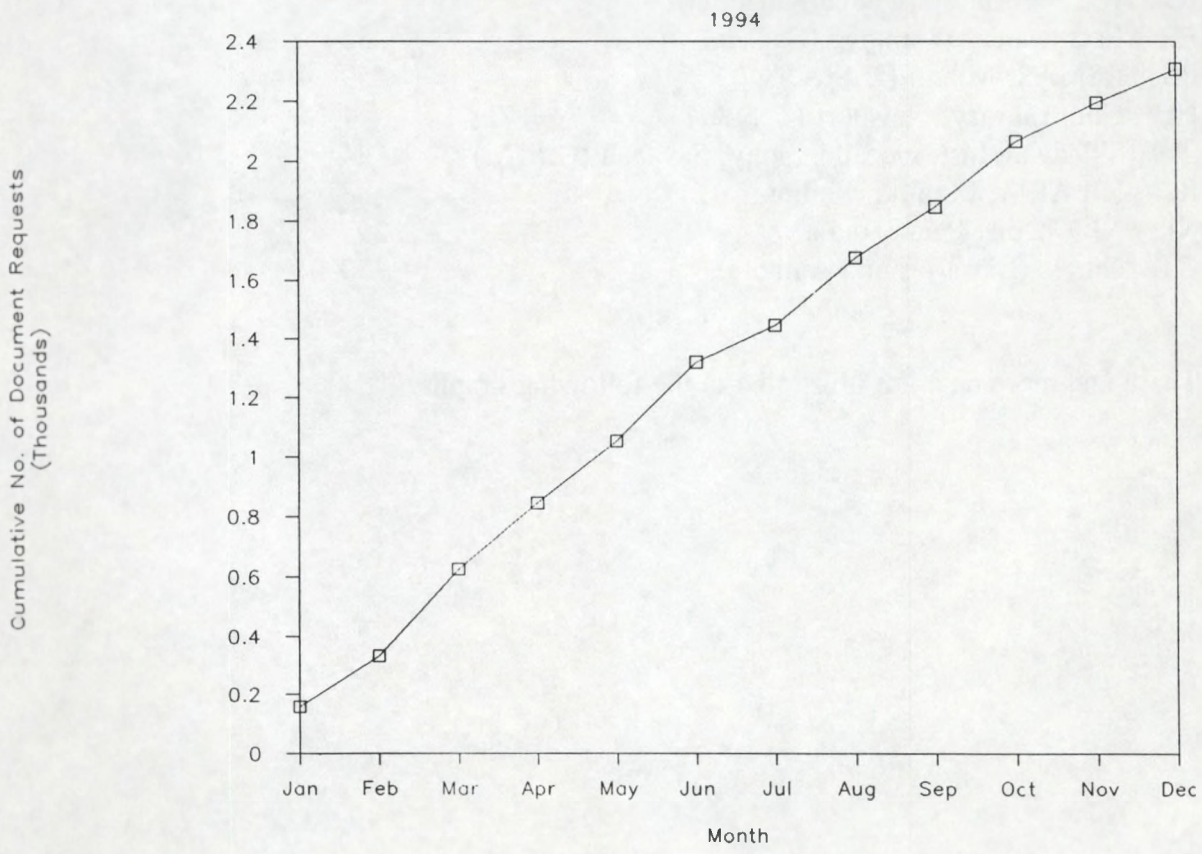
CODE	SUPPLIER	REQUESTS
RD	RDC, Mombasa (Kenya)	604
CH	Chiromo Campus Library, Univ. of Nairobi (Kenya)	156
KA	Upper Kabete Campus Library, Univ. Nairobi (Kenya)	33
KU	Kenyatta University, Nairobi (Kenya)	23
KR	KARI, Nairobi (Kenya)	14
IC	ICIPE, Nairobi (Kenya)	10
NM	National Museums of Kenya, Nairobi	27
UN	UNEP, Nairobi (Kenya)	38
MU	Moi University, Eldoret (Kenya)	13
IM	IMS, Zanzibar (Tanzania)	2
FA	FAO, Rome (Italy)	30
LU	LUC, Diepenbeek (Belgium)	534
AR	ARC, Gent (Belgium)	6
IZ	IZWO, Oostende (Belgium)	3
NO	NIOO, Yerseke (The Netherlands)	22
IO	IOS, Wormley (United Kingdom)	1
FR	Freshwater, Winnipeg (Canada)	52
RS	RSMAS, Miami (U.S.A.)	259
GU	Guin Library, Newport (U.S.A.)	44
SI	Skidaway Inst. Oceanography, Savanah (U.S.A.)	24
IC	ICLARM, Manilla (Philippines)	88
NI	NIO, Dona Paula (India)	297
OT	Others (Libraries and Authors)	30

These and more data are illustrated in the following graphs.

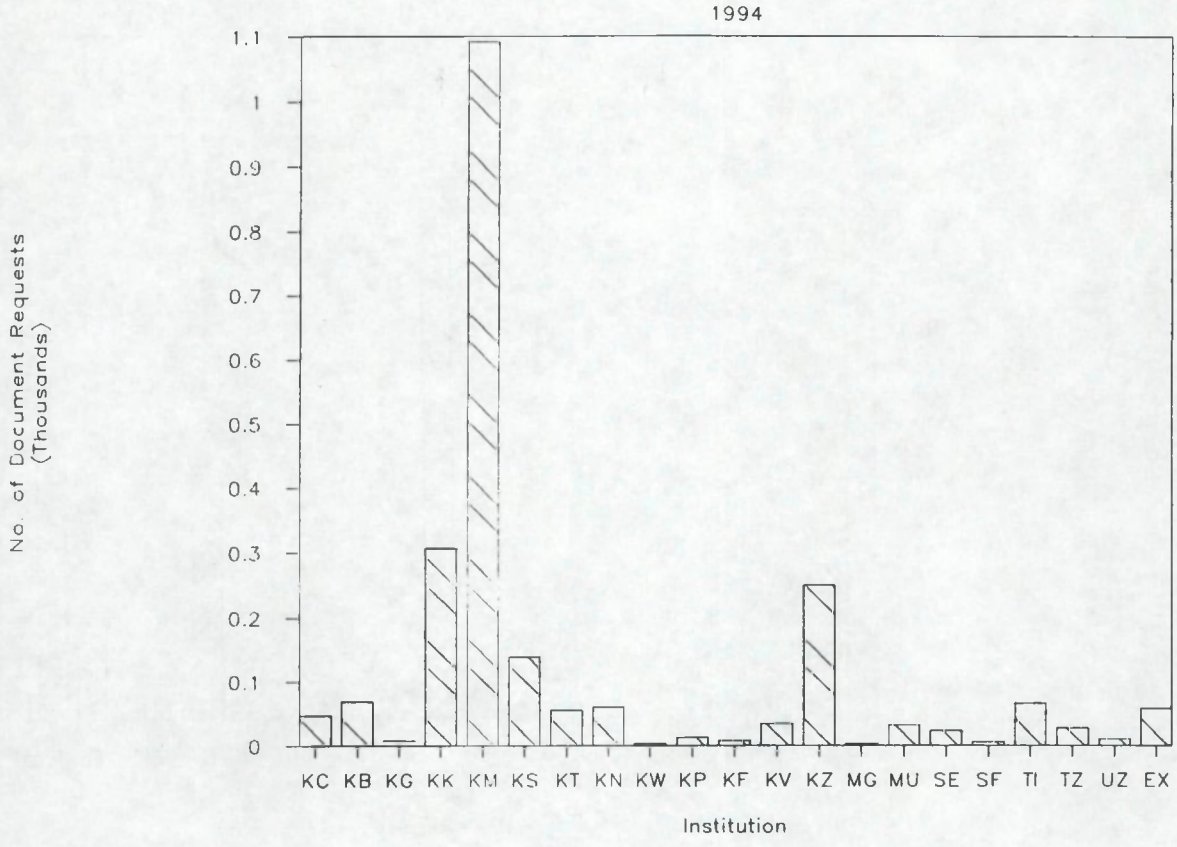
MONTHLY DOCUMENT REQUESTS



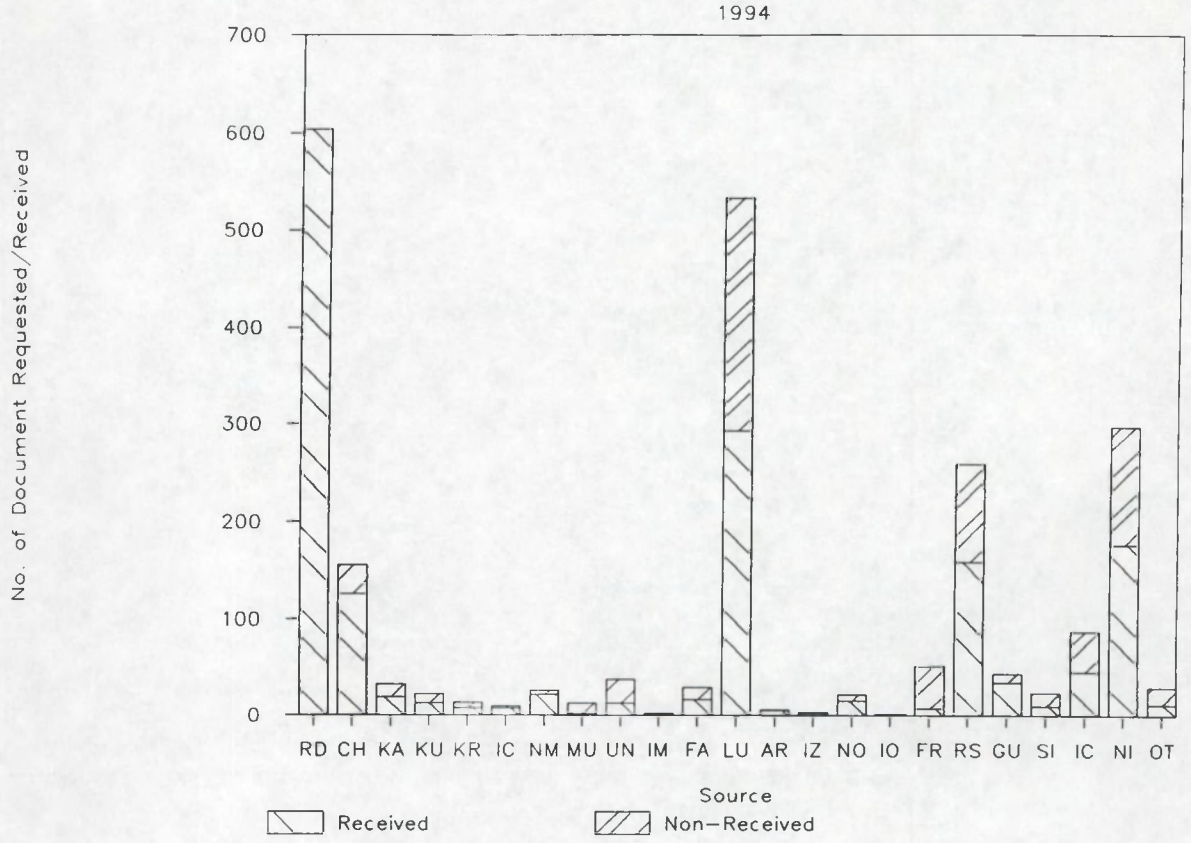
CUMULATIVE MONTHLY DOCUMENT REQUESTS



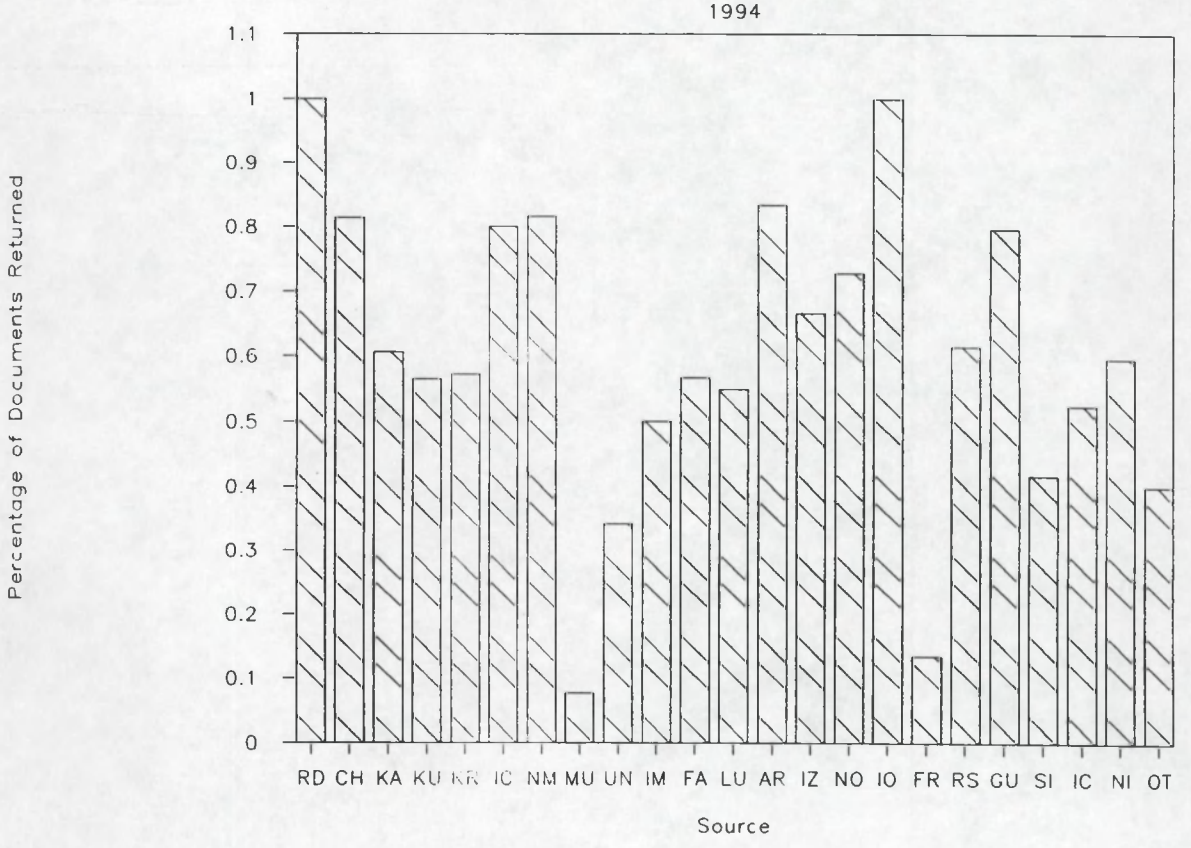
DOCUMENT REQUESTS PER INSTITUTE



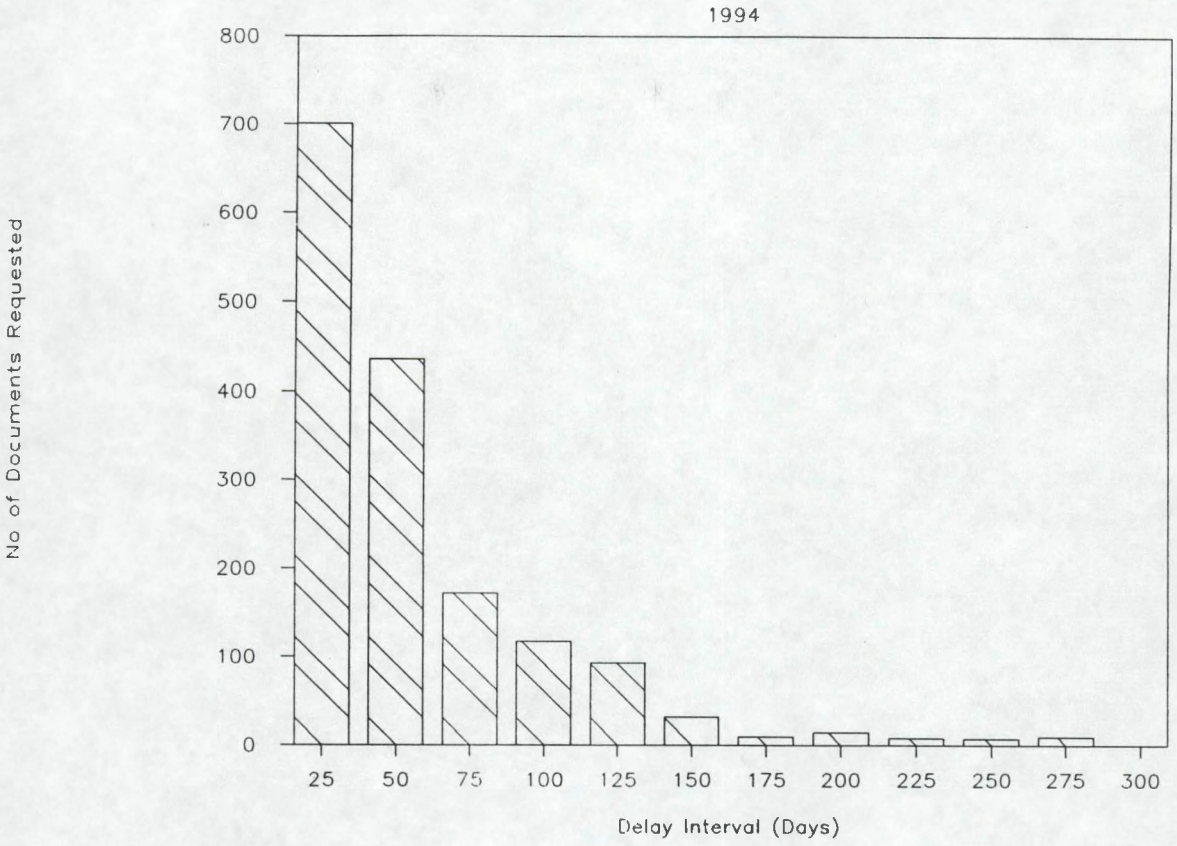
CONTRIBUTION OF DOCUMENT SUPPLIERS



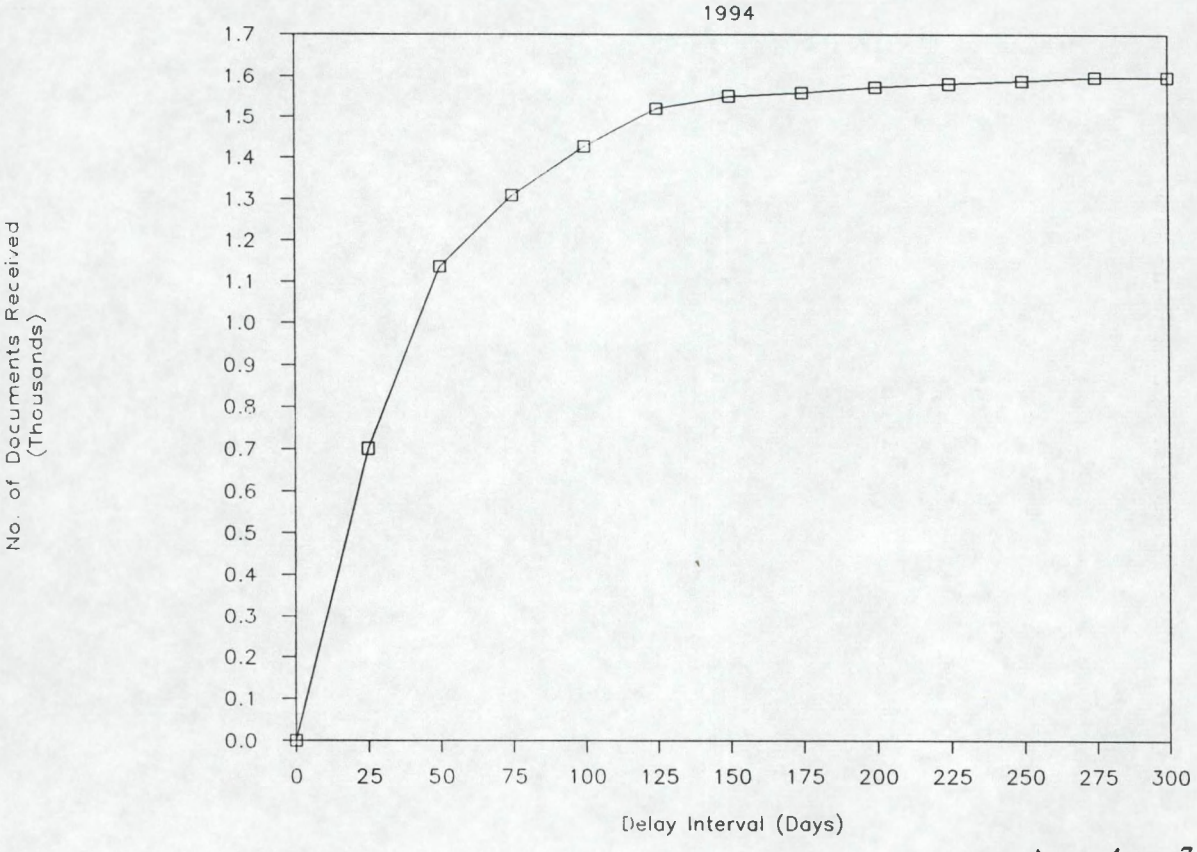
FILLING RATE OF DOCUMENT SUPPLIERS



DELAY IN DOCUMENT DELIVERY



CUMULATIVE DELAY IN DOCUMENT DELIVERY



ANNEX 5. DISTRIBUTION OF NEWSLETTER PER COUNTRY END 1994

Africa

Angola	1
Benin	2
Botswana	2
Burundi	3
Cameroun	2
Comoros	11
Congo Brazzaville	2
Egypt	4
Eritrea	8
Ethiopia	14
Gambia	2
Ghana	8
Guinea Rep.	5
Ivory Coast	3
Kenya	350
La Réunion	7
Madagascar	44
Malawi	6
Mauritania	1
Mauritius	60
Morocco	3
Mozambique	36
Namibia	1
Niger	1
Nigeria	23
Rep. Djibouti	1
Senegal	15
Seychelles	26
Sierra Leone	3
South Africa	14
Sudan	4
Swaziland	1
Tanzania	101
Togo	1
Uganda	20
Zaire	1
Zambia	1
Zimbabwe	5
Total Africa	**792**

America

Barbados	1
Bermuda	4
Brazil	3
British West Indies	1
Canada	24
Costa Rica	4
Cuba	1
Ecuador	1
Jamaica	5
Mexico	5
Trinidad & Tobago	1
U.S.A.	128
Venezuela	1
Total America	**179**

Asia

India	24
Indonesia	2
Iran	1
Iraq	1
Japan	3
Korea	1
Kuwait	2
Malaysia	1
Pakistan	1
Philippines	10
P.R. China	1
Qatar	1
Sri Lanka	15
Thailand	1
Ukraine	2
Total Asia	**66**

Europe

Austria	1
Belgium	50
Denemark	2
France	18
Germany	6
Greece	2
Iceland	1
Ireland	2
Italy	11
Monaco	2
Netherlands	13
Norway	4
Portugal	2
Russia	4
Spain	1
Sweden	19
Switzerland	5
U.K.	21
Total Europe	**150**

Oceania

Australia	12
Fiji	2
New-Zealand	3
Total Oceania	**17**

ANNEX 6. NATIONAL NETWORKING SEMINAR

The National Council for Science and Technology (NCST) of Kenya organised a two day seminar on "National Networking of Science and Technology Information Systems" on 27 and 28 January, 1994 in Nairobi. The Information Services Manager of the RECOSCIX-WIO project was identified as a resource person for the seminar and was invited to present the case of RECOSCIX-WIO in the section 'Existing sectoral/institutional S&T information networks'. As such the project represented the Kenya Marine and Fisheries Research Institute in the seminar.

The broad objective of the seminar was the outlining of a national policy on science and technology information networks: institutional framework, legal aspects and accessibility. The specific objectives were (according to Chepkwony, 1994, p. 2):

- to come up with regulations that govern the acquisition of compatible information technology (hardware and software);
- to come up with standards for Kenya's S&T information databases;
- to recommend training needs for networking and ensure sufficient availability of such manpower;
- to develop a policy of networking of S&T information systems which should be an integral part of the national policy;
- to come up with practical recommendations and possible solutions for networking of S&T information systems, for the efficient flow of information for development;
- to develop a plan of action for future activities.

In order to come to this, a number of preliminary discussion topics had been identified: information technology for S&T networking; non-computerised and computerised S&T information networking; existing sectoral/institutional S&T information networks; manpower and training for S&T information networking; harmonisation and standardisation of S&T information bases; funding, commercialisation and sustainability of S&T information networks; national requirements/benefits for S&T information networks; and accessibility to regional and international S&T information.

After an introduction by the Secretary and by the Chairman of the NCST, the seminar was opened by Prof. Karega Mutahi, Permanent Secretary, Ministry of Research, Technological Training and Technology.

The first session started with the keynote address by Prof. Ole Karei, Chairman of the NCST Information Sciences Specialist Committee. Other speakers presented introductions to information networking and information sharing, and the available technology in a more general, international context. The second session consisted of a presentation of the existing networks in the national and international institutions and organisations in Kenya. It was followed by the session on training, and harmonisation and standardisation of information bases.

The second day was opened with a session on finances and sustainability of, and the national requirements/benefits for S&T information networking. In the next session the emphasis was on the accessibility of regional and international information, and on a national policy on S&T information networks. The sixth session was spent on the presentation of various

recommendations that came out of the previous sessions, and their adoption.

These recommendations went down to the very basics and from there built a realistic proposal for policy:

- establish co-operation within the different scientific sectors with programmes of projects and activities, without forgetting the establishment of the necessary steering groups and focal points;
- survey development status for S&T information systems and sectoral and multi-sectoral information exchange programmes;
- improve use of existing information resources, standardise and harmonise information services and promote co-operation;
- organise training sessions to increase information flow to various user groups;
- organise awareness seminars for policy and decision makers;
- strenghten the potential of the NCST's scientific information centre KENSIDOC and publicise its activities;
- give the NCST the necessary support to co-ordinate Kenyan S&T information systems.

The seminar was closed by Mr. Samson Chemai, Managing Director of the Kenya Posts and Telecommunications Corporation (KP&TC).

Reference:

Chepkwony, J.K. (ed.) - *Recommendations and Plan of Action adopted by the National Seminar on Networking of Science and Technology Information Systems held on 27th - 28th January, 1994 at NCST Conference Room, Emperor Plaza, Nairobi* - Nairobi: National Council for Science and Technology, 1994 (NCST; no. 38)

ANNEX 7. PAPER FOR THE NATIONAL NETWORKING SEMINAR

RECOSCIX-WIO: THE PURSUIT OF ELECTRONIC LINKS BETWEEN OCEANOGRAPHIC RESEARCH INSTITUTES

RECOSCIX-WIO in full reads Regional Co-operation in Scientific Information Exchange in the Western Indian Ocean region. The project originates from a strain between the need for scientific information and the costs involved in obtaining it.

How did the project come into being?

When in 1985 the Kenya Belgium Project in marine sciences (KBP) was established, among other things it initially provided the scientists of the Kenya Marine and Fisheries Research Institute (KMFRI) an easier access to up-to-date information. Soon it became apparent, however, that the costs were out of balance with regard to the main project objectives, i.e. training, equipment and research facilities. The Free University of Brussels, the Belgian part of KBP, went looking for an extra partner, who could take the information provision under his responsability. This role was taken on by the Library of the Limburg University Centre, another Belgian (Flemish) university. At the same time a collaborator of KBP started a scouting mission in the region to assess similar needs in other marine research institutes and study the feasability of a co-operation.

The recommendations of the mission report were presented to the Regional Committee of the Intergovernmental Oceanographic Commission of Unesco (IOC-Unesco) at its Second Session in Arusha (Tanzania) in 1987 and a project proposal for network formation was accepted. Yet it took until February 1989 before the RECOSCIX-WIO effectively started with funds of the IOC for a two years' period. During this time the Limburg University Centre submitted a project proposal to the Belgian Administration for Development Co-operation (ABOS) through the Flemish Interuniversity Council (VLIR) and from August 1991 the RECOSCIX-WIO project receives its funds from the Belgian Government.

What is the idea behind the project?

Its aims are several:

- provide the marine scientists in the region with the information they need for their work;
- improve the exploitation of the information available in the region;
- stimulate communication between marine scientists in the region;
- stimulate communication between marine scientists in the region and the ones outside;
- publicise the marine scientific activities in the region to the global marine science community.

The overall idea is creating channels for the flow of information in and out and inside the Western Indian Ocean region. One cannot avoid to see the analogy with an electronic network and the use of electronic mail as an ultimate goal was soon put forward.

What is the present use of electronic communication?

The current activities on information provision are concentrated on scientific literature through information retrieval in bibliographic databases and document delivery. The project is fortunate that it was donated the Aquatic Sciences and Fisheries Abstracts (ASFA) database as a CD-ROM. This is the main instrument for literature searches and the only immediate costs involved are the ones for the power consumed by the CD-ROM drive and the personal computer to which it is connected. Rarely a query cannot be handled properly with ASFA and for such cases the project has on-line access to the databases of the host Dialog (U.S.).

Yet by far the most important application of electronic communication in RECOSCIX-WIO at this stage is electronic mail, keeping in touch with the colleagues abroad. The project is subscribed to GreenNet and Omnet's SCIENCEnet. The subscriptions date from the previous project manager's period and were never questioned up to now as the arrangement works out well.

GreenNet - Global computer communications network for Environment, Peace and Human Rights - is based in England and is part of the Association for Progressive Communications (APC). It provides an easy link to, amongst others, Bitnet and Fidonet. We use this gate also to send international fax messages.
Omnet, according to its publicity, is a communications management team - based in the U.S. - providing electronic services and support to the international science and business communities. Its SCIENCEnet "is a managed electronic environment for the international scientific community". Many oceanic and atmospheric scientists and research institutes are part of SCIENCEnet and communicate directly by email or via the Kiosks, the several bulletin boards where messages get posted according to fields of interest.

Summarising it can be put that we maintain GreenNet for its communication facilities with mainly Internet and Bitnet addresses, while SCIENCEnet is more adequate in communication with marine scientists. On top we get interesting information from the bulletin boards and at occasions have also used them to post our messages.

The system we use for the above communication is a personal computer linked to a Packet Assembler Disassembler (PAD) and modem to a leased line to Kenpac. Last year a new computer system, consisting of a server running UNIX SVR4 and six intelligent terminals, was purchased for the Regional Dispatch Centre, the RDC which is the core of the RECOSCIX-WIO project, located in the KMFRI, Mombasa.

UNIX was choosen because of its multi-user communication possibilities. Also we want to make the server accessible for the outside user. The reason for this is that the RDC is the central node of, in principle, 16 marine research institutes in 8 countries in the Western Indian Ocean region (Ethiopia and Eritrea, Somalia, Kenya, Tanzania, Mozambique, Madagascar, Mauritius and Seychelles), which form the actual RECOSCIX-WIO network. The working conditions are not equal to all of these institutes, so that we might have to continue with the ones that are able to. Connection through electronic means and email could boost the co-operation enormously. At present a lot of time is wasted waiting for the mail to come and not

all institutes have telefax facilities. Within the project the supply of computer equipment is foreseen to the co-operating institutes to enable them to contribute to the automated collective catalogue of library holdings. The same equipment connected to a modem and telephone line should enable the co-operating institutes to get in contact with the RDC.

At this time it is useful to give a short overview of the information services within RECOSCIX-WIO. The query handling and document delivery were mentioned before, as information presented to the scientists in the region.

Another task is the collection of information ON the region. The project has established a directory of marine scientists in the Western Indian Ocean, published by UNEP in 1992. The directory, WIODIR, is an automated database continuously updated at the RDC. From time to time updates will be sent out on diskettes. It is however not evident that everyone interested in the WIODIR, has the proper database management system on his/her computer: all databases in RECOSCIX-WIO use the powerful text-oriented CDS/ISIS software provided free of charge by Unesco. And once the database has been installed on our server (at the moment there still are some difficulties in compatibility between the UNIX SVR4 and the CDS/ISIS that was written for AT&T UNIX), the database will be available for consultation through dial-in and no regular updates will be sent out anymore.

In addition to the WIODIR we are planning a bibliographic database containing the publications of the scientists in the directory. As they are working on the Western Indian Ocean, most of their publications deal with the region. Yet the scientists get little opportunity to publish in the really international journals. They have been publishing mostly in only locally distributed periodicals and as such their publications ended up in the "grey literature". Still these documents may contain valuable information for every scientist concerned with the Indian Ocean, as that this ocean already is the one least studied of all. Once it is available, this database also will be put on the server for consultation.

The third database that the project is working on, is a collective catalogue of the library holdings of the co-operating institutes. During his scouting mission in the eighties, the KBP collaborator noted that several libraries had a most useful collection, at times very rich in local publications. As the situation stands now no regional librarian knows what his colleague has in stock; moreover he doesn't sometimes know it himself, unless he spends much time going through the inventory list. To make full use of the information available in the region and spend much less on documents that have to be ordered abroad, the RECOSCIX-WIO project has set up the building of a collective catalogue. This will also be made available for general consultation on the RDC's server.

Finally during the Third Session of the Regional Committee of IOC, last December in Mauritius, it became clear that the regional scientists are expecting the RDC to start managing databases with scientific data. Now for instance several sea level monitoring stations are active in the region that send their data to the Sea Level Centre at the University of Hawaii for processing. The processed data however are not available in the region anymore. Moreover their are other stations besides the ones that send their data to Hawaii. The assembled data could be stored at the RDC in Mombasa and kept available for the scientists requesting them.

Electronic links would facilitate and speed up the exchange of these data.

It may be clear by now that RECOSCIX-WIO really has the information to exchange as it is spelled out in the project's name.

A line of evolution is from scientific literature to scientific data; a combination of the two avoids the usual confusion when one talks to somebody else about "information". The stress on scientific literature was only natural in the eyes of the Belgian project co-ordinator, who is a librarian, but it has become evident that the expectations of the regional users go beyond that.

Another line of evolution should be the means by which the information is exchanged. The traditional way of mailing is cumbersome slow and the risk of loss is not imaginary. Taking on the challenge of modernising the services, RECOSCIX-WIO looks forward to email facilities within the region. Up to now the RDC has been priviliged in its email contacts with marine scientists abroad. Any relevant information could be forwarded from Mombasa to the co-operating institutes, but the means were slow. We have entered now a phase of experimenting. Making the UNIX server of the RDC accessible for dial-in has become a must. Getting the co-operating institutes equipped for email will be a necessity for the success of the project. A few of these institutes already have the means and are urging the RDC to get the communication funtioning: the University of Mauritius in on Fidonet and the RDC receives its messages through GreenNet; the Institute of Marine Sciences in Zanzibar has received the necessary equipment from SAREC, the Swedish Agency for Research Cooperation with Developing Countries, and is eager to establish electronic contact with the RDC.

There is however that eternal financial drawback. The RDC has spent, in 1992, about 240,000 KSh on Kenpac use, next to the 300 Pound Sterling use of GreenNet and 675 USD subscription to and use of SCIENCEnet. We fear that no institution without serious support from abroad will be able to spend that amount of money on a "fancey". Even the RDC has to look for more economical use of email. And yet it is an instrument we cannot do without anymore. On occasions email has kept us in contact with the rest of the world, while our telephone and fax lines were out of order. And taking into account the amount of information per time unit that is sent by email in comparison to a telephone conversation and perhaps even a telefax message, email should in principle end up more economical. Only can one convince his donor of this, when there is no record of the number of words spoken during a telephone conversation....

The good news is that during the last General Assembly of the IOC-Unesco, the U.S. has offered to support the development of email facilities in the Western Indian Ocean region. We are still on the lookout how to go about this in practise, but hope that by the next time there is a workshop of electronic networking, we will be able to report on the actual functioning of what we have been outlining in this contribution and on the establishment of an email network of marine research institutes in the Western Indian Ocean region.

ADDENDUM

RECOSCIX-WIO : A TELECOM USER'S EXPERIENCES

The RECOSCIX-WIO project is an **international** network of marine/aquatic sciences institutes in the Western Indian Ocean region. Because of this international nature, the experiences might be out of scope to most institutions participating in the workshop, but still I would like to present some, often very practical, comments on our use of and findings on telecommunication. I want to stress, however, that these comments are personal, and more specially that they are the views of a user.

Telecommunication is a tool, so do not let it become an aim as such. Networking, in the sense of **computerlinking**, is an ultimate goal for the project, but it is not clear yet how much longer it will take before we succeed. Our present use of telecommunication is :

(i) accessing Dialog Information Systems, a computer system hosting a broad range of bibliographic, full-text and factual databases, although we prefer the use of the Aquatic Sciences and Fisheries Abstracts, which we have as a CD-ROM (and is much cheaper to use of course);

(ii) email, but mainly - almost exclusively - international and more particularly to our contacts in Western countries.

To network or not to network, that is the question

In reply to the answer: "Do we opt for networking, i.e. use of email[1]?", I immediately say: "Yes", because I cannot miss it anymore. Being able to contact people through electronic means has become part of my way of working and email has kept us in contact with places abroad at times that our telephone and telefax lines were out of order (we use a leased line for our telecommunication).

Table 1. Communication options

	Mail	Telephone	Telefax	Email
Speed of communication	-	++	+(+)	+(+)
Infotransfer/time unit	?	-	+	++
Record of transmission	+	-	+	+
Graphics (e.g. signature)	+	-	+	-/+
File exchange	+	-	-	+

The fastest way of contacting somebody is to call him on the telephone, provided of course the person is in the place you expect him to be. The speed of communication, i.e. the time between the sending of the message and the reception of it, in the case of telefax and email depends on certain conditions: is the telefax machine close to your contact person; is your contact on the same network for email (otherwise time could get lost at gateways); how are

[1] The exploitation of one's possibilities of telecommunication should not be limited to electronic mail. Yet for the ease of the discussion we will do it, because email still is the primary use for many people.

the incoming messages distributed in the institution and how often...?
The amount of information transferred per time unit of transmission is low for a telephone conversation: by the time you have raised your issue on the phone, a complete telefax message has already been transmitted and an email message has rolled over the computer screen ten times, in a manner of speech.
A telephone conversation also leaves no record of what has been said, unless you would tape all your conversations or take notes (but in this last case there's only a one-sided, shortened record). As concerns the fax message, you should photocopy it, if it is on thermal paper that tends to bleach. An email message can be printed out or stored as a computer file after downloading.
Graphical information cannot be exchanged through telephone, but to some extent it is possible through email (though what about signed documents...?).
Computer files can be sent through email, and by normal mail when they are copied on diskette or tape.

But what about the costs of email? You may formulate your own comments on the following table.

Table 2. Charges for international connections through Kenpac

	Monthly Volume (Ksegm)	Monthly Duration (Min)	Monthly Charges (KSh)	Year total Charges (KSh)
Sept-Dec '91	22.866	503	18,724	74,895 *
Jan-Dec '92	21.488	388	19,988	239,852
Jan-Sept '93	10.951	229	21,299	191,694 *

* Please note that these totals don't cover 12 months.

On top of the Kenpac charges, we have the costs of the network subscriptions and use: for GreenNet an average of 10,000 KSh/month (subscription and use) and for Omnet some 18,000 KSh[2] (subscription; invoices for use are sent directly to Belgium).

What are some basic requirements for telecommunication?

During this workshop we have already heard about the **hardware**, computer, modem and transmission line (if you intend to use the telephone, have the quality of the line checked. Dial up to the nearest Kenpac node also requires a telephone line, but a leased line is expensive, certainly for small users). I would like to add to this a vital element in the safe use of telecommunication: a UPS, an Uninterrupted Power Supply. This piece of equipment ensures

[2] This figure should be checked, because I'm quoting it out of my mind right now. The amounts however, have raised in 1993, compared to the ones for 1992, quoted in the previous text.

that in case your power goes down while you are connected to a host computer, you get the time to disconnect and shut down your computer. Otherwise you might end up with an inflated bill on use of the host computer, because the connection stayed open during the power failure. This is most important when you connect to international networks.
The presence of **qualified personnel** is evident. You need at least someone to run the system, capable of dealing with unexpected situations (otherwise the same thing as above might happen again) and making your institution as independent as possible from support. If your institution is too small and you have to do things yourself, make sure that you know everything there is to know about the hardware and the software that you are using for telecommunication and expect the unexpected. Don't rely on the machine too much. If something happens it is still man that has to do the job of sorting things out.

If things come to the worst, you will need the **support** of a computer expert. Be warned, he will be expensive. Try to identify a firm that has the necessary expertise in telecommunication. There are companies experts in selling computers, but once they have their money you're stuck with the machine. I do not want to scare you, because for simple applications of telecommunication you will always find somebody in your surroundings able to help you out. It is only when it comes to complicated set-ups, such as the one we are trying to get in Mombasa, that local expertise is getting scarce. We want to install remote login for multiple users on our UNIX SVR4 server to consult our CDS/ISIS databases. After one and a half year of discussions and attempts of implementation, the computer firm has admitted that it needs an expert from the mother firm in the UK. We were told that this would be costly, so much even that the manager did not have an idea of the price range. Now we are fortunate that a Belgian expert is willing to come and have a look at our system and based on the information that we have sent him (by email), he is confident that he will be able to implement the communication according to our requirements. But other institutions might not have the same resources...

Electronic networking or die?

The formation of a computer network is a beautiful thing by the time you see a workable result, but it is important to have a look at many factors that will affect it. Choosing the right equipment and getting clear transmission cables are only the start.

RECOSCIX-WIO as an international network-to-be - if you read network as computernetwork, because we look at the present collaboration as a non-automated network - is dependent on the connection possibilities in the Western Indian Ocean region. There are datacommunication networks in Kenya, Mauritius and Seychelles. Our co-operating institutes in the other countries should go for linking through the telephone networks. Will that be a workable solution over the long distances that are involved? The institute in Zanzibar might consider connecting to the nearest Kenpac node (Mombasa?), but that still involves a telephone connection from Zanzibar to Kenya. Will the quality of the lines support that link? Previously in this seminar the satellite link of Healthnet have been mentioned. Could other instititions in other fields that health care also profit from the same technology? Would they get the permission and security clearance, in Kenya as well as in other countries in the region? A lot of questions that one day hopefully will get a solution.

But even if we are technically able to set up the computer links, where will the funds come from? For the time being the Belgian Government is funding the activities of the Regional Dispatch Centre in Mombasa; other co-operating institutions get support from donor agencies such as SAREC and ORSTOM. Looking at the costs I have mentioned earlier, dare we think of what would happen with all we have strived for, once this funding would come to an end? We are making the necessary efforts to carry ahead that point in time as far away in the future as possible, but does this therefore mean it will never come? We have to concentrate on viable solutions, also from the point of view of finances. Therefore I am glad to be in this seminar and listen to colleagues talking of their networking, to collaborate in finding ways of sharing our resources and saving our funds.

Another thing that was mentioned by a previous speaker was the "foot step" of Africa: the Eastern and the Western part of the continent are each covered by a satellite, yet the central part remains in the "dark". Looking from Mombasa, Nairobi is also in this "foot step". We also have a Fidonet address, but we cannot communicate with the Fidonet nodes in Nairobi anymore. So we have to use our connection to London to cross the 500 km distance to Nairobi. There may be technical explanations with regard to the nodes, but on a number of occasions the computers could not communicate because of the noise on the telephone line and rumble was appearing on the screen.

Even if RECOSCIX-WIO is an international network, national contacts and collaboration remain most important. As an example I like to mention the on-going UNEP project for a Coastal and Marine Resources Database and Atlas. The work is co-ordinated by the KMFRI, but in gathering the data the collaboration of the Meteorology Department, KWS, NMK ... is needed. Information flow in Kenya is needed and the tools facilitating this flow should be installed.

Now I would like to stress on the human factor in the network.
Prof. Karei mentioned the course at the Moi University and I also pointed at the necessity of capable personnel. We do need experts to manage a sustainable information system and network. But what about the users?
Managers, Directors ... of institutions and organisations should be educated in the use of information technology as well. Let us for a moment concentrate on email. I think of email that it is much closer to a telephone conversation than to a letter or telefax message, because of its speed and informality of communication. Now if you also consider the use of passwords, then you have the confidentiality of a conversation as well. So terminals providing access to email should be brought to the desktops of managers, cutting out any links that could affect its speed and confidential nature (e.g. messages received by secretary or even computer department, printed out, hand delivered...).

Don't forget the people with their fingers on the keyboard however. Hardware and software can be advanced up to the limit, still it are the people behind the screen that have to do the job.

Computer culture is not the same in Africa as it is in other parts of the world. People don't grow up with a computer as a "natural" part of their environment during their childhood. When they finally come to work in an automated environment, they have to overcome a fear

of that almighty piece of machinery, although that dumb concoction of metal, plastic and silicon is not able to do anything without them giving the command. Last year a Belgian sociology researcher came to investigate the role of education and culture in the interaction with information technology. I am very interested to see the results of her work and the her recommendations for improving the relation between man and computer.

Furthermore you give people the power of communication at the press of a button. Educate people who have access to email, to use it wisely. Otherwise you will spend part of your funds in paying for messages such as: "Hello, How are you doing. I'm fine and the weather overhere as well. How is it at your end?", sent to Jack and Jill all around the world. Even if email comes cheaper than other means of communication, it still costs to send messages, certainly on an international network.
No non-sense messages and no unnecessary lay-out, that is my message. People abroad sometimes have the habit of copying your message, write their comments between the lines and returning it to you. What a waste: you know what you have written and you end up paying twice your own message, once for sending it, next for receiving it back. If you have a correspondent overseas who has this habit, tell him that email and communication is not free for you as it might be for him/her.

Always stick to the core of the message. There is no need for a lay-out as you would do when writing a letter. Addressing (name, street, box, city, country) is not necessary as the message is delivered directly in the addressee's mailing box. Leave out space for a signature that will not be there. If you can keep the messag short enough to fit it on one screen, that's the better, so no scrolling through it is needed. The message and nothing but the message.

In conclusion

The last paragraph of my previous text has not come true yet, even if it was written 10 months ago. We are still negociating with the relevant US organisations. It is my sincere hope that we will not have to wait that long to see the results of this seminar and of other efforts of the NCST and that we will have an operational network in Kenya by the end of this year, even if it needs further development (and of course it will, because progress does not stop at one point).
I know that concepts and plans cannot take into account the practical, even small problems that I wanted to bring to your attention. Maybe I did not exactly have the right audience either and should I liaise with people who will implement the schemes. But all the same I wanted to grasp the opportunity of this seminar to utter my remarks and I thank you for bearing with me.[3]

Nairobi, 28 January, 1994

Dr. Peter REYNIERS
Information Services Manager
RECOSCIX-WIO project

[3] Please don't pay attention to any writing errors or poor choice of words, but this text was written without dictionary at hand.

ANNEX 8. REPORT ON COMPUTER TRAINING IN BELGIUM

A REPORT ON COMPUTER COMMUNICATION AND X.25 NETWORKING TRAINING CONDUCTED AT UNIVERSITY OF ANTWERP (UIA), BELGIUM

18th April - 13th June 1994

Background

In a period of 2 years computer supplier ICL (Kenya) continued to try and implement X.25 communication on the UNIX server of the RECOSCIX-WIO Project based in Mombasa. It was not possible to interactively connect to GreenNet and OMNET computers, but that does not fully meet the project's requirements. Up to date downloading of electronic-mail messages was possible but not the other way (uploading). ICL Kenya admitted however that they had exhausted their local expertise and further support had to come from UK. which had to be paid for by the project.

The project wanted a fully operational X.25 connections on the UNIX server based at the Regional Dispatch Centre (RDC) in order to allow for the IN/OUT bound connections to Kenya Post and Telecommunication Packet-Switch Network (KENPAC). This could not be easily achieved and an expert came from University of Antwerp during the last RECOSCIX-WIO evaluation visit in February 1994 who found it impossible to replace X.25 card installed by ICL with a high performance X.25 card from Arnet.

Training aims

It was decided that for the telecommunications aims of the project to be achieved the following had to be done:-

- the ICL server DRS M75 to be replaced with a high quality, easily expandable machine based on Intel-technology;
- the ICL DRS/NX 3000 UNIX to be replaced with SCO UNIX which has more industrial strength to support telecommunication, it is supported by more manufacturers;
- 2 months training for me in a heavily networked UNIX environment (University of Antwerp) Belgium;
- University of Antwerp to order a -486 SCO UNIX based machine on behalf of RECOSCIX-WIO, install networking X.25 protocols and develop the software for establishing the communication procedures;
- IOC of UNESCO to provide funds for the 2 months training and airplane ticket Mombasa-Brussels.

Achievements:

i) PERL software

***P*ractical *E*xtraction and *R*eport *L*anguage** (PERL) is a UNIX programming language for manipulating text files and processes. It provides a more concise and readable way to do many jobs that were formerly accomplished (with difficulty) by programming in C language or one of the Shells. PERL runs not only on UNIX operating system, it runs on several other operating systems and provide a portable model of computing across diverse architecture.

With the PERL, I developed various script programs which will make dialing into the RECOSCIX-WIO server possible and also enable dialing into various other systems like DIALOG. These script programs will be installed in the remote station PC(s) ie Co-operating Institutions (CI).

ii) X.25 Installation and configuration.

Though the delivery date (hardly a week before I left) of the server was rather too late, there was not much left to be done since the system in use at the University of Antwerp for the Library Network (VBIS), work on the same principles. The main concepts and tools involved in configuring the X.25 system was to set up the parameters held in the configuration files ie NUAs etc. The files to be adopted for the UNIX network server system are:-

-/etc/ttyxcfg
-/usr/lib/tsf/adpt0/setup
-/etc/tcp
-/etc/default/tcp

For the LAN which is based on the DOS-based LAN Manager, it will now be replaced with C-Kermit/Ms-Kermit. C-Kermit is a communication software program written in C and provide a full implementation of the kermit file transfer protocol, plus terminal connection, modem dialing, file management and a powerful script programming language. An important goal of C-Kermit is transportability to different computers and operating systems. With this software fully installed in the server there will be no need to use the Lan Manager and it will be possible to transfer files from one workstation to another.

iii) PageMaker Installation 1/06/94

WINDOW is a newsletter produced by RDC and an important instrument to promote the project. The work of typesetting which was originally being done by me has been shifted to another colleague and that means a little training on the newly acquired Typesetting software PAGEMAKER. I was involved in the installation of this software at the Limburg University Centrum where the training of this software is currently being conducted. It is hoped that the next issue of WINDOW newsletter will be done on PageMaker.

Conclusion

The working team of VUBIS lead by Dr. Richard Phillips agreed to send script files on the network files to be adopted when the new RDC server will be sent, and a closer follow up.

I wish to thank the whole team for their co-operation, RECOSCIX-WIO and IOC for providing the funds to cover for the trip and also the Director of KMFRI Dr. E. Okemwa for having nominated me to attend the training.

Sam NGETE

ANNEX 9. REPORT ON MIST COURSE IN BELGIUM

MANAGEMENT OF INFORMATION IN SCIENCE AND TECHNOLOGY (MIST 2)

The Second International Training Course on the Management of Information in Science and Technology held at the Free University of Brussels, Belgium from 2nd March to 24th June, 1994.

It involved information workers from developing country which attracted 15 participants from 12 countries.

The main objective was to make them acquainted with the modern techniques of information management in for example acquisition, storage and retrieval.

The course covered various topics on CDS/ISIS. Introduction to CDS/ISIS software package for information storage and retrieval. Its application in searching, editing in a database, formatting language and inverted file service.

We were also introduced to CCF (Common Communication Format). This is a Common Bibliographic exchange format that would be useful both to libraries and other information services.

We also had some introductory lectures on networks with special emphasis on INTERNET and the use of electronic mail.

We were also privileged to visit different places in Belgium and they we very educative.

Appreciation:
I wish to first of all express my profound gratitude to RECOSCIX Project Manager for the efforts he made for me to participate in this course. I also wish to thank Dr. Okemwa the Director of K.M.F.R.I for his tireless efforts which made it possible for me to participate in this course. Also my appreciation goes to the Coordinators of this Course.

Catherine KAUMBUTHU

ANNEX 10. REPORT ON FRENCH AND DESKTOP PUBLISHING TRAINING

1. FRENCH TRAINING COURSE AT THE ALLIANCE FRANCAISE DE BRUXELLES, BRUSSELLS FROM 28TH APRIL TO 30 JUNE 1994

I started the course at the Alliance Francaise de Buxelles on the 28th of April to 31st May,1994. The aim of this course was to improve french grammar and spoken in order to communicate with our co-operating institution which use french as theri first language and also to be able to do translation for texts for the WINDOW Newsletter.

TRAINING

The course which was intensive, covered various parts. It was for three hours an thirty minutes every day, that is monday to friday, starting from 9.00a.m. to 12.30 p.m. The course covered spoken french and grammar. Much emphasis was put on grammar being the most difficult part in the french language. There was also radio lessons and daily dictation in order to improve in spelling, this was very important as far as comprehension is concernine. Writing of buisiness letters, advertisements and personal letters was daily homework. The only common language we could use in class was french, all students were from different countries and continents with different mothertongues. Since most people in Bussels speak french, in this way I had a great opportunity to practise my spoken french.

OBJECTIVE

French is an important language in the world of communications and information exchange. It is very useful to a regional project, such as RECOSCIX-WIO to cummunicate with French speaking institutions, in Madagascar, La Reunion, Mauritius and Seychelles. Kenya being an anglo-phone country,there's no much opportunity to practise spoken french in Mombasa, but for written french, in the office I always type french texts and translate some texts from english to french and some texts from french to english. This gives me much practise in translation although I need to attend a special course in translations. This can be very important to me as far as WINDOW publication is concerned because I am now the person repsonible for typing the texts both in english and french and I'll be required to translate the texts for this newsletter, and doing the Desk Top Publishing the Newsletter.

2. PAGEMAKER COURSE AT THE UNIVERSITY OF LIMBURGS FROM 1ST JUNE TO 6TH JULY, 1994

BACKGROUND

During the last RECOSCIX-WIO Project evaluation Mission to Kenya early this year, a decision was taken to re-alocate tasks to the Recoscix-Wio Project staff. It was passed in this meeting that I be alocated on carrying out the task of DeskTop Publishing for the WINDOW Newsletter, but this time it has to be in PageMaker (it was formerly done in Ventura). My coleaque who was doing the DeskTop Publishing was now alocated to deal more in local network and technical tasks.

AIM

The aim of my training was to learn Desk Top Publishing in PageMaker in order to improve the outlook of the WINDOW Newsletter, which was formerly being done in Ventura . WINDOW Newsletter which carries scientific news from the Western Indian Ocean, i.e. Eritrea, Kenya, La Rénion, Mozambique, Madagascar, Mauritius, Seychelles and theUnited Republic of Tanzania. The purpose of this Newsletter is to inform scientists in the region on

what is new in research, scientific achievements and also training opportunities
The Belgian Government, through Limburgs University has been funding WINDOW Newsletter production since August 1992. From June 1993, SAREC, through IOC, for the publicity of WIOMSA (Western Indian Ocean Marine Scientists Association), a new project in the region which will be dealing with issue of Marine Research Grants, will be financing the Newsletter production.

TRAINING

This training took place at the Limburgs Universitair Centrum, CDI-Smile Department under the supervision of Jan Daniels and under the instructions of Joel. The duration was five to seven hours per day, from monday to friday.

The first week was spent on reading the 'Getting to PageMaker' manual, that is going through the exercises in the manual, following the given instructions.
The second week, I learnt how to create a page set-up, making a layout, that is creating desired columns, lines and spaces for blocks, graphs etc.
In the third week, I learnt how to create a front page for a publication, make the layout on a master page, set tabulation stops, to spread a title for the main heading, I also learnt how to make a text wrap round a rectangle.
In the final week, I learnt how to create a block for a tabulated text, how to place a logo, I also learnt how to move a picture into various sizes.

OBJECTIVES

Creation of good layout is very important when making a publication. In order to add some taste in a publication, you need to design it attractively. There are many skills of Desk Top Publishing in PageMaker and various fonts to be used. This makes PageMaker a very useful package as far as setting layouts and designing a publication is concerned. I can now confidently produce a publication using PageMaker skills in DTP. Unfortunately I could not learn Aldus Free Hand, this is a package used in PageMaker for designs, it is very very important as far as design is concerned. The reason being Aldus Free Hand van only be used in Macintosh or Apple computers.

PERSONAL APPRECIATION

For those two and a half months, I have really gained alot. As for the French course, I have improved much in my spoken french and grammar. Although I needed more time in order to learn more about translation. I really practised my french because in Brussels almost everybody speaks french, this gave me a good opportunity to practise my spoken french. As for Desk Top Publishing, although I needed more time to learn more in design, I learnt enough to be able to produce a publication.

ACKNOWLEDGEMENTS

I take this opportunity to thank Limburgs University for funding my stay and training, Prof. Leo EGGHE of Limburgs University for all the efforts he made for making my training a success, Dr. Ezekiel OKEMWA (Director K.M.F.R.I). for allowing me to attend the courses, the RECOSCIX-WOP project for all the assistance and efforts, Mr. Joel for all the time he spent and his efforts in teaching me Desk Top Publishing in Page Maker , Mr. Herwick, for his cooperation and all CDI staff for their cooperation.

Phyllis Chiteri MUTERE
RECOSCIX-WIO Project

ANNEX 11. ATTENDANCE DATABASE WORKSHOP AND VISIT TO THE UNIVERSITY OF ADDIS ABABA, ETHIOPIA (8 - 14 OCTOBER 1994)

1. TIME SCHEDULE

8 Oct. 16.00 - 17.15 : Travel from Mombasa to Nairobi

9 Oct. 08.55 - 10.40 : Travel from Nairobi to Addis Ababa

10 Oct. AAAS-PADIS Workshop on "Databases: the needs and contributions of African researchers":
Registration and Opening remarks;
Status reports for different fields;
African coverage in international databases;

11 Oct. Information needs and use;
African researchers as information producers;
Accessing databases: introduction and demonstrations;

12 Oct. Costs and sustainability issues;
Workshop wrap-up: priorities, strategies and follow-up.

13 Oct. morning: Visit to the Department of Biology of the University of Addis Ababa and to the Science Faculty Library

14 Oct. 10.45 - 12.45 (actually 15.00 - 17.00) : Travel from Addis Ababa to Nairobi
20.30 - 21.30 : Travel from Nairobi to Mombasa

2. AAAS - PADIS WORKSHOP ON DATABASES

The Workshop on Databases: the Needs and Contributions of African Researchers was held in Addis Ababa (Ethiopia) from 10 to 12 October, 1994. The meeting was jointly organised by the Sub-Saharan Africa Program of the American Association for the Advancement of Science (AAAS) and by the Pan African Development Information System (PADIS) of the United Nations Economic Commission for Africa (UNECA). The Carnegie Corporation of New York supported the workshop through a grant to AAAS.

Following a survey of database access in African institutions, the dual objectives of the workshop were "increasing the utility and accessibility of African databases as well as insuring that international databases are available to African institutions and incorporate African information resources". In her introduction to the workshop Dr. Amy Gimbel, Director of the Sub-Saharan Africa Program, summarised this as: how to know what is available outside; how to access it; how to cope with the costs. Mrs. Nancy Hafkin, Officer-in-Charge of PADIS, in her introduction touched another sore point, i.e. the availability of information on Africa, [only] to be found outside Africa, even when it was produced by Africans. Through this workshop AAAS and PADIS wanted to create an awareness to these problems and the wish to do something about them.

A large part of the first day was spent on a status report of what is available locally, regionally, and internationally in the sectors of Agriculture/Environmental Sciences/Natural Resources - the section in which the RECOSCIX-WIO project was presented -, Health Sciences/Population, Social Sciences/Development Studies, and Other Science and Technology and Development Fields. In total 12 speakers presented an overview of the databases (internationally) available in their field, sometimes with accessability problems, and possibly what activities their institution/organisation was undertaking in database production.

During the session on the role of the information providers it was discussed how information intermediates should access the information needs of researchers and get the relevant information to their users. In order to do so the intermediates themselves need to have adequate knowledge of the information resources at their disposal. Training for this is provided by the School for Information Studies in Africa, a 2 year MSc programme for the region, organised by University of Addis Ababa with funding from abroad.

In the session on the African coverage in international databases a number of obstacles was enumerated: it is difficult to find out what is available [in Africa]; African periodicals frequently do not have a regular publication schedule and are not submitted to international indexing journals; (non-)availability of the primary publication (what good does it do to have a document abstracted in an indexing journal, if the publication itself is not readily available?). It is difficult to find out from overseas what is being published in Africa. In this perspective the initiative of the Library of Congress, whose local representatives trace the local production in their working area, has to be applauded.

With regard to the information needs and use of African researchers and policy makers the African governments have to be made aware that the information delivery services deserve support. Information is still too much considered as a potential source for subversive activities, but this view cannot longer be upheld in the modern information society. And "hiding away" information in grey literature has already led too many times to duplication of research efforts. However the effort of disclosing old literature and data has to be balanced against the usefulness of that information to the modern scientist. A few successful projects do not mean that many data haven't already become obsolete. The costs of weeding a mass of obsolete data has to be determined before a large scale operation is set up.

African scientists are also information producers, but find it difficult to get their papers published in international periodicals. There is a need for strong regional journals. There is a capacity building in publishing in Africa, yet the turn-over of the manuscripts is too slow (e.g. paper accepted in 1992, but only published in 1994). The process of reviewing and refereeing is very expensive and time consuming, mainly due to slowness in correspondence [between different parts of the continent]. A database to help in identifying local expertise, i.e. authors and referees, would be most helpful.

Another important session delt with the costs and sustainability of databases. It has to be clear before the establishment of a database in an organisation that somebody somewhere has to pay. So what will it be used for? And it has to be clear that there is no duplication of efforts. If payment will be requested for its use, the quality has to be high enough to create the

willingness to pay. Marketing will be required to generate income. But most important for the sustainability is the local capacity and interest.

One afternoon was spent for demonstrations and practical use of databases, on CD-ROM, online and through Gopher.

During the round-up the various issues that emerged from the seminar were lined up:

- a lot of information is available, but mostly fugitive and uneasily accessible;
- archival literature poses the dilemma between duplication of research findings and what old information is worth retrieving;
- increase of African coverage in international databases;
- compatibility between databases is not discussed enough;
- production of African journals by African trained people;
- producing information needs has to be linked to accessing those needs;
- input through focal points is still uneven. How to get around that?
- is electronic access affordable?
- end users still can be too passive;
- sustainability of databases and their access;
- local expertise in information management;
- need for co-ordination, co-operation and national policies.

In the end everything could be summarised in three key words: organise, disseminate, finance.

3. UNIVERSITY OF ADDIS ABABA

The Information Services Manager, who had attended the database workshop, had an extra day in Addis Ababa due to the limited availability of air travel back to Kenya. He took this opportunity to visit the University of Addis Ababa, more particularly the Department of Biology (Aquatic Sciences Unit) and the library of the Faculty of Sciences.

The library of the Faculty of Sciences is housed in spacious rooms in a building close to the Department of Biology. It is well organised, but a closer look brings the same finding as in so many libraries in the region: the periodical subscriptions stop in the late seventies or the early eighties. Most of the current periodicals are received through donations, but are not always relevant to the patron [journals on arctic research or Polish birds for scientists working in the tropics?!]. The same goes for books: multiple copies of irrelevant books seem to come straight from a stock clearing of some overseas publisher through one or other well meaning donor. The library staff is capable and helpful, but has to work with the material it has at its disposal.

In the Department of Biology only Dr. Seyoum Mengistou was available. His colleagues were out on the field, but most are abroad for further studies, e.g. in Sweden. With the independence of its former province Eritrea, Ethiopia has become land-locked. Aquatic research is now concentrated on the different lakes in the Ethiopian part of the Rift and the upper catchment of the Blue Nile. The limnologists have the disposal of a small computer section and a well equipped laboratory, with facilities for field trips (inflatable boat; portable

measuring equipment). Dr. Seyoum expressed an interest in the RECOSCIX-WIO information services, since he had to rely mostly on his contacts with Canada - where he obtained his PhD - for information, due to the limited resources in recent literature in the faculty library.

ANNEX 12. PAPER FOR DATABASE WORKSHOP

THE HUNT FOR INFORMATION IN MARINE SCIENCES: Is RECOSCIX-WIO a success story?

What are the needs for databases, or more basically what are the needs for data? Living organisms for their survival depend on information from their environment. Useful data are stored in memory for future reference. Yet man has gone further along the line and gathers all kinds of data, and so many that the collective memory has to be stored in a tangible form, on paper, on magnetic data support, on (laser) optical readable media... in databases. The usefulness of this "collector's passion" could be the topic of a separate meeting, but for now we will concentrate on the way existing databases fill the needs of (African) scientists; and where they fail, because a call for additional data/information is heard in several places. (I am aware there is fundamentally a distinction between data and information, i.e. data are the raw material that become information through the processing by the user. That difference between the two concepts however, is not essential in the context of this contribution, and both will be used for one another).

The RECOSCIX-WIO project a.o. aims to provide the aquatic scientists in the region with the information they need for their research. In this process we are using databases, international as well as self maintained ones. Whether they serve our needs properly, I will try to establish in the following lines.

The RECOSCIX-WIO project, its objectives and activities

The RECOSCIX-WIO project was established in February 1989 by the Intergovernmental Oceanographic Commission (IOC) of UNESCO, after adoption of the project proposal during the Second Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean (IOCINCWIO-II, Arusha, Tanzania) in December 1987. The IOC financially supported only the starting phase (according to its policies) and in August 1991 the funding of the project was taken over by the Belgian Government through the Flemish Interuniversity Council (VLIR) and the Limburg University Centre (LUC). The current phase of the project ends in December 1995, but the LUC has already submitted to the VLIR a proposal for a new project, that would partially cover the present objectives and activities.

The acronym stands for REgional CO-operation in SCientific Information eXchange in the Western Indian Ocean region. Initially the network was formed by 16 co-operating institutions in marine sciences and fisheries in the African countries bordering the Indian Ocean, and the Island States (Ethiopia, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, Tanzania). Some changes have occurred since those early days. Human impulses have caused the raise and fall of nations (Eritrea, Somalia); some institutes were more active than others; some were replaced; and there was a growing demand from freshwater scientists. At present the Regional Dispatch Centre (RDC), the co-ordinating centre of the project, based in the Kenya Marine and Fisheries Research Institute (KMFRI) in Mombasa, has links - not all of them equally strong - with over 30 institutes in the region, according to their activity in the

network divided into Co-operating Institutes (CI) and Associated Institutes (AI).

The project's objectives are defined as follows:

- to provide aquatic scientists in the region with the necessary bibliography and scientific literature;
- to make full use of the scientific literature available in the region;
- to promote and facilitate communication between aquatic scientists in the region;
- to promote and facilitate communication between aquatic scientists in the WIO and other regions;
- to promote the scientific work of WIO aquatic scientists in- and outside the region;
- to provide information equipment, software and training.

To attain these goals, a number of activities, provision of information services and creation of data products, is carried out:

- Query Handling consists of bibliographic data retrieval;
- through the Document Delivery (DD) services scientific literature, mainly journal articles, is provided to the scientists;
- regularly the contents tables of periodicals' issues received in the RDC, are distributed to the institutes as the WIOCURRENT service;
- with the WIOLIB, a collective catalogue of the CIs' library holdings, the project aims to stimulate the use of the scientific literature available in the region;
- scientists can identify colleagues in other institutes and other countries through the directory WIODIR;
- the scientists' publications will become identifiable through the WIOPUB, a bibliography/catalogue of documents produced by the scientists contained in the WIODIR;
- the publication of a newsletter WINDOW.

The role of databases in RECOSCIX-WIO

The project is largely dependent on databases for the execution of its activities. These are international databases, available in Mombasa as CD-ROMs or through remote access (Dialog computer host), and local databases, established within the framework of the project and the host institute.

The Dialog Information Services offer a wide range of bibliographic, factual and full-text databases. We try however to limit the use of this resource because of the costs: not counting the data communication costs, in 1993 we spent US$ 572 for 12 sessions and in 1994 to date US$ 1,097 for 16 sessions. The type of databases consulted is almost exclusively bibliographic, mainly Biosis and ASFA (at a time that the CD-ROM drive had broken down), and to a much less extent CA Search (Chemical Abstracts), Books in Print, Oceanic Abstracts, Sociological Abstracts, Eventline and Science Citation Index.

The project has acquired a number of CD-ROMs through subscription (ASFA) or donation:

- Aquatic Sciences and Fisheries Abstracts (ASFA);

- NODC (National Oceanographic Data Center), Pacific Ocean: Temperature-Salinity Profiles (1900-1988) - NODC-01 (experimental disk);
- Global Ocean Temperature and Salinity Profiles, vol. 1: Atlantic, Indian and Polar Ocean - NODC-02;
- Monthly Mean Distributions of Satellite-Derived Sea Surface Temperature and Pigment Concentration: 1978-1986;
- TOGA: Meteorological and Oceanographic Data Sets for 1985 and 1986;
- World Climate Research Programme: Tropical Ocean Global Atmosphere (a set of 6 disks containing the TOGA data for the years 1985 to 1990).

The disks containing scientific data are still awaiting full exploitation of their use.
The ASFA database is the primary information source for the Query Handling and for checking bibliographic information for the Document Delivery service (scientists are not always correct in their copying of bibliographic citations when filling the request forms), and is used several times a week. In recent years - starting from 1991 - yearly we got 61, 84, 112, and by the end of September this year 72 requests for information retrieval. The database (on two disks) covers the period 1978 to the last update (now March 1994) and costs US$ 2700.

A number of databases has been developed by the project and the KMFRI, all but one using CDS/ISIS, the database management software offered by UNESCO.

The WIOLIB has to become the collective catalogue of aquatic sciences libraries in the WIO region. The database structure currently used is MIBIS (Manual for Preparing Records in Microcomputer-based Bibliographic Information Systems), developed by Anne Di Lauro for IDRC (International Development Research Centre, Canada. Some adaptions will be made however to make the structure compatible to the CCF/B (Common Communication Format for Bibliographic Information). Alternatively another database structure will be implemented to make the database compatible with the ASFA database (an application has been forwarded for RECOSCIX-WIO to become a regional input centre for the ASFA database). Plans are also made to extend the database structure with the necessary fields to turn the database into a catalogue annex library circulation control system.
The need for this database/catalogue, should be evident: the aquatic sciences libraries in the region hold a lot of documents, but nobody is aware what is available at his "neighbour's" place. Through the WIOLIB the project aims to save time and money, by locating needed publications within the region and exchanging information (documents) amongst the institutions, rather than each institution "buying" the requested material from abroad.

The same database structure used for the WIOLIB, will be implemented for the WIOPUB, the bibliography of publications by the aquatic scientists in the WIO region. Ideally this database should also be a catalogue, i.e. the documents should actually be available in one of the co-operating institutes' library, but scientists in the region do not always have a copy of all their publications left for submission to their library or the RDC.
The aquatic scientists in the region could contribute a lot to this database. It has been noted that many publications are in only locally distributed periodicals, not covered by international bibliographies such as ASFA, and therefore end up in the "grey literature" together with the reports and such materials that are not available through the normal distribution channels for

publications (publishers, book shops...). Thus interesting data may remain "hidden" from the aquatic sciences community. By generating the WIOPUB the project wants to draw the attention to the scientists' work in the region and possibly avoid duplication of efforts, by colleagues in the region or even colleagues abroad.

The WIODIR is a database completely generated by the project. It was one of the two databases that form the basis of a Standard Directory Record Structure for Organizations, Individuals and their Research Interests, recently published by IOC. It contains information on the researchers in the field of aquatic sciences, the institutes where they work, including their education and research topics. Complementary to the WIOPUB, the directory informs the user on the aquatic scientists' activities and should stimulate communication and co-operation in the region, as well as with overseas scientists. All it needs from the scientists is that they return the input sheets we distribute among the institutes. Initially, in 1990, this initiative was welcomed with a large return of the questionnaires (80%). The latest update (April 1994) however only resulted in a 40% return, although additional data were requested because of the change of database structure, with new fields to fill.

The KMFRI Research Projects Database is a reference tool that guides the user to the different research projects that are ongoing in the KMFRI and to the scientists connected with each project. At this stage it does not contain actual data. It is developed in CDS/ISIS according to the format used for the MEDI Catalogue (Marine Environmental Data Information Referral Catalogue). The extension of the database to the region, as well as the inclusion of factual data are being worked on.

In collaboration with the United Nations Environmental Program (UNEP) the KMFRI is developing an Environmental and Coastal Resources Database, annex atlas. All kinds of data relevant to Coastal Zone Management (biological, meteorological, agricultural,... data; data on population, infrastructure, water supply,...) are gathered by a team of KMFRI scientists and put in the computer in text files and worksheets for submission to UNEP (GRID: Global Resource Information Database), that maintains the actual database (the computers in the KMFRI are not powerful enough to this end). The KMFRI is the pilot institute for the project, before this one is extended to other East African countries.

A role for the African scientist?

Does the (African) scientist need databases? That depends on his/her intentions. If the ambition is to sit back and wait for the end of the day to come, then databases are waisted on him/her. If at the contrary the scientist has the ambition to take his profession seriously, then he/she will find databases on his/her way.

A scientist anywhere in the world needs to stay aware of the developments in his field of work particularly, but also has to keep an eye open for scientific evolutions in general. No library in the world is able to acquire a collection of all interesting publications, be it books or periodicals. A way of keeping a broad overview of what is being published is through bibliographies, of which the automated versions offer the advantage of multiple access to the entries.

Once the scientist has identified the publications of his interest he wants to find out if these are available in his library. Any modern library these days goes for library automation and maintains a computerised catalogue. A further trend is to merge catalogues of different libraries or to make the catalogue available through networking. The idea of global availability of publications is growing stronger, although the real life experiences of a librarian in Africa do not always confirm this.

Besides the published data, i.e. data in books, journals, in printed version or digitalised, a lot of data have become available in factual/numeric/statistical databases, on line and on CD-ROM. These require a new approach by the African scientist. He has to learn to deal with this new kind of material. Within the RECOSCIX-WIO project we witness this. Although scientists in the region on a number of occasions have requested scientific data to be available in the region (more particularly the sea level data that are collected by the different stations in the Western Indian Ocean region and sent to the TOGA Sea Level Center in Hawaii, should come back to the region for further processing), although databases with scientific data for physical oceanographers are available in the RDC in Mombasa, nobody has requested for these. At the one hand the availability might be more publicised, but at the other hand the scientist in the region has to learn to work with the data. This has been understood by the IOC and a workshop is being organised to train scientists in OCEAN-PC, a software for processing physical data (database management and data analysis).

At first these data will be the data that are made available through international databases. While working with these data the scientists will become aware of gaps in the data collections. They will learn to identify the needs for futher gathering of data, especially in their own region. There lies the opportunity for the African scientist to contribute to the global knowledge and understanding of the environment, leading to ways of sustainable management of natural resources, etc. (thinking in terms of aquatic sciences; scientists in other fields will of course see other applications).

In order to step into/remain in the international "science happening" the African scientist needs to think internationally, to work according to internationally accepted standards, to subject his knowledge, his work to international exposure... Fortunately the awareness of this is growing. Earlier this year for instance, a regional workshop was organised in Mombasa to train chemical oceanographers in common nutrient analysis methods and, where possible, in the conversion of older data to be compatible with the modern standards. Yet too few African scientists are eager to present their work to peer reviewed periodicals, unless they are co-operating with scientists abroad.

The African scientist is in many ways incapacited by the lack of funds, by the costs of research, of access to information, to (international) databases, but he has to learn to live with this, to become aware of his own capabilities and make the best of the means he has at his disposal, without regretting that he is not working in one of those well equipped laboratories abroad. Too often I have heard the remark that scientists go to the field to collect data, but once back in the office bury these in their drawer among the earlier collected data. Why are they not turning these data into results, even if, in the worst case, they have to do it using a pocket calculator, a pencil, a ruler and graph paper. Waiting for Godot? Possibly. Or simply

giving in to the uneven competition of the scientist abroad before the battle has been fought?

In conclusion I still owe you an answer to the question in the title. It is: not yet. The RECOSCIX-WIO project still has a way to go before it can claim to be a success story. Even if the number of co-operating/associated institutes is considerable, too few scientists are really involved with the activities; more of them could make use of the services offered; certainly more of them could contribute to the development of the WIODIR and the WIOPUB. And the project has to make its presence in the region much more felt.
The databases generated in-house have to be put to the test internationally. This was discreetly done by the presentation of the WIODIR database at the IAMSLIC (International Association of Marine Science Libraries and Information Centers) Conference in Bremerhaven (Germany) in October 1992, but we have to expose the results of our work to a larger audience. The efforts of African people - not only scientists, but also the people developing and maintaining databases - have to be brought out to the open more than now. In the case of RECOSCIX-WIO this opportunity will be offered once the Internet server is ready at the UNESCO Headquarters in Paris. The project's databases, after adaptation to international standards, will be put in front of the eyes of the scientific world. Only through this visibility and the ensuing critisism will we learn what direction we have to take for the future. And through databases such as these the international scientific community must learn to need the contribution of the African scientist. If this one is convinced of it first.

ANNEX 13

REPORT COORDINATION MISSION RECOSCIX-WIO

(8/2/94 - 22/2/94)

Leo Egghe

This report deals with the evaluation of the RECOSCIX-WIO project as was executed during my coordination mission, including a report on the visit of the LUC rector delegation to RECOSCIX-WIO and other projects. **Text in boldface refers to other texts or to actions that have to be taken.**

Tuesday 8/2/94

Departure for Nairobi

Wednesday 9/2/94

Arrival in Nairobi. Departure for Mombasa. Arrival in the early afternoon.

Discussion with Peter Pissierssens (PP) and Magnus Ngoile (MN) on different aspects of RECOSCIX-WIO as was discussed by them in the period 7/2/94-9/2/94. The discussions were based on a draft text that was prepared before. This text was ammended to a certain extent during the coordination mission. **The final text is added to this report**.

Thursday 10/2/94

Morning session

Discussions with PP, and Peter Reyniers (PR) on the services and products of RECOSCIX.

It is decided that ASFA will be purchased on CD-ROM for 1994 (price : about $ 1.500). The previous edition is from 1991 (a gift from NOAA). To purchase ASFA every year is not necessary since one can always use the online service via DIALOG, provided this cost is lower than the yearly purchase. However, after 3 years a new ASFA is useful.

The subscription to the "Current Contents" - "Agricultural, Biological and Environmental Sciences" is very useful and one should investigate how the other CI's and AI's (cooperating resp. associate institutions) could better benefit from this. For the moment, in RDC, one makes a selection of articles which are then requested to the authors (who usually send more reprints than asked). A list of these recent publications can then be sent to the CI's and the AI's (totalling about 30 institutions - **an updated list is added**). The service of WIOCURRENT will be continued.

Concerning WIOLIB, there is still the problem of quality control, due to lack of time. Also the input is far from complete. Priority is given to the above mentioned reprints, followed by the library materials of KMFRI. Last priority is given to the photocopies of requested articles and the donations.

Internships that took place : Nyika (2 weeks in 11/93) from IMS, Zanzibar, Shilamawa (2 weeks in 12/93) from UON, Chiromo Campus and Mioru (2 weeks in 12/93) from UON, main Campus. **Planned for 1994 are : Alice, Confett, Raniriarison and Tuku.**

WIODIR has been prepared by RECOSCIX and printed by UNEP (6/92). **It is decided that a new printed edition is useful every 2 years while a version on diskette should be produced twice a year. One should investigate whether UNEP is still prepared to produce the printed version.**

WIOPUB must still be produced. To advertise the need for the publications of the scientists in the WIO region, an announcement will be made in the journal WINDOW. The discussions on this journal will be held this afternoon in the presence of Magnus Ngoile (MN).

Afternoon session

There is a retardation in the production of the WINDOW issues. So is the 12/93 issue due in 3/94. MN proposes to do the editorial work of WINDOW : solliciting for texts, editing of these texts and so on. It is well understood that the production itself of WINDOW remains in Kenya (DTP in Mombasa, printing in Nairobi if necessary). Also the French translation, which is highly wellcomed in the region, should continue to be done in Kenya.

WIOMSA is prepared to take over the services of RECOSCIX-WIO when the Belgian funding should stop. However a continuation by the Belgian government is needed since only at about 1999, WIOMSA will be fully operational (having funds of international bodies available). Therefore two parallel actions are needed : first of all continuous promotion of RECOSCIX (attracting donor agencies) and secondly, preparation of the continuation of RECOSCIX-WIO, thereby underlining the sustainability around 1998 or 1999. A contract between KMFRI and WIOMSA will be needed. Also it is necessary to have a new breakdown of the RECOSCIX budgets for the period after 1995. **This must be prepared by the general manager in collaboration with the Kenyan director.** Main budgetposts are : telecom, travel and services.

SAREC, via IOC, has offered $ 15.000 for RECOSCIX. **A contract between LUC and IOC on the use of this amount is necessary.**

Concerning the planned movie (also with support of SAREC-IOC) a proposal prepared by MN and Basha Usi is in preparation.

Friday 11/2/94

Morning session

It was an advice of IOC to install a "steering committee" for RECOSCIX-WIO in order to give professional advices and more optimal decisions. In addition to this the function of a

"local project coordinator" is created. This task is accepted by Mika Odido (MO). The steering committee should be decomposed as is indicated in the text in the annex. **There should be a draft letter of nomination : this should be requested to the director of KMFRI, Dr. E. Okemwa** (EO). It is not necessary that all members are present at all times. On occasions such as a coordination mission or of a meeting of IOCINCWIO, a large part of the steering committee could be present ; the other members could be asked for their opinion in a later state.

Due to the fact that the nominated second VVOB staff member did not accept, a new schedule of responsabilities has been worked out - **see the text in the annex**. It mainly boils down to the involvement of WIOMSA in WINDOW (as decribed above) and in the p.r. and p.a. (public awareness) tasks of RECOSCIX. Also the local project coordinator should act as a p.r. officer for RECOSCIX. The library and information manager should also be occupied by education and training.

Afternoon session

The need for a DTP manager has been discussed. The following activities are planned : creation of a reprint series (to start with, only the publications of KBP are covered, later covering also the other regional publications), producing WINDOW in a more professional way and inclusion in WINDOW of extended abstracts of scientific publications, possible production of a journal in informetrics (as fund generating activity). The reprint series is very important since it can be a tool of exchange : in this way one can obtain important publications without paying. Adding extended abstracts to WINDOW is interesting for the current awareness in the region. These extended abstracts could be at the origin of a new scientific journal on marine sciences in the region.

It is agreed that Phyllis Mutere (PM) will be sent to Belgium for education in DTP. The condition is that her secretarial tasks will gradually be taken over by a new staff member. EO agrees in the nomination of a new secretarial staff member to RECOSCIX. PM will be educated in Ventura Publisher or Pagemaker and will receive an introduction to TEX. It is also agreed that she will follow a French course (advanced level) with the emphasis on written French.

This afternoon, the RECOSCIX day (18/2) of the rector delegation is prepared. Instructions are given for talks, demos and AV helpware. In the afternoon of 18/2, a meeting with the rector delegation on the future of RECOSCIX-WIO is planned.

Saturday 12/2/94

Preparation of a meeting with EO on the future of RECOSCIX-WIO and on the activities of the RECOSCIX-WIO staff. Further preparation of the visit of the rector delegation to RECOSCIX-WIO.

Some electronic cables were purchased in the city in order to enable Richard Philips (RP) to arrange the datacommunication via the UNIX server.

Sunday 13/2/94

Free.

Monday 14/2/94

Meeting with EO on the future of RECOSCIX-WIO and on the activities of the RECOSCIX staff members.

The quality of the activities of some Kenyan staff members has been underlined (e.g. Sam Ngete (SN), Kathryn Kaumbuthu (KK) and PM).

The activities of the VVOB staff member has been discussed. It was decided in 7/93, during my previous coordination mission, that PR should be "acting senior librarian" as long as this post has not been fillied in by a Kenyan officer. There is a letter of EO of November 30th giving mandate to PR for this function. Until now this function has not been executed by PR. The main reason is the preparation of the rector visit, the present coordination mission and the non-acceptance of the job by the second VVOB staff member.

It is now urgent, however, that PR should take over the library and information tasks of KMFRI and RECOSCIX. The new Kenyan senior librarian is expected to start in May, but even after this date, the actions of PR in the library are necessary (of course in close collaboration with the senior librarian). **To this end it has been decided that a detailed work plan for the library will be made until the end of the year. It is also expected that PR will produce monthly reports of the progress of the actions (in addition to the 3-month reports and the annual report).**

Evening : departure for Nairobi. Reception of the rector delegation.

Tuesday 15/2/94

Morning session

Visit of the UON : meeting with the DVC, Prof. Mutungi. Prof. Mutungi wellcomes the rector delegation and gives an overview of the history and activities of the UON. Rector Martens explains the purpose of the visit : visiting RECOSCIX-WIO, and preparing possible new development projects of LUC (mainly in the biological or economical area). He also informs the staff of the UON about the main specialties of LUC research. However it is to UON to mention the needs for cooperation. It is remarked that a VlIR commission recently recognised UON as a centre of excellence.

Visit of the main campus library (Mrs. Kimano, chief librarian). There is an impressive collection of all kinds of literature. Many journals are purchased with money of the World Bank. Even the (SOCIAL) SCI on CD-ROM is available through the American Association for the Advancement of Science. The library has 12 subject based sublibraries, united through a manual union catalogue. This library also produced the Union List of Periodicals in Kenyan libraries (1993). As such they also fulfill national tasks. Another example of this is their collection of East-Africana. Alltogether the UON library contains 300.000 records and more than 400.000 volumes.

The major problems of the UON library are : automation and e-mailing. For this last aspect, RECOSCIX could be used.

Afternoon

2 pm : meeting with the department of economics (Prof. Dr. P.K. Kimuyu)

Rector Martens explains the purpose of the visit : finding out if there could be a collaboration between the economics departments of LUC and the one of UON. There is a request of Prof. Vanthielen (LUC) for more information on a text of Prof. Ng'eno which was also mentioned in the reports of the VLIR commission that recently visited the UON. It is explained that they want to organise government people training in economic policy management (up to an M. Sc.). For this it is requested that teaching staff of Belgium could teach in the UON and that some staff people from UON could be sent to Belgium. They want to start on 1/10/95. Therefore, applications should be ready on 1/12/94 at its latest. One should also contact colleagues form other Flemish universities. An MOU should be prepared.

3 pm : meeting at the zoological department of the UON and of the Chiromo campus library

In this department, the RECOSCIX-WIO project has a CI (situated in the Chiromo campus library). Mr. Mafuti informs the delegation of the high value of RECOSCIX for his department. They are an active station, inputting books, thesisses and reprints. They have several requests : **there is the request for a CD-ROM player (it is asked to put this request in writing - the steering committee will decide on that) and for a UPS (it is clear that this was ordered from ICL and hence this will be deducted from their bills - it must however be investigated whether or not this UPS can be delivered through ICL after all). A request for an ASFIS thesaurus will be fulfilled (it should have been there after all!). Via RECOSCIX, one can arrange for a link with the LUC library (i.e. VUBIS-A).**

This meeting is followed by an extensive visit of the Chiromo campus library.

Wednesday 16/2/94

Morning

Visit of the Museum, followed by a meeting with Dr. Isahakiah of NMK. He expressed that the component "marine sciences" is weak in the NMK and that close contact with KMFRI (RECOSCIX) could be very beneficial. H. Gevaerts (HG) presents his proposal for a mini-livestock project.

W. Van Den Berghe discusses his activities in the centre of biodiversity in which the focus is on conservation. The herbarium collections are the largest in the world but also stresses the need for a better marine component : in order to create a reference collection, one needs literature. **The NMK will make a written detailed request for collaboration with RECOSCIX.**

Information has been given on the preparation of a movie on evironmental aspects of marine sciences in East-Africa. They are interested in the presentation of this movie in the museum and in the regional dissemination via the regional musea. **There will be further contact on this with PR.**

On the request of Van Den Berghe for an e-mail system it was decided that RP will investigate this problem on Monday February 21.

Afternoon

Visit of KWS (Dr. Else). Due to lack of time the organisation KWS was not properly introduced and hence there was some confusion on the possible collaboration with RECOSCIX.

HG explained his proposal for a mini-livestock project. He is going to discuss this further in his second week (after de visit of the rector delegation).

Thursday 17/2/94

Early morning : departure for Mombasa. Transport to the hotel and then to KMFRI.

Morning session

E. Okemwa (EO), director of KMFRI, wellcomes the rector delegation. He presents a brief history of KMFRI, the projects (including RECOSCIX-WIO). The early resignation of M. Geenen was mentioned : he stresses the fact that the Kenyans are fully supporting RECOSCIX and they will request, at all levels, continuation of it. He underlines that RECOSCIX is the ultimate link between scientists, policy makers and the public by producing communication tools, p.r. and p.a. activities. He finishes by stressing the importance of linkage with the regional programs (IOCINCWIO, SAREC,...).

Rector Martens replied. He said that the event of Geenen will be of no influence on the future of RECOSCIX : only what the Kenyans think of RECOSCIX is of value. L. Egghe (LE) thanked for the support to RECOSCIX.

HG presents a project proposal of HG on mini-livestock.

The morning is closed by an extensive visit of KMFRI and a short visit of KBP and RECOSCIX (for these two projects, specials sessions are prepared). The rector delegation was impressed by the present infrastructure and activities in KMFRI.

Afternoon session

Seven researchers of KMFRI were requested to present their work for the rector delegation. The rector delegation concluded that high quality research is going on in KMFRI and they consider this as an indirect support for RECOSCIX, since basic research is not possible without the necessary literature.

LE noticed the fact that RECOSCIX is also used for its e-mail services in the sense that it is used in order to receive scientific data.

During this meeting, RP and SN returned from Tanzania (Zanzibar and Dar Es Salaam). A separate report on their mission will be made. LE discussed the most important findings of their mission : they established a link between the Zanzibar computer and the one of KMFRI and in Dar Es Salaam the needs for teaching staff in the new graduate library were discussed.

Friday 18/2/94

This is RECOSCIX day

Morning session

There were introductory talks of EO, LE and MN. MN is president of WIOMSA proposing to gradually take over the services of RECOSCIX once the Belgian support stops. He is a strong supporter of RECOSCIX in the sense that this project is very important for the East-African region.

The main talk was given by M. Odido (MO) who gave an overview of the activities of RECOSCIX. This talk was followed by several demonstrations on all aspects of the services of RECOSCIX : QH, DD, WIOLIB, WINDOW, WIODIR, WIOCURRENT, e-mailing, interlibrary activities. The rector closed this meeting by expressing his gratitude for the perfect RECOSCIX demonstration. He underlines the high value of RECOSCIX for the region.

The rector then offered lunch to all the RECOSCIX members and presented an LUC souvenir.

Afternoon session

During this meeting, the future of RECOSCIX-WIO was discussed. **See the special text on this**. One also discussed the future visitings :

- **Sam Ngete will receive additional training in the UIA (on the UNIX server to be purchased in order to enable 8 simultaneous connections with RECOSCIX, X.25 PAD card and software). Duration : 1 month, paid by IOC. Time period : approximately March.**

- **Phyllis Mutere will come to Belgium for two months : one month will be devoted to more advanced training in the French language (especially written French must be educated) and one month is needed for DTP skills. She is hoped to become the DTP manager of the project. For DTP one thinks of TEX, Ventura Publisher or Pagemaker. This visiting will be further prepared in Belgium and will be paid by the LUC.**

- **Kennedy Oniancha will visit and work in some scientific libraries : he has had a good training as a graduate in Library and Information Sciences in Moi University, but needs more practise. This visiting will take place in the fall of**

1994 and will last 2 months. This visiting can be paid by the RECOSCIX internships budgets.

- **As a reminder : Mrs. Kathryn Kaumbuthu is selected by ABOS for the MIST course of 1994 in the VUB. She will be in Brussels in the period end of February - end of June.**

- **IOC is prepared to send PP for one month to RECOSCIX in order to cope with the early resignation of the second VVOB staff member. He will devote himself to p.r. and p.a. activities.**

Saturday 19/2/94

This is KBP day. After a short introduction of the history, present and future activities of KBP, the rector delegation is invited to Gazi to visit the oyster culture project.

In Gazi, the rector delegation is informed about the techniques of oyster culture (including the social contacts with the inhabitants of Gazi) and on the marketing techniques. The oysters are degustated : they have a very good taste and hence should be used in the restaurants as well as for nutrition for the local people.

The visit was closed by final talks of LE, EO and HM.

Sunday 20/2/94

Departure for Nairobi.

Monday 21/2/94

Morning

Visit of the Ministry of RTTT. Discussions with Ben J.O. Mak'Osewe, deputy permanent secretary (DPS).

The meeting was opened by EO who described the RECOSCIX-WIO project in all its facets : history, present and future. The DPS answered that his ministry is fully supporting the activities of RECOSCIX and will make sure that the necessary requests (via the Belgian Embassy) will be made in time for the continuation. HM explained the purpose of the visit to Kenya : the visit of RECOSCIX-WIO and the scanning of new possible actions of LUC in Kenya. He stressed the fact that he is following the lines of the VlIR and ABOS in the sense that Kenya is a country of high priority. He informed the DPS about the high value of RECOSCIX and of the high quality research in KMFRI. He expressed his wish to continue the project. LE gave an overview of RECOSCIX : past, present and future options and stressed the importance of governmental support from this office.

EO continued on the new tasks of RECOSCIX : p.a., via WIOMSA, video production, need for new office space (he requests the Belgian delegation to ask for it informally to ABOS), DTP training. The rector also mentions his visit to the departments of economics and zoology of the UON where project proposals were made. He also mentions the ongoing course in

biostatistics in LUC, where ABOS is supporting students from third world countries. He promises to send some information.

Afternoon

Visit of the Belgian Embassy. The ambassador and the head of the cooperation are excused due to a mission to Rwanda to meet Minister Claes. Mr. J. Moulin, deputy, leaded the discussions. Again, HM and LE informed Mr. Moulin about the purpose of the visit. As promised, the office space problems were mentioned. It was mentioned that ABOS could be prepared to sponsor buildings if it concerns an enlargement of an existing building in the framework of a "rehabilitation program". **This will be checked with ABOS. In any case, EO is requested to prepare a detailed description of the needs.**

It has also been decided to send all possible information to Mr. Moulin (incl. the annual report,...) (PR will send this). The rector delegation asks Mr. Moulin to inform them about the time period in which the "gemengde commissie" will take place. Mentioning RECOSCIX at that time (from both sides) would be very important.

Finally, the rector delegation visits UNEP (D. Van Speybroeck and P. Akiwumi (PA)). HM explains the purpose of the visit. PA informs the delegation of the activities of UNEP-OCA/PAC (Ocean Coastal Areas). They offer legal support and mechanisms to start activities. Also p.a. activities are carried out. We remind here of the already existing collaboration with RECOSCIX : the printing and distribution of WIODIR has been carried out by this office. **They promise to produce a new release of this WIODIR during this year. New specialities are going to be entered in WIODIR : economics, agriculture,... as long as there is a link with marine sciences). UNEP will also send the questionaires.**

They advice RECOSCIX to expand WINDOW so that it can become **the** newsletter of East-Africa on marine sciences. One needs therefore articles dealing with more regional problems and it is advised to work with an editorial board. LE informs that this evolution is in the line of the discussions that were held the last two weeks : WINDOW will be produced in close collaboration with WIOMSA and with MN as editor-in chief, and DTP skills are prepared in order to give WINDOW a facelift.

It is regretted that at this stage, UNEP cannot provide more support to RECOSCIX. This could change when there is more clarity on the future budgets of UNEP. **PR is in any case requested to maintain close contact with UNEP.**

At 11.45 pm, the rector delegation (HM, FD, LE, RP) leaves for Brussels. HG continues his mission and will report on it separately. So will RP on his mission.

ANNEX 14. REPORT ON THE MISSION TO THE RECOSCIX PROJECT 8/2/1994-22/2/1994

The main tasks of the mission were:

- evaluating and ameliorating the X.25 connectivity to the RECOSCIX-project
- screening of the local networkadministration and procedures
- evaluating and ameliorating the connectivity from IMS in Zanzibar
- giving tutorials on datacommunications

1. X.25 connectivity to the RECOSCIX-project

The RECOSCIX networksystem is based on Microsoft LAN-Manager with a UNIX-server. This server, together with the workstations are ICL-products. The basic - and sound - idea behind these choices, was the availability of local support. A drawback was the limited choice of high quality equipment within the budget.

One of the consequences was that the server has no expansion possibilities. All the available slots were taken by a network card, an X.25 card, a SCSI connection and a memory expansion board. The ICL X.25 card - a nice example of industrial archeology - was heavily patched. Replacing it with a high performance X.25 card from Arnet was only possible in hardware. There were no adequate drivers available on the UNIX level to support this card. Moreover, the network configuration was heavily tied with the presence of the ICL X.25 card.
It was quite clear that any X.25 connectivity has to be done by means of the ICL X.25 card. Outgoing X.25, on the PAD-level, was not difficult: linking the card with the Kenian national X.25-network (KENPAC) was easily accomplished by using the RACAL-MILGO LIMITED V.32-modem.
Incoming X.25, again with PAD-functionality, was a completely different matter: on the software level, LAN-manager level provided the necessary tools. On the hardware level, after inspecting core dumps on the UNIX level and consulting with the ICL people in Nairobi and London, it was discovered that an X.25 packet of type C5 generated a malfunctioning. The explanation of ICL UK, that this unacceptable packet was due to KENPAC, was unacceptable: KENPAC worked just fine if a connection was made to other X.25 hosts like Dialog in the United States. The errors appeared only in connecting to the ICL-card. Moreover, the proposition of ICL to patch the card again - for a hefty fee - was in clear contradiction with their former diagnosis.

2. Local systemadministration and networking

The basic functionality - security measures, backup procedures, account management - was taken care of in quite a professional way.

Nevertheless, the network and the UNIX possibilities are underused. It is advisable that the system manager Sam Ngete should get extra education and instruction so that he can advise in a more creative exploitation of the available resources.

3. Communications in IMS, Zanzibar

The RECOSCIX-project comes into its own if the cooperating institutes (e.g. IMS in Zanzibar) are on well functioning communications links with the RECOSCIX in Mombasa, Kenya.

The datacommunication resources of Tanzania and Zanzibar are very limited. There are no national research networks, there is not public X.25-network and the available telephone network is rather primitive.

The basic idea was to install a 2400-bps modem in IMS. By making use of the public PAD-functionality of the Kenyan KENPAC, it was hoped that a connectivity to the international hosts (like Dialog) could be established.

Installing the modem was not very difficult, dialing the telephone numbers to Kenya was another issue. In about forty tries, only once did the connection to a KENPAC number work. Nevertheless, the numbering scheme of the Kenyan telephone system allows for an easy access from Zanzibar to the RECOSCIX-system in Mombasa.

The solution is quite clear: the central UNIX-server of the RECOSCIX-project can be used as a switch to the X.25-world: Zanzibar dials the RECOSCIX-computer and goes from there - over KENPAC - to the X.25 hosts. Technologically, there are no problems but of course some kind of procedure has to be agreed upon:

- a user-friendly login-procedure with a menu-driven access to the X.25-world
- detailed statistics on which user reaches which destination

4. Tutorial on datacommunications

A tutorial with emphasis on basics, networking and international networks was prepared for the staff of RECOSCIX.

5. Summary and conclusions

One of the main conclusions is that the staff of RECOSCIX is working on quite a high level. Their enthousiasm and dedication is exemplary. Nevertheless, there are some remaining problems.

The following proposal should take care of these:

- the ICL server should be replaced with a high quality, easily expandable machine based on Intel-technology.
- Replace the ICL UNIX with SCO UNIX: not only is SCO UNIX of industrial strength, it is supported by (a lot) more manufacturers.
- Sam Ngete should work during several weeks in a heavily networked UNIX environment.
- The University of Antwerp is willing to
  - order a SCO-UNIX machine on behalf of the RECOSCIX-project
  - install on this machine IP-networking and X.25-networking
  - provide in a learning environment for Sam Ngete
  - develop, together with Sam Ngete, the software for establishing the communication procedures

Richard PHILIPS