Intergovernmental Oceanographic Commission
Workshop Report No. 83

IOC Workshop on Donor Collaboration in the Development of Marine Scientific Research Capabilities in the Western Indian Ocean Region

Organized in cooperation with the
Flemish Interuniversity Council (VLIR)

Brussels, Belgium, 12-13 October 1992

UNESCO

TABLE OF CONTENTS

SUMMARY REPORT **Page**

ANNEXES

1. Background

Over the past ten years the importance of coastal zone management and marine pollution monitoring and control has been increasingly acknowledged throughout the world. As the implications of global warming and subsequent sea-level rise become better understood, more and more attention is being given to the oceans and their impacts on life on earth.

During the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, June 1992 it was stated (Agenda 21, Chapter 17) that:

> *The marine environment - including the oceans and all seas and adjacent coastal areas - forms an integrated whole that is an essential component of the global life-support system and a positive asset that presents opportunities for sustainable development. International law, as reflected in the provisions of the United Nations Convention of the Law of the Sea referred to in this chapter of Agenda 21, sets forth rights and obligations of States and provides the international basis upon which to pursue the protection and sustainable development, at the national, sub-regional, regional and global levels, approaches that are integrated in content and are precautionary and anticipatory in ambit, as reflected in the following programme areas:*
>
> *(a) Integrated management and sustainable development of coastal areas, including exclusive economic zones;*
> *(b) Marine environmental protection;*
> *(c) Sustainable use and conservation of marine living resources of the high seas;*
> *(d) Sustainable use and conservation of marine living resources under national jurisdiction;*
> *(e) Addressing critical uncertainties for the management of the marine environment and climate change;*
> *(f) Strengthening international, including regional, cooperation and coordination;*
> *(g) Sustainable development of small islands.*

Under item (f) it was further deemed necessary to:

> *(a) Integrate relevant sectoral activities addressing environment and development in marine and coastal areas at national, sub-regional, regional and global levels, as appropriate;*
> *(b) Promote effective information exchange and, where appropriate, institutional linkages between bilateral and multilateral national, regional, sub-regional and inter-regional institutions dealing with environment and development in marine and coastal areas;*
> *(c) Promote within the United Nations system, regular intergovernmental review and consideration of environment and development issues with respect to marine and coastal areas;*
> *(d) Promote the effective operation of coordinating mechanisms for the components of the United Nations system dealing with issues of environment and development in marine and coastal areas, as well as links with relevant international development bodies.*

It is in the light of these recommendations, agreed upon by the Member States of the United Nations, that the IOC organized a second meeting of donors active in the Western Indian Ocean region. This report summarizes deliberations at the second meeting. A list of participants is added as Annex 3.

Communication and coordination between the various active parties has been limited in the past, often resulting in duplication of effort, uncoordinated timing of training activities, and research programmes which are difficult to integrate, due to lack of standardization of methodology, equipment, etc. In recent years, efforts have been made to improve coordination between the UN agencies. The Inter-secretariat Committee on Scientific Programmes Relating to Oceanography (ICSPRO) serves as a forum for the relevant international organizations in this respect. Memoranda of Understanding (MOUs) have formalized cooperation between several UN agencies such as FAO, IAEA, IHO, ICES, CPPS, ICSEM, SCOR (ICSU), UNEP and the IOC.

However, no regular forum exists for communication and coordination between donors, or between

donors and UN agencies. Such an arrangement could prove beneficial in a number of ways. For example, many UN agencies operate on the 'catalyst' principle, whereby seed money is provided to initiate specific activities. Ideally, once these activities are established and are running smoothly, they are taken over by the cooperating country. Although this policy has worked very well in some parts of the world, it is often found that such a strategy does not work well in developing regions: the co-operating countries can simply not come up with the financial back-up to sustain and further develop these programmes. Bilateral donors could provide important financial backstopping in this situation. It would therefore be a logical step to link the UN catalytic role with the bilateral programmes. Additionally, UN agencies are often in a good position to coordinate and extend research and training activities, which are carried out at the national level by donors, into regional activities.

The purpose of these donor meetings is therefore to exchange information on each other's programmes and activities and to investigate possibilities of cooperation in order to enhance the impact of our marine scientific development activities in the Western Indian Ocean region, and to identify the appropriate alliances.

2. Follow-up to the first meeting (Brussels, 21 October 1991)

During the first donor collaboration meeting in 1991 the following organizations participated:

- Belgian General Administration for Development Co-operation (BADC), Belgium
- Flemish Association for Development Co-operation and Technical Assistance (VVOB), Belgium
- Flemish Interuniversity Council (VLIR), Belgium
- Free University of Brussels (VUB), Belgium
- Limburg University Centre (LUC), Belgium
- Ministry of Development Co-operation, Belgium
- Swedish Agency for Research Co-operation with Developing Countries (SAREC), Sweden
- Intergovernmental Oceanographic Commission

During the meeting emphasis was on the exchange of information with respect to donor activities in the WIO region. Details are provided in the meeting report, which is attached as Annex-2. The meeting further identified a number of possible actions to enhance collaboration between the participants.

Follow-up actions to the first donor meeting can be summarized as follows:

(i) IOC-FAME: In 1992 the IOC provided financial support for the FAME course (Coordinated by VUB, Brussels). Furthermore, a link was established between FAME and the European Institute for Advanced Studies in Oceanography, supported by the IOC.

(ii) IOC-VLIR: A Memorandum of Understanding was signed for cooperation between VLIR and IOC. Working within the framework of VLIR's 'Own Initiatives' programme, it will be possible for the IOC to submit project proposals, drafted by Member States (developing countries) and the IOC, to VLIR. VLIR will then try to identify interested promotors within the Flemish Universities who will, in consultation with the IOC, submit the project as an 'Own Initiative' for funding by Belgium. This idea was developed as a result of the successful collaboration between the IOC and LUC in the RECOSCIX-WIO project. The advantage of this approach is that projects will be (i) Member State priorities; and (ii) submitted in the form of well-developed project proposals, prepared with the experience of international experts.

(iii) IOC-VVOB: VVOB is prepared to provide expert(s) to IOC programmes, whereby VVOB will contribute 60% of the expert salary and the IOC 40%. This will enable the IOC to incorporate highly qualified staff in its field projects. Consultations are underway to identify field projects where VVOB experts could be included, starting in 1993.

3. Possibilities for collaboration between donors

Following last year's meeting where a number of recommendations were made, the following items were put forward for discussion during the 1992 meeting:

(i) *Coordinate on-going and planned research and training activities*

There are still many cases of overlapping or redundant activities in the region. For example, a recent review of national and regional projects related to coastal erosion revealed that 15 individual projects are on-going or planned in the WIO region. Clearly, an important factor in coordination of activities is communication between organizers during the planning stages.

(ii) *Streamline contacts between donors*

The annual meetings in Brussels can serve to initiate this process. However, to maintain momentum and facilitate the intersessional work, a few key actions are necessary:

* identify contact points within each organization or agency;
* create a central register for terminated/ongoing/planned activities in the region and distribute the information to all partners on a regular basis;
* identify a coordinator and base of operations;
* continue to hold regular meetings between participating donors.

(iii) *Extend fellowship support for higher education programmes*

Although several institutions in the developed countries organize courses which are attended by students from developing countries, through the provision of scholarships and fellowships, the available financial support offered by one country for a course does not suffice to include the needs of the region. Furthermore, the curricula which are offered may not always be appropriate for the requirements of particular students. It would be preferable to create international curricula, pooling courses of several universities in different donor countries. Students could then select courses from various universities in different countries (including developing countries) so as to achieve a relevant education profile and possibly a university degree. If the courses have the same international base entry level then funds for fellowships can possibly be pooled as well. This initiative will require good coordination and central services.

(iv) *Support initiatives from within the region*

A goal of essentially all aid programmes is to encourage initiative and self-sufficiency among recipients. With this in mind, all donors active in the region could consider supporting the 'Western Indian Ocean Marine Science Association' (WIOMSA), with special attention to its 'Marine Research Grant Scheme' (MARGS). These grants (estimated at US$ 10,000 each) will provide scientists from the region with the incentive and means to carry out meaningful research. It is clear that scientists supported by the MARGS programme can easily be involved in the implementation of bilateral projects. This will undoubtedly have a positive effect on the success of these projects.

(v) *Expand bilateral projects to the regional level*

It is realized and appreciated that various donors are assisting marine sciences in the region through bilateral projects. By virtue of the nature of bilateral projects however, these projects have a strictly national character with few possibilities for regional implications. The IOC on the other hand, through its regional committee IOCINCWIO, has a mandate to initiate and support regional programmes and activities, as agreed upon by the participating governments of the WIO region.

A number of advantages could be gained by linking bilateral projects with regional programmes. For example, training activities, previously limited to participants from one or a few countries, could be opened to wider participation. Alternatively, bilateral projects which have proved highly successful at the national level could be expanded regionally, with coordination and support provided by UN agencies and multi-lateral donors.

This is precisely the philosophy behind the IOC-SAREC cooperation in this region which serves as a model for bilateral-international agency cooperation.

(vi) *Cooperative agreements between donors for specific projects.*

It may be helpful to formalize cooperation on specific projects and or programmes through Memorandums of Understanding or other contractual agreements. This approach has been used between VLIR and IOC, and IOC and SAREC to coordinate and implement programmes which fulfill the common goal of both organizations, which is the development of marine science capabilities in the Western Indian Ocean Region.

4. Opening Statement by the Secretary IOC

The Intergovernmental Oceanographic Commission (IOC) was created in 1960. It is a body with functional autonomy established within UNESCO. It has now 119 Member States including the USA, UK and Singapore. Its principal governing body is the Assembly, supported by an Executive Council of 33 member States including those of the Chairman and four Vice-Chairmen. The IOC Secretariat is located in the UNESCO Headquarters, Paris. The main purpose of the Commission is to promote marine scientific investigations and related ocean services, with a view to learning more about the nature and resources of the oceans through the concerted action of its members.

Since the oceans are central to both global environmental change and sustainable development, it is essential that we understand and are able to predict global and regional ocean processes and their interaction with the atmosphere, biosphere and geosphere. However, our scientific knowledge of these processes is limited. As a consequence we cannot predict, with acceptable accuracy, the behaviour of a most important part of the global system, the oceans, and their impact on the environment.

It is therefore essential that we expand this knowledge and improve this capability through a renewed commitment to oceanographic research, technology development and transfer, and education and training. The Intergovernmental Oceanographic Commission has the potential to play a pivotal role in meeting these needs. In order to do so, the Commission has articulated a clear strategy for its future, and most immediately for the 1990s.

The principal goal which has guided the Commission in developing this strategy is simply stated in its Statutes as follows:

> *The IOC is committed to providing the intergovernmental framework "to promote marine scientific investigations and related ocean services, with a view to learning more about the nature and resources of the oceans."*

To achieve this overarching goal and to address the challenges it poses, the Commission will continue to strengthen its international marine science programmes and ensure that it is able to fulfil its role as the competent international organization within the United Nations system "to promote marine scientific investigations."

To meet these challenges, the Commission will focus on four major themes which will:

(i) Develop, promote and facilitate international oceanographic research programmes to improve our understanding of critical global and regional ocean processes and their relationship to the stewardship of ocean resources and their exploitation;

(ii) ensure effective planning for the establishment, and subsequently the co-ordination, of an operational global ocean observing system which will provide the information needed for oceanic and atmospheric forecasting, and for ocean management by coastal nations, and also serve the needs of international global environmental change research;

(iii) provide international leadership for the development of education and training programmes and technical assistance essential to global ocean monitoring and associated oceanographic research; and

(iv) ensure that ocean data and information obtained through research, observation and monitoring are efficiently husbanded and made widely available.

The development of national capabilities for marine sciences and services through worldwide partnership of its Member States and their scientific institutions and national organizations is one of the major themes of IOC. The commitment to Training, Education and Mutual Assistance in the marine sciences (TEMA) is intimately interwoven with other objectives of the Commission, including the fashioning of oceanographic research programmes and the development of global and regional networks of ocean services.

Until recently, the formation of national capabilities for marine sciences and services was seen primarily as part of the overall socio-economic as well as cultural development of individual countries or groups of countries in a given region. This is still the main immediate goal since it is linked to the national use and management of the resources and amenities of the waters adjacent to each country. However, the developing global partnership in response to the global problems of climate change and sea level rise adds a new dimension to TEMA. It has become of increased interest to all countries to develop ocean research and monitoring into a truly global and mutually supportive activity.

Training, education, and mutual assistance have to be an integrated, important part of any major regional and global programme in marine science including the pooling and strengthening of research and training capacities within each of the major regions, but also by further encouraging bilateral training and assistance programmes. Advice has also to be given to other international agencies on how to support the development of marine science capabilities in their Member States through the 'UNESCO-IOC Comprehensive Plan for a Major Assistance Programme to Enhance the Marine Science Capabilities of Developing Countries'.

Member States proposing and planning such programmes must be prepared to make a commitment to TEMA activities within these programmes; they should take a lead in building up networks for specialized training and for developing the necessary infrastructure on a national and regional level. In cases where there are insufficient basic scientific and technical personnel and equipment to build on, ways and means

have to be found to create such a base.

It should be recalled that the IOC is referred to as one of the competent international organizations within UNCLOS. With respect to the follow-up to UNCED for the IOC, it should therefore be noted that the IOC has particular responsibilities in relation to the Framework Convention on Climate Change, the Biodiversity Convention and the implementation of Agenda 21. For the latter, this concerns in particular, Chapter 17, where it is stated in Part E: "Addressing critical uncertainties for the management of the marine environment and climate change":

Para. 17.106 "*Recognizing the important role that oceans and all seas play in attenuating potential climate change, IOC and other relevant competent United Nations bodies, with the support of countries having the resources and expertise, should carry out analysis, assessments and systematic observation of the role of oceans as a carbon sink.*

Para. 17.107 *States should consider, inter alia:*

(a) Increasing international cooperation particularly with a view to strengthening national scientific and technological capabilities for analyzing, assessing and predicting global climate and environmental change;

(b) Supporting the role of the IOC in cooperation with WMO, UNEP and other international organizations in the collection, analysis and distribution of data and information from the oceans and all seas, including as appropriate, through the proposed Global Ocean Observing System, giving special attention to the need for IOC to develop fully the strategy for providing training and technical assistance for developing countries through its Training, Education and Mutual Assistance (TEMA) programme;

(c) Creating national multisectoral information bases, covering the results of research and systematic observation programmes;

(d) Linking these databases to existing data and information services and mechanisms, such as World Weather Watch and Earthwatch;

(e) Cooperating with a view to the exchange of data and information and its storage and archiving through the world and regional data centres;

(f) Cooperating to ensure full participation of developing countries, in particular, in any international scheme under the organs and organizations of the United Nations system for the collection, analysis and use of data and information.

Para. 17.108 *States should consider bilaterally and multilaterally and in cooperation with international organizations, whether sub-regional, regional, inter-regional or global, where appropriate:*

(a) Providing technical cooperation in developing the capacity of coastal and island states for marine research and systematic observation and for using its results."

Our presence here at this meeting should be seen in this context and should be regarded as one step in the follow-up actions to UNCED.

5. Country/Organization presentations

5.1 **BELGIUM**

5.1.1 Flemish Interuniversity Council (VLIR)

Presented by Prof. Schamp, VLIR

1. **General**

The "Vlaamse Interuniversitaire Raad" (VLIR) was created in 1976. As its name suggests, the VLIR is in fact the associating body of the different universities in Flanders.

The main objective of the VLIR is to encourage dialogue and cooperation between the Flemish university institutions and to elaborate policy advice and proposals on different matters related to the universities and their functioning.

The organization also tries to act as a common voice in the field of international scientific cooperation and serves as a dispatching centre for people and institutions seeking information on or contact with scientific activities and scientists in Flanders. In this respect, a specific committee was set up for cooperation with Third World Countries. Through this committee and the Council, and also in close collaboration with the Belgian Administration for Development Cooperation (BADC-ABOS) the VLIR nowadays is strongly involved with both the preparation and execution of different kinds of collaboration projects worldwide in the fields of science and technology. Though the Flemish Interuniversity Council is not to be considered as a donor agency sensu strictu, the organization is involved with the setting up of scientific cooperation schemes with the Third World as an intermediate body, operating as a selective go-between for the different parties concerned. This intermediating role first of all relates to the Flemish Universities and their partner Institute(s) within the Third World. However, it also concerns the relationship with the Belgian Administration for Development Cooperation (BADC) which, on behalf of the Belgian Government, is the principal funding agency of the university development cooperation in Flanders. In other words, as an interuniversity organization representing Flemish university institutions and taking into account their particular expertise and interests, it seeks ways how to correspond best to specific needs formulated by Third World universities and research institutes.

As for the practical possibilities for collaboration with Flemish universities, the following channels should be mentioned.

(i) In the scope of the Belgian official cooperation, bilateral agreements can be concluded with recipient countries in which specific sections may be preserved for university cooperation schemer or, to a lesser extent, for specific projects in the field of applied scientific research. Although in this case, the negotiation between the contracting Governments are decisive for the identification and preparation of the projects, the principle of sub-contracting is frequently used when it comes to implementation. This goes especially for university and scientific cooperation projects, where the sub-contracts are channeled through the coordinating interuniversity councils. The VLIR here is responsible for the appointment - after interuniversity vacancies - of a general coordinator who is then charged with the scientific and technical follow-up of the project concerned.

(ii) The VLIR has always insisted on enlarging the possibilities for cooperation beyond the rather limited scope of the traditional cooperation instruments. Most notably, the

organization in this respect stressed the importance of both applied and basic scientific research. Consequently, apart from the already existing official development cooperation opportunities, Flemish universities have become very active in this field on their own initiative. The institutional and budgetary framework for their proposals is provided by the so-called "**own initiative program**". Projects of the own initiative type are in effect based on an inter-institutional agreement of the Flemish university with the collaborating university or research institute in the Third World. The establishment of institutional links with one or more Flemish universities or faculties is therefore a crucial factor in setting up a project of this type. Proposals are introduced at the VLIR where they are submitted to interuniversity sectoral evaluation committees. After that the VLIR and its Committee for development cooperation make up an evaluation reporting on the project proposal and formulate an advise for the Minister for Development Cooperation of the project and the scientific matters related to it. For obvious reasons, the projects within the "own initiative program" incorporate to a greater extent the views and philosophy of the VLIR concerning scientific cooperation with Third World institutes. In general, the on-going projects pay attention to collaborative research in fields that are of special relevance or interest to the developing world. Disciplines and subjects such as engineering, housing technologies, agricultural research, bit also aquaculture and marine biology are usually well presented in the program. At this moment, not less that 51 overseas VLIR-projects are being run in about 25 countries worldwide.

(iii) Apart from the overseas projects, the own initiative program consists of a second window for university development initiatives. These are the so-called "**International Course Programs in Flanders**". Today, Flemish universities offer a broad range of English spoken postgraduate training opportunities to which Third World scholars are invited to participate. Also short term training programs are being organized. Scholarships are provided by the Belgian Administration for Development Cooperation (BADC) but can be obtained from multilateral organizations (EC, FAO, UNDP, ...) as well. Though the courses are organized at one host university, they are usually characterized by a substantial input from other universities as well. Unless indicated as a short training course, the successful completion of the programs takes two academic years to a Master degree.

The VLIR, in the last 10 years, has insisted on the fact that the importance of joint scientific research, in addition to formal learning and training, should be validated in the programs and projects that are being established with the Third World. According to the VLIR-philosophy, the establishment of sustainable international scientific contact and the transfer of a scientific method resulting therefrom, may well constitute the most important objective as to the countries and institutes involved. From this perspective, international scientific cooperation with the Third World goes well beyond the mere institution building activities that are usually firmly accentuated in the aid strategies of traditional donor agencies. Moreover, apart from its educational objectives and its impact on the development process, it is believed that the establishment of collaborative research links between European universities and their counterparts in the developing world will give a strong impetus to further North-South cooperation.

2. VLIR in the Western Indian Ocean region

VLIR has three own-initiative programmes in the region, more particularly in Kenya. These include:

* Higher Education in Marine Sciences (Free University of Brussels - Kenya Marine

and Fisheries Research Institute, Mombasa)

* Regional Co-operation in Scientific Information Exchange in the Western Indian Ocean Region (RECOSCIX-WIO) (Limburg University Centre - KMFRI, in cooperation with Ethiopia, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, Tanzania)
* Law of the Sea, Ocean Management and Marine Policy (University of Ghent - University of Nairobi)

Furthermore VLIR supports a number of International Course programs related to marine sciences and accessible to students from developing countries, including those from the WIO region:

* Master of Science in Aquaculture (University of Ghent)
* Postgraduate Training Course on Fundamental and Applied Marine Ecology (FAME) (Free University of Brussels)
* Management of Scientific and Technical Information (Free University of Brussels)
* International Training Course on the Biology and Practical Use of the brine Shrimp Artemia in Aquaculture (University of Ghent) (Short training course)

5.1.2 Flemish Association for Development Co-operation and Technical Assistance (VVOB)

Presented by Dr. J. Lenvain, VVOB

1. **General**

VVOB is a non-profit making organization subsidized by the Flanders Ministry of Education and by the Belgian Administration for Develeopment Cooperation (ABOS). The task of VVOB consists of providing personnel to Developing Countries for teaching, medical, engineering and research assignments. This way, VVOB aims at transferring know-how from the industrialized world to countries of the Third World. VVOB is presently sponsoring some 300 academics working in Ecuador, Suriname, Thailand, Indonesia, China, Kenya, Rwanda, Burundi, Zambia, Malawi, Zimbabwe, Swaziland and Botswana. In 1993 some additional countries will join the list (possibly including Tanzania). Besides programmes with countries, VVOB has developed joint activities with international research centers (e.g. ICRAF, ILRAD, ITC) which are focusing their efforts on Thord World problems. All cooperation with VVOB is carried out on a cost-sharing basis whereby the host institution contributes by providing a salary under local terms and housing.

2. **VVOB and Marine Sciences**

At this moment VVOB is sponsorong two experts at the KMFRI Mombasa (one of which is the General Manager of RECOSCIX-WIO). Six more Biologists are posted in various universities in Kenya.

Upon request by Third World countries with whom VVOB has an agreement, personnel can be made available to carry out marine research, jointly with local counterparts.

Within an international framework, IOC and VVOB have discussed collaboration to post personnel in IOC field projects.

5.1.3 Free University of Brussels

Presented by Prof. P. Polk, Free University of Brussels

I. Kenya Belgium Project in Marine Sciences

The Kenya-Belgium Project is based on the co-operation of not one single, but of a group of Belgian experts working closely together with their Kenyan counterparts.

In the first stage of the project, the Project's Director visited the KMFRI (Kenya Marine and Fisheries Research Institute) and discussed the equipment and training requirements of the institute. The necessary basic equipment was then purchased. Then the local training part of the project started: for periods ranging from a few weeks to several months, visiting experts had theoretical discussions, gave courses, reviewed literature and assisted Kenyan scientists in preparing a work plan. They went into the field together, analyzed samples and discussed the results. If necessary and possible, a short or long term fellowship was provided to the Kenyan scientist to acquire specific technical skills or attend specialized courses at one of the Belgian universities or scientific institutions. Equipment, used during the training in Belgium was brought to Kenya after the training. In this way, one of the major problems facing students from developing countries was averted: when they return from training abroad they find themselves sitting idle because they don't have the necessary equipment to put their newly gained experience into practice. This *link between education, research and equipment* is fundamental for the KBP.

So far, we have had the collaboration of experts in a wide range of specialities: library sciences, database management, biological oceanography (plankton, benthos, primary and secondary production, taxonomy and ecology of zooplankton, taxonomy and phytosociology of macro-algae, ecophysiology,...) and Chemical oceanography (nutrients, biochemical cycles, ...).

After seven years it has become clear that this group approach has been very successful. Kenya now has a nucleus of highly skilled marine scientists and appropriate equipment which is maintained by local staff. They are working together with Dutch and Belgian experts on a new project "Dynamics and Assessment of Kenyan Mangrove Ecosystems", funded by the European Community.

The time has now come to share this acquired knowledge with others in the East-African Region: it should be possible for a visiting expert to train not only a Kenyan scientist but a few others from the region as well. The impact of this approach would be tremendous.

Furthermore, these scientists would use the same, intercalibrated methodology and possibly the same equipment. The results thus obtained would therefore comparable and a joint, regional management of the biotopes could be worked out!

II. Postgraduate Training Course: Fundamental and Applied Marine Ecology (FAME)

The postgraduate training course on Fundamental and Applied Marine Ecology F.A.M.E. was founded in 1985. The course is taught in English and enables students to obtain the degree of "Master in Fundamental and Applied Marine Ecology". The course is sponsored by ABOS, and was until recently available only for students from developing countries.

During the first year the curriculum is composed of theoretical courses, illustrated by practical exercises and excursions. The second year offers the opportunity to specialize.

Adding to only a few compulsory courses, a diverse list of optional courses is available, including e.g. tropical fisheries and coral reef ecology which are both of great interest to developing countries.

Significant weight is given to the Master's Thesis: a small research subject is thoroughly studied involving experimental work, literature study and statistical interpretations. The thesis is carried out as much as possible within the framework of research possibilities and problems in the student's home country: pollution studies, aquaculture, mathematical modelling are but a few of many possible subjects. The students work at different universities (Belgian or other) and institutions according to the subject chosen. If possible, samples from the country of origin of the student are used for the thesis.

When successful trainees return to their country, we try to maintain contact through briefings and cooperative projects. It is indeed important that the knowledge and skills acquired during the two years are fully used. An example: Kenyan students are involved in the Belgian-Kenyan Project and the East-African Mangrove project, sponsored by the European Community.

As we aim constantly to improve we consider the evaluation of the course as very important. The F.A.M.E. courses are evaluated by each student. This exercise is followed by discussions with students and teachers. External evaluation is carried out by ABOS experts who give advice on the course after two days of assessment and evaluation. The evaluation process already revealed some shortcomings of the course: as F.A.M.E. is dealing with a very heterogenous group of students who have had some working experience in a specific field, it is more desirable to have a program with room for optional courses but maintaining the inter-disciplinarity and the combination of fundamental and applied courses.

Prof. Polk said he offered to organize F.A.M.E. under the flag of the IOC. He said this would make it possible for different donors to organize courses but under the common flag of the IOC (see Action 1).

5.1.4 University of Ghent

Presented by Prof. E. Somers, University of Gent

Law of the Sea

1. **Objectives**

The management of the oceans and their natural resources, as well as international law of the sea as a legal framework in which this management takes place, remains one of the most important nuclei of development within the international community.

The new international Law of the Sea, as it is expressed in the United Nations Convention for the Law of the Sea (10 december 1982), formulates rights and obligations of the States and provides an international basis for the protection and sustainable development of the marine environment and its natural resources. This new international Law of the Sea is partly a reflection of the needs of the developing countries as they were brought forward during the Third United Nations Conference on the Law of the Sea (1973-1982). In view of the fact that for many developing countries the sea is the only source of natural resources to which they have access, it is understandable that they wish to replace the primary system of exploitation of the sea by a system of protecting and sustainable management.

The lack of necessary technological and financial means in general and the shortage of experts, documentation, international contacts and basic training seriously limit the possibilities of the developing countries in this respect.

As a follow-up to an existing bilateral VLIR project between the Universities of Ghent and Nairobi (Law of the Sea, Ocean management and Marine Policy) (1989-1993), a new project called "Institute for Ocean Law and Marine Studies" (IOLAMS) has been planned. This will create a regional infrastructure which can assist in specific training, documentation, research and cooperation requirements with a view of enabling rational management of the oceans and coastal areas. The Institute will be developed as a regional centre whereby education and training facilities will be given to students from the region. This will lead to a specific degree. Through the establishment of documentation centers in the region (starting with Dar-Es-Salaam, Tanzania) a regional documentation and knowledge infrastructure will be built up. The project will involve the Institute for Ocean Law and Marine Studies (for the time being through the Law of the Sea Documentation Centre) at the University of Nairobi, the Faculties of Law at the Universities of Nairobi and Dar-Es-Salaam on one hand, and the University of Ghent (Vakgroep International publiek recht) and Maritime Institute on the other. When necessary other Flemish Universities can be involved. It is also planned to embrace the Law of the Sea Documentation Centre in IOLAMS.

The project will also establish close links with

* the RECOSCIX-WIO project;
* the Kenya Belgium Cooperation in Marine Sciences (KBP);
* the UNCTAD-Port of Ghent-University of Ghent (Maritime Institute) Port Marketing training initiative;
* the Postgraduate programme in Port and Maritime Sciences (University of Ghent);
* the Maritime Institute (University of Ghent).

2. **Activities**

(1) development of a base for integrated and coordinated research as well as training in legal aspects and management of marine coastal areas, natural resources, maritime transport and port management;
(2) establishment of a coordinated academic research, consultation and training network within the region;
(3) training of East-African postgraduate students to become experts in international Law of the Sea;
(4) upgrading of Kenyan postgraduate students to PhD level;
(5) exchange of experts and students between the involved institutions;
(6) development of a basic documentation centre in Dar-Es-Salaam;
(7) further development of the Nairobi documentation centre into a regional "Institute for Ocean Law and Marine Studies" which will act as node for further regional developments in training and research;
(8) establishment of durable information and data exchange between the collaborating institutions.

Prof. Somers concluded saying that in a regional project it is important to formally work with institutions rather than with individuals. He also said that in a regional framework an organization like the IOC is very important as it has the institutional and governmental contacts necessary to establish regional inittiatives and can therefore act as an intermediary between the donors and receiving institutions.

5.1.5 Limburg University Centre

Presented by Dr. P. Reyniers, General Manager, RECOSCIX-WIO Project

The RECOSCIX-WIO project

RECOSCIX-WIO stands for "Regional Cooperation in Scientific Information Exchange - West Indian Ocean". The main goals of this project are:

(i) to build basic collections of marine science literature for the marine institutes in the countries bordering the Western Indian ocean and to inform them on new publications;

(ii) to establish a network between those institutions, with KMFRI (Kenya Marine and Fisheries Research Institute, Mombasa) as the central node (called RDC - Regional Dispatch Centre);

(iii) to establish and maintain good relations with several international and donor organizations (like IOC, UNEP, ...) in order to attract support for the project and the cooperating institutions;

(iv) to (re-)organize the library of KMFRI, being the central (and largest) documentation centre.

This ambitious programme was initiated by the IOC and has now been taken over by LUC (Limburgs Universitair Centrum - Diepenbeek, Belgium) within the framework of a "VLIR-own initiative" project sponsored by ABOS. A full time expert has been provided by VVOB (Dr. Peter Reyniers). The budget is over 14,000,000 BFrs (nearly US$ 500,000) for a period of 4 years. This does not include additional support received from various donors and agencies who are providing financial as well as in-kind support.

The main activities of the project can be described as follows:

(i) **Query Handling** (QH) and **Document Delivery** (DD) services. QH provides (computer readable) information (=abstracts) on "what literature exists on a certain marine science topic". To obtain this information sources like the ASFA CD-ROM (Aquatic Sciences and Fisheries Abstracts on Compact Disc) and DIALOG (on-line database system offering hundreds of databases like Biosis, Oceanic abstracts, Pollution abstracts, ...) are used. DD provides the documents (hard copies). The RDC requests the document either directly from one of the 15 cooperating libraries (located in many countries throughout the world) or alternatively the document is obtained through the LUC (interlibrary division) which will trace the publication and send it to the RDC.

(ii) A **regional bibliographic database** called 'Western Indian Ocean Library Database' (WIOLIB) is being developed, containing the library holdings of the cooperating institutions with emphasis on 'grey' literature. All cooperating institutions in the region are being provided with a personal computer, application software (UNESCO's Micro CDS/ISIS), a database structure (IDRC's MIBIS) and training (in Mombasa and/or on-site). Where technically possible the cooperating institutions (CI) will be linked with the RDC central computer system on which the combined databases of the cooperating institutions will be loaded. The database will, through packet switching, also be accessible from any location in the world.

(iii) Aspects of **public relations** include:

a. **WIODIR** (the Western Indian Ocean Directory of marine scientists), which has been developed and is being updated by RECOSCIX-WIO but printed and distributed by UNEP's OCA/PAC (Ocean and Coastal Areas Programme Activity Centre). A computerized version is produced as well by RECOSCIX-WIO and distributed by UNEP's OCA/PAC. The database now has over 200 records.

b. **WINDOW** (Western Indian Ocean Waters), the newsletter of RECOSCIX-WIO, which unites the partners and makes contact with fellow scientists all over the world. The newsletter now has a print run of 1000 copies.

c. **visits in the region**. The purpose of these visits is to inform the librarians and

scientists of the CI's, promote the project, and to provide on-site training.

d. **visits outside the region**. Such visits are important in order to establish and maintain contacts with international organizations (such as IOC, IAMSLIC, and so on). The public relations activities also have a fund raising purpose and often generate in-kind support by attracting free donations of printed materials.

e. **WIOCURRENT**, an updating service on marine literature, sent to all cooperating institutions.

f. the (planned) publication of a **regional bibliography** of papers published by scientists of the region.

(iv) **The library of KMFRI**, home of RECOSCIX-WIO, needs systematic reorganization, especially in view of its role as regional dispatch centre where thousands of documents are already being stored. To provide a baseline efficient journal service, the project has subscribed to 10 core journals which are at the disposal of the region.

These tasks are carried out by a team, composed of a General Manager, Scientific Manager, Technical Manager, Administrative Assistant, Library Assistant and Office Clerk. All are local staff (Kenyan) except the General Manager who is Belgian. Starting in 1993 the project will invite librarians from other countries in the region for internships at the RDC in Mombasa, where they will familiarize themselves with the operations of the RDC and will, for periods of 3-6 months, replace or complement the Kenyan staff.

Thanks to an active public relations policy, the project has gained high visibility not only in the East Africa region but also throughout the world. This has prompted various libraries and donor agencies to support the project with in-kind (e.g. books, journals, ...) or financial assistance. Cooperation with international agencies includes IOC (sponsoring of workshop), UNEP (WIODIR software contract, WIODIR printing and distribution) and FAO (RECOSCIX as depository centre for FAO fisheries publications). Support was also obtained from donors such as NOAA (for the ASFA CD-ROM), ICOD (for shipping of major literature donations), IDRC (for communication expenses), SAREC (for equipment and staff travel), etc.

An important workshop on Marine Information Management was recently organized in Mombasa (10-19 August 1992), with support of the IOC. Librarians and Information managers from Kenya, Madagascar, Mauritius, Mozambique, Seychelles and Tanzania participated. As a first step in establishing a link between East and West Africa and in preparation for the planned RECOSCIX-CEA (Central Eastern Atlantic), the IOC also sponsored the participation of an information manager from Côte d'Ivoire. The workshop covered the theory of bibliographic databases, use of UNESCO's Micro/CDS ISIS database and MIBIS as a bibliography Micro CDS/ISIS application.

5.1.6 University of Liège

Presented by Prof. A. Distèche, Université de Liège

The European Institute for Advanced Studies in Oceanography

Bringing scientists of the North and South closer together and thus foster collaborative activities was discussed recently during a round-table discussion organized within the framework of the Bordomer '92 conference (Bordeaux, 1 October 1992)[1]. It was discussed

[1] Remarks on Cooperation with Developing Countries. Summary report of a round-table discussion held during Bordomer '92, Bordeaux, France, 1 October 1992. (Can be obtained from the IOC Secretariat, Paris, France)

whether the European Marine Interdisciplinary Network (EMIN) could interact with scientists from developing countries.

The European Institute for Advanced Studies in Oceanography is part of the European Association for Marine Sciences and Technologies (EAMST, AESTM). The participants in the EIASO Courses have founded a Network "**European Marine Interdisciplinary Network**" (EMIN) which groups 150 members. Their first meeting was held in Texel (The Netherlands) in March 1991. A second meeting took place in 1992.

Their coming together allows Ph.D. students to present their thesis or their current research. They also intend to organize seminars on major topics in Oceanography.

In Bordeaux, the EMIN representatives offered to assist in filling the gap in education existing in some developing countries. They emphasized the importance of communication between scientists which is often still lacking in the South. EMIN offered to send their Bulletin to scientists from developing countries and thus start interaction between North and South. It was noted that the same could be done with publications from the South. They further suggested inviting scientists from developing countries to EMIN scientific meetings, possibly with assistance from the IOC and other International Organizations or donors.

In a further development it has been planned to exchange scientists directories between the WIO region (through RECOSCIX-WIO) and EMIN.

What is the European Institute for Advanced Studies in Oceanography (EIASO)?

1. **Objectives**

"To offer, in Europe, high level courses given by specialists on subjects of relevance, to graduated oceanographers who want to improve their knowledge"

"To henceforth help to prepare the European Scientific teams working within the framework of either National Activities or of Programmes supported by the European Community"

In no case this teaching is allowed to duplicate existing courses, already well organized in universities or equivalent institutions.

The courses are original, complementary, centered if possible on existing research programmes and they are organized to allow for large discussions.

The courses essentially address students who have started a doctorate in marine sciences. By bringing together these students, already well qualified and coming from European Institutions, the audience is sufficiently large to organize efficient high-level courses, offering a large range of options, profitable to teachers and students. Furthermore, students coming from Universities where oceanography is not a major subject, benefit from a better education. The proposed effort is intended to lead to a European network of scientific cooperation between research workers (both teachers and students) bound by a similar exceptional education and by personal contacts which are encouraged within and between ections of the Institute. Special efforts are devoted to promote inter-disciplinarity and to foster teamwork. In the long run the activity of the Institute should help harmonizing oceanography education in Europe. It should also contribute to the mobility of research workers and

teachers, favor coordinated action and develop a spirit of cohesion and a feeling of fraternity.

2. Organization

The teachers, the students, the organizing committee

The teachers are recruited among professors, research workers, heads of laboratories or institutes, respected for their research work and for the quality of their teaching. Preference will be given to Europeans.

The students (number limited between 40 and 60) must have a degree in oceanography, or in marine sciences and applied sciences. The applications to follow the advanced courses are examined by an ad-hoc jury which also constitutes the organizing committee of a particular course.

Nature and duration of the courses

The teachers provide specialized information on subjects of relevance which either

a. frame with others in a well defined discipline: marine physics and dynamics, chemistry, biology, geology, climatology and meteorology, modelling and marine technology;
b. are centered on multi-disciplinary themes: estuarine processes;
c. lead to training courses proposed to support large programmes organized by the European Community (MAST, STEP), participation in International Programmes like JGOFS, Global Changes, WOCE, etc. or, as outcomes of such programmes, lead to important state-of-the-art lectures whilst opening further research perspectives (e.g. EROS 2000, COST 647)

In each case the duration of the course is limited to 3 weeks, corresponding to about 90 hours of teaching, discussions and exercises. The courses are given in English.

3. Funding

Until 1990 each course was submitted for funding to the ERASMUS Bureau, the programme "Sciences" of DG XII (Directorate XII Science Research and Development, CEC) and the Council of Europe. Since 1990 the courses are presented as supporting initiative to the MAST programme (Marine Sciences and Technology), CEC General Directorate XII, to the Council of Europe if the subject permits and to the funding agencies of the host country. The students participate by paying their own travel costs and registration fee. Since 1992 a call for proposals has been made by the officials of MAST 2 to increase the number of courses to be organized following the lines indicated above.

5.2 FRANCE

Institut de recherche scientifique pour le développement en coopération (ORSTOM)

Presented by Dr. J. Chabanne, Adjoint au Chef du département T.O.A., ORSTOM

1. **General**

The French Scientific Institute for Development through Cooperation, called ORSTOM is a French Governmental Organization placed under the joint control of the Ministry of Research and the Ministry of International Cooperation. From its beginning, ORSTOM has been devoted to scientific and technological research in the tropical regions. Currently, its working area spreads out over the entire tropical area of the world. ORSTOM centres number about forty located in thirty countries.

The ORSTOM Headquarters are based in Paris. The annual budget is approximately 180 million dollars. ORSTOM employs 2500 staff including 1500 researchers, engineers and technicians directly involved in scientific activities.

Research is carried out jointly with the scientific institutions of the host countries, based on scientific and technical priorities defined in consultation with the host countries. About 600 ORSTOM researchers and engineers have been posted for a long-term assignment in Africa, Latin America, Asia and Pacific; 400 of them have been placed in national, regional or international research institutions of the South. Moreover, research activities of about one hundred developing country scientists are directly financed by ORSTOM.

Other French or foreign organizations (national or international) may be associated in research programmes.

Research focuses on four major issues:

* environment and major ecosystems: ocean, continental waters and earth;
* agriculture in fragile tropical environments;
* environment and health;
* changing human beings and society.

The research structure is as follows:

<u>The departments</u>

They are entrusted with development and management of research programmes. They are multi-disciplinary, as thematic and inter-disciplinary concerns form the major focus of ORSTOM research. There are five departments:

* Earth, Ocean and Atmosphere Department
* Agricultural Environments and Activities Department
* Continental Waters Department
* Health Department
* Society, Urbanization and Development Department

Departments are divided in Research Units, which are laboratories "without walls", where the programmes are carried out.

The Scientific Committees

They are discipline-focused. They are qualified to assess (i) the progress of the various programmes and (ii) the careers of the individual researchers carrying out the programmes. Seven Scientific Committees represent more than forty specialities under the following headings:

* Geology and Geophysics
* Hydrology - Pedology
* Hydrobiology and Oceanography
* Plant Studies
* Biological and Biochemical Sciences applied to Man
* Social Sciences
* Engineering and Communications Sciences

The marine scientific research is carried out in the "Earth, Ocean, Atmosphere" (TOA) Department and the "Hydrobiology and Oceanography" Committee. Countries where ORSTOM is involved in marine sciences include Congo, Côte d'Ivoire, Guinée, Indonesia, Mauritania, Mauritius, Senegal, Seychelles, Togo, and Vanuatu.

Moreover, ORSTOM strengthens the scientific capabilities of the developing countries in two additional ways:

(1) Training of researchers through research practice. ORSTOM researchers ensure the training of local researchers within the framework of research programmes carried out either locally in the host countriy laboratories, in ORSTOM centers, or in the laboratories of its developed countries partners. About 300 trainees are received each year.

(2) Support to scientific communities and networks of countries in the South. This form of support involves:
   * the creation and management of joint new research sites and laboratories;
   * assisting in the establishment and operation of scientific networks;
   * the provision of financial, technological, documentation and data-processing support to individual researchers and partner institutions for the implementation of their own research programs; e.g. providing them with access to the ORSTOM intercontinental telemail network.

2. ORSTOM Marine Scientific Research Activities in the Western Indian Ocean Region

At present, the ORSTOM scientific activities in the Western Indian Ocean region are focused on two topics:

* Tuna Research programme
* Satellite Remote Sensing programme

The Tuna programme

About twelve ORSTOM researchers and engineers are involved in the study of the Tuna fishery in the Western Indian Ocean Region. It is a global research and development programme on Tuna, largely supported by the European Community. The scientific programme carried out by ORSTOM researchers aims at the assessment of the Tuna population and the management of the fishery.

The main research topics are:

* fisheries statistics
* population dynamics

* Tuna behavior and migration
* biology of the various species
* physical and biological environment
* fish aggregating devices

The remote sensing station

ORSTOM has recently developed a remote sensing station on Réunion Island where five researchers and engineers are working. The aim of this station is to receive satellite pictures and to interpret them.

The interest of the Centre is regional and discussions on collaboration are under way with several countries of the region. A training course will be organized in November 1992, in cooperation with IOC-UNESCO.

In the WIO region ORSTOM has had several stations and/or representations in La Réunion, Mauritius, Seychelles and Madagascar. The latter one was terminated. In the future ORSTOM is planning to start activities on Coral Reef research.

5.3 NETHERLANDS

Netherlands Marine Research Foundation (SOZ)

Presented by Drs. A. Bijlsma, SOZ

1. General

In accordance with its charter, SOZ has the responsibility for ensuring that the Netherlands maintains and stregthens its position among the world leaders in marine science and technology. Success in marine science involves a long term commitment to selected lines of research. The health of the North Sea is one of the national priorities. In the last decade 20% of the SOZ budget has been spent in this research area. One of the significant international programmes is the World Climate Programme (WCP). Within this programme, the World Ocean Circulation Experiment (WOCE) is a programme of ocean observation using satellites, ships and other platforms. SOZ has made Dutch participation in WOCE possible. The Joint Global Ocean Flux Study (JGOFS) is a core project of the International Geosphere-Biosphere Programme (IGBP) and aims to achieve a better understanding of the carbon fluxes in the ocean and to predict the response of the ocean to human perturbations, in particular those related to the 'greenhouse effect'. SOZ stimulates and coordinates The Netherlands participation in JGOFS.

2. Cooperation with deveoping countries: Partners in Science

In the mid-eighties SOZ successfully completed the Indonesian-Dutch Snellius-II Programme. It was one of the most important marine scientific initiatives of our oceanographic history. The scope of the programme excited the imagination and enhanced the cooperation between the two countries. About 250 Indonesian and 200 Dutch scientists and technicians participated in this major research effort. The results are published in hundreds of scientific papers, video-training courses, etc. The transfer of knowledge in the execution of this joint research effort was a substantial part of the programme and contributes to a sustainable development of the marine sciences in Indonesia.

3. SOZ and the Western Indian Ocean region

Similar partnerships with Kenya and Pakistan have been developed within the Netherlands Indian Ocean Programme (1990-1995). The Netherlands Indian Ocean expedition takes place between April 1992 and March 1993. The expedition intensively researches the Arabian Sea Region (Red Sea, Gulf of Aden, Arabian Basin, Oman Basin, Somali Basin, with of course special interest in the Somalian upwelling zone), the Kenya Coast (with an offshore and two land-based -Bay of Gazi- projects) and reefs in the Seychelles Group.

The expedition, which is the most visible part of a five year Indian Ocean Programme (IOP) makes use of the fully containerized Dutch RV Tyro. The expedition includes five distinct research projects:

- Part 1A: Late Quaternary Productivity
- Part 1B: Sedimentation of the Indus Fan
- Part 2 : Tracing a Seasonal Upwelling System
- Part 3 : Monsoons and Coastal Ecosystems in Kenya
- Part 4 : Monsoons and Pelagic Systems
- Part 5 : Biology and Oceanic Reefs

5.4 SWEDEN

Swedish Agency for Research Cooperation with Developing Countries (SAREC)

Presented by Dr. A. Granlund, SAREC

SAREC, the Swedish Agency for Research Cooperation with Developing Countries, received over 3 percent of the total Swedish Government allocation for development cooperation, which in 1989/90 was SEK 11.6 billion. SAREC was founded in 1975 and in 1979 became an independent government agency under the Ministry for Foreign Affairs.

1. Objectives

SAREC's task is to support research that contributes to the development of developing countries. This means among other things:

* helping developing countries to build up their own research capacity;
* supporting research which can help to solve important problems in the developing countries;
* promoting scientific cooperation between Sweden and the developing countries;

To attain this objectives SAREC supports research in the fields of health and nutrition, rural development and environment, natural sciences, technology and industrialization, social sciences and humanities.

2. Mode of operation

Bilateral support goes mainly to a number of least developed countries. SAREC also supports some countries which have more resources for research. SAREC supports national research institutions so that they will be able to identify and define research projects, plan and carry through research, and create viable research environments. In the more developed countries the aim is geared at achieving research results. One important way of building capacity in developing countries is through institutional cooperation between researchers in departments and institutes in developing countries and those in Swedish university departments. Swedish departments also help collaborating institutions in developing countries to purchase scientific equipment and literature. The institutional cooperation also gives researchers from developing countries the opportunity for research training. The number of Swedish departments participating has grown from 40 different department in 1983 to over 90 in 1990. SAREC supports about 170 projects or programmes with institutional cooperation.

Cooperation between developing countries. SAREC also supports regional research institutions in developing countries and research projects where several developing countries work in collaboration. Support for research collaboration between developing countries is important in that it strengthens the South-South dialogue.

International research programmes. SAREC also gives support to several major international research programmes which yield results that can be used at national level. SAREC therefore works actively to form contacts between international and national research. SAREC's major contributions to international research go to CGIAR (agriculture), TDR (tropical diseases), HRP (Human reproduction) and PHC (primary Health Care) of WHO.

Special programmes. Over time SAREC has identified some important research areas which have not received attention within the bilateral programmes. SAREC now therefore actively supports research within certain special programme areas, i.e. material and child health, democracy and human rights, and women's research and also supports research libraries in some developing countries.

Development research in Sweden. For research in the field of development, SAREC acts as a research council for researchers at Swedish universities. The aim of this programme is to stimulate interest in Sweden for developing countries and the development process.

3. SAREC and marine sciences

Geographically SAREC is active with bilateral programmes related to Marine Sciences in South/Central America (Chile, Costa Rica), East Africa (Mozambique, Tanzania) and Asia (Sri Lanka, Vietnam). In East Africa SAREC is now also active in regional programme. The Marine Programme of SAREC involves a budget of US$ 5 million. This is expected to expand to about US$ 10 million or even US$ 20 million.

Future geographical area interest are shown on the table on page 32.

4. SAREC in the Western Indian Ocean region

SAREC activities in the Western Indian Ocean have started about 7 years ago in Mozambique to upgrade the Marine Station in Inhaca Island through a bilateral programme. About two years ago another bilateral programme was started with Tanzania.

The SAREC policy emphasizes on Education (M.Sc./Ph.D.) and training, as well as on research. SAREC is usually not involved in infrastructure building or very limited.

Subject areas in marine sciences covered by SAREC programmes include:

* Oceanography and Marine Geology:
  - Physical Oceanography
  - Chemical Oceanography
  - Sedimentology
  - General Cyclonomy
* Marine Chemistry:
  - Environmental Biology
  - Marine Pollution
  - Physical degradation
* Marine Biology and Ecology:
  - Fishery biology
  - Coastal biology
  - Seaweed biology
* Socioeconomics and Geography
  - Natural Geography
  - Cultural Geography
  - Social Anthropology
  - Demography
  - Economy
  - Politics

Projects undertaken in East Africa during 1991/92 include

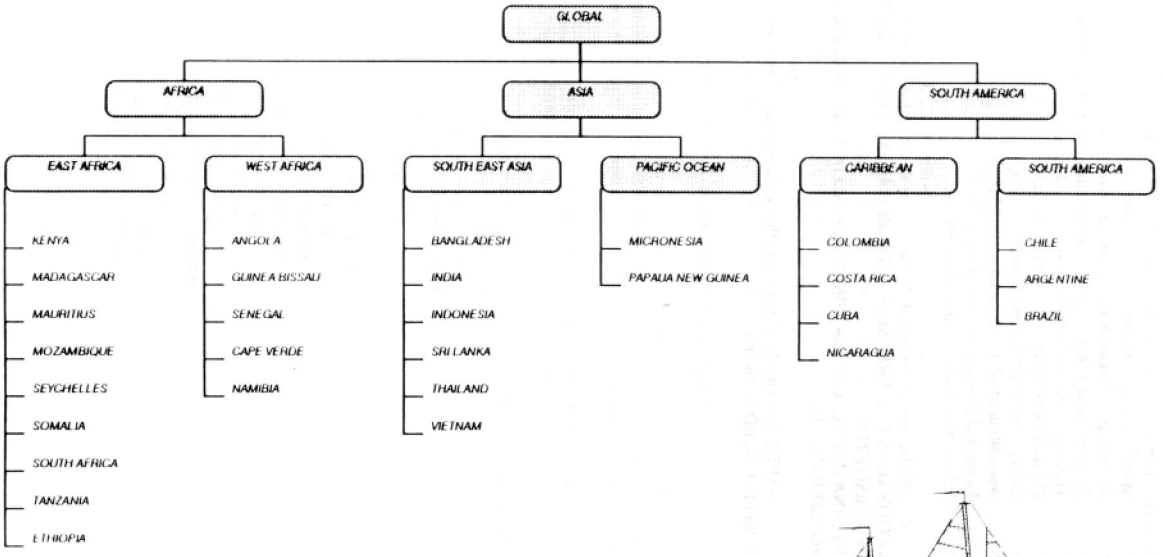
* MSc. Training in Physical Oceanography
* Workshop on Research in Coastal Lagoons
* Seminars on nutrient Fluxes/Dynamics Kenya/Tanzania/Mozambique
* Training course in Nutrient Analysis
* Physical Oceanography Informal Seminar
* Diving Course for Marine Scientists
* Association of Marine Scientists (WIOMSA)
* Fauna and Flora of the East African Coast
* Fellowships, travel, small equipment, etc.

SAREC has extensive national as well as international cooperation:
NATIONAL: SIDA, SWEDMAR, RYMDBOLAGET, SMHI, FISKERIVERKET, SGU, UNIVERSITETEN
INTERNATIONAL: DANIDA, FINNIDA, NORAD, UNEP, IOC, FAO, GTZ, IFREMER, WORLD BANK, EC

SAREC is currently (since 6 months) collaborating closely with Canada's IDRC in relation to UNCED follow-up.

SAREC Marine Program

Future Geographical Areas



5.5 IOC'S ACTIVITIES IN THE WESTERN INDIAN OCEAN REGION

Presented by Mrs. Christine Coughanowr, IOC

Most of the IOC's activities in the WIO region are through cooperation with and support from SAREC. The IOC programme is guided by the priorities set during meetings of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean (IOCINCWIO) of which the last meeting was held in December 1987, Arusha, Tanzania and of which the next meeting will be held in Mauritius, December 1992.

A problem faced by marine scientists in developing countries is that the environment is not a priority. Therefore support has to be sought from donors. However, there again the same problem occurs.

The IOC, being an intergovernmental organization, undertakes programmes defined by its Member States and funded by its Member States. A problem here is that the Member States (or at least its representatives) often are not well aware of the IOC's activities which tend to be quite technical. Here the IOC is now trying to better communicate with its Member States and reach a higher profile. It is important to realize that the IOC is composed of a Secretariat and its Member States.

The IOC continues to be active in a variety of marine science activities in the region. Operations in the Western Indian Ocean region are organized within the framework of IOC's Committee for Co-operative Investigations in the North and Central western Indian Ocean (IOCINCWIO). A number of new regional initiatives have been developed in preparation for this meeting, as described below.

A summary of activities in the region which have been recently completed or are in the planning and development stages is provided below.

1. Marine Pollution

Assessment and Control of Pollution in the Coastal Environment of the Eastern African Region

This project is funded jointly by UNEP and the collaborating countries of the region and is being implemented by FAO, IAEA, IOC and WHO. Two training workshops - one on marine pollution and the other on technician training- were organized by IOC, with support from SAREC, in 1992.

In 1993, IOC will focus on the need for physical oceanographic training in resolving coastal marine pollution problems, through the organization of a workshop, follow-up mission and provision of basic physical oceanographic instrumentation.

Katina P. Oil Spill

In August 1992, IOC sent a consultant to Maputo on an advisory mission to survey the impacts and offer advice following the sinking of an oil tanker in Maputo Bay. A number of recommendations were made on follow-up studies, training and contingency planning.

Marine Debris/Beach Litter Pilot Monitoring Project

This new regional initiative is being proposed, as a follow-up to two on-going projects in the Mediterranean and Caribbean regions. Specific activities proposed for 1993 include a consultants mission followed by a training workshop on survey methodology.

Coastal Zone Management Planning in the Eastern African Region (EAF/5)

This project is funded jointly by UNEP and the collaborating countries of the region and is being implemented by FAO, IOC and IUCN. Final project documents have not yet been completed, however IOC's identified responsibilities include conducting training programmes for baseline studies and monitoring, and assisting scientists from the region in the preparation of regional overview documents on the state of the marine environment.

2. Ocean Observation, Mapping, Dynamics and Climate

Through the Global Sea-Level Observing System (GLOSS) three additional tide gauges have recently been installed in the region, bringing the total to twenty. Provision of additional tide gauges, spare parts and training for specialists in sea-level measurements and analysis is planned, contingent upon funding.

The International Bathymetric Chart of the Western Indian Ocean is being prepared with cooperation from five countries in the region. In September 1991, a consultant travelled through the region and conducted a series of hands-on training sessions on the methodology to be used for data entry and compilation.

A number of new initiatives are in the planning and development stages, including a regional co-operative research project on coastal erosion in the Western Indian Ocean, a pilot project with UNEP and WMO on sea-level change and associated coastal impacts in the Indian Ocean, and a pilot project on coastal ocean circulation in the region. In addition, a six month course on marine meteorology/physical oceanography is being developed with WMO to be taught in Nairobi, Kenya.

3. Data and Information Exchange

After being supported by the IOC from 1989 to 1991, financial support for the information exchange network programme "RECOSCIX-WIO" (Regional Co-operation in Scientific Information Exchange in the Western Indian Ocean Region) has been taken over by VLIR, and implementation is being handled by LUC. Nevertheless, cooperation between IOC and RECOSCIX-WIO has been and will be continued.

In August 1992, the IOC provided financial support to allow participation of two participants from the region in the RECOSCIX-WIO Marine Information Management workshop, as well as a third participant from West Africa. IOC is in the process of planning a similar RECOSCIX network for the West African region, whereby experience gained from RECOSCIX-WIO can be extended and transferred to a new region. Furthermore, this expansion of the RECOSCIX network will forge a link between the two sub-regions which can be used for the exchange of scientific information and will open possibilities for scientific collaboration and training.

4. The IOC-SAREC Programme in Regional Capacity Building for Marine Coastal Management and Related Research

In 1990, IOC and the Swedish Agency for Research Cooperation with Developing Countries (SAREC) entered into an agreement for a joint programme in the Western Indian Ocean region to support coastal management and related research through regional capacity building. This programme represents a unique partnership between an international organization and a bilateral organization. The primary purpose of this joint programme is to coordinate the efforts and combine the experience of these two organizations in the Western Indian Ocean region, in support of coastal management and related research.

Regional capacity-building is encouraged through the organization and support of training activities, the provision of small research grants and the support of regional marine sciences organizations.

Twelve different training and research activities have been fully or partially supported by this programme since its inception, in the fields of marine pollution, nutrient cycling and eutrophication, remote sensing, sea-level rise and coastal erosion.

Additional activities in most of these fields are planned for 1993, and will include a short course in biogeochemistry, a laboratory and safety manual for nutrient analyses, a nutrient intercalibration exercise, and a workshop on coastal erosion. In addition, the IOC-SAREC programme will partially support a workshop on coastal zone management in the region, tentatively scheduled for March or April of 1993. In conjunction with this workshop and other planned training activities, limited funds will be made available for related research initiatives through a mini-grant programme. Support is also being provided through this programme for the recently founded Western Indian Ocean Marine Science Association (WIOMSA)

5. UNESCO-UNDP Regional Project for Training and Research for Integrated Management of the African Coastal Marine System (COMARAF)

The primary goal of this interdisciplinary project, which has been funded by UNDP and implemented by UNESCO, is to enhance the efforts and capabilities of African institutions and scientists to better understand the specific features of their coastal systems, thus promoting an integrated approach to coastal zone management in Africa. This project is in the process of being extended to a second phase, and specific activities will be determined at the regional task force meeting in Nairobi, April 1993.

Table : **ACTIVITIES INVOLVING THE IOC IN THE WESTERN INDIAN OCEAN REGION 1990-1995**

Note: This list of activities was obtained on the basis of information provided by participants of the meeting.

IOC PROGRAMME	ACTIVITY	LOCATION	TIMING
LIVING RESOURCES	Support seaweed symp.	Namibia	Mar. 92
	LME symposium	Mombasa	Apr. 93
NON LIVING RESOUR.	Regl. coast. eros.study	WIO	proposed
	Coastal erosion workshop	undecided	1993
MARINE POLLUTION	Mar. pollution workshop	Mauritius	Nov. 90
	Mar. pollution workshop	Goa (India)	Apr. 92
	Mar. technician training	Mombasa	May 92
	Katina oil spill:mission	Maputo	??
	Tr.workshop Phys. Oc.	undecided	1993
	Consult. mission	-	1993
	Equipment	-	1993
	Consult. mission mar.debr	-	proposed
	Tr.workshop survey method	-	proposed
OCEAN DYNAMICS/ CLIMATE	Ind.Oce.advis.pan.meet	Bangalore	Aug 92
	GLOSS tide gauges	Tan/Mad/Som	-
	Sea-level workshop	Mombasa	Jun 92
	Tide gauge spare parts	-	proposed
	Tr. course sea-level	Bidston (UK)	proposed
OCEAN MAPPING	Mission	-	-
	Bathymetric map WIO	-	ongoing
OCEAN SERVICES	RECOSCIX-WIO development	Mombasa	89-7/91
	RECOSCIX-WIO tr.course	Mombasa	Aug 92
	Mar.meteorol/phys.oceanogr training course (6 months)	Nairobi	proposed
GOOS	Pilot proj. on sea-level change and coastal impact	-	proposed
COASTAL ZONE MGMT	CZM workshop	Dar Es Salaam	spring 93
	Training prgms in baseline surveys and monitoring	undecided	1993
	Assist local experts in dev. of regl. overview	undecided	1993
TRAINING/EDUCATION	IBCWIO Training Course	Mau/Ken/Tan	Aug 91
	Nutrient seminar series	Ken/Moz/Tan	Jul 91
	Nutrient analysis workshop	Zanzibar	Nov 91
	Remote sensing workshop	La Réunion	Nov 91
	Biogeochem. short course	Zanzibar	Nov 92
	Nutrient intercalibr. exercise	Zanzibar	Apr 93
	Nutrient lab and safety manual	-	Spring 93
	Mini-grant programme	-	1993
	Support for WIOMSA	-	1993
	African Musselwatch Feasibility study	-	1993
	Ocean Flux Monitoring	Kenya	Oct 93
	Bathymetric Charting	RV Meteor	1995

5.6 WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATIO N (WIOMSA)

Presented by Dr. M. Ngoile, IMS (Zanzibar)

1. Introduction

Marine Science research in the Western Indian Ocean (WIO) Region (Comoros, Kenya, La Réunion, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, Tanzania) started gathering momentum with the implementation of the Indian Ocean Expedition (IOE) in the 1960s. The initiative for the IOE came from scientists from developed countries with interest in understanding the monsoon phenomenon. Participation from the maritime countries bordering the Indian Ocean was very minimal. This was mainly due to lack of qualified indigenous personnel to participate into the programme and to a lesser extent the inability of newly independent countries to contribute towards the costs of the expedition. This deficiency has been recognized by the international scientific community and efforts have continuously been made to improve the situation. This was reflected by the establishment of several marine science research stations in the region. However, in the early days, marine science research concentrated in fisheries science. In this regard research vessels have been donated to conduct resource surveys and training programmes were developed, although these have mainly dealt with the translation of temperate zone experiences into tropical situations. Most of these programmes are being executed under the umbrella of the FAO. Research in other aspects of marine science has received less attention and it is only recently that the IOC, UNEP, and bilateral donor agencies have started drawing attention to its importance.

Today there are many donor agencies that are assisting in the development of marine sciences in the WIO region. Coordination of these efforts would ensure efficient use of the financial resources, minimize the chances of duplication, allow the sharing of information and encourage a regional approach to finding a solution on common marine environmental problems. Fortunately the situation with regard to indigenous expert personnel is a little better than it was in the 1960s and consequently there is an opportunity for co-development and partnership in marine science research and training, in the WIO region, between scientists from the region and those from other parts of the world.

The need for collaborative marine science research within the region has been echoed by marine scientists from the WIO region during a number of national and regional workshops/seminars and the stage was specifically set during a regional workshop held in Dar es Salaam in November 1989 which was hosted by the Institute of Marine Sciences, University of Dar es Salaam and supported by the Swedish Agency for Research Cooperation with developing Countries (SAREC). This workshop provided an opportunity for the marine scientists to discuss and assess the level of marine science expertise in the region, the amount of existing information, deficiencies, and the scientists were able to come up with recommendations on how to advance marine science research and an action plan on how to implement the recommendations. One of the recommendations was the need for the marine scientists of the region to act as a team and this was to be implemented by the formation of an association. The decision to have an association has been welcomed by SAREC and IOC-UNESCO who have responded by providing support for the establishment of the association.

2. The Association

The name of the Association is the "Western Indian Ocean Marine Science Association" (WIOMSA). It is a non-profit making and non-governmental organization. The purpose for establishing WIOMSA is to provide a platform for fostering better communication between marine scientists and institutions in the region and with scientists and institutions from outside the region; and to facilitate

effective coordination through collaboration with UN, international, regional and national organizations and agencies active in marine science research and development, with a view of contributing to, and enhancing the building and development of indigenous marine science and technology capability of the region. The building of indigenous marine scientific and technological capability in the WIO region is prerequisite not only for the meaningful utilization of the marine resources of the region but also for active participation and proper implementation of numerous collaborative efforts coming from national, regional and international agencies.

3. **Objectives**

The objectives of the Association are:

(1) to promote and advance the educational, scientific and technological development of all aspects of marine science in the WIO region;
(2) to provide a forum for discussion and dissemination of information and organize meetings, seminars and workshops for the presentation of information, findings and experiences on subjects related to marine sciences;
(3) to encourage the support of marine sciences research, development and educational activities by government and private sector;
(4) to collect and disseminate scientific and technical information on marine sciences;
(5) to promote and foster inter-institutional linkages within and outside the region;

The membership of the Association shall not be restricted to scientists from the region but also scientists, individuals and institutions from within and outside the region with interests in the development of marine science in the WIO region will be able to join. Apart from procedural activities, the Association shall promote and support research in the regional waters concerning national and regional problems and issues deemed of importance by the Association, produce a newsletter, journal, bulletin and/or information brochures and reports, organize workshops, seminars, and symposia, and seek and solicit funds from individuals, national governments/private sector and donor agencies.

The constitution of the Association was adopted by the scientific community of the WIO region during a workshop which was held in Maputo, Mozambique in December 1991. During the same sitting it was decided that the scientists who were present would be part of the founding members of the Association. Mechanisms for formal registration of the Association are being worked out. The funds of the Association shall be derived from membership fees, support from national and international organizations, donations from public/private parties who support the aims of the Association, sales from the Association's publications and consultancies.

The secretariat of the Association will consist of not more than five staff members headed by the Executive Secretary. It is proposed to have semi-autonomous national WIOMSA units for each of the WIO countries and each will hold a sub-account of WIOMSA under the stewardship of a national secretary. The establishment of the national WIOMSA units will be in accordance with the laws governing the establishment of non-governmental organizations (NGOs) in each country. It is further proposed that membership fees, donations, and support funds from national scientists, individuals, and institutions shall be deposited into national sub-accounts and those from outside the region shall be deposited in the main account. A donor agency may specify and give guidance with regard to the use of the donated funds shall be used and accounted for as specified. Also mechanisms shall be developed which will guide the transfer of funds from the sub-accounts to the main account to support regional activities and initiatives and vice versa.

4. The Marine Research Grant Scheme (MARGS)

One of the activities to be initiated by WIOMSA is the granting of research funds to marine scientists working within the region. The Marine Research Grant Scheme (MARGS) is intended to revitalize the marine scientists and unleash the force that will enhance the development of an indigenous marine science capability of the WIO region.

The proposal to establish MARGS within WIOMSA has been evaluated by a joint IOC/SAREC/WIOMSA working group with respect to its viability and the group also explored the possibility of raising sufficient funds from donor agencies specifically those involved in marine research development of the WIO region. Although MARGS will cover all aspects of marine sciences, priority will be given to aspects that fall within the development strategies of the member countries.

The objectives of MARGS are:

(1) to provide a financial assistance to marine scientists to pursue research activities of their choice and initiative within the framework of national priorities and needs;
(2) strengthen the individual research capacity of marine scientists in the WIO region;
(3) develop the potentialities of researchers of the WIO region;
(4) create a national and regional core of marine science researchers.

These objectives will be achieved through the provision of financial assistance to individual marine scientists to carry out research, travel grants to enable the scientists attend scientific meetings and assistance to enable researchers visit marine science research institutions within and outside the region. The scheme will create productive researchers in the field of marine sciences and the scientists will in return acquire practical experience in marine research activities.

5. **Call for support**

WIOMSA strongly urges donor agencies to:

- contribute to MARGS;
- support co-development and partnership research initiatives;
- collaborate with WIOMSA in its efforts to coordinate marine science development within the WIO region;
- use WIOMSA in negotiating consultancies in marine resource development in the WIO region;
- provide material and financial support to assist in the development of WIOMSA;

Although the constitution was endorsed by the marine scientists from the WIO region comments, suggestions for improvement are welcomed before the Association is formally registered.

6. **Further comments**

WIOMSA is ideal for creating a national and regional link between the marine scientific community and politicians; and between the marine science community and the public.

As there is a clear overlap in some of WIOMSA's objectives and RECOSCIX-WIO's, close collaboration with this programme will be sought, especially referring to RECOSCIX-WIO's newsletter WINDOW which will be used as WIOMSA's major communication tool. The existing RECOSCIX-WIO communication and computer infrastructure in Mombasa will also be essential to WIOMSA. Experiments have in fact been carried out as early as 1991 whereby computer links were set up between Zanzibar and Mombasa.

6. Discussions and proposed follow-up actions

Discussions centered on a number of recurrent themes which evoked remarkable consensus among the participants. Lack of information on the current and planned activities of the many organizations working in the region was seen as a major obstacle to improved cooperation and coordination. Many participants expressed an interest in the expansion of bilateral programmes and projects to the regional level and the creation or improvement of links between existing projects. Problems related to training, research and equipment were discussed in detail, as was the importance of fostering a continuum between these fundamental aspects of marine science. The importance of promoting marine science at the public and governmental level was highlighted, as a means for improving baseline support for research and resources management. Finally, it was agreed that WIOMSA could play an important role in furthering the marine sciences in the region. Further discussion is provided below:

Lack of information

The need for a data base to identify and track the on-going and planned activities in the region was stressed repeatedly. The newsletter WINDOW, published quarterly by RECOSCIX-WIO, partially fills this need, however it was generally agreed that IOC could play an important role in this regard.

Improved links between existing programmes and projects

A number of participants expressed interest in creating or improving links between existing programmes and projects. For example, mutually beneficial links could be set up between the Law of the Sea Center in Nairobi and the RECOSCIX-WIO center at KMFRI, or between ORSTOM's computerized communication system and RECOSCIX-WIO, to improve information exchange. Similarly, the WINDOW newsletter, published quarterly by RECOSCIX-WIO, could provide an opportunity to publicize the activities of WIOMSA in its early stages. The

European Institute for Advanced Studies in Oceanography could help to foster links between young European marine scientists and their African counterparts through the EMIN association.

Expansion of bilateral programmes and projects

The need to open up existing programmes/projects to a wider audience was emphasized, while recognizing that it is neither possible nor desirable to develop all programs equally in all countries of the region. Representatives of several organizations expressed an interest in expanding bilateral programmes and projects to the regional level. VVOB, for example, is considering an expansion of its programme to Tanzania, and ORSTOM also expressed an interest in expanding its activities to the regional level. The programme at the Institute of Ocean Law and Marine Studies in Nairobi is considering, as a second stage, an expansion of its activities to the regional level. This would include wider participation in research and training activities at the Center in Nairobi, and the development of regional documentation centers in other countries.

SAREC pointed out that its collaboration with IOC is important, as it provides SAREC with a link with the region. It also complements, through the regional activities under IOC-SAREC, SAREC's bilateral activities with e.g. Tanzania and Mozambique. The link with the IOC has allowed SAREC to open up its activities to other countries in the region easily and successfully.

Education and Training

A number of problems were identified with respect to the current state of education and training of East African scientists. Universities within the region are often not able to attract a sufficient number of students for specialized courses in the marine sciences to be self-sustaining, nor is there yet a formal agreement between these universities for course/degree equivalency matters. It was also observed that job prospects for marine scientists in the East African region are limited, and that training should be linked to problem-solving and practical applications (i.e. industrial) where possible. Training activities should be crowned with issuing degrees. Especially for developing country scientists, their career is highly dependent on acquired degrees. Short-term training courses were seen as having limited value unless they are linked to subsequent research activities.

In Europe, the FAME course offers specialized training in the marine sciences in a limited number of fields at the M.Sc. level, but would benefit from increased support and participation from other European institutions and thus an expanded curriculum. Prof. Polk pointed out that courses for students from countries of the South, when these courses are organized in the North, are not always productive or relevant. Indeed, students from the South carry out field studies in marine environments (e.g. North Sea) which are totally different from their own. Ideally, all training should be carried out in the South. However this is not possible due to lack of facilities and financial resources there at this time. Furthermore, it was noted that marine science courses offered at the national level in developing countries, may not be able to attract a sufficient number of students to be sustainable. However, it may be possible to attract sufficient students at the regional level.

Prof. Polk suggested a twofold structure:

(i) short-term courses organized in the North; this will enable the students to familiarize themselves with the latest technologies and to make contact with their counterparts from the North.

(ii) long-term courses organized in the South; however, the move from the North to the South can be done gradually with an increasing involvement of lecturers from the South.

It is important that these loose ends be knitted together such that progress can be made towards the issuance of degrees, so that training is useable within the East African context. A number of potential approaches were identified which could improve the existing situation with respect to training and education,

including the development of regional training centers, course-equivalency and degree exchange programmes between African and European universities, and the development of education and research programmes wherein short-term specialized training is provided in Europe and longer-term training and research is carried out within the region. Too often students, being trained overseas, go back to an empty laboratory without means to put their (expensive) training into practice. In the selection of students the host institution and the possibilities for the student to carry out scientific research programmes there after completion of the studies, should be taken into consideration.

Research

The issue of duration of projects was also brought up: donors traditionally think of projects which run for 4-5 years, after which the host institution will take over. This philosophy may be applicable to industrial development but is not appropriate for research development cooperation. In research, practical applications are slow in developing and the capability of scientific institutions to be self-supporting is a problem occurring (and seldom solved) even in developed countries. Some donors are therefore thinking in terms of 5-10 year programmes (e.g. Sweden, France, The Netherlands).

During the Round-table discussion at Bordomer '92 (Bordeaux, 1 October 1992)[2], an important issue was raised with regard to the definition of cooperation. It was said that too often the scientists from donor countries wish to implement projects mainly interesting and relevant to themselves. It is important that the receiving countries and their institutions are fully involved from the early stages of project development.

Equipment

In any capacity building and cooperation activity the continuum education, equipment and research is considered crucial. For instance when providing equipment it is essential to provide follow-up assistance e.g. in the form of training and maintenance. Examples were given of equipment donations of highly sophisticated equipment whereby no spare parts or even consumables were available locally. In other cases motor vehicles have been donated, but the receiving institution could not afford the fuel or a road license. It is therefore clear that a one-time donation may be useless without an overall follow-up.

7. Action Plan

7.1. **European Marine Sciences Training Programme for students from developing countries**

Preamble

Although several institutions in developed countries organize courses which are attended by students from developing countries, through the provision of scholarships and fellowships, the available financial support offered by one country for a course does not suffice to build up a critical mass for a region. Furthermore, the curricula may not always be tuned to the requirements of particular students. It would be preferable to create international curricula, pooling courses of several universities in different donor countries. Students could then select courses from various universities in different countries (including developing countries), so as to achieve a relevant education profile and a university degree. If the courses have the same international base level then funds for fellowships can

[2] Remarks on Cooperation with Developing Countries. Summary report of a round-table discussion held during Bordomer '92, Bordeaux, France, 1 October 1992.
(Can be obtained from the IOC Secretariat, Paris, France)

possibly be pooled as well. This initiative will require extensive coordination and central services.

Actions

In order to discuss the possibilities of establishing a coordinated and degree-providing curriculum making use of existing courses in Europe a working group has been created with the following members:

Chairman: Prof. Ph. Polk, Free University of Brussels, Belgium

Members:
- Representative of EMIN
- A. Disteche (Coordinator EIASO)
- Dr. M. Ngoile (WIOMSA)
- SOZ (contact Dr. Bijlsma)
- Sweden (contact Prof. Rydberg)

Secretary: P. Pissierssens (IOC)

The working group will prepare a proposal for a package of courses which will provide a degree, based on courses in marine science available throughout Europe and possibly the Western Indian Ocean region. Memoranda of Understanding will be drafted between the relevant institutions. Special attention will be given to the identification of cooperating universities, entry level degree requirements, available curricula, degree issuing institution, international recognition of the degree and any other issue identified by the Group.

A draft report will be circulated to the participants of this meeting (through the Secretary IOC) by the Working Group by February 1993.

7.2 Information dissemination between donors

Preamble

The low priority given to marine issues in developing countries can be at least partially explained by the lack of awareness both by the policy-makers and by the public. Insufficient awareness amongst the scientists on each other's activities (North-North, South-South, North-South) is another important issue.

Following a demonstration of the WIODIR directory of scientists, it was noted by Dr. Bijlsma that the global directory of scientists (last edition 1983) was dearly missed. Dr. Bijlsma urged the IOC to re-vitalize this activity. He said that information dissemination should be a priority of international organizations like the IOC.

As mentioned in (section 1) there should be more communication or coordination exists between donors, or between donors and UN agencies. The annual meetings in Brussels can serve to initiate this process. However, to maintain momentum and facilitate the intersessional work, a few key actions should now be achieved:

* identification of contact points within each organization or agency;
* creation of a central register for terminated/ongoing/planned activities in the region and distribute the information to all partners on a regular basis;
* identification of a coordinator and base of operations.

Actions

(i) The IOC Secretariat will investigate the cost, estimate the required number of copies on Compact Disc or hard copies, and solicit subscriptions so as to ensure a sustained funding for a Global Directory of Marine Scientists;

(ii) In order to establish continuous contacts between the donors participating in this donor meeting, contacts (henceforth referred to as Group member) will be identified in each participating organization/project. For this purpose a letter will be sent to each participant of the 1992 meeting requesting the identification of a permanent contact person;

(iii) At the IOC Secretariat a database will also be established identifying contacts at other relevant donor agencies (e.g. World Bank, UNDP, GEF,...) for each Group member. This database will be circulated to all Group members;

(iv) The database referred to in (ii) will include all IOC Action addresses (official contact addresses for all 119 IOC Member States). The Group Members will make all effort to ensure that, through their country action address, their country participates in relevant IOC meetings;

(v) At the IOC a database will also be established listing selected past, ongoing and planned projects of the Group Members, relevant to the Western Indian Ocean region;

7.3 WIOMSA

Preamble

WIOMSA can create a link between the Intergovernmental mechanism of e.g. the IOC's Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean (IOCINCWIO) and the scientists *in the field*. Through its Marine Research Grant Scheme (MARGS) it can actively stimulate and support promising scientists in the region and assist in establishing a core group of scientists. In existing bilateral or multilateral projects and programmes, scientists working under a MARGS grant will be able to generate a major thrust safeguarding the proper implementation of these projects and programmes.

Actions

(i) the president (currently acting president) of WIOMSA will attend all relevant IOC (IOCINCWIO, IOC Assembly) and other meetings (regional meetings e.g. LME symposium) to publicize the organization and its objectives with a view of attracting membership and funding;

(ii) the WIOMSA Secretariat will prepare a detailed project document with objectives, planning and financial requirements of the organization. This document will be prepared by the WIOMSA Acting President by 1 December 1992.

7.4. Expansion of bilateral projects to the regional scale

Preamble

It is realized and appreciated that various donors are active in the region with bilateral cooperation projects. These projects have a strictly national character with few possibilities for regional implications by virtue of the nature of bilateral cooperation.

A number of advantages could be gained by linking bilateral projects with regional programmes. For example, training activities, previously limited to participants from one or a few countries, could be opened to wider participation. Alternatively, bilateral projects which have proved highly successful at the national level could be expanded regionally, with coordination and support provided by UN agencies and multi-lateral donors. The regional co-operative programmes or projects formulated

and endorsed by regional scientific and intergovernmental groups, such as IOCINCWIO[3], could also be adopted by several bilateral donors so that a regional activity could be established although the individual support of the participating countries and institutions is bilateral.

Some projects which had a previously national (bilateral) character have already taken steps for regional expansion: IOLANS (previously University of Ghent-University of Nairobi) which will expand to Tanzania, SAREC activities with Zanzibar which now include cooperation with scientists from Kenya, RECOSCIX-WIO (which has been regional from the start and of which the IOC is now preparing a West African equivalent).

Other examples could be worked out: e.g. Mussel watch: could be implemented in the Western Indian Ocean region using oysters; ORSTOM's regional Remote Sensing facility in La Réunion could be opened up to the entire region with development of training courses (bilingual) and specific remote sensing projects.

Actions

(i) IOC, with assistance of the Group Members and the International Mussel Watch Committee, and through its GIPME programme will prepare a document on the possibilities of a regional Mussel Watch programme as a second field phase of the IOC-UNEP International Mussel Watch, possibly for submission to the 1993 IOC Assembly;
(ii) ORSTOM will consider the opening up of its Remote Sensing facilities in La Réunion to scientists of the WIO region and will meet with the IOC secretary to discuss for such an undertaking.

7.5. Setting up of cooperative agreements between donors for specific projects.

Preamble

It may be helpful to formalize cooperation on specific projects and/or programmes through Memoranda of Understanding or other contractual agreements. This approach has been used between VLIR and IOC, and IOC and SAREC to coordinate and implement programmes of interest to both organizations and their common goal which is the development of marine science capabilities in the Western Indian Ocean Region.

The IOC-VLIR MOU will allow developing countries to submit projects, drafted in cooperation with the IOC (and sometimes based on an IOC-funded pilot project or feasibility study) and its experts, to the VLIR. VLIR will then seek appropriate promoters who can submit (after positive evaluation by the relevant VLIR commission) the project to the Belgian Government for funding. This has advantages for all parties involved: the developing country is assisted by the IOC in drafting a well-founded project proposal and has access to a donor; IOC is able to play its catalyst role; VLIR is assured of a well-founded and well-studied project proposal; the Belgian Government is presented with projects which have been well-studied and may even have gone through a pilot-phase hereby minimizing the risk of failure to the minimum.

The IOC-VVOB cooperation will make it possible for the IOC to use highly qualified (Ph.D.

[3] IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean.

level) scientists in its field projects provided the IOC can provide matching funds. This will be complementary to the Associate Expert scheme, supported by the Member States.

The Institute of Marine Sciences (Zanzibar, Tanzania) and the Kenya Marine and Fisheries Research Institute (Mombasa, kenya) have signed a Memorandum of Understanding hereby clearing the way for an inter-institutional cooperation (exchange of scientists, joint undertaking of research activities in kenyan or Tanzanian waters,...).

Actions

(i) VLIR and SOZ will investigate the possibilities for a cooperative agreement between the organizations;
(ii) During IOCINCWIO-III (Mauritius, December 1992) Member States of the WIO region may be encouraged to establish Memoranda of Understanding with other institutions of the region hereby facilitating cooperation and exchange of scientists.

7.6. UNCED Follow-up

Preamble

Following the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, June 1992 and more particularly Agenda 21, Chapter 17, donors as we;; as international organizations like the IOC are now in the process of framing their activities within the recommendations formulated there.

Actions

(i) The Group Members are invited to exchange information on each other's actions relevant to UNCED.

ANNEX I

AGENDA
(or programme of the Workshop)

12 October

- Opening of the meeting by VLIR
- Presentations by individual donor representatives

12 October

- Report by the IOC Secretary on follow-up actions of the 1991 meeting
- Presentation by Dr. M. Ngoile, Acting President of WIOMSA (Western Indian Ocean Marine Science Association)
- Plan of Action 1992-1993
- Closing of the Meeting

ANNEX II

ACTIVITIES DISTRIBUTION PER ORGANIZATION

BELGIUM

1. VLIR

Kenya:	- Higher Education in Marine Sciences (VUB-KMFRI): BILATERAL
	- Law of the Sea (RUG - Univ. Nbi): BILATERAL
Regional:	- RECOSCIX-WIO (LUC - KMFRI - ...), (base in KMFRI)
	- (planned: IOLAMS: RUG - Univ. Nbi - Univ. Dar)
TRAINING:	-F.A.M.E. (VUB)
	- Msc in Aquaculture (RUG)
	- M.I.S.T. (VUB)
	- Artemia course (RUG)

2. VVOB

Kenya:	- General manager for RECOSCIX-WIO project (LUC-KMFRI)
	- Scientist for KMFRI
	- 6 biologists for Kenya (2 related to marine sciences)

FRANCE

ORSTOM:	- Tuna Research programme (Regional, with stations in La Reunion, Seychelles and Mauritius. Supported by EEC)
	- Satellite Remote Sensing (La Reunion): REGIONAL

NETHERLANDS

SOZ:	- Netherlands Indian Ocean Expedition 1992-1993 (KENYA, SEYCHELLES)

SWEDEN

SAREC:

Tanzania:	- Capacity Building: SAREC-IMS: BILATERAL
Mozambique:	- Capacity Building: SAREC-Univ. Ed. Mondlane: BILATERAL
Regional:	- IOC-SAREC co-operation
	- WIOMSA
TRAINING:	- Msc in Phys. Oceanogr.
	- Workshop on Research in Coastal Lagoons
	- Seminars on Nutrient Fluxes/Dynamics
	- Training Course in Nutrient Analysis
	- Seminar on Phys. Oceanogr.
	- Diving Course for Marine Scientists

IOC:	ALL IOC ACTIVITIES ARE REGIONAL
	- Assessment and Control of Pollution in the Coastal Environment of the Eastern African Region (UNEP-IOC Implemented by FAO, IAEA, IOC and WHO)
	- Katina P. Oil Spill consultancy (Maputo, Mozambique)
	- Marine Debris/Beach Litter Pilot Monitoring Project
	- Coastal Zone Management Planning in the Eastern Africa Region (EAF-5) (UNEP-FAO-IUCN-IOC)
	- GLOSS (Global Sea-Level Observing System): 20 tide gauges placed
	- RECOSCIX-WIO
	- IOC-SAREC
	- COMARAF (UNESCO/IOC)
TRAINING:	- Workshop on marine pollution
	- Workshop on technical training
	- (1993: physical oceanography training)
	- (1993: training workshop on survey methodology: related to marine debirs)

ANNEX III

DONOR COLLABORATION IN THE DEVELOPMENT OF MARINE SCIENTIFIC RESEARCH CAPABILITIES IN THE WESTERN INDIAN OCEAN REGION

Report on an Interagency Meeting
Universitaire Stitching
Brussels, Belgium, 21 October 1991

1. INTRODUCTION

Over the past ten years the importance of coastal zone management and marine pollution monitoring and control has been increasingly acknowledged throughout the world. With the green-house effect and sea-level rise, more and more attention is given to the oceans and their impact on life on earth.

In developing countries, the need for conservation of marine life and appropriate management techniques is receiving increasing attention. It is with this in mind, that developing countries are trying to build capacity in marine research. Marine science institutions have been established in almost all countries of the Western Indian Ocean region, including Ethiopia, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia and Tanzania. Unfortunately these countries do not have the necessary financial resources for training and research. Several of these countries have obtained outside assistance, resulting in the establihsment of a number of well-functioning projects which have created some degree of expertise and infrastructure in the region.

A recent meeting in Brussels brought together some donor organizations involved in marine sciences in the Western Indian Ocean region with the objective of lowering the barriers between agencies involved in development co-operation. This can only result in faster and more efficient development of scientific and technical capabilities in the countries of the Western Indian Ocean Region. It is hoped that the conclusions drawn from this meeting and the suggested actions to be taken will assist other donors in co-ordinating their development co-operation efforts in this and other regions.

2. SOME DONORS ACTIVE IN THE WESTERN INDIAN OCEAN REGION

During the meeting in Brussels the following organizations presented their activities:

- **Belgian General Administration for Development Co-operation (BADC): Belgium**

  This organization is the main Belgian government funding body for development co-operation. It funded the Kenya-Belgium Project directly between 1985 and 1989, and has continued funding this project through the VLIR since 1990. Through the VLIR, BADC has also funded the RECOSCIX-WRO project since August, 1991.

- **Intergovernmental Oceanographic Commission of UNESCO (IOC):**

  This United Nations agency is involved in a variety of marine science activities in the region. Operations in the Western Indian Ocean region are organized within the framework of the IOC's Committee for Co-operative Investigations in the North and Central Western Indian Ocean (IOCINCWIO), established in 1979. The first session of IOCINCWIO was convened in Nairobi, Kenya in 1982, the second in Arusha, Tanzania in 1987, and the third will be in Mauritius in September 1992.

  IOC's activities in the Western Indian Ocean region which focus on the coastal zone include:

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

The IOC implemented the first phase of this project in 1989 and continued support until July 1991, when it was teaken over by VLIR-LUC;

(ii) International Bathymetric Chart of the Western Indian Ocean (IBCWIO)

This project is currently being conducted with co-operation from five states in the region. Data are being assembled and prototype plots have been prepared.

(iii) Global Sea-Level Observing System (GLOSS)

Seventeen tide gauges have been installed in the WIO region. Ten persons have been trained in the operation of the stations and processing of the data in both English (Bidston, UK) and French (Brest, France). A workshop entitled "The Causes and Consequences of Sea-Level Changes in the Western Indian Ocean" was organized in Mombasa, Kenya, in 1991, with support from SAREC.

(iv) Eastern African Action Plan (UNEP OCA/PAC with UN system)

Recently a regional project for the "Assessment and Control of Pollution in the Coastal Environment of the Eastern African Region" was started. This project is funded jointly by UNEP and the collaborating countries of the region and is being implemented by FAO, IAEA, IOC and WHO. A regional workshop entitled 'Regional Aspects of Marine Pollution' was organized by IOC, with support from SAREC, in Mauritius in 1990.

(v) UNESCO-UNDP Regional Project for Training and Research for Integrated Management of the African Coastal Marine Systems (COMARAF)

This project is funded by UNDP and implemented by UNESCO. It is an interdisciplinary project whose purpose is the enhancement of the efforts and capabilities of African institutions and scientists to understand the specific features of their coastal systems, thus promoting an integrated approach to the management of the coastal zone in Africa. The main activities in East Africa included a regional field training workshop on estuarine processes and water circulation in mangrove environments (Zanzibar, 1988); a regional field training workshop on coral classification and taxonomy (Mauritius, 1988); a joint research programme on ecology and management (Kenya, 1989); and a regional workshop on the ecology and management of coral reefs (Mauritius, 1990). Experts from the European and Australian research institutions participated in some of these activities.

(vi) SAREC and SAREC-IOC Project on Marine Coastal Management

In addition to the director support provided by SAREC for the development of marine sciences in East Africa, SAREC entered into an agreement with IOC in 1990 for a joint regional programme, which incorporates the main elements of the IOC programme in the IOCINCWIO region and those of the SAREC Action Plan for East Africa. The purpose of this joint programme is to ensure the maximum coherence and mutual reinforcement of the activities previously carried out by IOC and SAREC independently. The joint action plan includes a workshop on regional aspects of marine pollution (see above); seminars on nutrient fluxes and dynamics (Kenya, Mozambique, Tanzania: 1991); a regional training course on remote sensing applications related to marine coastal management (1991); a regional workshop on the causes and consequences of sea-level rise on the Western Indian Ocean coasts and islands (contribution to GLOSS); and training of marine techniques in co-operation with the International Laboratory of Marine Radioactivity (ILMR) of IAEA.

Various other activities are planned for 1992 and 1993.

- **Flemish Inter-University Council (VLIR): Belgium**

This organization acts as an intermediate body in the setting up of scientific co-operation schemes with developing countries. VLIR plays a mediating role in linking Flemish universities and their counterparts in developing countries. As an inter-university organization, VLIR endeavors to match the particular expertise and interests of Flemish universities with the specific needs formulated by universities and research institutes in developing countries. VLIR has three channels for co-operation:

(i) **bilateral programmes** wherein the VLIR either serves as a sub-contractant for project implementation or appoints a general co-ordinator for a project;

(ii) **'own-initiative' programmes**. These are projects based on an inter-institutional agreement between a Flemish university and a counterpart university or scientific institution in a developing country. In general, on-going projects focus on collaborative research in fields that are of special relevance or interest to the developing world, such as aquaculture and marine biology. Currently VLIR has two marine science projects in the WIO region: The 'Higher Education in Marine Sciences' project and RECOSCIX-WIO;

(iii) **One of the 'own-initiative' programmes** is the "International Course Programmes in Flanders". Flemish univiersities offer a broad range of English language postgraduate training opportunities, in which developing country scholars are invited to participate. Short-term training programmes are also organized. Scholarships are provided by the BADC or by other international organizations, such as FAO, EC, IOC, UNDP, etc. Postgraduate programmes relevant to marine sciences include 'Master of Science in Aquaculture' (RUG), 'Postgraduate Studies in Nematology' (RUG), and 'Postgraduate Training Course in Fundamental and Applied Marine Ecology' (VUB). Short training courses include 'Lake Management: the Zooplankton' (RUG), 'International Training Course on the Biology and Practical Use of the Brine Shrimp Artemia in Aquaculture' (RUG), and 'Management of Scientific and Technical Information' (VUB).

- **Free University of Brussels (VUB): Belgium**

The Free University of Brussels started the 'Kenya Belgium Project in Marine Sciences' in 1985, funded by the BADC in the framework of a bilateral programme. This project is based at the Kenya Marine and Fisheries Research Institute, Mombasa, Kenya. Its main objective is to build marine scientific research capacity, focusing on the link between equipment, training and research. The project has strengthened capacities in various research areas including zooplankton, phytoplankton, coral reefs, benthos, aquaculture, marine chemistry and heavy metal pollution. One sub-project involved oyster culture in a mangrove area. Within the framework of the project, several scientists have participated in short-term or long-term training courses (FAME) at VUB and other institutes. The KBP was also the driving force in the development of the RECOSCIX-WIO project.

- **Limburg University Centre (LUC): Belgium**

The LUC became active in the Western Indian Ocean region through the RECOSCIX-WIO project. As noted above, this project was developed initially as part of the Kenya-Belgium project, was then 'adopted by UNESCO-IOC who implemented the first phase (1989-1991) and has now been taken over by VLIR. The RECOSCIX project is a project between the KMFRI (Mombasa, Kenya) and LUC (Diepenbeek, Belgium) but has a strong regional component with co-operating institutions in 8 countries of the region (Ethiopia, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia and Tanzania). The project's main objectives are (i) to provide marine scientists in the region with necessary scientific literature; (ii) to promote communication between scientists of the region; (iii) to promote communication between scientists from within and outside the region; and (iv) to promote the region's capabilities in marine sciences in the rest of the world.

An interesting approach taken in this project is the active development of a donor platform: the project's core funding is provided by VLIR, with additional funding from IOC, SAREC, NOAA, IDRC (PADIS), ICOD and numerous libraries and information centres throughout the world. This approach will undoubtedly provide the project with a more hopeful future perspective than single donor projects.

- **Swedish Agency for Research Co-operation with Developing Countries (SAREC): Sweden**

SAREC has supported research in developing countries since 1975. Initially, most of the support was channeled on research activities within the UN system and other international organizations. Over the years, the emphasis has shifted towards bilateral co-operation with a number of developing countries, particularly in Africa. Marine research in East Africa has received support through bilateral projects such as that between the Kristineberg Marine Biology Station in Sweden and the Marine Biology Station at Inhaca Island, Faculty of Biology, Eduardo Mondlane University in Mozambique. The present programme, which started in 1989, was envisaged to cover two main projects with several components each. The objective is to study the ecology of Inhaca Island and Inhaca coral reefs as well as the flora of Inhaca's waters and islands. Other projects include the Somali Marine Science Programme which was initiated in 1988 in co-operation with the Somali Academy of Sciences and Arts. This programme aims to improve and develop the marine scientific capabilities in Somalia. Likewise co-operation with the Institute of Marine Sciences, Zanzibar, Tanzania, is supported to strengthen the scientific capacities, particularly in the field of near-shore ecological problems.

Within the framework of these bilateral programmes, SAREC organizes various workshops which are open to all scientists of the region. Some are organized in collaboration with the IOC (as described under IOC above), others are organized by SAREC alone. Recent or proposed activities include: (1) Msc. Training in Physical Oceanography (Univ. Gothenburg): SAREC-IOC; (2) Training Workshop on Marine Pollution (Goa, India): IOC-SAREC; (3) Seminars on Nutrient Fluxes/Dynamics (Kenya, Tanzania, Mozambique): IOC-SAREC; (4) Chemical Processes in Coastal Systems (Zanzibar, Tanzania): IOC-SAREC; (5) Regional Training Course in Remote Sensing Applications (Reunion): IOC-SAREC; (6) Regional Workshop on Biogeochemical Processes in Coastal Areas (Zanzibar): IOC-SAREC; (7) Development of Regional Research Capabilities Training of Marine Technicians (Mombasa): IOC- SAREC; (8) Workshop on Research in Coastal Lagoons: SAREC; (9) Training Course in Nutrient Analyses: IOC-SAREC; (10) Diving Course for Marine Scientists: SAREC; and (11) Association of Marine Scientists in East Africa: SAREC.

- **Flemish Association for Development Co-operation and Technical Assistance (VVOB): Belgium**

This organization was originally established to provide secondary school teachers to developing countries. Later this role was expanded to include university lecturers and research scientists. In the WIO region, VVOB has so far provided 3 marine science lecturers (University of Nairobi, Kenya) and one researcher (KMFRI, Mombasa, Kenya). For the RECOSCIX-WIO, VVOB will provide the resident manager for the duration of the project. This assistance is of significant importance: instead of using badly needed project money for the salary of an expatriate expert (usually a considerable percentage of the budget), VVOB ensures that the project budget is used for what it was intended: development.

This approach is unique in development co-operation and is highly appreciated by the receiving Governments.

- **Ministry of Development Co-operation, Belgium**

This is the parent ministry of the Belgian BADC and, as such, is the deciding ministry in Belgium's policy with regard to development co-operation.

3. COLLABORATION: FOLLOW-UP ACTIONS

The meeting discussed possible actions as a follow-up to enhance the collaboration between the attending institutions.

Guiding questions in this context were:

What to we need to do more?
Who is asking for it?
How do we use the resources, and for whom?
To whom are we talking: nations, agencies, donors, regional organizations (EEC, ACP, OAU)

Possible mechanisms for support within the co-operating framework include:

- Integration of training components;
- Fellowships;
- Infrastructure;
- Research vessels;
- Marine stations associated with universities or other research institutes;
- Marine technician training;
- Establishment and support to the society of marine scientists and institutions in East Africa.

It was considered that the same basic message of the need for support to the creation of marine awareness, research, education and development should be conveyed by the participants to pertinent institutions, making appropriate cross-references to each other. Institutions referred to include the EEC, World Bank and UNDP.

Specific follow-up actions include the following:

- Extend fellowship support, including soliciting support for fellowships from France, Germany, Holland, Sweden, besides Belgium, for the international FAME;
- Prepare a data base on participating institutions, donors, individuals and contact points. The IOC Secretariat can co-ordinate this, provided that information is provided by the participants;

- Approach the “big” donors in harmony (WB, GEF, UNDP, etc.).

- It was agreed that the individual contact points in WB, GEF, EEC, etc. should be identified and communicated to all participants. Input is being solicited and prepared for circulation;
- The FAME courses are international and should be considered as a Belgian SAREC-IOC activity; this could be confirmed informally or possibly in the form of an MOU.

Some action has already been taken in the following areas:

- Belgium has proposed support from the UNESCO Participation Programme for fellowships;
- The Secretary of IOC has discussed with representatives of the WB the possibility of organizing information seminars or workshops to provide insights and intellectual arguments as to why the marine environment is, or should be included in development plans (economic, environmental, etc.);
- The Secretary of IOC has had some discussions with GEF about marine-related actions, and with IOI (International Ocean Institute) on possible co-operation in this matter.

4. STEPS TOWARDS CO-OPERATION BETWEEN THE DONORS

Although various donors are active in the Western Indian Ocean region, co-operation and co-ordination is usually limited. Co-ordinating efforts have been made in recent years between UN agencies (e.g. UNEP, FAO, IOC) which have improved the efficiency of their respective programmes. However, contacts between bilateral donors tend to be limited and this has resulted in the duplication of efforts. Also, little contact has been made in the past between bilateral donors and UN programmes. This is regrettable, since the UN specialized agencies are not funding agencies, but function rather as catalysts, providing seed money to start up specific activities, which the countries are then supposed to take over. This policy works well in developed regions. However, in developing regions it is often found that programmes simply cannot take off because the co-operating countries cannot provide the financial back-up required to run the project. Bilateral donors, on the other hand, do have major funding capacity. It is unfortunate that their efforts are often limited to one receiving institutions without a wider impact on other institutions and countries.

It is our view that a closer working relationship between all donors, whether bilateral or UN, would provide for a more efficient and powerful tool for the development of marine sciences in the Western Indian Ocean region.

It is for this reason, that the IOC approached VLIR to convene a small donor meeting in Brussels. From the above contributions, it is clear that a substantial degree of complementarity exists between the different programmes and activities. IOC and SAREC have shown the way in the planning of their joint programmes. The IOC, through its many years of experience in the region and its numerous contacts, as well as its regional body IOCINCWIO is an ideal partner who can advise on the needs of the region. SAREC actively supports IOC programmes, as well as its own bilateral programmes in individual institutions, taking care to avoid the duplication of effort. During the meeting the participants decided to expand this co-operation to include also the Belgian projects.

Another example of complementarity is illustrated by the RECOSCIX project, which originally developed from regional needs as defined during the second session of IOCINCWIO. The IOC funded and implemented the pilot phase of the project. In 1991 when major funding was required for equipment, major training activities, and so forth, the project was submitted with success to Belgium.

The participants have furthermore expressed their wish that another meeting be organized to include more donors. This follow-up meeting has been tentatively scheduled for October 1992. It is hoped that all donor agencies active in the Western Indian Ocean will appreciate the importance of collaboration in achieving sustainable development of marine sciences in the Western Indian Ocean region.

Participants List - Donor Meeting 211/10/91
(Universitaire Stitching, Egmonstraat 11, Brussels)

Mr. Jo BASTIAENS
Vlaamse Universitaire Raad - Secretariat
Egmonstraat 5
B-1050 Brussels BELGIUM
Tel: (32 2) 512 91 10
Fax: (32 2) 512 29 96

Prof. Louis NEIRINCK
Chairman International Relations
Vrije Universiteit Brussels
Pleinlaan 2
B-1050 Brussels BELGIUM
Tel: (32 2) 358 47 67 or (32 2) 641 21 21
Fax: (32 2) 641 36 40

Prof. Philip POLK
Laboratorium voor Ekologie en Systematiek
Vrije Universiteit Brussels
Pleinlaan 2
B-1050 Brussels BELGIUM
Tel: (32 2) 641 34 09 or (32 2) 641 34 02
Fax: (32 2) 641 34 03

Dr. Katrien DELBEKE
Laboratorium voor Ekologie en Systematiek
Vrije Universiteit Brussels
Pleinlaan 2
B-1050 Brussels BELGIUM
Tel: (32 2) 641 34 02
Fax: (32 2) 641 34 03

Dr. Peter REYNIERS (*)
Katholieke Universiteit Leuven
Central Library (VLIR)
Mgr. Ladeuzeplein 21
B-3000 Leuven BELGIUM
Tel: (32 16) 28 46 05
Home: Scheldestraat 153, B-9040 Gent, Belgium
Tel: (32 91) 29 13 37

Mr. Peter PISSIERSSENS
Manager RECOSCIX-WIO
IOC-UNESCO
P.O. Box 95832
Mombasa KENYA
Tel: (254 11) 47 11 29
Fax: (254 11) 47 22 15

(*) Note: Dr, Reyniers has taken over management from Peter Pissierssens as of 13/1/92.

Prof. Leo EGGHE
Limburgs Universitaire Centrum
Universitaire Campus
B-3590 Diepenbeek BELGIUM
Tel: (32 11) 22 99 61
Fax: (32 11) 22 95 17

Dr. Selim MORCOS
Intergovernmental Oceanographic Commission - Secretariat
UNESCO
1 rue Miollis
75732 Paris Cedex 15 FRANCE
Tel: (33 1) 45 68 39 62
Fax: (33 1) 40 56 93 16

Dr. Gunnar Kullenberg
Intergovernmental Oceanographic Commission - Secretariat
UNESCO
1 rue Miollis
75732 Paris Cedex 15 FRANCE
Tel: (33 1) 45 68 39 83
Fax: (33 1) 40 56 93 16

Dr. Olof LINDEN
SAREC Marine Science Programme Co-ordinator
Dept. of Zoology, University of Stockholm
1061 Stockholm SWEDEN
Tel: (46 8) 16 40 15
Fax: (46 8) 16 77 15

Mr. Ludo VERRYKEN
Kabinet Ontwikkelingssamenwerking (Multilaterale betrekkingen)
W.T.C. Toren 2, 21e verdieping, E. Jacqmainlaan 162
B-1210 Brussels BELGIUM
Tel: (32 2) 210 19 12
Fax: (32 2) 217 33 28

Dr. Micheni NTIBA
Department of Zoology, University of Nairobi
P.O. Box 30197
Nairobi KENYA
Tel: (254 2) 43720 Ext. 536

Dr. Jack S.F. LENVAIN
Senior Programme Officer, Flemish Association for Development Co-operation
and Technical Assistance
Maria Theresiastraat 21
B-1040 Brussels BELGIUM
Tel: (32 2) 217 76 16
Fax: (32 2) 217 57 73

ANNEX IV

LIST OF PARTICIPANTS

Drs. Auke BIJLSMA
Netherlands Marine Research Foundation
Laan van Nieuw Oost Indie 131
2593 BM Den Haag
THE NETHERLANDS
Tel: (30 70) 344 07 80
Fax: (30 70) 383 21 73
Tlx: 20000 memo nl start message with
nmc 27: nlx 1229

Dr. Jacques CHABANNE
Adjoint au Chef du departement TOA
(Terre, Ocean, Atmosphere)
ORSTOM
213 rue Lafayette
75480 Paris Cedex 10
FRANCE
Tel: (33 1) 48 03 77 77
Fax: (33 1) 48 03 76 81

Prof. Dr. Albert DISTECHE
Universite de Liege
Oceanologie B6
Sart Tilman
4000 Liege
BELGIUM
Tel: (32 41) 56 33 20/71 40 80
Fax: (32 41) 56 33 25/71 40 80

Prof. Leo EGGHE
Limburgs Universitaire Centrum
Universitaire Campus
B-3590 Diepenbeek
BELGIUM
Tel: (32 11) 22 99 61
Fax: (32 11) 22 95 17

Dr. M. EL TAYEB
Chief, Science Operations for
Africa and the Arab States
UNESCO
1 rue Miollis
75732 Paris Cedex 15
FRANCE
Tel: (33 1) 45 68 41 63
Fax: (33 1) 45 67 51 43

Dr. Anders GRANLUND
SAREC Marine Science Co-ordinator
SAREC
P.O. Box 16140
S-103 23 Stockholm
SWEDEN
Tel: (46 8) 791 21 01
Fax: (46 8) 791 21 99

Dr. Jack S.F. LENVAIN
Flemish Association for Development Co-operation
and Technical Assistance
Maria Theresiastraat 21
B-1040 Brussels
BELGIUM
Tel: (32 2) 217 76 16
Fax: (32 2) 217 57 73

Dr. Selim MORCOS
Science Operations for Africa & the Arab States
UNESCO
1 rue Miollis
75732 Paris Cedex 15
FRANCE
Tel: (33 1) 45 68 39 62
Fax: (33 1) 45 67 51 43

Dr. Magnus K. NGOILE
Institute of Marine Sciences
P.O. Box 668
Zanzibar
TANZANIA
Tel: (255 54) 321 28
Fax: (255 54) 330 50/ 321 28

Prof. Philip POLK
Laboratorium voor Ekologie en Systematiek
Vrije Universiteit Brussels
Pleinlaan 2
B-1050 Brussels
BELGIUM
Tel: (32 2) 641 34 09
Fax: (32 2) 641 34 03

Dr. Peter REYNIERS
RECOSCIX-WIO
P.O. Box 95832
Mombasa
KENYA
Tel: (254 11) 47 11 29/47 25 27
Fax: (254 11) 47 22 15
Tlm: recoscix.mombasa (Omnet)

Ms. Freya RONDELEZ
Vlaamse Universitaire Raad
Egmonstraat 5
B-1050 Brussels
BELGIUM
Tel: (32 2) 512 91 10
Fax: (32 2) 512 29 96

Prof. SCHAMP
Vlaamse Universitaire Raad
Egmonstraat 5
B-1050 Brussels
BELGIUM
Tel: (32 2) 512 91 10
Fax: (32 2) 512 29 96

Prof. Dr. Eddy SOMERS
Vakgroep International Publiekrecht
Universiteit Gent
Gent
BELGIUM
Tel: (32 91) 64 68 96
Fax: (32 91) 64 69 89

Mr. R.VAN LANDUYT
Algemeen Bestuur voor
Ontwikkelingssamenwerking
(ABOS - BADC)
Marsveldplein 5
B-1050 Brussels
BELGIUM
Tel: (32 2) 519 05 09
Fax: (32 2) 519 05 85

IOC

Dr. Gunnar Kullenberg
Secretary
Intergovernmental Oceanographic Commission
UNESCO
1 rue Miollis
75732 Paris Cedex 15 FRANCE
Tel: (33 1) 45 68 39 83
Fax: (33 1) 40 56 93 16
Tlm: G.KULLENBERG (Omnet)

Mr. Peter PISSIERSSENS
Intergovernmental Oceanographic Commission
UNESCO
1 rue Miollis
75732 Paris Cedex 15 FRANCE
Tel: (33 1) 45 68 40 46
Fax: (33 1) 40 56 93 16
Tlm: IOC.SECRETARIAT (Omnet)
peterp@ucsvax.sdsu.edu (Internet)

Mrs. Christine COUGHANOWR
Intergovernmental Oceanographic Commission
UNESCO
1 rue Miollis
75732 Paris Cedex 15 FRANCE
Tel: (33 1) 45 68 39 62
Fax: (33 1) 40 56 93 16
Tlm: IOC.SECRETARIAT (Omnet)

[end of report]