

# Intergovernmental Oceanographic Commission

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## **Joint IOC-CIDA-Sida(SAREC) Workshop on the Benefits of Improved Relationships between International Development Agencies, the IOC and other Multilateral Intergovernmental Organizations in the Delivery of Ocean, Marine Affairs and Fisheries Programmes**

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UNESCO

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## 1. INTRODUCTION

The basic assumption is that the aim of all governmental involvement with global ocean issues is to support sustainable development. In this we use the original definition given by the Brundtland Commission, namely that we achieve development which "meets the needs of the present without compromising the activity of future generations to meet their needs".

Although the implementation of this aim can take place in a variety of ways, wise management is essential and decisions must be based on the best available information and interpretation. This implies that data and knowledge about the ocean environment, its ability to sustain life, the continual monitoring of changes and the accurate forecasting of trends, is a prerequisite for sustainable development.

The very nature of the life-supporting systems implies an interdependence between countries and regions, which needs to be recognized and taken into account in our concerted actions. Already, following UNCED, global action has taken place through the entering into force of the Framework Convention on Climate Change, the Convention on Biological Diversity, and the continuing work on such issues as desertification, forest management, prevention of marine pollution from land-based activities and the Agreement on Straddling Stocks and High Seas Fisheries. The results of UNCED have in many ways provided for a common programming framework.

The following text gives the context for this Workshop, a discussion of major issues facing the world ocean community and an outline of the role of the Intergovernmental Oceanographic Commission (IOC), its role, objectives and structure in the context of those issues. It describes how cooperation between the IOC and the Swedish Agency SAREC has led to the establishment of successful programmes using the IOC regional organization.

## 2. WORKSHOP CONTEXT

The Intergovernmental Oceanographic Commission has an important role to play in supplying the information and research necessary to address the many regional and global ocean issues facing the world today. Having limited programme funding, the IOC relies to a large extent on the coordinated efforts of its Member States, often focussed through regional subsidiary bodies and networks. An important consideration, because of the international nature of these programmes, is to facilitate the participation of the maximum number of Member States through attention to capacity-building and to the transfer of needed technical and scientific expertise where appropriate. The cost of training and assistance programmes are high, even at the scale of the Commission's involvement. With the assistance of developed countries, training courses are arranged, manuals and text books prepared and expert meetings convened, and partnerships are developed.

The intergovernmental programmes are not alone in their struggle with funding pressures. Multilateral agencies, and the bilateral developmental agencies such as CIDA, have been affected by the economic downturn of the past several years. Budgets have been reduced and the respective organizations are also experiencing difficulty in delivering their objectives. Multilateral developmental and loan agencies, such as the Global Environment Fund and the World Bank have suffered with falling budgets, increasing demands and rising costs.

Despite these difficulties, intergovernmental and assistance programmes still have to be delivered and objectives met to the best of the abilities of the respective organizations. One of the ways to stretch available funds is to economize on management and administration costs and make programmes more effective. It is in this context that the possibility of making better use of existing regional structures and indigenous expertise, thus freeing up centralized administrative and management costs, should be discussed. The greater involvement of local knowledge and management also implies increased participation and contribution from the participating regional countries.

It is interesting to note that another international conference on donor support to development-oriented research in the basic sciences was convened in Uppsala, Sweden, 15-16 June 1995, with the support of Sida(SAREC). This resulted in a declaration and recommendations for action. These emphasize *inter alia*, the importance of basic science for any development and the need for related long-term commitments on the basis of a national strategy. In

this context we may also refer to the Second International Conference on Oceanography, Lisbon, Portugal, November 1994, and the resulting **Lisbon Declaration and Shared Vision** (reprinted in IOC Annual Report 1994, Annex I).

### 3. THE WORKSHOP OBJECTIVES

During the Workshop participants were informed about the evolving role of the IOC and of its regional subsidiaries and the programmes. The developmental agencies explained the problems of planning and delivering their own programmes in the poorer regions of the globe. Case histories and regional examples were given in both instances.

The Workshop examined the issues related to regional organization of scientific and monitoring programmes and delivery to identify advantages to be gained through a closer involvement of a technical multilateral organization, like the IOC, with development agencies in the delivery of the respective programmes.

The purpose of the Workshop included investigating possibilities of:

- (i) using existing regional intergovernmental mechanisms for implementation of donor-sponsored programmes formulated through the donors for bilateral or multilateral purposes (e.g. CIDA and the CARICOM Secretariat in the Caribbean).
- (ii) Donors adopting, or cooperating more with, national and regional development programmes formulated through existing regional intergovernmental mechanisms on basis of priority problems and needs in the region.
- (iii) Increased cooperation and pooling of resources between global and regional intergovernmental mechanisms (such as the IOC and its regional bodies), national institutions involved in these, and donors of bilateral or multilateral nature.
- (iv) Increased use of a common programming framework as provided in the results from UNCED, in Agenda 21 and in the Conventions adopted at UNCED, with related cross-referencing to these documents.

The Workshop should also identify the mutual benefits which will result from an implementation of items (i-iv).

The IOC has organized in cooperation with SAREC three smaller workshops of a similar nature in 1991 and 1992. These, however, concentrated on the Eastern Africa - Western Indian Ocean region, while the present IOC-CIDA-Sida(SAREC) workshop is global in its scope.

### 4. DEVELOPMENT ACTIVITIES RELATED TO THE OCEANS

All participants took the occasion to give an overview of their development activities related to the marine environment.

The presentations are only summarized here. In some cases full texts are provided in the Annexes to this report.

## 4.1 CANADIAN INTERNATIONAL DEVELOPMENT AGENCY (CIDA)

### 4.1.1 **Canadian Observations on Opportunities and Constraints in the Implementation of International and Regional Ocean Related Programs**

(introduced by L. Hinds)

#### **Summary**

Development assistance by Canada was initiated in 1960. Implementation of projects is entrusted to various Canadian Executing Agencies (CEA). This is intended to utilize to the fullest the Canadian Private Sector's capabilities as they relate to the oceans, marine affairs and fisheries sub-sectors. The majority of programs have been implemented by Canadian NGOs in collaboration with private sector NGOs in recipient countries. Multilateral Agency execution has also been a mechanism for the delivery of Canadian sectoral ODA. CIDA has been involved in project execution arrangements with international and regional organizations.

The ODA policy framework is to operate within six basic priority areas: (i) basic human needs; (ii) women in development; (iii) infrastructure services; (iv) human rights, democracy and good governance; (v) private sector development; and (vi) the environment.

Canada's foreign policy gives high priority to the oceans and the marine environment whereby 'ocean' and 'environment' are totally interlinked. The ocean sectors include marine environmental protection policy and technology; oceans, coastal and inland waters; living and non-living resource management, including aquaculture and mariculture, port and marine terminal operations- offshore energy exploration and exploitation- ocean-related recreation; maritime transportation; and ocean law, policy and management.

Mr Hinds concluded by saying that the main constraint in the implementation of international and regional action programs by bilateral or multilateral/UN specialized agencies, is that they have reached a plateau with respect of what they can achieve under their respective mandates. Now, there is stagnation or a descent in the relative effectiveness in their effort to ocean development and management. He stated that this situation is directly related to the state of the economies of most developing countries. Equally important, however, is the recipient country. Attention must be paid to the lack of cooperation and coordination among national agencies, the inability of national experts to integrate activities into national work programmes, and the question of keeping up-to-date in a specific discipline or contributing basic data to a regional and/or international programme. Sustainable development will not occur if we maintain policies and programmes that are externally lead; recipients must take on this responsibility, they must establish priorities, they must position ocean issues on their priority development agenda, they must take the lead in the new century.

A full copy of the presentation is provided as Annex II to this report.

### 4.1.2 **The CIDA/CFTC Study on Capacity building Interventions in the Fisheries and Oceans Sectors of Selected Commonwealth Countries and the Relationship of these to donor cooperation and coordination**

(introduced by Z. Ramnath)

#### **Summary**

The CFTC and CIDA jointly funded a Review of donor-funded, capacity-building interventions in the Fisheries and Oceans sectors of selected Commonwealth countries. Field work conducted in the South Pacific, Caribbean, West Africa and Southern Africa Development Community during the period March-June 1995, resulted in the review of sectoral programming in the fisheries and oceans bureaucracies of twelve countries and eight regional organizations. The experiences and evaluations of and lessons learned by Host Country and Donor project personnel were sought and, their suggestions for improving programming efficiency and effectiveness were requested. Wide-ranging, detailed and often similar commentaries, were elicited from both sides with many issues being common to all regions. The suggestions provided by Donor field personnel at times contradicted the policies of their parent organizations and indicated that programming interventions and sustainability could be greatly enhanced if a formal

process of information sharing existed both within and among development agencies.

A full copy of the presentation is provided as Annex III to this report.

## 4.2 SWEDISH INTERNATIONAL DEVELOPMENT AGENCY - SAREC OF SIDA

(introduced by A. Granlund)

### Summary

The aim of Sida through SAREC is to build capacity in research on a long-term basis. There are substantial differences between regions and amongst countries which must be taken into account, but we can nevertheless learn from those actions that have led to success. These clearly show the need to attract decision makers. A major element in achieving this is to present a positive attitude and use the right terminology. Very few donors talk about marine issues. SAREC receives about 3% of the Sida budget, and of this 4% is now provided for the marine programme of SAREC, while this figure was only 0.5% five years ago.

We are also now promoting marine issues in Sida - e.g. in a study on how to promote coastal zone studies in the whole of Sida.

In conclusion we can confirm that the development of research capacity is the main aim but linked to issues and needs of society.

## 4.3 ICELANDIC INTERNATIONAL DEVELOPMENT AGENCY (ICEIDA)

(introduced by G. Oddsson)

### Summary

Iceland's development aid programme started in 1980. The basic goal is to support developing countries in their search for economic growth and to support social progress and political independence, through capacity building especially education and training. Icelandic aid is almost exclusively directed to Africa. The three main cooperation countries are the Cape Verde, Malawi and Namibia.

ICEIDA's activities with Namibia started shortly after Namibia's independence in 1990. ICEIDA has provided a fisheries advisor for the SADC Sector Coordinating Unit for Marine Fisheries and Resources in Windhoek, Namibia (since 1992). The objective of the ICEIDA-Namibia cooperation is to gather information about the state of the fish stocks in Namibian waters.

A fisheries advisor was provided for the SADC Sector Coordinating Unit for Inland Fisheries, Lilongwe, Malawi (since 1989). ICEIDA is responsible for the fisheries research part of the Lake Malawi Fisheries Project of the World Bank.

ICEIDA started cooperative projects with Cape Verde in 1981. Much of that cooperation has been in fisheries, mostly on untraditional demersal species. Three research vessels have been provided.

Future perspectives include focus on small-scale fishing, fish farming, processing and marketing. A three year cooperation project has been started with Mozambique, in cooperation with the Nordic development Fund. Focus is now being moved away from fisheries research towards training and education in the marine sector.

A full copy of the presentation is provided as Annex IV to this report.

#### 4.4 CARIBBEAN COMMUNITY AND COMMON MARKET (CARICOM) (introduced by Herman G. Rohler)

##### Summary

The Caribbean Community and Common Market (CARICOM) was founded in 1973 by the Treaty of Chaguaramas as a movement towards unity in the Caribbean. The objectives are (i) economic cooperation through the Caribbean Common Market; (ii) coordination of foreign policy among the independent Member States; and (iii) common services and cooperation in functional matters such as health, education and culture, communications and industrial regions. The Community is composed of the Conference of Heads of Government (The Conference) and the Common Market Council (The Council). CARICOM is assisted by a secretariat, based in Guyana.

A full copy of the presentation is provided as Annex V to this report.

#### 4.5 ASSOCIATION OF SOUTHEAST ASIAN NATIONS (ASEAN) (introduced by A. Zainuddin)

##### Summary

The Association of Southeast Asian Nations (ASEAN) was founded on 8 August 1967 with the central objectives of, among others: (i) accelerating economic growth, social progress and cultural development in the region through joint endeavors; (ii) promoting active collaborations and mutual assistance on matters of common interest in the economic, social, cultural, technical, scientific and administrative fields; and (iii) providing assistance to each other in the form of training and research facilities in the educational, professional, technical, and administrative spheres. ASEAN is not a development agency. Rather, ASEAN serves as a forum for promoting the economic, social and cultural development of the region through cooperative programmes, for addressing issues of common interest to the Member Countries, as well as for resolving intra regional differences.

Specific to marine and ocean fishery programmes, Member Countries, while having their own national priorities, have continued to collaborate on: (i) management and conservation of the fisheries resources of the Exclusive Economic Zones (EEZ) in the ASEAN region; (ii) identification of common areas for commercial cooperation in fisheries; and (iii) working towards a common stand and understanding of regional and international matters in fisheries.

ASEAN's cooperation in fisheries stems both from collective national efforts and assistance from its eight Dialogue Partners--Australia, Canada, the EC, Japan, New Zealand, United States, South Korea and UNDP. Three types of development cooperation projects in fisheries can be distinguished. First, projects that actually work to strengthen cooperation in the fisheries sector at the ASEAN level, which can be called "integration orientated" projects. Second, projects which address a common need expressed by all ASEAN countries but which are not really designed to promote ASEAN cooperation per se. These are "common needs" projects. Third, projects which can be traced to the interest of one specific ASEAN country. These are "country specific" projects.

Taking advantage of the geographic proximity, historical and cultural ties and complementarity of economic activities, ASEAN is also promoting a targeted cooperation centered around the "growth triangles". ASEAN Member Countries have identified the development and joint management of fisheries and aquatic resources as one of the key areas of cooperative actions to be taken in the growth triangles. ASEAN look favorably at programmes involving the growth triangles since the private sector usually plays a crucial role in their planning and implementation.

A full copy of the presentation is provided as Annex IX to this report.

#### 4.6 THE COMMONWEALTH SECRETARIAT

(introduced by S. Fakahau)

##### Summary

The Commonwealth Secretariat facilitates inter-governmental consultations and exchanges of information in the political and economic fields, while its development cooperation wing, the Commonwealth Fund for technical Cooperation (CFTC) assists development in Member Countries. The Agricultural Development Unit (ADU) of the Export and Industrial Development Divisions (EIDD), the main source of expertise in fisheries, collaborates with other divisions of the Secretariat to provide advice, hands-on expertise and training in all aspects of fisheries and oceans to member countries. The Secretariat also collaborates with other donor agencies in the implementation of member countries' fisheries and oceans management, research and development programmes. Development assistance is channeled through regional fisheries and ocean organizations and national governments.

#### 4.7 NETHERLANDS GEOSCIENCES FOUNDATION (GOA)

(introduced by J. Stel)

##### Summary

Dr Stel provided a historic overview of the **Snellius II Programme** (1982-1987) which involved a bilateral partnership between the Dutch and Indonesian governments. Within its framework an extensive joint research programme was carried out in the eastern Indonesian waters. He pointed out that the innovative element of the Snellius II Programme was that the transfer of knowledge and capacity building were an intrinsic part of the overall programme, as well as the conversion of the results to the public at large, politicians, and policy makers.

He also gave extensive information on the **Indian Ocean Programme** (IOP)(1990-1995).The IOP comprised five interrelated projects namely monsoons and coastal ecosystems in Kenya, monsoons and pelagic systems, tracing seasonal upwelling, geological study of the Arabian Sea and, biology of oceanic reefs. From May 1992 till April 1993 the *Tyro* carried out research in the northwestern part of the Indian Ocean. Scientists especially from Kenya and Pakistan were, through formal *Partners in Science* programmes, intensively involved in the planning of the expedition.

He concluded that the value of a Partners in Science programme has proven itself in the Snellius II and Indian Ocean Programmes. From these efforts, it has become clear that such a programme must meet certain conditions if it is to be successful. These conditions include, among other things, the establishment of a good, scientific infrastructure in the developing country including experts, institutes, equipment and technicians who know how to use it. This is time-consuming. The establishment of such an infrastructure takes at least six to ten years. Besides this, it is essential that each of the two countries involved furnishes study plans, has its own coordination centre and supplies manpower, pools of instruments and financial means. The main objective of a partnership is to assist a developing country in capacity building through the transfer of knowledge and infrastructure, by the execution of a joint bi- or multilateral research effort. This should optimally be reached by matching science funding with ODA-funding.

A full copy of the presentation is provided as Annex VII of this report

#### 4.8 INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (IOC) OF UNESCO

(introduced by G. Kullenberg)

##### Summary

The IOC of UNESCO was created in 1960, through a decision of the General Conference of UNESCO. It

was originally focusing on facilitating cooperation in marine research and promoting marine scientific investigations. It is a body with functional autonomy within UNESCO.

Presently there is a shift in emphasis underway towards ensuring that scientific results are integrated and can be applied for sustainable development and actions are being related to major issues of society. The IOC is covering in its programmes marine science, ocean observations and services, including data and information exchange and management, capacity building, training and education. The subject area programmes are developed by expert groups and intergovernmental committees.

Regional actions are central implementation tools. These are based on regional programmes formulated by regional subsidiary bodies of the IOC, consisting of representations of the Member States in the region, but also open to other Member States interested or active in the region.

The IOC Assembly decides on a bi-annual programme, which is subsequently adjusted as required and endorsed by the UNESCO General Conference.

The frameworks provided by the UNCED results and agreements, as well as by UNCLOS are providing major guidelines for the IOC programme formulation. Cooperation with other bodies and programmes is an essential element of IOC actions. This includes cooperation with UN and non-UN, inter-governmental and non-governmental organizations. In several cases joint programming is used, and also formalized cooperation agreements, e.g. GESAMP, ICSPRO, WCP and IGBP. In the regional case cooperation agreements have in some cases been established with donors e.g Sida (SAREC) as regards East Africa and the Caribbean, DANIDA as regards Harmful Algal Blooms (HAB), and with Japan as regards the Western Pacific region.

The tripartite model of cooperation established between the regional subsidiary body of IOC (IOCINCWIO) and Sida (SAREC) through IOC is an example of how this interaction can be constructively used. A complete version of the presentation can be found in Annex VIII.

## **5. EXAMPLES OF REGIONAL STRUCTURES AND SUBSIDIARY BODIES**

Some presentations were also made on regional structures. Summaries of these are provided here, and in some cases the full presentation are provided in the annexes to this report.

### **5.1 CARICOM** (introduced by Herman G. Rohler)

See section 4.4.

### **5.2 REGIONAL SUB-COMMISSIONS OF THE IOC**

Regional Sub-Commissions of the IOC can be established by the IOC Assembly at the request of Member States in the Regions. These take into account at least the following basic conditions:

- (i) an existing regional subsidiary body of the IOC has formally requested the Assembly to designate it as a regional Sub-Commission;
- (ii) the budget and secretariat required for the effective functioning of the proposed regional Sub-Commission will be made available;
- (iii) the Member States of the region for which a regional Sub-Commission is proposed are already actively engaged in co-operation activities or have demonstrated their commitments to so become.

Regional Sub-Commissions operate within the framework of the general policy of the IOC and the budgetary guidelines and allocations established by the Assembly. The Sub-Commissions are inter-governmental bodies of the IOC. They formulate the regional programmes on the basis of regional priorities and needs, taking into account budgetary constraints.

Two Sub-Commissions have been established: **IOCARIBE** (Caribbean region) in 1982, and **WESTPAC** (Western Pacific region) in 1990. They meet regularly every third year. Secretariats have been established in Cartagena, Colombia (for IOCARIBE) and Bangkok, Thailand (for WESTPAC).

The programmes of both Sub-Commissions include regional components of the IOC global programmes, adjusted according to regional priorities and needs. In IOCARIBE a close cooperation has been established with UNEP and a joint programme in marine pollution assessment, monitoring, abatement and research called CEPPOP has been in operation since 1990. A regional ocean observation system of sea level, ocean circulation, water masses, and marine contamination has also been gradually established.

The cooperation and dialogue with regional bodies, e.g. CARICOM and some NGOs, needs to be strengthened for IOCARIBE. A major problem is sustained funding and dependable resources although IOCARIBE benefits from a considerable support: from the United States and some other donors (France, Sweden). The WESTPAC Sub-Commission benefits from a sustained resource allocation from several of the countries in the region, in particular Japan. The United States is also providing significant support. Problems encountered in WESTPAC are often related to the vastness of the region, and different sub-regional groupings. The cooperation with UNEP has not been as strong as in the Caribbean. Cooperation with ASEAN projects and CCOP is now being strengthened.

Experiences of the WESTPAC Sub-Commission and associated national structures are presented in Annex IX.

### 5.3 IOC SUB-COMMISSION ON THE WESTERN PACIFIC AND ASSOCIATION OF SOUTHEAST ASIAN NATIONS (ASEAN)

(introduced by M. Hungspreugs)

#### Summary

In Southeast Asia there are a number of bilateral and multilateral programs on marine science or marine related activities operating. Not many of these are known to one another. An attempt is made to list some of them here although several other names are known by this author but not much is known about the programs so they are not included here as yet. However, improvement in coordination and cooperation will certainly maximize the benefit and lessen the cost involved. A full copy of the presentation is provided as Annex IX to this report.

### 5.4 REGIONAL SUB-COMMITTEES OF THE IOC

The IOC development actions originally started as regional cooperative investigations. The first of this kind was the Indian Ocean Expedition initiated in the 1960s, with SCOR as the driving scientific body, and IOC as the inter-governmental mechanism. This initiative was followed by similar cooperative investigations in the Eastern Atlantic, in the Caribbean and the Western Pacific. The developments in the latter two regions led to the establishment of the Sub-Commissions (IOCARIBE and WESTPAC) after about 1-2 decades, passing first through an Association (IOCARIBE) and a regional Sub-Committee (WESTPAC).

The Sub-Commissions were only established after a thorough review of the results of the regional cooperation programmes. In the other regions the cooperative programmes have led to the establishment of IOC regional Sub-Committees: for Central Eastern Atlantic (IOCEA), for the Central Western Indian Ocean (IOCINCWIO) and for the Central Northern Indian Ocean (IOCINDIO). The regional committees are composed of

Member States of the region, represented by their national institutions, and other Member States with a demonstrated active interest in the region. The committees formulate their programmes on the basis of national plans and needs, taking into account the regional common interests and priorities. The global IOC substantive programmes can provide inputs, and regional sub-programmes can be developed. The implementation of the programmes depend to a large extent on financial support from outside, i.e. from IOC and donors, with the participation of the active national institutions in the region. This implies that the rate of development is a function of our ability to obtain donor support. Through the considerable long-term support from Swedish and Belgian donors to the IOCINCWIO region during the last eight and ten years respectively, the development there has advanced well beyond the other regional sub-committees.

In 1995 the IOC Assembly decided to establish a regional sub-committee for the Black Sea.

A basic difference between the Sub-Commissions and the Sub-Committees is that the latter neither have a secretarial function in their regions nor the associated considerable cost of a secretariat.

The development in the **IOCINCWIO** and **IOCEA** sub-committees as presented by Dr. E. Okemwa, and Dr. L. Awosika respectively is detailed in Annexes X and XI respectively, including examples of national experiences. Information on the Tanzania case including the Western Indian Ocean Marine Science Association (WIOMSA) is given in Annex XII.

## **6. SUMMARY OF DISCUSSIONS, CONCLUSIONS AND RESPONSES TO WORKSHOP OBJECTIVES**

The presentations generated considerable discussions which are presented in an overview form here.

### **6.1 ENVIRONMENT & DEVELOPMENT**

In November 1994 the United Nations Convention on the Law of the Sea entered into force. This provides an international legal framework of ocean affairs, which will gradually enter national legal fora and help achieve harmonization at regional and global level.

In order for this to benefit the nations concerned they must achieve sufficient national capacities to adequately manage their resources: living and non-living, known and unknown. The IOC part of an integrated capacity concerns the ability to obtain data and information and to interpret and use these. In view of the nature of the ocean it is furthermore necessary that the data and information can be used internationally and can be compared among nations. This leads to requirements for quality and data control, harmonization and standardization of observations, and data quality control.

These aspects have been taken into account during the formulation of regional programmes and agreements such as those of the UNEP Regional Seas, IOC, FAO, and IMO.

The preparations for, and follow-up to, UNCED have reinforced these requirements, relating the capacity building to environment and development, and emphasizing the integrated or holistic approach. The Workshop noted this and stated that the UNCED results could be used as frameworks for joint programming involving national and international institutions working together with donor agencies in partnerships.

### **6.2 INTERSECTORIALITY**

The Workshop also noted that there are many international bodies and programmes as well as donors dealing with marine affairs, usually on a sectoral basis. This does not lend itself to an integrated approach. The Workshop considered it important to stimulate national ocean policy development which includes the scientific and observational elements, whereby local knowledge must be adequately incorporated in the process. Priorities ought to be related to

central issues of society, which can vary depending upon regions and climatic zones. It was suggested that perhaps the Commission on Sustainable Development could be used as an integrating and policy shaping body. The role of the other international bodies including IOC was also acknowledged in this context. Sustainable development requires integration of scientific inputs: a point made frequently as an example was the need to bring fisheries and ocean research people closer together than they often are. The importance of cultural differences was also stressed. The differences between donor agencies are also showing this, e.g. in emphasizing *development* or *research*, usually not combinations or interactions thereof. The *partnership* concept was stressed: this should be exemplified in regional management efforts and would reduce overlaps, improve planning, and bring out benefits for all involved. Examples of this were given e.g. in the Commonwealth approach, the ASEAN programmes and the IOC-Sida (SAREC) regional cooperation. The importance of giving priority to environment and development was confirmed by the Workshop. This must include education and improving the public understanding of the role of the environment for development. An example is the need to secure food from the sea through sustainable management.

The need to involve the private sector was also stressed. This is successfully applied by CIDA which assigns Canadian private sector firms as Executing Agencies and trains private sector personnel in developing countries to provide services such as equipment maintenance. Concepts of integration such as **LME** (Large Marine Ecosystems) and **ICAM** (Integrated Coastal Area Management) were considered useful, so as to achieve an ecosystem-oriented approach, where society is part of the system. The biosphere reserve model was given as an example. The **1998 International Year of the Ocean** could be used to boost all these points. Perhaps the **Independent World Commission on the Ocean** could likewise be used to promote an institutional integration.

In summary the Workshop asked:

- (i) What does integration imply?
- (ii) What is the political system of the partners?
- (iii) Can project cycles be linked to national policy cycles and national policies?
- (iv) How are national achievements used in project identification?

and endorsed the need to:

- (i) establish national coordination mechanisms;
- (ii) prepare actions through national workshops;
- (iii) define the national priorities and aims
- (iv) help to get the oceans and coastal areas on the national priority agenda, as well as on that of donors (less than 1% of resources go towards ocean development)

Special concern was given to the exploitation of marine living resources. The need for a much more integrated approach in this particular context was repeatedly emphasized.

## 6.3 CAPACITY BUILDING

The human resource development was also considered to be more effective if organized at the regional level since this could lead to a pooling of resources and to reaching a *critical mass* of participation. In this context the need for adequate research capabilities was particularly emphasized. It was stressed that human capacity building should be linked to infrastructure building. Examples where this has been achieved are ASEAN and CARICOM through CIDA funding. This leads to coordination and cooperation as well as political interest and commitment. It also requires that the issues of society be addressed. For instance the need for marine research to help address the real issues was re-emphasized by the Workshop, and the need to establish a dialogue with all user sectors. Examples were presented showing the benefit of regional programming and involvement of donors from the start using regional inter-governmental mechanisms, e.g. ASEAN, Commonwealth and CARICOM. The ASEAN success demonstrates the importance of summit meetings with an in-depth preparation, which includes sector ministers and ministers of economy. The ASEAN programme now includes fisheries at various levels: EEZ (national, international); aquaculture; marine pollution. Ministerial meetings are central elements of the cooperation. The sustainable development of marine living resources is a very important part of the ASEAN programme, with SEAFDEC playing an essential role. Cooperation between SEAFDEC and IOC-WESTPAC could well benefit the aims of the regional countries and economies.

The ASEAN experience suggests that, in order for the cooperative projects to be sustainable, they must have a national basis. This is particularly true when the nations will gradually take over the projects. A consequence of this is that national/regional experts must be used, or must be developed as part of the projects, since these experts must remain in the nations and the regions. In this context mechanisms like SEAFDEC and WESTPAC can provide the required foci and basis for regional scientific cooperation, thereby helping ensuring sustained scientific expertise and development in the region and participating nations. Another example where this approach is working well with focus *inter alia* on the marine environment is the Commonwealth Organization.

The experiences gained from the IOC's regional activities in Africa show the potential for successful regional cooperative programmes and identifies several needs which are often overlooked, e.g.: provision of some basic equipment and maintenance of these including spare parts; on-site training should be a priority and primarily use the existing national expertise. The experiences there also show the very important role of national commitment, individual leadership, and involvement. This brings out the staffing and personnel issue which is a major concern in many cases.

In this process one should use local (national) capacities, involve science institutions from the start and achieve an improved profile for marine matters. This is now of utmost importance in view of the following factors: decreasing or at best static available funding; the small percentage of these funds being provided to fisheries and marine research development; the missing linkage between these two marine aspects; the status of science which in general is not high on the development agenda; the efforts which are being made to obtain more integration. A recognized role of marine science and ocean observations should be reinforced and encouraged.

## 6.4 THE IMPACT OF SCIENCE

The economic and social benefits of research must be clearly identified as should the impact of science on management, and this should be part and parcel of development projects. These matters should also be introduced in the regional programming of IOC. The scientific community needs to become more integrated and less isolated. The scientific efforts must yield results and must not always claim that more research is needed. A change is also needed in the institutional structure: 13 UN agencies are 'active' in the Caribbean. A substantial change is required in order to achieve an impact commensurate with the efforts which are made.

There is a need for a science policy. In developing countries there is a growing political awareness of the importance of science. Science is now on the agenda of OECD. We must use this and endeavour to provide more information about our activities outside our normal communities. We need to help translate the scientific results into applications, and explain or help interpret the results. An increased vertical communication and coordination is also needed. Project developments are often done at a high level, and the implementing institutions are not involved early enough.

There is also a need to critically consider which science is required and relevant. This can be achieved by identifying how the science and technology relate to, or is relevant for, development and economics. That is a requirement to ensure a certain continuity in the policy. Several regional cooperation arrangements e.g. ASEAN, CARICOM, have been able to achieve this. However, a sufficiently high level of participation and commitment is required. The IOC should strive to involve high level representation in its governing body meetings. We must increase public and political awareness if we are to have any real impact. The 1998 International Year of the Ocean can be utilized to this end. There is at the same time a need for much more efforts as regards environmental education. This is certainly well demonstrated in the process of follow-up to UNCED.

In general the attitude of the public toward the marine environment and the ocean is one of caution - human beings are terrestrial creatures. Take fisheries as an example: the developed countries have all the technology, knowledge and expertise required as well as political will - and still they fail in fisheries management. The *status* of the ocean is low. We need to change the application of our knowledge.

## 6.5 DONOR SUPPORT AND COORDINATION

Project development requires a dialogue between recipients and donors. The projects should not be donor driven. Leadership and communication is required, with proper and dedicated advice to decision makers so the right level of presentation in competitive conditions can be achieved. International organizations have a role to play here.

There is considerable political benefit to use existing regional intergovernmental mechanisms to both help implement projects and, in particular, to formulate programmes in cooperation with donors for possible donor support in the implementation. CIDA has used this approach which ensures participation of national institutions from the start and continuing throughout the duration of the intervention.

Several regional mechanisms were presented and their main problems, advantages, disadvantages were identified and discussed. For the IOC regional subsidiary bodies, the funding of the programme implementation is generally the main problem. In addition there is the need for funding of the regional secretariats established for the IOC Sub-Commissions, IOCARIBE and WESTPAC. It was considered that these problems are related to: (i) the lack of aggressive and convincing presentation of the regional programmes and the lack of an agreement or pledging system such as exists for the UNEP Regional Seas counterparts; and (ii) the lack of a formal inter-sessional mechanism in the form of a bureau. The need for strong leadership of regional bodies was emphasized. As a positive example the regional programme for the North and Central Western Indian Ocean (IOCINCWIO) was noted. This programme has established, through IOC, a strong and very beneficial cooperation with several donors, in particular with Sida (SAREC). This tripartite partnership of : (i) a regional body with a regionally driven programme, (ii) a global coordinating mechanism in the form of IOC, and (iii) a multi-lateral donor in the form of Sida (SAREC) is in fact a model for regional development aid. The experiences gained during the past five years have been very positive (see section on IOC). CIDA has similar experiences one of which involves the CARICOM Secretariat as the regional body driving a regional resources assessment programme which involves 15 Caribbean countries with CIDA as the major funding agency.

Another problem which was identified is the lack of interaction, cooperation, coordination and dialogue between different regional bodies operative in the same region. It was stressed that each body should undertake an outreach campaign and inform the others about benefits which could result from a closer cooperation. This is fully in line with the need for integration stressed during UNCED. Recently some efforts have been taken in this direction in regions covered by the IOC Sub-Commissions.

The need for regional organizations to implement the programme agreed upon by the governments was repeatedly stressed. It was agreed that this is the foundation of the IOC regional programmes and bodies. The Governments must identify priority activities, and the implementation of these should be facilitated through the regional cooperation mechanism which should build on, and respond to national needs and priorities.

Regional cooperation, however, implies that the establishment of a real capability to build and implement national programmes which can form parts of a regional cooperation programme is critical. Thus, elevating the abilities is a priority item for the regional actions. It was of course emphasized that regional cooperation as regards the marine environment is a necessity which makes the national efforts enormously more valuable than when taken individually. The international programme thus reinforces the national one, and vice-versa.

In order to facilitate funding and sustained commitment it is valuable to focus on urgent needs of Member States, so that it is demonstrated that the regional mechanisms can deliver and are of benefit to the countries. This will also help obtaining required outside funding. Regional expertise should be fully utilized.

The experiences in the ASEAN-Canadian cooperation highlight many of the prerequisites for achieving success. Each participating country must feel involved, and each should receive a share of support and responsibility. Awareness creation and information management are very important elements. The project planning phase must be interactive and involve everybody; counterparts must be identified through an agreed mechanism; the workplans should be developed locally; each problem to be considered should concern more than one country. A dialogue needs to be established between technical/scientific people and policy makers.

The growing coordination and cooperation between WESTPAC and ASEAN projects was noted as a very positive trend. The fact that both partners wanted this cooperation as expressed by their Member States, and that projects are regionally driven, i.e. are wanted by the governments, was stressed. The project or task leaders at national level are often the relevant government agencies or institutions.

Other aspects which need careful consideration include: policies of host countries; on-site training and education; regional variations in culture and development.

Cooperation between agencies is also very desirable and essential as it helps to ensure retaining trained personnel, and supports the existing national institutions in a sustained way. Continuity is essential over a longer period (5-10 years).

Considerable discussion focused on how to improve marine sciences in Member States. The roles of information, libraries, support to research through grants, networking, ocean data bases and clearing house were stressed. In this context the IOC can play a large role. However, the IOC needs to re-consider its strategic purpose. What is the purpose of the IOC in the regional context - where are the outputs of the various IOC activities directed - how are they used - how do the results of a workshop get into a planning process or into a project? The IOC should not at all compete with other organizations about projects, but rather facilitate, modify, improve and help to coordinate. There is a need for some support for coordination and dialogue activities. A key question in this context is how we can make decision makers more aware about the role of research and observations; which medium to use; whom to address. Improved awareness is a must and should include information about what we are doing, about the good things and results, about impacts of these on economics and sustainable development. The role of education about oceans and the marine environment in schools was also brought up in this context.

In order to achieve the set goal we should go to the top, to prime ministers and finance ministers. There is a need for strong arguments, directed to the key leaders. We should make an information package aimed at these targets. We should avoid talking about our problems, but rather present the positive.

The cooperation between donors and science lies in the benefit of identifying sustainable programmes based on national interests, including economics, in the form of an attractive science-based package. This will also attract other users and sectors. The IOC-Sida (SAREC) cooperation is a case at hand. We should address the scientific wings of donor agencies with the lessons learnt from the IOC-Sida (SAREC) cooperation, and provide an economic tool based on marine science and observations. Identify the problems, bring it to the donor, and if of interest, bring together the partners: national institutions, donors and facilitators, in this case the IOC. We need to maintain our science base: to protect that intellectual seed and what it produces, and at the same time link up closer than is the case now with management and user communities. An impact indicator is an increased demand for support to research and observations.

When Identifying the different groups in the donor community, we should single out those oriented towards research. The others should be addressed for preparation of information packages to inform decision makers. These products can sell the issues much better than the research scientists. Various tools can be developed: presentations; special courses; workshops; inter sectoral national seminars involving governments etc. We need to exchange ideas on how to produce and present concrete results to society. Perhaps we should create a scientific and technical forum at a national level. Preparation of brochures, information booklets (e.g. the tsunami series, fisheries, harmful algal blooms, marine science country profiles). Public relations should be part of missions, and we must follow up missions. Regional science seminars with participation of all regional bodies so as to include also the user sectors can be very effective.

A start should be made at the national level, and from there we move to the regional level. Organizations and donors should be involved in both. The donors can then identify what is of interest to them and the appropriate organization can be used as the facilitator. A joint programming framework can be utilized, e.g. Agenda 21 or follow-up to UNCED in general. Evaluations and impact studies come in from the start, and priorities are identified. Indicators of results can be specified as : trained manpower, manuals, inputs to legal instruments or economical development, an increased demand for support, etc.

## 6.6 CONCLUSIONS

On the basis of the discussions and the points made in the presentations we can conclude with respect to the purpose of the Workshop mentioned in Section 3 of this report that:

- (i) there are clear benefits for both donors and recipients to use regional inter-governmental mechanisms for the implementation of donor-sponsored programmes;
- (ii) many possibilities exist for increased cooperation between donors and regional inter-governmental mechanisms, whereby donors adopt regionally formulated programmes, with the donors being partners in the programme formulation and action specifications. The benefits for all concerned include *inter alia*: more active participation of national institutions and experts; sustained development, increasing commitments of national institutions and of governments; increased political visibility; improved image; and increased management and policy shaping interactions with national agencies. This may stimulate formulation of national research policies, with an associated increased demand for support;
- (iii) the possibilities to increase pooling of resources at global and regional level are obvious. With this comes sharing of experiences; inter-regional linkages in this respect can be very beneficial. Several examples were identified: the problems of implementation are often similar, and many of the problems of the marine environment are universal;
- (iv) the benefits of an increased use of common programming frameworks e.g. UNCLOS or UNCED provisions, are particularly obvious in addressing global issues. However, these do not lend themselves to global legally binding agreements, but where a common agreed approach will help ensure that a universal problem is gradually solved. Examples include: land-based sources of marine pollution; marine biological diversity (coastal zone); responses to sea level changes and matters related to climate change; responses to extreme events; management of marine living resources in the EEZ. The donor community will, by using such common and agreed programming frameworks, obtain a much larger impact and global return on investment than by using more individualistic approaches. Cross-references to the common programme frameworks will additionally attract the attention of global inter-governmental mechanisms like the UNGA and the CSD.

Essential missing elements in many of our research and environmental development efforts are linkages to economics and social-cultural aspects. This must be remedied if societies are to obtain the impact and benefits which are inherent in the current development of our understanding of the oceans. Another important dialogue which must be strengthened as far as IOC is concerned is with policy makers and management in general. We need this dialogue in order to ensure long-term commitments and sustainable development of the marine environment, as well as to achieve a proper acknowledgement of the IOC itself.

## **7. ESTABLISHMENT OF PRIORITIES FOR OCEAN RESEARCH AND DEVELOPMENT PROGRAMMES: WORKSHOP CONCLUSIONS**

### **7.1 ROLE OF MARINE SCIENCE IN DECISION MAKING**

There was considerable discussion on whether the role of marine science in the decision-making process will decrease in the next decade. Whereas this may be the case in some countries, including industrialized nations, others reported more rather than less use of scientists by politicians. It was recognized that decision makers have to weigh environmental and information impacts and costs against short and long term economic development.

It was argued that NGOs, who often have a more efficient access to the general public and consequently to the politicians, have a stronger impact than scientists in the decision making process. Concern was expressed about the strength of scientific capabilities of the NGOs. There is a trend with donors to work increasingly with NGOs and the group felt that caution should be used when using only NGO partners for marine science related issues and activities.

It was agreed that in order for the members of the marine science community to assist and to be actively involved in the policy definition process, they have to identify appropriate channels and improve their techniques to communicate and clarify their findings to the political decision makers. This brought the discussions to the need of including communication and information transfer to community leaders and the public as regards the responsibilities of the scientists. It was remarked that this would challenge the capacity of an individual in being both an outstanding scientist and an efficient communicator. A resolution to these diverse demands was not identified in the discussions. Nevertheless it was noted that a non-scientific politician convinced of the scientific arguments was a better advocate for science amongst his colleagues than the scientist himself or herself

It was stated that scientists need to respond promptly and in concrete terms to queries or requests for advice and recommendations from the government, rather than replying that 'further study of the issue is required'.

Attention was drawn to the low esteem given to the ocean. This is reflected in the low status accorded to fishermen and seamen, as well as in the use of the oceans for waste disposal. The rewards for accepting training and education in marine sciences must become part of the programme benefits.

### **7.2 THE PROGRAMME PLANNING CYCLE**

Some concern was expressed over the setting up of projects involving highly sophisticated equipment which can rarely be sustained by the recipient country beyond the duration of the project thereby leading to frustration amongst the scientists and an inability to maintain an appropriate level of activity.

It was stressed that, in order for projects to be effective, the project planning cycle must ensure that marine scientists are involved in important elements of project identification and formulation. During the project formulation exercise other departments involved in economic and social aspects related to the project should also be contacted. This could include the public service commission, economic planning units, department of finance, etc. to ensure sustained support for counterpart activities and staffing.

### **7.3 INVOLVEMENT OF DEVELOPING COUNTRIES IN GLOBAL PROGRAMMES**

It was observed that global issues may not be obviously relevant to the immediate needs of developing

countries. This was called the big science-little science issue. However, lack of participation by developing countries in global issue programmes may widen the gap in capacity between developing and industrialized countries. We therefore need to translate global issues into locally relevant terms. It was also said that programmes focusing on the 'local' issues and needs provide a foundation leading to participation in broader global issues. Targeted research may be a possible mechanism here.

## 7.4 SCIENCE AND TECHNOLOGY POLICY

In many countries, few science and technology agencies exist at the national level. Even where they exist they are observed to be fragile due to the short-term policies implemented by changes in policy makers. It was observed that regional cooperation could actually stabilize and support national policy frameworks as could the information of senior decision makers.

It was stressed that the donors are result-oriented and results need to be easily measured. This generally favours fisheries related projects. Marine science is usually of marginal interest to donors. The goals of basic science are usually open ended and funding requirements are continuous. This creates 'donor fatigue'. To avoid this, marine related research must therefore become more result and development oriented and focus on projects with clearly identified socio-economic relevance and benefits.

There is also a need to recognize and identify the role of marine science in broader global issues of pollution, water quality, global warming, sea level rise, etc. that are important to donor countries in addition to the resolution of local and regional issues.

It was observed that adopting a science policy at the national and international level assists in the acceptance and evolution of science and science-related programs. It was regretted that UN bodies do not sufficiently address the issue of science policy.

## 7.5 INTEGRATION OF UN AGENCIES AND REGIONAL BODIES

It was observed that there should be more integration of activities within the family of UN agencies. Such integration would help in building capacities of indigenous organizations .

Concern was expressed about the number of regional bodies and their level of activity. It was observed that member states displayed a higher level of commitment to regional structures which were based on charters and in which membership was subject to financial participation. Membership in these other regional structures was observed to be detrimental to participation in intergovernmental entities such as the IOC regional bodies.

## 7.6 CONCLUSIONS WITH RESPECT TO HOW TO ACHIEVE PROPER PRIORITIES AND COMMITMENTS

### 7.6.1 Cooperation

- (i) Cooperation between regional bodies and donors must increase, and donors should contact regional bodies early on in the project formulation and *vice versa*;

The meeting recognized that it may be possible to achieve efficiency through the increased use of regional bodies. In many cases the programmes of the IOC have objectives similar to those of the donor agencies. This is not surprising as both should be serving the priorities of the governments of the region. In addition, many of the IOC programmes provide services that are fundamental to marine programmes, such as standards and formats for ocean data and information exchange, standards and reference materials for pollution studies, equipment maintenance training,

etc. Recognition and support from donor agencies for these programmes would, of course, improve the delivery of IOC programmes in the regions. On the other hand, the use of indigenous expertise for planning and management, using the regional organizations, could substantially reduce the operational costs and increase the effectiveness of selected donor programmes.

- (ii) The existing gap between fisheries people and ocean research people must be closed. Physical conditions and processes must be taken into account
- (iii) The environment, including the marine environment should be given the right priority, e.g. in relation to food (fisheries, aquaculture). There is a need for intersectoral projects.
- (iv) The conditions of the marine environment, both from an environmental and ocean health point of view are essential factors to be considered for fisheries management and other living resource questions

These factors are often neglected. Because of the food and economic importance of the fisheries to many developing countries, many developmental programmes are aimed at the improvement of wild or cultivated fish harvests. A closer relation between the IOC and development agencies would ensure that important associated marine environment questions are not overlooked.

#### **7.6.2 Benefits**

- (i) Experiences of different donors should be recorded and used as an aide to the donor community at large in formulating projects that are responsive to the recipient's needs

The meeting heard of many experiences from both donor and recipient country representatives that demonstrated a lack of communication amongst donor agencies. In many instances, mistakes were repeated and examples of successful programmes not shared. The meeting recommended a practise whereby the community at large could benefit from the reports from bilateral and multilateral developmental programmes.

- (ii) There is a need for more integration

A regional approach is essential as a plateau has been reached in the national approach. Differences between regions have to be recognized. In the past, programmes have tended to be sectoral and bilateral. The meeting recognized that a regional approach would be more effective and allow for regional differences in marine priorities and programmes.

- (iii) We need to collect and put together the experiences obtained in different regions and donor programmes
- (iv) Capacity building is a long-term process and is evolutionary

Donors are generally interested in science for development and in results, and hence science must produce results and show its importance and relevance in providing solutions to problem solving. Priority-setting should be issue driven.

- (v) We must avoid donor driven projects

#### **7.6.3 The importance of Communication and Visibility**

- (i) We must attract decision-makers through the use of appropriate terminology and we must make more efforts in explaining the issues

- (ii) Leadership and communication (briefing, advice) are essential elements. Ministerial or senior official levels should be used to obtain commitments
- (iii) Projects must have a national base so as to ensure their self-sustainability.

Experts involved in projects should be indigenous and should remain in the region. Politicians are listening and want to be informed but must also take their sectors and interests into account. Look at OECD, signals on science and GOOS. We must use these signals.

**ANNEX I**

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## ANNEX II

### **CANADIAN OBSERVATIONS ON OPPORTUNITIES AND CONSTRAINTS IN THE IMPLEMENTATION OF INTERNATIONAL AND REGIONAL OCEAN RELATED PROGRAMS.** (Presented by L. Hinds)

(The views and interpretations of this document are those of the author and should not be attributed to CIDA or any individual acting on its behalf).

#### **1. EVOLUTION OF CANADIAN OCEANS ODA**

The history of aid activities can be divided into three distinct periods. From 1960 to 1970, virtually all assistance was delivered on a bilateral and multilateral basis. Between 1970 and 1980, bilateral ODA continued, but was increasingly being replaced by regional projects, and projects involving Canadian businesses. Throughout the 1980s and 1990s, as Canadians accumulated more experience, an increasing share of fisheries sector ODA took the form of "hands-on" bilateral, regional and inter-regional projects implemented by Canadians and national experts.

In response to approved requests the regional distribution of fishery assistance illustrate very clearly the broad spread of program apportionment of allocated funds over the past 30 years. 43% went to sectoral activities in Africa (29% for Francophone and 14% for Anglophone projects); Asia/Pacific activities received 20% of the budget; Caribbean States 18%; Latin America 12% and contributions to Multilateral Intergovernmental programs 1 %.

Programs were allocated among 14 different technical disciplines. For convenience of this review, they are combined into 4 broad sub-sectors-. **production sector** (including primary production and aquaculture), received 13% of the allocation, **processing and postharvest activities**, reducing post -harvest losses ( secondary sub-sector) received 25% of the allocation; **services to the industry** ( shore infrastructure, landing sites, cold storage) received 20%. The largest allocation 42% was directed to management, **capacity building/human resource development and administration**.

#### **2. PROJECT EXECUTION AND CANADIAN ODA.**

Implementation of projects is entrusted to various Canadian Executing Agencies (CEA's). This system is intended to utilize to the fullest the Canadian Private Sector's capabilities as they relate to the oceans, marine affairs and fisheries sub-sectors.

The majority of programs, (59%), have been implemented by Non-Governmental Organizations based in Canada, in collaboration with private sector non-governmental groups in recipient countries. Multilateral Agency execution has also been a mechanism for the delivery of Canadian sectoral ODA. CIDA has been engaged in trust fund and contribution arrangements with international and regional organizations (UN and Indigenous) for the execution of projects. Examples include- 1) FAO for the South China Seas and West Africa's CECAF programs. Sub-regional groupings such as the Association of South East Asian Nations (ASEAN), for Fisheries Post-Harvest Technology and Marine Science, The Forum Fisheries Agency (FFA) for Fisheries Management. The Organization of Eastern Caribbean States (OECS) and The Caribbean Community (CARICOM) for Fisheries Management and development.

In general, aid has been geared towards making full use of the fishery resource under the jurisdiction of developing coastal states. Projects have often been aimed at more efficient exploitation of the resource entailing, for example, the provision of better vessels for improving catch rates, development of improved transportation and preservation activities, a scientific approaches to stock assessment, conservation and management of the resource. On occasion, assistance has taken the form of scientific cooperation, as in the mapping of coastal regions within the context of the *United Nations Convention on the Law of the Sea, 1982 (UNCLOS)*.

#### **3. CURRENT POLICY FRAMEWORK FOR CANADIAN OCEAN RELATED ODA.**

The recent Canadian foreign policy review and subsequent Government statements make it very clear that

the environment generally, and the oceans and the marine environment specifically, are to be given a high priority in Canadian national, regional and international policy and relations. The mandate for Canadian ODA is to support **sustainable development** in developing countries, in order to reduce poverty and to contribute to a more secure, equitable and prosperous world.

The ODA policy framework is to operate within six basic priority areas:

- **basic human needs;**
- **women in development;**
- **infrastructure services;**
- **human rights, democracy and good governance;**
- **private sector development; and**
- **the environment.**

"Oceans" and "environment" are totally interlinked and part of a single ecosystem. In other words, it is not possible to address environmental ODA without addressing oceans issues. The reverse is equally true. Accordingly, and in keeping with the Government's enunciated policies, ODA in the environmental area is also oceans ODA. The ocean sectors include marine environmental protection policy and technology; oceans, coastal and inland waters; living and non-living resource management, including aquaculture and mariculture, port and marine terminal operations- offshore energy exploration and exploitation- ocean-related recreation; maritime transportation; and ocean law, policy and management.

Today, the sustainable use of the oceans is recognized as a fundamental global objective. Approaches to management and conservation in fisheries, aquaculture, and other traditional ocean-related activities remain intact, but their scope is constantly being expanded, taking into account these new concepts and approaches. In the interests of integrated planning and management, greater attention to the other marine sectors has become necessary. There is a greater concern for the global picture. Modern ecological concepts such as "ecosystem management" have given marine affairs a completely new and holistic orientation that did not exist ten years ago, and it is clear that innovative, integrated approaches to ocean affairs must be incorporated into development assistance if the current technical, social and scientific challenges are to be met.

Different parts of the world are exhibiting varying reactions to the new ideas depending on their national values and interests, and specific context that is geographical, political, social, economic and cultural in scope. Significant regrouping of nations around common global and regional environmental issues are gradually forming the core of a new type of governance. Marine affairs, themselves environmental issues, are central to these developments.

This type of "regime-building" includes a wide variety of cooperative arrangements, ranging from highly institutionalized, permanent macro-regional regimes, such as those for marine transportation serviced by the International Maritime Organization (IMO), the UNEP Regional Seas Program, the Food and Agriculture Organization (FAO) and other regional fisheries organizations, to short-term, bilateral arrangements, such as fisheries joint ventures, offshore petroleum development arrangements, oil-spill contingency planning, natural disaster preparedness and response, and maritime transport. In this general context, Canada has tended to support quasi-governmental informal arrangements rather than the formal approach in fulfilling its aid policy.

#### **4. INSTITUTIONAL ISSUES AND ODA DELIVERY**

The institutional frame/work has seen equally dramatic developments. The concept of the competent international organization is used in *UNCLOS* to designate responsibilities for the coordination of implementation measures, and has been used With reference to FAO, IMO, IOC, UNEP, and other UN and international agencies. This may now have to be interpreted more flexibly given the establishment of new global institutions and the proliferation of regional arrangements, including the establishment of the Earth Council, the World Commission for Sustainable Development, the forthcoming establishment of similar regional commissions (the first to be established in the Mediterranean in 1995), the establishment of the International Seabed Authority in Jamaica and the Law of the Sea Tribunal in Germany in pursuit of *UNCLOS*, the expansion of the UNEP Regional Seas Program to cover 13

developing regions, the expansion of port state control memoranda to include the Asia-Pacific and Latin American regions, and other regional developments. There is now also in operation an independent world commission to address global oceans issues, chaired by President Soares of Portugal. The global importance of oceans will also be highlighted in 1998, the year of the oceans.

Developing countries are finding these tasks to be monumental. Lack of qualified personnel, lack of appropriate technologies and know-how, inadequate financial resources, poorly developed policies and legal regimes to confront the international exploitation of their resources, and underdeveloped scientific capacity to carry out the necessary research to support precautionary decision-making are but a few of their difficulties. As a consequence, countries are seeking to cooperate more with each other so as to equip themselves through partnerships to deal with these issues and assure their future development.

Since it is not possible for any one country to handle all these issues single-handedly on a comprehensive basis, international cooperation must become a necessary part of assistance programs seeking to incorporate these new facets as the key to prosperous and sustainable exploitation of ocean resources.

Agenda 21 challenges us to think about the entire spectrum, encompassing both the land and water sides, through its call for integrated management and development of coastal and marine areas. The nature of the existing governmental institutions also differ on both sides: roughly speaking, on land in many cases there are already well-established multipurpose government institutions at both the local and provincial levels to address questions as to control and land use and conflict among users, while on the water side, in any cases there tend to be only single-purpose provincial or national agencies operating, each concerned primarily with a single use of the ocean (fisheries, oil and gas extraction, port management, tourism, residential and commercial development, maritime transportation etc).

Problems identified at the country level today require a new spectrum of training and educational needs. To assist developing countries in this implementation challenge donor countries need to undertake work redefining central concepts and definitions, in further developing a general model of coastal management, and in finding appropriate ways of tailoring general approaches of coastal management to specific national settings. Regional and national interests in land-based marine pollution are immediate and tangible while global interest remains more general and remote. Consequently, a major impediment to global action to address the problem of LBSMP is the perceived tension between global and national interests.

All States of a region should cooperate with regional centres particularly at this period of declining funds to ensure the most efficient use of scarce funds. In support of the above objective, every effort should be made to recognize that relationships among global, regional, national and local organization; governmental and non-governmental, form an expanding international research and technology transfer web that will continue to grow and become increasingly inter-connected in the future. The donor community in cooperation with developing countries should assist in expanding the web, by linking different analytical skills and by drawing on each others comparative advantage.

National planning units and the donor community have to choose priorities from among the large number of important environmental protection needs of developing countries. Financing channels - multilateral, bilateral, public and private sectors should be explored in line with the specific requirements of programs and projects. New agreements are needed within the donor community that link policy and funding commitments.

## **5. SOME KEY ISSUES FOR DONORS AND RECIPIENTS**

### **Donors/International Agencies**

1. Defining the exact meaning of integration-
2. Understanding the political system of target countries/regions;
3. Linkages with national analysts to transfer project cycle methodology;
4. Utilization of national achievements in policy and programme development.

#### Recipient countries

1. Establish national programme committees - info sharing, programme coordination, human resource and equipment sharing;
2. Conduct seminars, workshops on the project cycle and the composition of the international donor community-;
3. Develop national positions on strategies for programme implementation (Action Plans);
4. Organize to get Oceans onto the national priority development agenda.

#### Conclusion

I have tried to respond to the focus of this session; responding to what CIDA has done, intends to do in the future, I have provided a general analysis of the global institutional structure within which ocean ODA flows. I will now conclude by saying; that it is my observation that the main constraint in the implementation of international and regional action programs by bilateral or multilateral/UN specialized agencies, is that they have reached a plateau with respect of what they can achieve under their respective mandates. Now, there is stagnation or a decent in the relative effectiveness in their effort to ocean development and management.

This situation is in my opinion directly related to the state of the economies of most developing countries. Equally important, however, is the recipient country, the lack of cooperation and coordination among national agencies, the inability of national experts to integrate activities into national work programmes, and the question of keeping up-to-date in a specific discipline or contributing basic data to a regional and/or international programme. Sustainable development will not occur if we maintain policies and programmes that are externally lead; recipients must take on this responsibility, they must establish priorities, they must position ocean issues on their priority development agenda, they must take the lead in the new century.

### ANNEX III

## **THE CIDA/CFTC STUDY: CAPACITY BUILDING IN THE FISHERIES AND OCEANS SECTORS OF SELECTED COMMONWEALTH COUNTRIES IN THE SOUTHERN AFRICA DEVELOPMENT COMMUNITY, THE CARIBBEAN, SOUTH PACIFIC, AND WEST AFRICA**

(Presented by Z. Ramnath)

### **1. MAJOR ISSUES WHICH AFFECTED SECTORAL PROGRAMME SUSTAINABILITY**

#### **1.1 PERSONNEL ISSUES**

Procedures for the selection of Consultants and Donor Representatives (DRs); interpersonal relationships and cultural concerns which exist between Host Country personnel and DRs; local counterparts and technology/information transfer; assignment of DRs on a full-time versus a part-time basis; the absence of a pre-arranged format for dispute settlement between HC personnel and DRs.

#### **1.2. PROJECT-RELATED ISSUES**

The level of involvement of the Host Country (HC) in the feasibility studies of projects and in project planning; issues involving project implementation; purchase of project equipment, vehicles and supplies; lack of programme/donor flexibility; financial management of programme/project funds.

#### **1.3. TRAINING**

- \* relevance of local and regional training versus training that is delivered in the Donor country;
- \* relevance and inflexibility of training programmes;
- \* appropriateness of the training institution;
- \* effect of training on minorities and other disadvantaged groups;
- \* the level of training provided;
- \* the need to emphasize Policy and Management training;
- \* selection of inappropriate trainees.

#### **1.4. HOST COUNTRY POLICIES**

- \* the "brain drain" existing in developing countries;
- \* the allocation of national administrative responsibility for the Fisheries and Oceans sectors

### **2. REGIONAL VARIATIONS IN OUTPUT**

#### **2.1. SIMILARITIES**

- \* current systems of governance and their organizational structures which are patterned on the British approach;
- \* education systems that follow those that were in force prior to Independence;
- \* use of English as the language of business and of secondary and tertiary education in the South Pacific and as the language of the Caribbean;

#### **2.2. ISSUES WHICH AFFECT AND DIRECT THE DEVELOPMENT PATHS OF THIRD WORLD COUNTRIES AND REGIONS**

- \* their post-colonial political histories
- \* the importance placed by post-independent Governments on equal education for all and the quality and accessibility of this education
- \* the socio-economic conditions which apply to the majority of a country's population
- \* the value of culture and tradition to the people

- \* the incidence and effects of natural disasters on a country

### **3. SOME CAUSES OF DONOR FATIGUE**

The interactions of a single Fisheries Department with the Donor Community could include:

- \* several ongoing projects each funded by a different Donor Agency;
- \* the presence of fact-finding missions;
- \* the conduct of feasibility studies;
- \* preparation of project proposals;
- \* preparation of quarterly, annual, mid-term and final narrative and financial reports of donor funded projects;
- \* end-of-project evaluations;
- \* provision of a variety of recipient contributions - (e.g. several suitably qualified, full-time, local counterparts; support personnel, office space, equipment, services and funding)
- \* arranging and attending meetings with consultants on short-term assignments and others who are passing through.

These duties are separate from the daily operation of the Department and do not account for the personnel who are attending training courses, meetings, seminars and workshops. Under such circumstances, it is not difficult to appreciate the problems that both the DRs and the HC personnel face when attempting to implement projects and the issues which contribute to reduced levels of outputs.

### **4. RATIONALE FOR DONOR COOPERATION AND COORDINATION**

A. If each Donor Agency identified:

- \* the problems it has faced and the successes it has achieved in each country/region
- \* the issues/approaches that contributed to the problems and successes
- \* the lessons learned from each situation
- \* the past, current and proposed interventions for each country/region

B. Donor cooperation would then:

- \* provide answers to questions faced by Donor Agencies and DRs;
- \* identify workable solutions for common problems and for problems that are specific to a country or a region;
- \* reduce overlapping activities and competition among donors;
- \* ease the strain placed on developing countries by reducing the number of projects that are ongoing simultaneously;
- \* improve project sustainability;
- \* clearly define and separate national and regional issues and reduce repetition of interventions;
- \* lead to more cost-effective use of donor funding and new strategies for programming.

### **5. CURRENT APPROACHES TO DONOR COOPERATION AND COORDINATION**

#### **5.1. FLEXIBILITY OF TRAINING PROGRAMMES**

The Proposal: Permit scholarship recipients and/or the HCs to submit their preferred choices of institution to deliver training that is being funded by the donor. The selected Institutions need not be located in the Donor's country but, the rationale for selection must be provided for the consideration of the funding agency.

Problems that will be addressed by this Proposal:

- \* appropriateness of the training institution;
- \* relevance of the training programme;

- \* HC involvement in the decision-making;
- \* "ownership" of the intervention;

Added Advantages:

- \* increased project sustainability;
- \* greater potential for maintenance of mutually beneficial long-term relationships between Donor and HC.

**Source of the Proposal:**

Lake Kariba Fisheries Research Institute  
ICEIDA

**Funding Agencies which Utilize this Approach:**

NORAD - internationally  
ICEIDA - nationally and regionally  
UNDP/FAO - internationally, nationally and regionally

## 5.2. FOCUSED AID THROUGH COLLABORATION AMONG DONOR AGENCIES

The Proposal: Donor commitments are focused on a strategic area in a country and the area of focus is derived from collaboration among the donors

Problems that will be Addressed by this Proposal: \* No overlap of activities and competition among the donors;

- \* HCs are not able to play one donor against another;
- \* donor activity is decentralized and spread more evenly within the HC;
- \* donor activity can be coordinated and staggered to relieve the strain placed on the HC bureaucracy.

**Source of the Proposal:**

Currently being practiced by some donors in the different groups of Outer Islands in Tonga and is supported by the Australian International Development Assistance Bureau (AIDAB)

**Funding Agencies which Utilize this Approach:**

Australia	- core donor for Ha'apai
New Zealand	- " " " 'Eua
EC	- " " " the Vava'u Group of islands

## 5.3 FLEXIBILITY OF THE FUNDING AGENCY

The Proposal:

The Funding Agency needs to consider the logistical problems that are faced by the HC and must be able to adjust its programming schedule to accommodate the needs of the HC. In this fashion, the life of a project could be extended (from 6 months to 18), the funding can remain the same (except that it will be spread over a longer period) and the management of the project is left with the HC with supervision being provided by visiting DRs from time to time.

Problems that will be Addressed by this Proposal: \* Reduction of interpersonal conflicts between HC and DRs:

- \* maintenance of project schedules;
- \* development of management and technical skills as HC personnel learn from their mistakes but at their own pace;
- \* reduction of demands made by DRs on local personnel;
- \* departmental functions and project implementation are ongoing activities;

- \* cost effective as high salaried Consultants are not assigned to the project full-time and for the duration of the project;
- \* consultants are assigned when needed thus allowing a wide variety of short-term Consultants to be assigned in relation to specific requirements which arise on the project;
- \* allows nationals to acquire on-the-job training and expertise in their own environment

Added Advantages:

- \* Project is not "donor driven";
- \* gives "ownership" of the project to the HC;
- \* builds local capacity as at the end of the project the nationals who were employed on the project are employable in the country and their skills are required by the participating organization or by other related organizations.

Source of the Proposal: Fisheries Division, Trinidad  
Donor which Utilizes the Approach: FAO

#### 5.4 READINESS OF THE HOST COUNTRY TO ACCEPT THE PROJECT

The Proposal:

The Funding Agency must be able to refuse to initiate a project if the HC is not ready to accept it.

Problems that will be Addressed by this Proposal:

- \* Local contributions are in place;
- \* project begins when the HC is prepared to cope with the demands that will be placed on it by the project;
- \* HC must display commitment to the project before the Donor will become involved;
- \* project is not "donor driven".

Added Advantages:

- \* Increased chances of achieving long-term sustainability after the project is completed;
- \* cost-effective as the donor does not waste funding and personnel on a project that is ill-prepared for implementation;
- \* the HC will be made to establish its priorities if it wishes to have the project.

Source of the Proposal: FAO Regional Office, Trinidad  
Donor which Utilizes the Approach: FAO

## 6. RECOMMENDATIONS PROPOSED IN THE CFTC/CIDA STUDY

### 6.1. Co-operation among/between Agencies

The International Development Community (IDC) must come together to openly and freely discuss its concerns about the impact (or lack thereof) of its capacity building interventions in the Fisheries and Oceans sectors of developing countries. The purpose of the discussions would be to:

- \* identify common problem areas, describe individual experiences and lessons learned;
- \* propose workable solutions for the problems and present these in order of priority.

The solutions will require considerable discussion with recipients and they must be capable of delivery and of achieving long-term sustainability. The result of a country failing to deliver its contribution could be the cessation of international development interventions in that country's Fisheries and Oceans sectors.

It would be essential for the International Development Community to present and retain a unified front on all aspects of this issue.

#### 6.2. Retention of Trained Personnel

In lieu of concentrating efforts on scholarships for individuals and providing allowances to support attendance at meetings etc., Funding Agencies could shift from these current types of approaches to Human Resource Development (HRD) to the enhancement of the capacities of existing national and regional training institutions. Selection of institutions for attention would need to be firmly based on the degree of need of the Institution and its relevance to the capacity building activities of a country and region.

It is further recommended that a comprehensive list of these requests be prepared, by region, and submitted to the Funding Agencies in order of priority and with the accompanying rationale for each request. Having reviewed the list and, based on knowledge of the level of training activities conducted at the particular institutions, the IDC can decide among its members which needs will be addressed, in what quantity and by whom. Additionally, the IDC reviews its existing HRD policies and develops a revised but unified strategy for offering funded training based on the lessons learned and the recommendations proposed in Table 4.2 of the CFTC/CIDA Study.

#### 6.3 Capacity Building in Policy Analysis

The IDC might wish to expand its focus on capacity building efforts in policy analysis at the national and sectoral levels in developing countries. This focus cannot be dealt with in isolation from the previous recommendations and should be developed in relation to them. It is further recommended that special attention be paid to the experiences of and lessons learned by ODA (Britain) in SADC in this regard.

#### 6.4 Benefits of Small Projects

Donor Agencies prefer to implement large-budget, multi-faceted and complicated projects as opposed to managing many small projects.

Too many projects and DRs at the same time result in more inefficiency, less technology transfer and decreasing chances of long-term sustainability. The more realistic approach is to have small projects spread over longer time-frames; for both donor and recipient to have more realistic expectations of their individual capacities; and, for both to be able to refuse to become involved in a project when they do not have the capacity to cope with it.

#### 6.5 HRD for Minorities

Utilizing a common policy derived from consultation within the IDC, the community introduces HRD projects which target minorities in developing countries and involves the entire IDC with each participating agency delivering the identical project in one developing country.

The goal of the project is to provide funding support for the training of a specific number of economically disadvantaged children (possibly 50/country/year over 5 years) throughout their secondary education and at least to completion of an Undergraduate Degree or a Technical Diploma/Certificate delivered in their home countries or region. The Gender Policy should also be included in this proposal with a pre-determined number of places being allocated to women.

## ANNEX IV

### THE ICELANDIC INTERNATIONAL DEVELOPMENT AGENCY (ICEIDA)

(Presented by G. Oddson)

#### 1. INTRODUCTION

Iceland is a relative newcomer in international development, the first Icelanders undertook this sort of work around 1980.

The basic goal of Icelandic development assistance is to support developing countries in their search for economic growth and to support social progress and political independence in accordance with the charter and fundamental tenets of the United Nations.

The priority is to assist the least developed countries in such a way that the poorest groups benefit the most. One way to achieve this is through capacity building, especially education and training.

The proportion of aid in recent years has been divided in such a way that multilateral aid is just over 50 and bilateral aid just under 40 percent, 10 percent is emergency relief. Bilateral aid is handled by ICEIDA. It comes in the form of grant aid and is used to support development in a few chosen areas.

#### 2. INSTITUTIONAL STRUCTURE AND FUNCTION

ICEIDA is an official institution under the Ministry for Foreign Affairs, operating under laws enacted in 1981. Funds are allocated annually by Alþingi. It has a Board of Directors, seven who are appointed by Alþingi, the Icelandic Parliament, and a chairman who is appointed directly by the Foreign Minister. The Board of Directors, besides formulating policy, has considerable decision making power. The daily operations of ICEIDA are in the hands of the Executive Director, Dr. Bjorn Dagbjartsson. In each project country there are project managers or project coordinators who are responsible for project activities. They regularly submit reports to the Board of Directors and to the Executive Director on the progress of projects and propose amendments and changes in collaboration with cooperative partners. ICEIDA is small, it only has between 20 and 25 employees at any one time, most of them abroad. The simple structure of ICEIDA has the advantage of quick responses because of the direct information exchange and minimal bureaucracy.

According to the law the purpose of ICEIDA is to promote cooperation between Iceland and the developing countries. The goal of such cooperation being to support the governments of these countries in improving their economy and thus strengthen social progress and political independence within the framework of the United Nations. Furthermore, the aim is to promote mutual understanding between Iceland and the developing nations by increased cultural and commercial relations.

#### 3. GOALS AND EMPHASIS

ICEIDA has set the following goals and emphases as the basis for its work:

Development cooperation shall help people to be self-sufficient, in particular by transfer of knowledge and professional skills. Cooperation shall promote sustainable development, protection of the environment and natural resources, progress of the productive sectors, equality of individuals, democracy and human rights.

It is important to improve the living conditions of the poorest, the circumstances of women and children, which are often neglected in the granting of development aid. ICEIDA shall endeavor to make sure that its development assistance will be as beneficial to as many as possible and does not adversely affect the living conditions of the recipient people.

Emphasis shall be placed on cooperation with the least developed countries (LDC's) as evaluated by

competent institutions.

Development assistance shall be given primarily in fields in which Icelanders have special knowledge and experience that can be transferred by teaching and training.

With only limited funds at its disposal, ICEIDA concentrates on a few countries and areas so that the aid can be used efficiently and can support long term goals. This also facilitates knowledge and understanding of the countries and areas to which aid is directed.

#### **4. STRATEGIES**

Upon selecting new projects it is important that experiences from previous projects are applied.

When preparing projects ICEIDA seeks information, assistance and cooperation with international organizations and agencies with expertise in development cooperation. Preferably ICEIDA conducts independent research into the conditions in the country and area in question.

At the outset of each project specific and detailed goals and objectives are defined so as to facilitate the assessment of results.

At the termination of each project component specified at the outset, independent evaluations are undertaken to assess progress and results. This is done at least every two years for individual projects.

With increasing development assistance it becomes ever more necessary to distinguish between:

- the selection and preparation of projects,
- project implementation and daily administration, and
- their assessment and evaluation.

#### **5. THE OBJECTIVES OF ICELANDIC DEVELOPMENT AID IN FISHERIES RESEARCH AND TECHNOLOGY**

It is of primary importance to recognize and understand the social structure of the receiving country and the objectives of the local fisheries policy. This accomplished the objectives of the aid shall usually be the following:

- to assist with the acquirement of biological information and with the estimation of long-term sustainable yield of important stocks.
- to suggest new and innovative fisheries technology which conforms with the state of technology and financial capabilities of the recipient country and does not harm living natural resources.
- to help with the processing and preservation of catches either for local consumption or export, so that revenues of fisheries exports are maximized.
- to assist local artisanal fishermen to develop traditional fisheries methods so as to improve their income, safety and work conditions.
- to improve marine research and to educate and train local marine scientists so that the recipient nation will, as quickly as possible, be able to conduct the work done by foreign consultants.
- to assist the local authorities in improving and implementing long-term fisheries policy that takes into account possible long-term yield of stocks, the cost of fishing and processing, the employment needs of the subjects and their nutritional needs and is based on sustainable biological and economical development of the natural resources.

#### **6. CURRENT ACTIVITIES**

Icelandic aid is almost exclusively directed to Africa. The three main cooperation countries are the Cabo

Verde Islands in the Atlantic off West Africa and Malawi and Namibia in Southern Africa. At first Malawi was mainly supported through cooperation with the Southern African Development Community (SADC) and presently ICEIDA supports some other countries in Southern Africa through SADC.

The choice of ICEIDA's cooperating countries is based on United Nations definitions of the least developed countries. Two of the three ICEIDA partners are among the group of poorest nations in the world and the third, Namibia, is facing a difficult reconstruction after independence five years ago.

In all those countries with which ICEIDA cooperates, the main emphasis has been on the strengthening of the fisheries sectors.

Fish is an important protein supplement in the diet of the poorest part of the population and it may be an important source of income and employment. At the same time, fisheries is an area in which Iceland considers itself to be among the experts.

In many countries, the fisheries sector is a typical example of small-scale activity, as is the case in the Cabo Verde and in Malawi. Such activity is often ignored or not considered enough when development projects are being planned. Small scale fisheries create employment opportunities and provide important nutrition for marginal communities.

#### 6.1 Southern African Development Community

ICEIDA has provided one fisheries advisor for the SADC Sector Coordinating Unit for Marine Fisheries and Resources which is located in Windhoek, Namibia, since 1992 and another fisheries advisor for SADC Sector Coordinating Unit for Inland Fisheries and Resources, located in Lilongwe, Malawi, since 1989. This support will continue in 1995-98. ICEIDA contributes to the SADC Bank Plant Genetic Resources in Zambia, with the other Nordic countries.

#### 6.2 Malawi

ICEIDA is responsible for the fisheries research part of the Lake Malawi Fisheries Project of the World Bank. We also directly support the Aquaculture Department of the Bunda College of Agriculture.

#### 6.3 Namibia

ICEIDA has been doing projects in Namibia since shortly after independence in 1990. This cooperation will continue through 1998, with Iceland's support from 1995-98 being about USD 4.0 million.

Marine research has been the main emphasis in ICEIDA's cooperation with Namibia. With the objective of gathering information about the state of the fish stocks in Namibian waters.

All five officers on the Namibian research vessel are provided by ICEIDA.

Two marine scientists in fisheries and oceanographic research have been provided by ICEIDA, to the Swakopmund Research Center, since late 1990 as well as a project manager and an assistant to the management.

Five Namibian scientists have gone on study visits to the Marine Research Institute in Reykjavik, Iceland, for 4-8 weeks each.

Currently ICEIDA provides 4 teachers at the Walvis Bay Maritime Center.

Overall the cooperation with Namibia has been a great success and a lot of cooperative work has taken place between the scientists of the two countries

#### 6.4 Cabo Verde

ICEIDA has been doing cooperative projects in Cabo Verde since 1981. Much of that cooperation has been in fisheries research mostly on untraditional demersal species. Very little was known about the important demersal stocks in Cabverdean waters before ICEIDA's projects. Three research vessels have been provided by ICEIDA since 1981, the latest one R/V Islandia was donated to the Cabverdean government in mid 1994. Currently ICEIDA and NDF are starting a three year five part project. The components are:

- Fisheries training
- Tuna information center and bait centers
- Institutional support
- Infrastructure development
- Fisheries research

#### 7. Future perspectives

In the recent past, ICEIDA has begun to focus more attention on poverty alleviation, through considering the conditions of those people who are engaged in small-scale fishing, fish farming, processing and marketing. Attention is also being paid to improved quality of production, to better safety and working conditions, and last but not least, to increased opportunities for education and training. In all those countries with which ICEIDA works, a change in emphasis in this direction has been taking place in recent years.

ICEIDA is currently starting a three year cooperation project with Mozambique in Southeast Africa. This project which is in cooperation with the Nordic Development Fund (NDF) concentrates on inspection and quality control of fisheries export products and on fisheries research, where ICEIDA contributes a research vessel, Fengur, and a shore captain.

In Namibia ICEIDA is decreasing it's support in fisheries research and increasing it's involvement in training and education in the marine sector. ICEIDA is currently providing six teachers (half the staff) for the new Maritime Institution in Walvis Bay. ICEIDA has also conducted courses in fish processing and hygiene in Luderitz. Besides these projects ICEIDA has provided personnel for adult literacy and women training in Luderitz.

## ANNEX V

### THE CARIBBEAN COMMUNITY SECRETARIAT: CARICOM

(Presented by H. Rohler)

#### 1. SECRETARIAT

The Caribbean Community Secretariat is organized into:

##### *Offices*

Office of the Secretary-General  
Office of the Deputy Secretary-  
General  
Office of the General Counsel

##### *Directorates*

Foreign and Community Relations  
Regional Trade and Economic  
Integration  
Human and Social Development

##### **Mission Statement**

"To provide dynamic leadership and service in pursuit of regional integration through the timely development and operation of Community structures and programs which provide for effective decision-making and implementation, create and strengthen linkages among Governments, Organizations and the Peoples of the Caribbean Community and which improve the quality of life and contribute to the attainment of a viable and sustainable Community".

##### **Functions**

- (i) service meetings of the Community and of its Institutions or Committees as may from time to time be determined by the Conference;
- (ii) take appropriate follow-up action on decisions made at such meetings;
- (iii) initiate, arrange and carry out studies on questions of economic and functional cooperation relating to the Region as a whole;
- (iv) provide services to Member States at their request in respect of matters relating to the achievement of the objectives of the Community;
- (v) undertake any other duties which may be assigned to it by the Conference or any of the Institutions of the community.

##### **CARICOM Secretariat:**

Bank of Guyana Building  
P.O. Box 10827, Georgetown, Guyana  
Tel: 592-2-69281-9;  
Fax: 592-2-67816/66091/58039/57341  
Telex: 2263 CARISEC GY  
Cable Address: CARERSEC

#### 2. THE CARIBBEAN COMMUNITY & COMMON MARKET CARICOM

Formed by the Treaty of Chaguaramas in 1973, as a movement towards unity in the Caribbean.

##### **MEMBERS**

Antigua and Barbuda, The Bahamas [of the Community only], Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago.

**Secretary-General:** Dr. Edwin W. Carrington

**Former Secretaries-General:**

Mr. Fred Cozier [under CARIFTAI] [Barbados, 1968-1969]

Mr. William Demas [Trinidad and Tobago, 1970-1974]

Sir Alister McIntyre [Grenade, 1974-1977]

Dr. Kurleigh King [Barbados, 1979-1983]

Mr. Roderick Rainford [Jamaica, 1983-1992]

**ORGANIZATION**

The Caribbean Community has three objectives:

- economic cooperation through the Caribbean Common Market;
- coordination of foreign policy among the independent Member States, and
- common services and cooperation in functional matters such as health, education and culture, communications and industrial regions.

The principal organs of the Community are:

- the Conference of Heads of Government, commonly called "The Conference";
- the Common Market Council, commonly called "The Council".

**CONFERENCE OF HEADS OF GOVERNMENT: " THE CONFERENCE"**

The Conference of Heads of Government [The Conference] consists of the Prime Ministers of all Member States of the Caribbean Community, except in the case of Guyana where it consists of the Executive President and in the case of Montserrat, the Chief Minister.

The primary responsibility of the Conference is to determine the policy of the Community. It is the final authority for the conclusion of treaties on behalf of the Community and for entering into relationships between the Community and regional organizations and States.

Conference is also responsible for making the financial arrangements to meet the expenses of the Community but has delegated this function to the Common Market Council, Decisions of the Conference are generally taken unanimously.

**COMMON MARKET COUNCIL : "THE COUNCIL"**

The Council consists of one Minister of Government designated by each Member State. It is responsible for the efficient operation and development of the Common Market including the settlement of problems arising out of its functions.

**INSTITUTIONS**

There are several institutions of the Caribbean Community responsible for formulating policies and performing functions in relation to co-operation in services such as education, health, labor matters and foreign policy. Each Member State is represented on each Institution by a Minister of Government of the Member State.

**ASSOCIATE INSTITUTIONS**

Under the Treaty, the following bodies are Associate Institutions of the Community:

Caribbean Development Bank, Caribbean Examinations Council, Caribbean Meteorology Organization, Council of Legal Education., University of Guyana, University of the West Indies

**BUREAU OF THE CONFERENCE**

The decision to create the Bureau of the Conference was taken at the Special Meeting of CARICOM Heads of Government in October 1992. The responsibility of the Bureau is to negotiate proposals, update consensus, mobilise and secure implementation of CARICOM decisions in an expeditious and informative manner. The Bureau came into operation in December 1992.

## ANNEX VI

### INSTITUTIONAL STRUCTURE AND OPERATIONAL FOCUS FOR ASEAN COOPERATION IN FISHERIES: ASEAN

(Presented by A. Zainuddin)

#### 1. BACKGROUND:

The Association of Southeast Asian Nations (ASEAN) was founded on 8 August 1967 with the central objectives of, among others: (a) accelerating economic growth, social progress and cultural development in the region through joint endeavours; (b) promoting active collaborations and mutual assistance on matters of common interest in the economic, social, cultural, technical, scientific and administrative fields; and (c) providing assistance to each other in the form of training and research facilities in the educational, professional, technical, and administrative spheres. ASEAN is not a development agency. Rather, ASEAN serves as a forum for promoting the economic, social and cultural development of the region through cooperative programmes, for addressing issues of common interest to the Member Countries, as well as for resolving intraregional differences.

ASEAN cooperation in agriculture started with the convening of the Meeting of the Adhoc Committee on Food Production and Supply in June 1968 under the umbrella of the ASEAN Economic Ministers (AEM). The functions and responsibilities of this Committee was subsequently transferred to the Committee on Food, Agriculture, and Forestry (COFAF), which was one of the five economic committees established pursuant to the decision to reorganise the ASEAN structure. Four sub-committees and six subsidiary bodies were established under COFAF to streamline the implementation of collaborative projects in the agriculture sector. In order to give greater impetus to cooperation in the agriculture sector, the ASEAN Ministers on Agriculture and Forestry (AMAF) agreed to come together to provide policy directions to COFAF.

At the Fourth ASEAN Summit held in December 1992, the Heads of Government decided to restructure the ASEAN machinery for economic cooperation. The restructuring involved the dissolution of the five economic committees and their subsidiary bodies, and the handing over of all aspects of ASEAN economic cooperation to Senior Economic Officials Meeting (SEOM) by 1 January 1993. Underlying this decision was the need to forge a greater degree of hierarchical coherence in the policies and programmes for economic cooperation and the need to foster a trans-sectoral orientation in the economic programmes of ASEAN. The move was also intended to provide impetus for achieving the goals of AFTA.

In order to ensure continued policy guidance for the region's cooperation in agriculture, the AMAF have been meeting annually to consider, review and approve policies, strategies and action programmes. The AMAF are supported by their Senior Officials (SOM-AMAF) who meet at least twice a year to review and evaluate ASEAN cooperation in the sector in relation to the following: (a) policy formulation and coordination; (b) technical, investment and trade facilitation; (c) technical cooperation; (d) human resources development; and (e) joint actions and approaches in international organisations and fora.

#### 2. ASEAN COOPERATION IN FOOD, AGRICULTURE AND FORESTRY

The Third ASEAN Summit in Manila in 1987 identified the goals of ASEAN cooperation in food, agriculture and forestry as improving the standard of living in the sectors, sustaining an adequate supply of basic agricultural and forestry commodities for regional needs, and reducing differences in agricultural and forestry structures in the region. The Fourth Summit in Singapore agreed to strengthen regional cooperation in the areas of development, production, and promotion of agricultural products for ensuring food security and upgrading information exchange in ASEAN. For the forthcoming Fifth Summit to be held in December 1995 in Bangkok, AMAF has proposed the theme of the agriculture sector to be "Towards global competitiveness through modernisation and sustainable development of agriculture and forestry. " ASEAN is seen by its leaders emerging to become the world's major producer of food, with its agricultural land and seas serving as important sources of production.

To achieve these goals, ASEAN has implemented numerous cooperation programmes which cover a wide spectrum of activities in crops, livestock, fisheries, forestry, training and extension, and agricultural cooperatives. The implementation of these programmes and activities are carried out by sectoral working groups which are guided by existing ASEAN agreements, ministerial understandings, and memoranda of understanding that have been agreed upon by AMAF.

The Ministerial Understanding (MU) on ASEAN Cooperation in Food, Agriculture and Forestry adopted by the 15th AMAF Meeting in October 1993 stipulates that future cooperative endeavours in the sector will focus on seven priority areas, including management and conservation of natural resources for sustainable development. Among the activities identified to facilitate cooperation in these areas is developing training packages on management and conservation of natural resources for sustainable agriculture and forestry production and conservation of fishery resources.

The MU formed as basis for the Medium-Term Programme of Action for ASEAN Cooperation in Food, Agriculture and Forestry (1995-1999) approved by the 16th AMAF Meeting in August 1994. At the same Meeting, the Ministers also endorsed the Sectoral Work Plan for 1995-1996 involving projects implemented through networking arrangement using specialised focal points.

Specific to marine and ocean fishery programmes, Member Countries, while having their own national priorities, have continued to collaborate on: (i) management and conservation of the fisheries resources of the Exclusive Economic Zones (EEZ) in the ASEAN region; (ii) identification of common areas for commercial cooperation in fisheries; and (iii) working towards a common stand and understanding on regional and international matters in fisheries. As marine and ocean affairs are also under the purview of Ministries for Science and Technology and for Environment, AMAF have also been working closely with relevant sectoral Ministers on programmes of common interest. A large number of programmes under the sectoral Ministers are implemented by fishery and research agencies of AMAF.

### **3. ISSUES ON ASEAN FISHERIES**

Fishery has been one of the dominant sectors in the region. With the region's geography being coastal and dotted with islands, its people traditionally depend on the seas and rivers for food, livelihood and transport. The countries in the region have always considered fisheries as an integral part of their national resources and a major contributor to the national economy, employment and food security. The resources are similar and in many cases shared. Over the past decades, the growth of the ASEAN fisheries sector has been very significant and the sector has become an important source of foreign exchange earnings.

While ASEAN Member Countries have been focusing on the production of aquaculture products which are a good source of protein, programmes on marine and ocean fishery are also of great interest to ASEAN due to the fact that most Member Countries have vast EEZ for fishing. The monitoring and surveillance of these EEZs is of high priority to ASEAN because Member Countries recognise the need to preserve the resources and bounties of the high seas in a sustainable manner.

However, ASEAN recognises that the desire to meet the increasing demands for seafood and foreign export earnings by Member Countries has resulted in unsustainable use of living aquatic resources. With most ASEAN Member Countries depending heavily on their primary resources for economic development, indiscriminate resource exploitation, combined with accelerating economic activities on land and water, has seriously degraded and damaged the coastal environment and aquatic resources. Most inshore fisheries resources are being rapidly depleted, largely due to overfishing, destruction of habitats and environmental degradation. Partial compensation is coming from aquaculture that has been expanding and intensifying in recent years. But unregulated development and intensification of the coastal aquaculture have added a variety of economic, environmental and social conflicts and management problems.

Sustainable utilisation of living aquatic resources is fundamental to food security of the region's vast population. Thus, regional cooperation in the management and development of the resources is essential, and joint and collaborative actions are beneficial for the individual Member Countries and for the region as a whole. Regional

cooperation and coordination to support and supplement national efforts toward integrated management and sustainable development of coastal and marine areas is critical. Support is essential to enhance the capabilities of ASEAN Member Countries in the areas of information, science and technology, and the development of human resources. With assistance from the international community, Member Countries will be able to participate fully in the conservation and sustainable use of the aquatic resources under their national jurisdictions. For its part, the ASEAN Secretariat, in collaboration with relevant fisheries bodies such as SEAFDEC, could play a coordinating role in the management and development of the region's aquatic resources.

#### **4. ASEAN POLICY ON UTILIZING SUPPORT FUNDS FROM INTERNATIONAL DEVELOPMENT AGENCIES**

ASEAN's cooperation in fisheries stems both from collective national efforts and assistance from its eight Dialogue Partners--Australia, Canada, the EC, Japan, New Zealand, United States, South Korea and UNDP.

Three types of development cooperation projects in fisheries can be distinguished. First, projects that actually work to strengthen cooperation in the fisheries sector at the ASEAN level, which can be called "integration orientated" projects. Second, projects which address a common need expressed by all ASEAN countries but which are not really designed to promote ASEAN cooperation per se. These are "common needs" projects. Third, projects which can be traced to the interest of one specific ASEAN country. These are "country specific" projects.

In this regard, the ASEAN Cooperation Unit (ACU) has been organised to assist in programme/project development and in prioritising project proposals competing for external and internal resources for funding support. Due to the limited availability of funds, it has been agreed that the prioritisation of cooperation programmes in the sector should be guided by the principles of: (a) regionality, i.e., the programme should provide benefits to the region as a whole, and (b) sustainability, i.e., in the case of a project that involves the establishment of a research and training institution or coordinating centre, the institution should be able to sustain itself after the project period is over either through ASEAN's own funding, the institution's own funds generated by their income-generating activities, or through the host country's funding.

In general, AMAF, in considering programmes for implementation, adopts a policy which gives high priority to those projects that can be implemented on self-reliance basis with minimal dependence on external assistance. In this regard, Member Countries are encouraged to get financial support through bilateral arrangements particularly for programmes and projects of common interest to Member Countries. The benefits derived from such bilateral arrangements can therefore be extended to other Member Countries.

In addition, AMAF also strongly observes the principle of equal treatment for all ASEAN Member Countries. This means that in determining the beneficiaries of a programme, donor countries or agencies should not make any distinction between developed and underdeveloped or developing countries. All ASEAN Member Countries should be treated as equal.

Taking advantage of the geographic proximity, historical and cultural ties and complementarity of economic activities, ASEAN is also promoting a targeted cooperation centered around the "growth triangles". The three existing growth triangles are:

- Indonesia, Malaysia and Thailand, comprising the northern states of Malaysia, northern Sumatra in Indonesia and Southern Thailand;
- Indonesia, Malaysia and Singapore, including the southern Malaysian state of Johore, islands of Riau archipelago of Indonesia and Singapore;
- Brunei Darussalam, Indonesia, Malaysia and the Philippines, including Brunei Darussalam, the east and west Kalimantan and North Sulawesi in Indonesia, Sarawak and Labuan in Malaysia, and Southern Philippines.

ASEAN Member Countries have identified the development and joint management of fisheries and aquatic resources as one of the key areas of cooperative actions to be taken in the growth triangles. ASEAN look favorably

at programmes involving the growth triangles since the private sector usually plays a crucial role in their planning and implementation.

ASEAN's policy on the utilisation of development agencies places importance on executing agencies with in-house facilities and expertise. Agencies that have these features have a high degree of accountability and are deemed to be in a strong position to provide continuity to the development programmes undertaken by ASEAN. SEAFDEC has been singled out as one such agency which is given high rating in terms of its available facilities and expertise in fisheries. ASEAN prefers to work with these types of international development agencies since they are committed to collaborate in programmes that provide medium- to long-term benefits.

## ANNEX VII

### PARTNERS IN MARINE SCIENCE, A DUTCH INNOVATION

(Presented by Dr. J. Stel)

#### 1. INTRODUCTION

During the 1992 United Nations Conference on Environment and Development (UNCED) the need for a Global Ocean Observing System (GOOS) and an Integrated Coastal Zone Management (ICZM) approach was recognized. The implementation of UNCED's action list 'Agenda 21' requires new initiatives in the North-South transfer of technology and know-how. It is clear that UN-organizations such as the IOC, UNEP and UNDP together with the Worldbank, regional development banks and national and international Overseas Development Assistance (ODA) will play a major role in this. Among the numerous IOC-activities in marine science and technology the activities of the committee on Training, Education and Mutual Assistance (TEMA), the Training and Education in Marine Science (TREDMAR) and Promoting Coastal marine Sciences (PROMAR) are highly relevant. The approach of the latter two is comparable with the one in the Dutch partnerships programmes.

#### 2. THE DUTCH EXPERIENCE

##### **Snellius II Programme (1982-1987)**

In the eighties the Dutch and Indonesian governments provided the funding of the Snellius-II Programme (1982-1987). Within this bilateral partnership in marine science the Netherlands Marine Research Foundation (SOZ, the present Netherlands Geosciences Foundation, GOA) and the Indonesian Institute of Science (LIPI) executed a joint research programme in the eastern Indonesian waters. The innovative element of the Snellius II Programme was that the transfer of knowledge and capacity building were an intrinsic part of the overall programme, as well as the conversion of the results to the public at large, politicians, and policy makers.

The Snellius II Programme started in November 1982 and ended exactly five years later with a scientific symposium in Jakarta. The most spectacular phase of the programme was an expedition of sixteen months in 1984-85. The expedition was executed by the Dutch research vessel *Tyro* and five smaller Indonesian research vessels, a helicopter and a small plane. Research was organized in five themes being geology and geophysics of the Banda Arc, ventilation of deep-sea basins, pelagic systems, coral reefs, and river input into the ocean. More than 200 Dutch and some 250 Indonesian scientists participated in the programme.

The use of containers as mobile research laboratories was an important factor in the success of the expedition. This concept was developed in the Netherlands during the late seventies to take advantage of a national pool of oceanographic equipment. This equipment pool allows both small academic departments and governmental research institutes to execute ocean-going research projects. Standard twenty foot containers serve as (trans)portable biological, physical, chemical and geological laboratories, workshops, electronic shops, storage rooms and even as dedicated labs for C<sup>14</sup> analysis. In order to warrant ship time for the expedition the Dutch freighter with passengers accommodation *Tyro* was acquired in 1982.

Before the *Tyro* was purchased, she sailed between Ireland, France and the Netherlands. In France horses were delivered, in Ireland cows and in the Netherlands a mixed cargo. That she was once a cattle ship is still to be seen in the wooden coating of the inside of the hold and the presence of some cattle stairs, gradually sloping gang planks with a step every half a meter. The vessel was modified for the application of containers by constructing container lockers, connecting bridges and central supplies for power, salt, fresh water etc. The passenger accommodation was enlarged. *Tyro* now carries 15 crew and 25 scientists. Fifteen highly different research cruises were executed during the Snellius II expedition by simply reshuffling the thirty containers stored at the ship's deck and in the ship's holds. Another successful innovation was the use of half a dozen air conditioned containers as a shore-based laboratory in the harbor of Surabaya and a two-container lab at Grezik, some 40 km north of this city.

Transfer of know-how and educational assistance was an important aspect of the Snellius II Programme. A

large number of junior and senior Indonesian scientists came to the Netherlands for technical and analytical training. During the expedition on-board training was given for junior scientists and technicians. An analysis of the number of scientists on-board *Tyro* indicates that the participation of Indonesian scientists was substantial. A similar analysis of the number of technicians shows that the participation of Indonesian technicians was low, indicating - as in almost any developing country - the lack of qualified marine technicians. Another important element of the training programme were guest lectures by Dutch scientists at Indonesian universities and research institutes. During the Indian Ocean Programme (IOP), similar arrangements were made within the partnership in marine science between the Netherlands and Kenya, Pakistan and the Seychelles Partners in Science.

After the expedition about 70 Indonesian scientists came to the Netherlands within a special fellowship programme for training on data analysis, data handling and the preparation of joint reports and scientific papers. This programme was made possible by ODA-funding, which was made available through the Dutch Ministry of Education, Culture and Science. Indonesian scientists generally stayed in the Netherlands for a period of three to six or nine months. Some stayed several years and obtained a Ph.D. at a Dutch university. Today, leading Indonesian science managers refer to this capacity building initiative as laying the basis for the present, advanced Indonesian marine science capability. The ex-Snellius fellows now form the core scientists and lectures in a number of marine institutions such as the center for R&D in Oceanology in Jakarta, the Hydrographic Office of the Navy and at universities with a strong programme in marine science.

### **Indian Ocean Programme (1990-1995)**

In the nineties the Dutch carried out the Indian Ocean programme (1990-1995) during which the Snellius II approach was developed into the concept of Partners in (Marine) Science. The IOP comprised five interrelated projects being monsoons and coastal ecosystems in Kenya, monsoons and pelagic systems, tracing seasonal upwelling, geological study of the Arabian Sea and, biology of oceanic reefs. From May 1992 till April 1993 the *Tyro* carried out research in the northwestern part of the Indian Ocean. During a period of ten months the influence of the monsoon on marine life was investigated. Detailed studies were carried out into the composition of the topmost layers of the ocean floor and into the biological and chemical processes which determine the formation of these sediments. The history of the life and the circumstances of the sea - and also, with it, of the influence of the climate - is, for a large part, stored in the ocean floor. The organic products, and other breakdown products piled up there, can give an idea of the environmental conditions under which they lived. So, by studying the sea floor an idea of past climates is obtained.

Scientists from especially Kenya and Pakistan were, through formal Partners in Science programmes, intensively involved in the planning of the expedition. The Kenya Marine Fisheries and Research Institute in Mombasa was the partner in Kenya. The National Institute of Oceanography in Karachi was the Pakistani partner. In Kenya the programme was built upon the existing Belgian-Kenyan coastal research Programme, funded by the European Union. In Pakistan the partnership programme was aimed at marine geology and by this it was complementary to the marine biological US-Pakistan cooperation in marine science. The programmes in marine science between respectively Kenya, Pakistan and the Netherlands are divided into two phases. Phase-1 (1992-1993) was the ocean-going research programme which was part of the Dutch IOP. As funding from the Dutch ODA organization was not obtained, these programmes were funded by the SOZ. Phase-2 will be a five year coastal marine research programme. In Pakistan the bilateral programme proposal is directed towards marine geological research of the Indus delta and the EEZ. Some 75 % of the proposed budget allocates for Capacity Building activities. The follow-up in Kenya will be part of a regional Eastern African Partners in science programme and will be aimed on research at the coastal zone and the EEZ.

Due to the lack of Dutch ODA-support only a modest re-expedition training programme could be developed for Kenyan and Pakistani scientists before the expedition. A training course, held in May 1992 in Mombasa, however, attracted participants from Kenya, Tanzania and the Seychelles. This course was also supported by the Swedish Agency for Research Cooperation with Developing Countries (SAREC) and UNEP. The course included a three day training course on-board *Tyro*, off the Kenyan coast. The scientific programme of this research cruise was developed by Kenyan scientists. During the expedition a substantial number of scientists from Kenya, Pakistan and the Seychelles participated in the research cruises. At the start of the cruises in the partner countries a PR-programme was successfully launched to attract the support of the politicians and policy makers. After the expedition a limited number of scientists came to the Netherlands for research and training and to write joint papers. A popular book *The*

*Third Ocean An expedition between Asia and Africa* was published in 1994 in English and Dutch, to inform the public at large. In 1995 a CD-ROM with all expedition data was published by GOA, and donated to the partners. By this they got access to all available data of the ten month's expedition in the Indian Ocean. A update is planned in 1997.

Again the use of containers as laboratories offered a large degree of flexibility. In Kenya, three containers were placed on the compound of the prestigious Jalini Beach hotel, during June-July 1992. They served as a temporary research laboratory while the hotel offered housing and electricity. The use of containers has the great advantage that no (expensive) research ship has to be purchased in order to be able to do marine research. In the simplest and cheapest form, it is sufficient to purchase some containers which are equipped as laboratories and with which an institute can conduct its own research with chartered vessels or onboard ships from other countries. At present the National Institute of Oceanography in Karachi is executing the Pakistani Antarctic Programme in this way. For developing countries this is an interesting way for capacity building. Moreover, the use of containers for research offers developing countries the possibility to take part in international research for relatively little money.

With the purchase of the *Tyro* as a research vessel, the SOZ has taken off in a direction which also wins international recognition. Maybe the *Tyro* is not spectacular to look at, but the system of containers is not only cheap, but also extremely flexible. The containerized laboratories can be transported not only by sea, but also on land and by air. They can be placed on land for a while, exchanged for other containers and collected again later. The idea of container research has proved its value. This experience provided a strong stimulus for the SOZ to further propagate the idea of containerized labs. And with success. Within the EUROMAR project Mobile Station for Environmental Services (MOSES) a new generation of advanced container laboratories has been developed by six European countries. In 1993 prototypes of MOSES were tested by the Netherlands, France and Finland.

### 3. LESSONS LEARNED

The value of a Partners in Science programme has proven itself in the Snellius II and Indian Ocean Programmes. From these efforts, it has become clear that such a programme must meet certain conditions if it is to be successful. These conditions include, among other things, the establishment of a good, scientific infrastructure in the developing country including experts, institutes, equipment and technicians who know how to use it. This is time-consuming. The establishment of such an infrastructure takes at least six to ten years. Besides this, it is essential that each of the two countries furnishes study plans, has its own coordination centre and supplies manpower, pools of instruments and financial means. The main objective of a partnership is to assist a developing country in capacity building through the transfer of knowledge and infrastructure, by the execution of a joint bi- or multilateral research effort. This should optimally be reached by matching science funding with ODA-funding. A number of lessons can be drawn from the experience with the partnership programmes:

- \* Institution building. The building of a research capability (manpower, institutions etc.) takes at least 6-10 years. It should be understood that marine and coastal research programmes are dealing with long-term problems. Moreover, one should realize that in marine science the dividing line between applied and basic science is tenuous at best. Short-term research projects are only of use for sustainable development of the research capacity if they are part of a long-term cooperation. Continuity must be guaranteed.
- \* Real partnership. From both sides much effort (manpower, money, ship time etc.) must be made available to the joint expeditions. The support of the partnership by the scientific and political community on both sides is essential.
- \* A joint planning. The establishment of a joint Planning Committee with members from both national planning committees is a prerequisite for the success of the partnership. The role of scientific coordinators for (sub)projects is of vital importance since they are responsible for the overall management and scientific rationale of each (sub)project.
- \* A coordinating agency in the partner countries. A long-term cooperation scheme can only be carried out successfully if the responsibilities of the coordinators on each side are clearly defined.
- \* A multi disciplinary approach. Tackling the problem of sustainable use of the marine and coastal resources can only be done in a multi disciplinary way. The Snellius II Programme as well as the Indian Ocean Programme have shown that the combination of scientists from different disciplines enhances the results of each separate discipline.
- \* The concept of containerization. Transfer of know-how is essential in the development of a local marine

science capability. In this process the application of containerized labs is promising. Firstly, it allows developing countries at low costs to establish sea-going facilities by using converted commercial ships as research vessels. Secondly, it allows developing countries to build their facilities step by step, tailor-made to the possibilities of their research community. Thirdly, maintenance or breakdown of marine equipment has little or no effect on ship time. Fourthly, the use of container labs can lead to a more efficient and cost-effective use of scientific equipment (for instance by the establishment of national or regional equipment pools).

- \* Combination of research and training. The combination of on-board training together with the possibilities offered by pre- and post expedition fellowships is very successful. The training of scientists and technicians is essential for the development of a marine science capability.
- \* Matching of science and ODA-funding is a pre-requisite for a successful programme.

#### **4. A WAY AHEAD**

The responsibility for the development of marine science capability rests ultimately with each individual country. Nevertheless, countries with well developed marine science capabilities have a responsibility to assist in the development of similar capabilities in less developed nations. Whenever industrialized countries support marine research in developing countries, the prevailing view seems to be that only applied research should receive support. Moreover, the needs in marine science are generally perceived along lines similar to the needs in other scientific and technological disciplines: more money, more trained and skilled manpower, more equipment, more training programmes - both formal and informal - , more scholarships, more overseas attachments, and a greater commitment on the part of the general public and politicians to the development of marine science. Frequently such inputs are not properly evaluated in terms of assessing their impact on performance, achievement and the development of marine scientific capabilities in developing countries. Often expensive equipment, including research vessels, is provided through donor agencies while problems of maintenance or recurrent budgets prevent its proper use in the development of marine science. However, there are a number of attractive and cost-effective ways, such as the use of research containers on land and on ships, for the development of a country's marine science capability.

In the eighties the former Marine Division of UNESCO and the Netherlands Marine Research Foundation independently developed the concept of "training through research". The main objective of the TREDMAR-programme is to "enhance coastal and marine science learning and teaching worldwide to better equip scientists, teachers and planners, and through them the public at large, for the decision-making process concerned with questions related to the marine and coastal environment". Tuning in at the opening of the former Soviet Union TREDMAR played a catalytic role in the training through research cruises on board the well equipped Russian research vessel *Gelendzhik*. The cruises are highly successful despite the scepticism of some of the established funding agencies. It is a well-known fact that international cruises such as the ones on-board the drilling vessels of the Ocean Drilling Programme, also function as state-of-the-art courses in oceanography. The partnerships developed by SOZ also centre around the concept of transfer of know-how and the assistance in establishing and using a marine science infrastructure, by working together in well defined scientific programmes. This approach, matched by ODA-funding should be applied in the development of future research and management programmes such as GOOS and by the implementation of Integrated Coastal Zone Management plans.

## ANNEX VIII

### INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (IOC) OF UNESCO

(Presented by G. Kullenberg)

#### 1. EARTH AND THE OCEAN

When the IOC was created in 1960 the founding Member States recognized that (Report of Sixteenth Session of the Assembly, Document SC/MD/97, Annex VII):

*"the oceans, covering some seventy percent of the Earth's surface, exert a profound influence on mankind and indeed upon all forms of life of the earth... In order properly to interpret the full value of the oceans to mankind, they must be studied from many points of view. While pioneering research and new ideas usually come from individuals and form a formidable task to be undertaken by any one nation or even a few nations"*

These thoughts have been given new meaning with the recognition that the earth and its environment are changing dramatically on previously unanticipated time and spatial scales at a time when many nations are seeking new opportunities for social and economic development. The international community is taking unprecedented actions to address the economic and social implications of global environmental change and of sustainable development which, as a result, have become a core agenda for international affairs. In regard to the ocean, attention is increasingly being focussed on the coastal zones. A basic element of this strategy is an issue-oriented approach, support towards achieving sustainable development being the goal.

Demographic analysis suggests that the global population will only begin to level off in the middle of the next century and that before then another two to four billion, beyond the present six billion, will need to be provided for. At the same time, FAO statistics - even ten years ago - indicated that the total world food production could support a population of five to six billion, if evenly distributed.

Since then, world food production has not kept pace with population growth and is not more evenly distributed than before. The consequences are those that we already see today and which are not likely to decrease in magnitude and geographical extension. Not the least of these are major starvation and mass migration with ensuing political instability and pressure on societal structures.

Patterns of energy consumption follow that of the population curve. Consumption in developing countries can be expected to increase relatively rapidly. Taking a global population of ten billion, with an average per capita energy consumption equal to just 25% of the present consumption in the United States, world energy consumption in 50 years would require 2.7 times the resources used today. This demand may not be met by utilization of oil and gas alone, nor through the other readily available resources of coal and oil shale.

The coupled impact of increasing population and energy consumption on the global ecosystem leads to a third factor - that of anthropogenically-induced climate change - which itself will play both a contributing and constraining role in future development.

Observations over several decades show an undeniable trend of increasing atmospheric CO<sub>2</sub>. The relation between this and temperature on earth is also demonstrated beyond any doubt and a global warming appears to be unavoidable. Thus, patterns of energy consumption, as well as those of food production, will inevitably change over the next five decades.

How the global life-supporting system will change is a major question. Forecasting of the size and timing of these changes can only be achieved through the use of models which must take into account the role of the oceans as a major governing force of life on our planet.

It should be emphasized that much of the present population and a majority of the future population of the earth will live and work within the coastal areas. This makes these areas of society very vulnerable to physical and

other natural and human-induced disturbances and changes.

Basic trends point very clearly to the increasing importance of the oceans. The coastal and marine environments and their resources may provide the only alternative for sustainable development for future generations. In order for society to be able to use the ocean's resources rationally in the next century a major concerted effort must be initiated now in marine research, technology and systematic ocean observations development, and related global capacity development. The coastal zone is the region where effects of population growth, climate change, etc., will be felt to be most vulnerable.

The expected impacts of climate change and variations, as well as the impact of many natural hazards (tsunami, storm surges), also hit the coastal zones, thus creating environmental destruction and refugees. This will accelerate the impact of lack of food.

The UN Convention on the Law of the Sea (UNCLOS) defined the "New Ocean Regime" and endorsed the Exclusive Economic Zones (EEZ). This implied the greatest transfer of natural resources in history. Ninety percent or more of traditional fishing areas that used to be in international waters are now under the jurisdiction of individual coastal and island states. Thus the instrument for a sustainable use and development of ocean resources is available. But it is not yet used! The resources of the areas within the EEZ's in the form of coastal and marine productivity and biodiversity are now being lost at a rapid rate. Destruction of coastal habitats and ecosystems is wide-spread and extensive.

A recent realization is the role of the interdependence of human action, societies and systems, and that we essentially have to manage interdependence taking into account uncertainties and prevention of effects of human actions. Our life-support system is not only the environment but also human components of systems and institutions, including relationships between nations. What are the effects of human systems and institutions on the human habitat? What are the effects of environmental resources on peace and security, and how are these effects measured? What are the indicators of sustainable development? The environmental resources include air, soil, water, terrestrial and marine ecosystems, climate, and their degree of disturbance and pollution. Their interdependence is demonstrated when analyzing the feedback mechanisms and their effects.

Four main factors seem to be at the root of present environmental problems (see e.g. Document IOC/EC-XXV/8 Annex 2, para 2.17, 1992):

- (i) limited attention to national and international economic policies and forms of development which do not adequately take into account the environmental consequences of these policies;
- (ii) weak regulatory mechanisms and administrative systems dealing with environmental issues;
- (iii) insufficient public awareness concerning the real causes and magnitude of environmental problems, and available remedial measures; and
- (iv) inadequate forecasting and anticipation of emerging environmental problems.

Remedies for these include (*loc. cit.*): improved understanding of marine and coastal environmental processes and ecology; integrated management approaches; control of land-based sources of marine pollution; long-term systematic research and observation programmes; strengthening of national infra-structures and national and international institutions; financial assistance and capacity development. Several of these matters are addressed in Agenda 21, in particular in Chapter 17.

Society is presently in a transitional period, with emphasis on intersectoriality and interdisciplinarity. New partners and institutions are emerging. There is a need to reshape existing institutions to meet new challenges, including the development of new human resources able to understand and analyze the complex interplay between systems, organisms and institutions. A system-oriented, holistic approach, addressing issues is required. The discipline of economics must become involved and socio-economics is becoming a necessary element in our endeavors.

The shift of emphasis from the open-ocean to the coastal zone leads to a strong emphasis on regional or sub-regional co-operation and the use and strengthening of IOC regional subsidiary bodies as another essential part of the Strategy. This includes sharing of equipment and common use of infrastructure and existing institutions.

IOC has a unique role to play, as the only dedicated mechanism for these matters, in relation to development, organization and co-ordination of long-term systematic observations on a well-founded scientific basis and adjusted to meet society's needs, with related capacity building. IOC can also act as a supporting scientific and technical body for other organizations and, on the other hand, IOC can identify related tasks which other organizations could assume.

The Strategy emphasizes the scientific basis and application of scientific results and systematic observations for the management and sustainable development in the framework of the follow-up to UNCED. Particular stress is put on the follow-up to the Small Island Developing States Conference.

These basic elements may have the following implications for the activities of IOC:

- (i) that emphasis must be put on ensuring that understanding and scientific knowledge of how the ocean works need to be transmitted and related to other parts of society and must be supplemented with an adequate, regularly updated and scientifically valid information basis, properly integrated, accessible, and transmissible to Governments, for use in their policy formulation and decision making;
- (ii) that education and awareness are major long-term factors which influence how society deals with environmental conditions and resources;
- (iii) that interdependence is presently reaching global scales making it imperative that knowledge, information (data) and technology are shared and that inter-regional co-operation is much further developed;
- (iv) that indicators and early warning systems need to be identified, interpreted and used in shaping common policies;
- (v) that institutional mechanisms must be strengthened so that institutions are able to provide the required, adequate information and so that they can implement agreed policies and instruments (cases at hand are UNCLOS; FCCC, and the Convention on Biological Diversity);
- (vi) that the pressure on the terrestrial environment will inevitably lead to increasing pressure on the use of marine resources including coastal areas;
- (vii) that pressure on the coastal zone will continue to increase over the coming decades; and as a consequence, the vulnerability of society to ocean-driven disasters, as well as gradual destruction, will continue to increase;
- (viii) that inter-dependence may lead to an increasing gap between developed and developing countries if preventive policies are not identified and implemented.

The creation of more increased public awareness concerning the role of the ocean and of IOC must be an important effort in the Medium-term period. This should *inter alia* be associated with the Ocean Year 1998 and EXPO98.

## 2. INSTITUTIONAL FACTORS

The entry into force of the United Nations Convention on the Law of the Sea (UNCLOS) in November 1994 provides a major factor of influence on the IOC in its evolving role as a competent international organization in marine scientific research and related activities. The expansion in marine scientific research is presently being followed by an increasing need for ocean services and capacity development, including training and education. Societies' priorities on research programmes concern the scientific basis for development and management of the marine environment, its living and non-living resources and the coastal zone. IOC has major responsibilities to provide technical assistance to coastal States to carry out marine research and systematic observations, and to disseminate marine scientific data and information, as well as in its advisory roles.

Another major factor influencing the work of IOC is the follow-up to UNCED, including the Convention on Biological Diversity, the Framework Convention on Climate Change and Agenda 21; the IOC, in this context, needs to co-operate with the Commission on Sustainable Development, the ACC Sub-Committee on Oceans and Coastal Areas, the UN Department on Policy, Co-ordination and Sustainable Development, as well as the Secretariats established to serve the Conventions, and ICSPRO.

A third factor presently influencing IOC science programmes is the establishment of global change research programmes in the two main streams of WCRP and IGBP. The IOC is a co-sponsor of WCRP, with WMO and ICSU, and is co-operating with several IGBP projects, notably JGOFS and LOICZ. The Global Ocean Ecosystem Dynamics

project (GLOBEC), which IOC co-sponsors together with SCOR, ICES and PICES is also becoming an IGBP project.

Involvement in these large-scale global change research programmes puts great demands on the IOC which must be fulfilled. Major reasons for the co-sponsorship are the need to ensure that the global marine research community, as a resource, participates actively in these research programmes; that the required capacity in human resources can be established and sustained; and that the results can be shared globally. IOC has a major role to play in this context.

In view of the limited resources available generally, and to the IOC in particular, the involvement of IOC in these global research programmes should essentially be seen as the fulfillment of IOC's role in promoting marine scientific investigations *"with a view to learning more about the nature and resources of the oceans through the concerted action of its members"* (part of Article 2 of the IOC Statutes). There are certain scientific aspects not covered through the global change research programmes, in particular those related to OSNLR and GIPME. These programmes are major contributions in the context of UNCLOS and UNCED.

Finally, a major factor influencing IOC is the increasing demand for ocean services, articulated in the agreements on the development of the global observing systems GOOS and GCOS. IOC is a partner in the development of both, with a leading role in GOOS. It is clear that this must be seen as the major contribution of IOC to the development of ocean services. It encompasses practically all ocean services and ocean observation programmes of the IOC. An exception is the marine information management programme, which should turn into a major contributor to the implementation of UNCLOS and follow-up of UNCED.

Ultimately, all efforts will vanish, however, if the capacity development is not maintained, and if the involvement of Member States in all the activities is not secured. The IOC contribution to this capacity development will continue through the TEMA programmes, with a new strategy adjusted to meet the needs of UNCLOS and UNCED. Hence TEMA must be of the highest priority.

### **3. THE IOC ROLE**

The principal goal of the IOC is defined in its Statutes, Article 2, as being *"to promote marine scientific investigation and related ocean services, with a view to learning more about the nature and resources of the oceans"*, also referred to above. IOC has identified four major themes to focus on to meet the challenges identified here:

- 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;
- 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;
- provide international leadership for the development of education and training programmes and technical assistance essential to global ocean monitoring and associated oceanographic research; and
- ensure that ocean data and information obtained through research, observation and monitoring are efficiently husbanded and made widely available.

The following major thrusts should meet the challenges and address the major issues:

- Global climate research programmes and the associated large-scale oceanographic experiments to observe and understand air-sea interaction, the impact of the ocean on climate, and the impact of changing climate on the ocean.
- Research, baseline studies, and monitoring of marine pollution to measure and assess the effects of human activity, notably those resulting in degradation and contamination, especially in the coastal interface zones; studies and observations in the coastal zone aimed at assessing vulnerability.
- Study of the marine environment as a whole - both coastal and open-ocean - its physical and biological parameters and processes, with emphasis upon its role as a residence for living resources, its geological and

geophysical properties, including non-living resources in shallow and deep-ocean areas, and the interfaces between the ocean, its floor, and the atmosphere.

- Accelerated development of ocean observing and monitoring systems leading to an adequate Global Ocean Observing System in support of marine research and ocean uses, as a common service to Governments and their marine user communities for the common good. This should also ensure that information on the world's oceans is collected to uniform standards.

Within these thrusts the major uncertainties and issues are addressed through the following programmatic actions:

- Capacity building through TEMA and regional programmes;
- Systematic Ocean Observations through GOOS, and IODE, with the support of others;
- Oceans and climate, through WCRP, GOOS and GCOS; and IGBP(JGOFS); related to FCCC, Small islands, biodiversity, Chapter 17;
- Living Marine Resources and food production, through OSLR, GOOS, Ocean Mapping (OM), and GIPME, related to Chapter 17 and biodiversity;
- State of the marine environment and the health of the coastal zone, through GIPME and GOOS, and IGBP(LOICZ), related to Chapter 17 (land-based sources);
- Integrated Coastal Area Management and coastal zone vulnerability, through OSNLR, OSLR, OM, GIPME, IODE, GLOSS, GOOS, and IGBP(LOICZ), and participation in CSI, related to Chapter 17 and FCCC;
- Coastal zone protection, warning and natural disaster reductions through the tsunami warning system (ITSU), sea-level observations (GLOSS), OM, IODE and storm surge predictions, related to Chapter 17;
- Small Island Developing States through vulnerability studies and observations (GLOSS, GOOS), GIPME, OSLR, OSNLR, OM, IODE, and participation in CSI;
- Data and information Exchange through GOOS and related programmes (GLOSS, IGOSS, Mussel Watch, etc.) and IODE and MIM;
- Public awareness creation through various actions, including publication of newsletters and exhibitions.

Most of these activities also fall within the framework of UNCLOS. One of IOC's major goals should be to serve as an intermediary between ocean and coastal research and systematic observations on the one hand, and policy formulation and decision-making by Member States on the other. IOC should help ensure that the required knowledge and scientific results are obtained, and that they are interpreted and provided to all Member States for use and application.

The programme actions are both global and regional. The latter address the regional priorities as identified by the regional subsidiary bodies, and are therefore not merely mirrors of the global ones.

#### **4. The IOC regional programmes**

The IOC is providing funding for each of the regional subsidiary bodies so as to ensure their functioning. Two regional secretariats are supported for the Sub-Commissions (IOCARIBE and WESTPAC). The meetings and some activities are generally covered by IOC funds. The governments have committed national institutions participating in the work, and we thus have the institutional network and the related human resources. Through UNCED results, in particular Agenda 21, but also the conventions, a common programming framework has been provided. Through the IOC global subject area programmes an inter-regional linkage can be obtained, and a participation of human resources from outside the developing regions, with coverage of a wide range of expertise. Has this produced any results? Some success stories can be cited. So as to give an indication:

In the Caribbean and South America, the joint IOC-UNEP marine pollution research, monitoring and assessment programme CEPPOL has been developed, starting in 1990-91. This was done to a large extent on the basis of experiences from the IOCARIBE marine pollution programme CARIPOL which started in 1979/80, and has generated an extension data base on oil and tar ball pollution in the Caribbean.

In East Africa and the Western Indian Ocean, a substantive regional programme is working on the basis of the cooperation between IOC and Sida (SAREC). Several regional workshops have been organized during 1990-1995

to collect and assess marine data, so as to provide compatible databases for different regions. This is part of the Global Oceanographic Data Archaeology and rescue (GODAR) project of IODE, supported also by NOAA (United States).

## 5. Obtaining donor support: the IOC-Sida (SAREC) example

How do we manage to obtain donor support? We need to convince the donors that their interests and programme implementations can be met, just as IOC's. If so, then the established mechanism can function along the following lines;

- the contacts with potential donors are established and the donor's representative is invited to attend the meeting of the regional body to provide advice;
- the regional body prepares the regional cooperative programme and identifies the participating national institutions;
- the programme is endorsed by IOC;
- consultations are arranged, involving the regional body, the IOC Secretariat and the interested donors, to formulate the agreement on support and how it will be provided;
- a joint management groups is established, and a workplan is prepared, specifying the activities, with the reporting format and schedule.

This outline is based on the established cooperation between SAREC of Sida and IOC.

In 1990, IOC and SAREC of Sida entered into an agreement for a joint regional programme in East Africa to support marine coastal management and related research through regional capacity building. The purpose of this joint venture was to merge elements of the SAREC Action Plan for East Africa with those of the IOC programme in the Western Indian Ocean as established by the IOC Regional Committee for the Cooperative Investigation in the North and Central Western Indian Ocean (IOCINCWIO), so as to ensure the maximum coherence and mutual reinforcement of activities previously carried out by IOC and SAREC independently. The cooperation thus uses the IOC intergovernmental regional subsidiary body to establish regional priorities and methods, and obtain related national commitments to sustained participation in the programme. In this way a true partnership is built up. The same approach has since been used in the Caribbean programme.

### THE IOC-SAREC STRATEGY

Below is presented schematically the strategy we have used in our joint programme.

Phase 1: **Identification of available human capacity:** This was done by both IOC and SAREC prior to the formulation of the preliminary action plan in 1990. This plan was then subsequently updated on the basis of the Recommendations from the SAREC-sponsored Workshop on Marine Sciences in East Africa (Dar-es-Salaam, Tanzania, 14-16 November 1989). However, throughout the cooperation programme the IOC-SAREC programme has always tried to respond to changing needs, rather than adhere strictly to a pre-defined 5-year workplan.

Phase 2: **Human capacity building:** as mentioned above a substantial number of training courses and workshops on a variety of subjects including physical oceanography, biogeochemistry, marine pollution, nutrients and eutrophication, living resources, coastal zone management, data and information management were organized. These activities started in Phase and continued in Phase 3.

**Communication & Information dissemination:** this started in 1989 when IOC embarked on the development of the RECOSCIX-WIO (regional cooperation in scientific information exchange in the western Indian ocean region). This project's main objective are (i) to provide marine scientists with relevant and up-to-date scientific information (literature); (ii) to promote inter- and intra-regional linkages between marine scientists; (iii) to develop specialized marine information products such as a directory of marine institutions and scientists, and a regional library holdings database, and (iv) create awareness for marine sciences in the IOCINCWIO region. After the initial pilot phase support by IOC between 1989 and 1991, the Belgian Government took over core funding of the project as from 1991 and will continue until 1999.

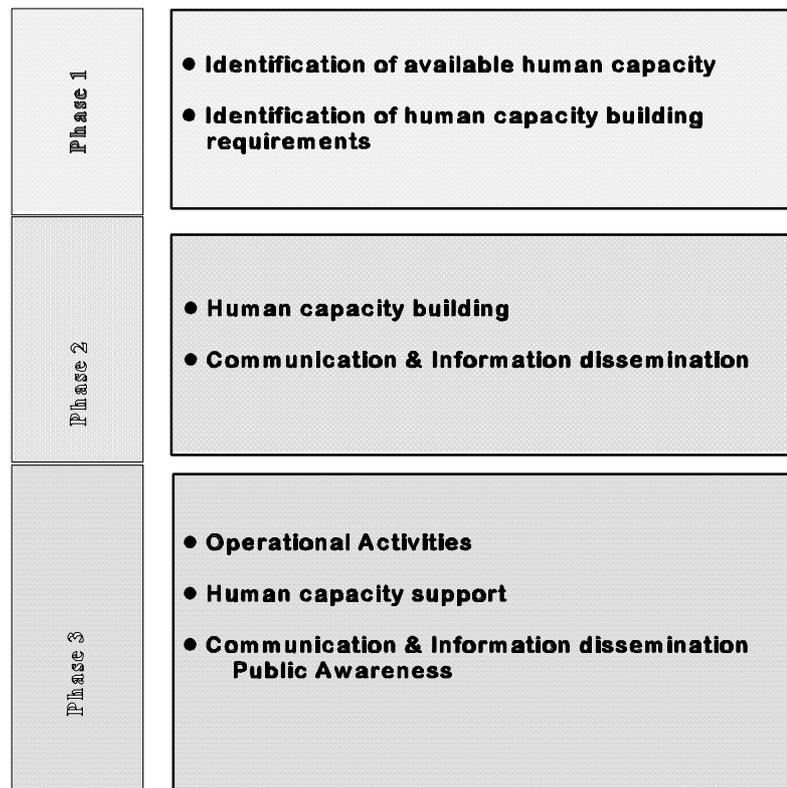
Phase 3: **Operational Activities**: after completion of the series of training courses and workshops emphasis in Phase 3 is put on operational activities.

**Human capacity support**: the human capacity support gradually shifted from group training activities to individual support through research grants. These are issued through the regional NGO WIOMSA (more details in Annex XII).

**Communication & Information dissemination** : complementary to the RECOSCIX-WIO support which IOC has continued to co-sponsor, specific support has been provided for electronic mail access being an indispensable tool for scientists all over the world.

**Public Awareness**: this function has been fulfilled mainly through the RECOSCIX-WIO newsletter WINDOW (Western Indian Ocean Waters).

Schematic representation of IOC-Sida (SAREC) programme strategy:



## ANNEX IX

### IOC SUB-COMMISSION ON THE WESTERN PACIFIC AND ASSOCIATION OF SOUTHEAST ASIAN NATIONS (ASEAN)

(Presented by M. Hungspreugs)

In Southeast Asia there are a number of bilateral and multilateral programs on marine science or marine related activities operating. Not many of these are known to one another. An attempt is made to list some of them here although several other- names are known by this author but not much is known about the programs so they are not included here as yet. However, improvement in coordination and cooperation will certainly maximize the benefit and lessen the cost involved. Regional Projects that Thailand participated is Participating in and International Organization responsible.

- IGOSS/MAPMOPP Monitoring of beach Tar and Dissolved/Dispended Hydrocarbon in sea Water.
- Monitoring of Heavy Metals in Bivalves as Pollution indicators, early 1980's .Since 1989, there has been a 9 stations, twice-yearly monitoring of the selected heavy metals and organochlorine pesticides in green mussels.
- WESTPAC River Inputs of contaminants to the sea.
- UNEP/EAS projects on coral reef, sea grass, oil and non-oil pollution during the early 1980's. Other aspects participated were of insignificant results. At the present, coordinating bodies on the Seas of East Asia (COBSEA), meets annually to decide on the program and budget of the activities of the West Asian Seas Action Plan which started in 1980, and now comprising of 6 new member countries namely Brunei, Australia, Cambodia, P.R. China, Korea, Vietnam (joined in 1993) and the original 5 members Indonesia, Malaysia, the Philippines, Singapore and Thailand. So far, over 30 projects were approved and implemented by national institutions of the participating countries. UNEP also set up the East Asian Seas Regional Coordinating Unit, (EAS/RCU) to take over the Secretariat functions of the Action Plan and carry out the coordination from the region. The office is located in the UNEP Regional Office in Bangkok. The projects so far implemented have all been funded through the resources of UNEP's Environment Fund and those of the East, Asian Seas Trust, Fund. However in the future some of the project concepts approved by COBSEA, specially larger scale projects, should be presented for the funding consideration by bi-and multilateral donors. The resources from the Trust Fund could then be used as seed money for the development of detailed project documents by the National Focal Points that originally proposed the project concept. With this in mind the Tenth Meeting of the COBSEA approved the development of the following project proposals and requested the EAS/RCU on behalf of the Governments to contact the donor community, requesting their consideration for potential funding:

1. Oil pollution control in the East, Asian Seas Region: "umbrella" project (EAS-23), Component (a) submitted by Thailand and component (b) submitted by Indonesia (estimated cost US\$ 1.5 million);
2. Quality assurance for non-oil pollution monitoring (EAS-24), submitted by the Philippines (estimated cost US\$ 1.5 - 2 million);
3. Conservation and sustainable development for the East Asian Seas (EAS-26), submitted by Malaysia (estimated cost US\$ 1.5 - 2 million);
4. Coastal resources management plan project for East, Asian Seas region (EAS-28), submitted by Malaysia (estimated cost US\$ 1.5 million); and
5. Coastal erosion in East Asian Seas region: Assessment and Management (EAS-31), submitted by Thailand (estimated cost, is 1 million).

There exists a group of Experts on East, Asian Seas Action Plan that acts as an independent scientific advisory body to the COBSEA, UNEP also sponsors the Association of South-east Asian Marine Scientists(ASEAMS) which meet every 3 year.

#### 5.4.1 A National Experience: THAILAND

There are several marine and coastal-related organization operating in the region. Some notables are:

1. ASIAN-Australia Cooperative Program on Marine Science.
  - 1.1 Living Coastal Resources this project aimed at getting a set of Coastal resource data and achieved an extensive database of mangrove, coral communities & seagrass beds for the use of GIS technique in assessing the change in their conditions.
  - 1.2 Regional Ocean Dynamics Project  
Study of tide and current, especially in the region of the flow through current from the Pacific to the Indian Ocean as an important factor in understanding the El Nino Southern Oscillation (ENSO) Phenomenon.
2. ASIAN-CANADA Cooperative Program in Marine Science Phase 1, operated during 1983 - 1988 and Phase 11 is going on for 1991 - 1996. The present theme is 'Establishment of Environmental Criteria for Development and Management of Living Marine Resources and Human Health Protection. This phase consists of 3 technical studies, they are
  - 2.1 Development, of tropical marine environmental quality criteria
  - 2.2 Marine monitoring & baseline studies,
  - 2.3 Investigation of Toxic red tides which cause contamination of shellfish, marine fish kills and also Human deaths.One research project is on the utilization of Shrimp Farm Sludge Cake for Rehabilitating Mangrove at Kung Krabane Bay which is the abandoned shrimp farm by replanting mangrove forest.
3. ASEAN-US Cooperative Program on Marine Science: Coastal Resource Management. The objective was to reduce the conflict use of coastal resources particularly land use conflict caused by aquaculture, mangroves tin mining & coastal tourism. The chosen study sites for Thailand were Ban Don Bay, (Sarat Thani), and Phang-nga Bay (called upper South Project,).
4. ASEAN- Republic of Korea  
The objective of this project is to promote the use of science and technology in the industrial use of marine biological resources. The four aspects are biodiversity, marine natural products, bioremediation and biomonitoring, and mariculture bio-technology.
5. THE MEKONG COMMITTEE  
The Mekong Committee was established in 1957 by the Governments of Cambodia, Laos, Thailand and Vietnam as an autonomous intergovernmental agency. The member countries decided to work together to promote, coordinate, supervise and control the planning, investigation and implementation of water resource development projects in +,he Lower Mekong Basin. Throughout it's existence, the Committee has been supported by the United Nations, especially the United Nations Development Program (UNDP), and the Economic and Social Commission for Asia and the Pacific (ESCAP, formerly ECAFE). Certain aspects are funded by Australia and Sweden. Since 1978 the Committee has worked as an "interim" committee with only three members namely the Lao, PDR, Thailand and Viet, Nam, but retains the Committee's original goals. The new arrangements re-includes Laos while Burma and China were observers.  
The main activities of the Committee are:
  - to collect basic data relating to hydrology, climatology, hydrography, topography, pedology, geology, transportation and demography;
  - to prepare sectoral plans and programmes, project proposals and other working documents;
  - to carry out or coordinate surveys, feasibility studies, economic studies and systems analysis;
  - to assist in the execution of projects, whether funded by cooperating countries or international agencies/ organizations;
  - to provide monitoring and evaluation of project activities.
6. SEAFDEC, Southeast Asian Fisheries Development Centre The Centre was established in 1967 between the Government of Japan, Malaysia, the Philippines, Singapore and Thailand and since November 1994 Brunei and Vietnam also became members. The aim is to do research and training for promotion of fisheries development. The Training Department is situated near Bangkok and operating a 65 m very well-equipped

training and research vessel. At the moment there is a cooperative research work between Thailand and Malaysia to do a 3 year research project (1995-1997). This project consists of Fisheries Oceanography, fisheries, plankton, benthos, as well as marine geochemistry studies.

7. JSPS Japan Society for the promotion of Science ( Gakushin) This Japanese organization operates under the Ministry of Education, Science and Culture (Monbusho) started an exchange scientist programme with SE Asia in 1978 and now runs under the system of Core University, i.e. Chulalongkorn University for Thailand and Ocean Research Institute University of Tokyo. Two elements of the programme are scientific exchange of personnel and cooperative research projects. There is also Ph.D programme for foreign scientists who can spend up to 3 months each year at Japanese institution, then produce reasonable quality research papers. Several senior officials in SE Asia received their Ph.D by this method.
8. SEAPOL, Southeast Asian Programs in Ocean Law, Policy and Management. SEAPOL is a non-governmental network of scholars, governments officials, members of the private sector, and individuals with a professional interest in ocean affairs. Funding is provided by CIDA. One of the new purpose of SEAPOL is to initiate interactions between the ocean policy specialists and ocean scientists in SE Asia and their counterparts in the other regions of the Pacific Ocean. In July 1993, SEAPOL organized an Overview Workshop on the Gulf of Thailand, in Kuala Lumpur, Malaysia and in December 1994, a Tri-Regional Conference on Current Issues in Ocean Law, Policy and Management: SE Asia, N. Pacific and SW Pacific. One of the outcome of these two conferences is a Draft Proposal on Oceanographic Priorities for the Gulf of Thailand: A feasibility Study for Future International Cooperative Research Programme. Early in 1996, SEAPOL will organize a workshop in Phnom Penh to assist, the Cambodian Government in identifying its national interest and needs in ocean law, policy and management.
9. IOC/WESTPAC Subcommission Secretariat  
WESTPAC established a Secretariat Office in the National Research Council of Thailand compound in late 1994. At present, there is an Assistant Secretary of WESTPAC and 2 junior office personnel. It is expected that member countries will second Associate Experts to work there as well as the Head of Office.

#### Project Proposal Seeking Funding.

1. IAEA Regional-Asia : Project on Marine Contamination and Transport Phenomena (1996-2000).
2. Oceanography of the Gulf of Thailand in Relation to Living Resources : A Feasibility Study for Future International Cooperative Research. Key questions.

#### **Association with IOC and with donors in national and international cooperative projects**

Suggestion for improvement.

How cooperation and coordination could be improved between donors and institutions and organizations involved in developing and implementing programmes at national and international level

How existing national expertise can become more involved with donors

How can one ensure that experts receiving their training in one type of programme can be used or absorbed in another one.

## ANNEX X

### IOC REGIONAL COMMITTEE FOR THE CENTRAL EASTERN ATLANTIC (IOCEA)

(Presented by L. Awosika)

A NEW APPROACH TO THE DEVELOPMENT OF OCEAN SCIENCE PROGRAMMES IN THE CENTRAL EASTERN ATLANTIC.

#### ABSTRACT

The Central Eastern Atlantic borders developing nations along the west coast of Africa. Most of the countries economic backbone is derived from marine resources. However, inadequate knowledge of the interactions between the ocean, land and air contributes to a large extent to unsustainable management of the resources. Development of ocean science in the region is hampered by lack of national funds. A new approach involving multilateral and International cooperative efforts is required for the implementation of the concepts of Agenda 21 and the Law of the Sea. Such efforts should include the use of national scientists in the planning, implementation and evaluation of International ocean science programmes. Training by participation, provision of equipment and infrastructure as well as cooperation and exchange of data and information should be part of capacity enhancement. Assistance by Multilateral agencies through International agencies on a regional basis should form the network for the achievement of this new approach to development of ocean science in the Central Eastern Atlantic.

#### INTRODUCTION

The Central Eastern Atlantic lying approximately between 30 degrees north and south of the equator borders about 21 states and 3 island states. While many of these states have declared their Exclusive Economic Zones (EEZ) many have ratified the Law of the Sea Convention. The resources within this part of the Atlantic ocean and the coastal areas include fish, oil and gas, non fuel minerals, mangroves, and various species of wildlife and flora. Some of these resources form the back bone of the economy of many of the countries in the region. The coastal areas bordering the ocean form the economic nerve centres and are characterised by large population density. Conflicting methods of exploitation of many of the resources have led to pollution, erosion, deforestation, flooding and other socio-economic problems. Sustainable exploitation and management of the resources in the marine and coastal areas is heavily dependent on adequate scientific knowledge of the physical, chemical, biological processes in the ocean and their interactions with adjacent coastal land. The down turn in the economy of many of the states in this region has been responsible for low funding of oceanographic research by the governments. The need then arises for multilateral and international assistance to enable these countries acquire the scientific capacity needed for the management of the ocean and coastal areas.

#### EXISTING INTERNATIONAL INSTITUTIONAL ARRANGEMENTS INVOLVED IN OCEAN SCIENCE.

The region already has existing national and Institutional arrangements for the effective implementation of the new ocean regime as contained in Agenda 21 and the Law of the Sea Convention of 1982 which came into force on 16th November 1994. Major International agencies involved in ocean science include in the region include:

- the Intergovernmental Oceanographic Commission (IOC) - IOCEA
- the United Nations Environmental Programme (UNEP) -WACAF
- the Food and Agriculture Organisation (FAO) - CEECAF
- the International Maritime Organisation (IMO)

IOC programmes in the region include Ocean Science in Relation to Non-Living resources (OSNLR), Ocean science in relation to living resources (OSLR). The region has also participates in GLOSS, GOOS, WOCE and other IOC related projects through National Institutes for ocean related research, Universities and government departments with ocean related mandates. Though the IOCEA region has made some achievements in the implementation of IOC programmes, the region is still very much lacking in keeping pace with global ocean science. This is mainly due to the following:

- Inadequate funding,
- lack of equipment,

- dearth of trained personnel,
- lack of efficient communication between local and International scientists,
- Inadequate participation of local scientists in International projects,

#### **AREAS OF NEEDS IN OCEAN RESEARCH IN THE REGION.**

Areas of Ocean research programmes needing development in the region include:

- Sediment fluxes (measurements of boundary conditions, sediment entrapment, transport and deposition).
- Waves and tidal analysis.
- Shallow seismic/side scan survey, interpretation and application for coastal processes.
- Structure and function of benthic communities
- Salt marshes, intertidal and near shore.
- Geographic Information Systems and applications to coastal zone studies.
- Integrated Coastal Zone Management.
- Measurement and calculation of dissolved and particulate matter in shelf and coastal waters.
- remote sensing and application for coastal and marine processes.
- Oceanographic instrumentation and maintenance.

Many multilateral assisted ocean research programmes fail to address the above needs adequately by:

- not involving the region's local scientists in the planning, implementation and evaluation processes in international ocean science programmes,
- not utilising available local resources for training. Most training is done overseas with sophisticated equipment which are not available in the region.
- by not providing token funds for provision of consumable spare parts and field expenses to enable local scientists pursue their research activities.

#### **CONCLUSION**

Development of Ocean research programmes in the IOCEA region is paramount to the sustainable management of coastal and marine resources. However, such development can only come to fruition if a new approach is utilised by multilateral agencies for the development of ocean science.

A major achievement in the region was the successful implementation of the first IOCEA cruise in the Gulf of Guinea between 10 to 25 October 1989 on board the Nigerian Institute for Oceanography and Marine Research Vessel SARKIM BAKA. The Cruise utilised local resources with financial support from IOC to collect oceanographic, and meteorological data between the shelf bordering Nigeria to Cote d' Ivoire in pursuance of the Sediment budget programme of the OSLNR component of IOC. The cruise also offered a well timed opportunity to get some training in oceanographic data collection. National efforts in the region at strengthening ocean research are grossly inadequate considering the huge sums of funds involved in Ocean research and the dearth of highly trained person in ocean research.

Ocean science development in developing regions like the IOCEA region should hence embrace the following:

- Provision of equipment and infrastructure for national scientist.
- Training should be done in country as much as possible employing local experts.
- Local experts should be involved in planning and execution of international ocean researches.
- Training by participation should be the main focus for capacity enhancement.
- National or Regional Ocean science programmes funded by multilateral agencies should utilise existing International and regional bodies like IOC to plan and implement any programme. The SAREC experience is a good example.

## ANNEX XI

### **IOCINCWIO DEVELOPMENT AND IMPROVEMENT OF MARINE SCIENTIFIC RESEARCH CAPABILITIES IN THE WESTERN INDIAN OCEAN REGION**

(Presented by Dr. E. Okemwa)

#### **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 Kenya, the need for conservation of marine life and appropriate management techniques is receiving increasing attention. It is with this in mind that Kenya is trying to build capacity in marine research. Marine science institution has been established in Kenya. Unfortunately Kenya does not have the necessary financial resources for training and research. Kenya has obtained outside assistance, resulting in the establishment of a number of well-functioning projects which have created some degree of expertise and infrastructure in the country.

#### **2. MARINE SCIENCE NATIONAL PROGRAMMES IN KENYA**

After the collapse of the East African Community in 1977, Kenya decided to carry out the policy of research as before in the E.A. Community. In 1979 Kenya Government established Kenya Marine and Fisheries Research Institute to do research in aquatic systems in Kenya. Under national programmes Kenya Marine and Fisheries Research Institute is carrying out short-term and long-term research programmes which include the following:

- Biological oceanography
- Chemical oceanography
- Physical Oceanography
- Marine geology
- Aquaculture/mariculture
- Environmental chemistry/pollution studies
- Integrated (Coral reef/Mangroves/Sea grass beds)
- Seaweed Biology
- Socio-economic studies.

The Kenya Government decided to collaborate with the Government of Belgium in 1985 in marine sciences.

#### **3. KENYA-BELGIUM PROJECT IN MARINE SCIENCES**

The Kenya-Belgium Project started in 1985 with Kenya Marine and Fisheries Research Institute as the contact institution of Kenya and Free University of Brussels as the other contact in Belgium. The philosophy on the project was based on: research, equipment, education, literature and operational funds. During the early period of the project discussions between the Kenyan and Belgian Scientists on the equipment and training were carried out on the 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 by the Belgian Government 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 students from developing countries 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.

After ten 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. The time

has now come to share this acquired knowledge with others in the Western Indian Ocean 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 be comparable and a joint, regional management of the biotopes could be worked out.

### 3.1 NEW CONCEPT ON PRIORITY CENTRES

The Belgian scientific cooperation is in the process of experiencing tremendous changes for the better of our regional and local partnerships. Indeed, the focal point of the on-going changes in the new concept of "Priority centres" which are like centres of excellence. This concept has been specifically developed in view of the needs of the Belgian Government Partners from developing countries and, especially, with the ultimate aim on the following:-

- To reduce the current "Brain Drain";
- To strengthen the capacities of local or regional high education system;
- To optimize the results of the inter-university collaboration;
- To provide better value for the same amounts of money to the recipient countries.

#### 3.1.1 How can these goals be achieved?

The goals can be achieved by focusing on post-graduate education organized in the supported region itself instead of providing scholarships in Europe with all the additional financial burden it implies, which is detrimental to the number of beneficiaries. Indeed many more of them could follow equivalent training sessions, backed by Belgian high level institutions and the Belgian Cooperation, in their own region than it was the case within the traditional system of scholarship.

Kenya Marine and Fisheries Research Institute and the University of Nairobi have been selected as priority centres in Kenya. Like already stated, the priority centre's concept is based on regional approach. This is not only relevant in terms of sustainability and capacity building of institutions, but it will also play significant role in integrating the regional centres of knowledge.

### 3.2 FUNDAMENTAL AND APPLIED MARINE ECOLOGY (FAME) POSTGRADUATE TRAINING IN EAST AFRICA

The postgraduate training course in Fundamental and Applied Marine Ecology (FAME) was started in 1985 at Free University of Brussels (VUB).

There are plans to have FAME East Africa between VUB (Belgium); Nairobi University (Kenya); Kenya Marine and Fisheries Research Institute (Kenya); Dar es Salaam University (Tanzania) and Institute of Marine Science (Zanzibar) under the priority centre's concept.

The Curriculum is composed of theoretical courses, illustrated by practical exercises and excursions. The second year offers the chance for students to specialize. Adding to only a few compulsory courses, a diverse list of optional courses is available including e.g tropical fisheries, Coral reef ecology and mangrove ecology which are both of great interest to developing countries.

KMFRI (Kenya) and IMS (Tanzania) will host students on practical exercises. Students will come from VUB, Nairobi University and Dar es Salaam University for FAME East Africa program. Those universities will offer the students the degree certificates after completion of their studies. The details are being worked out.

## 4. MARINE SCIENCE RESEARCH IN THE WESTERN INDIAN OCEAN REGION.

Marine Science research in the Western Indian Ocean (WIO) Region (Comoros, Kenya, La Reunion, Madagascar, Mauritius, Mozambique, Seychelles, Somalia and Tanzania) started gathering momentum with the

implementation of the International Indian Ocean Expedition (IIOE) in the 1960s. The initiative for the IIOE 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 drawing attention to its importance.

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.

Marine Science in Western Indian Ocean has not real developed very much. Each country in the region is carrying out national programs, and few programs are based on regional level.

#### 4.1 AFRICAN SCIENTIST

Many countries in Western Indian Ocean pay low salaries to marine scientists in the range between US\$ 100.00 and 300.00. Field allowance is paid in range between US\$ 10.00 and 20.00 per day.

African scientists work in very bad condition: no vehicle to use to go to the field to carry out research, no chemicals for analysis, no good laboratory space, no equipment etc.

What is needed for good research work are the following:-

1. Operational funds;
2. Land transport (vehicles and fuel);
3. Sea transport (boat, outboard engine and fuel);
4. Subsistence allowance (for field work);
5. Equipment;
6. Chemicals and reagents;
7. Physical infrastructure (good laboratory, office space, computers etc);
8. Salary (topping-up of low salaries).

Donors should take into consideration of the issues raised above to enable the African scientist work in optimal way.

#### 4.2 WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION (WIOMSA) AND FISHERIES SOCIETY OF AFRICA (FISA)

The purpose of establishing WIOMSA and FISA is to provide a platform for fostering better communication between African Scientists and Institutions in the region and with scientists and Institutions from outside Africa; and to facilitate effective coordination through collaboration with UN, International, regional and national organizations and agencies active in Fisheries and 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.

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 Western Indian Ocean Region (WIO).

The Objectives of MARGS are:

- 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;
- strengthen the individual research capacity of marine scientists in the WIO region;
- develop the potentialities of researchers of the WIO region;
- create a national and regional core of marine science researchers. 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.

The Objectives of the Fisheries Society of Africa are:-

- to promote and advance the educational, scientific and technological development of all aspects of fisheries science in Africa;
- 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 aquatic sciences;
- to encourage the support of aquatic sciences research, development and educational activities by government and private sector;
- to collect and disseminate scientific and technical information on fisheries.
- to promote and foster inter-institutional linkages within and outside the region;

#### **Call for support**

WIOMSA and FISA strongly urges donor agencies to:

- contribute to MARGS;
- support co-development and partnership research initiatives;
- Collaborate with WIOMSA and FISA in its efforts to coordinate marine science and fisheries development within Africa.
- use WIOMSA and FISA in negotiating consultancies in marine and freshwater resource development in Africa;
- provide material and financial support to assist in the development of WIOMSA and FISA.

#### **5. IOC'S ACTIVITIES IN THE WESTERN INDIAN OCEAN (WIO) REGION**

Most of the IOC's activities in the WIO region are through cooperation with and support from SAREC. The IOC program 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, 1992, Mauritius and of which the next meeting will be held in Madagascar in 1996. A problem faced by marine scientists in developing countries is that the environmental studies are not priority. Therefore support has to be sought from donors. However, there again the same problem occurs.

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 Investigation in the North and Central Western Indian Ocean (IOCINCWIO). A number of new regional initiatives have been developed as described in table 1.

#### **6. ACTIVITIES OF DONOR COUNTRIES IN WESTERN INDIAN OCEAN REGION**

There are many countries doing research in Western Indian Ocean which include the following: Belgium, France, The Netherlands and Sweden. A number of activities are going on as indicated in table 2.

## 6.1 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. Coordinating efforts have been made in recent years between UN agencies (e.g. UNEP, FAO, IOC) which have improved the efficiency of their respective programs. 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. 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 institution 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.

## 6.2 THERE IS NEED TO EXPAND BILATERAL PROJECTS TO THE REGIONAL LEVEL

It is realized and appreciated that various donors are assisting marine sciences in the Western Indian Ocean 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.

The regional co-operative programmes or projects formulated and endorsed by regional scientific and intergovernmental groups, such as IOCINCWIO, 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 in bilateral.

### 6.2.1 Collaboration: follow-up actions in western Indian ocean region

Possible mechanisms for support within the co-operating frame-work in Western Indian Ocean region include the following:

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

## 6.3 EDUCATION AND TRAINING

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 aquaculture, environmental) where possible. Training activities should be crowned with issuing degrees. Especially for developing country scientists, their career is highly dependent on acquired degrees.

- (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.
- (iii) enhanced of traditional disciplines through courses, seminars or practical for professionals in programs in Marine sciences.

Develop and/or strengthen interdisciplinary educational programs that will contribute to development of marine science in the region. All such programs should combine theory and practice, and should emphasize the application of research to address important coastal management issues.

#### 6.4 RESEARCH

Improve theoretical concepts and research methodologies for effective interdisciplinary coastal management in Western Indian Ocean. These efforts should lead to the development and improvement of best practices and tools, incorporating the various factors determining the social, economic and environmental performance of coastal resources in an integrated approach.

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 it is not appropriate for marine research development cooperation. In Marine research, practical applications are slow in developing and the capacity 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).

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 i.e write up and execution of the project.

#### 6.5 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. Some examples from Western Indian Ocean are: 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 spare parts and/or the fuel or a road licence. It is therefore clear that a one-time donation may be useless without an overall follow-up.

#### 6.6 Partnerships and networking

Partnerships and networking is one way of improving cooperation and coordination between donors and Institutions in Western Indian Ocean. It can be done in the following way:

- strengthen and create network and linkages among Research Institutes and Universities. This includes encouraging university faculty and Research Institutes to participate in incipient and on-going marine science initiatives.
- Build, join, and/or strengthen networks and partnerships among Research Institutes, Universities, non-governmental organizations, UN organizations, and the public and private sectors, in order to complete existing efforts and avoid duplication. Through a cooperative and coordinative approach, the benefits of an interdisciplinary marine science program in Western Indian Ocean are maximized.

RECOSCIX-WIO (Regional Co-operation in Scientific Information Exchange in the Western Indian Ocean Region) project started in 1989 as a data and information exchange project in Western Indian Ocean. The support of RECOSCIX from the Belgian Government is ending in December, 1995. Donors are called upon to support this project since RECOSCIX-WIO has proved to be an excellent tool in strengthening and creating network and linkages among research institutes and universities in Western Indian Ocean.

#### 6.7 CAPACITY STRENGTHENING

- There is need to develop physical infrastructure and human resources in the Western Indian Ocean Region to support marine science. The primary task is to rehabilitate, maintain and strengthen existing scientific and technological capacity and to build new capacity.
- Also there is need for the countries in the Western Indian Ocean region to link institutions of higher learning and research Institute in neighboring countries with one another and with advanced institutions in the north.

This will enable the weaker countries with less train manpower to build local manpower and infrastructure.

#### 6.8 POLICY APPROACHES FOR DEVELOPMENT ASSISTANCE

Traditionally, development aid agencies have dedicated the bulk of their assistance to projects in education, health and food (agriculture). Such assistance, while important, will not by itself initiate the advancement of marine science.

Both in the past and at present, some support has been made available for project aid in research development and infrastructure, from both bilateral and multilateral aid agencies. This assistance gives the impression of being somewhat haphazard and rather lacking in consistency in direction. What is needed is policy of the recipient governments to give first priority to marine science development to donors.

#### 7. FUTURE PROGRAMS

Future programs which are planned in Western Indian Ocean region and need funding include the following:

- Large Marine Ecosystem of Somalia Current Project.
- Coral reef initiative of Western Indian Ocean.
- Conservation of marine mammals in Western Indian Ocean.
- Land Ocean interaction studies on coastal zone in the Eastern African region.
- Abiotic and biotic factors on the Inter-linkage between mangroves, sea grass beds and coral reef in the Eastern African region.
- Renewal of RECOSCIX-WIO Project.

Table 1: **ACTIVITIES INVOLVING THE IOC IN THE WESTERN INDIAN OCEAN REGION 1990-1995**

<u>IOC PROGRAMME</u>	<u>ACTIVITY</u>	<u>LOCATION</u>	<u>TIMING</u>
LIVING RESOURCES	Support seaweed symposium	Namibia	Mar.92
	LME symposium	Mombasa	Apr.93
NON LIVING RESOURCES	Regl.coast.eros.study	WIO	proposed
MARINE POLLUTION	Coastal erosion workshop	Zanzibar	1994
	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.deb.	-	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	Mombasa	1995
OCEAN MAPPING	Tr.course sea-level	Bidston(UK)	proposed
	Mission	-	-
OCEAN SERVICES	Bathymetric map WIO	-	ongoing
	RECOSCIX-WIO development	Mombasa	89-7/91
	RECOSCIX-WIO tr.course	Mombasa	Aug.92
	RECOSCIX-WIO tr.course	Mombasa	Aug.95
	Mar.meterol/phys.oceano. tr. course (6 months)	Nairobi	proposed
GOOS	Pilot proj.on sea-level change and coast.impact	-	proposed
COASTAL ZONE MGMT.	CZM workshop	Dar.	spring.93
	Tra.prgms in baseline dev.of regl.overview	undecided	1993
TRAINING/ EDUCATION	IBCWIO Train.course	Mau/Ken/Tan	Aug.91
	Nutrient sem.series	Ken/Moz/Tan	Jul.91
	Nutrient analy.works.	Zanzibar	Nov.91
	Remote sensng.works.	La Reunion	Nov.91
	Biogeochem.short cour.	Zanzibar	Nov.92
	Nutrient intercalibr. exercise	Zanzibar	Apr.93
	Nutrient lab & safety manual	Zanzibar	Apr.93
	Mini-grant programme	Zanzibar	1993
	Support for WIOMSA	Zanzibar	1993
	African Musselwatch	-	1993
	Feasibility study		
Ocean Flux Monitoring	Kenya	Oct.93	
Bathymetric Charting	RV Meteor	1995	

**Table 2: ACTIVITIES DISTRIBUTION PER ORGANIZATION**

**BELGIUM**

1. VLIR

- Kenya: - Oyster Culture and Mangrove re-afforestation (VUB- KMFRI): BILATERAL  
- Law of the Sea (RUG - Univ. Nbi): BILATERAL  
Regional - RECOSEC-WIO (LUC - KMFRI - ...). (based in KMFRI).

- TRAINING: - F.A.M.E. (VUB)  
- MSc in Aquaculture (RUG)  
- M.I.S.T. (VUB)  
- Artemia course (RUG)

2. VVOB

- Kenya: - General manager for RECOSEC-WIO project (LUC-KMFRI)  
- Scientist for KMFRI

**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)  
- Mangroves and Wetlands Project (based at KWS)

**SWEDEN**

- SAREC - Tanzania - Capacity Building: SAREC-IMS: BILATERAL  
- Mozambique - Capacity Building: SAREC-Univ. Ed.Mondlane : BILATERAL  
- Regional - IOC-SAREC cooperation (WIOMSA)

- TRAINING: - MSc. Ph.D in Phys. Oceanography  
- Workshop on Research in Coastal Lagoons  
- Seminars on Nutrient Fluxes/Dynamics  
- Training Course in Nutrient Analysis  
- Seminar on Physical Oceanography  
- Diving Course for Marine Scientists  
- Association of Marine Scientists (WIOMSA)  
- Fauna and Flora of East African Coast  
- Fellowships, travel small equipment, et al

## IOC

### 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-Ocean observation, mapping, Dynamics and climate
- RECOSCIX-WIO
- IOC-SAREC programme in capacity building
- COMARAF (UNESCO/IOC)

### TRAINING:

- Workshop on marine pollution
- Workshop on technician training
- (1993: Physical oceanography training)
- (1993: training workshop on survey methodology: related to marine debris)

## ANNEX XII

### **THE INSTITUTE OF MARINE SCIENCES, ZANZIBAR, TANZANIA**

(Presented by N.S. Jiddawi)

#### **1. INTRODUCTION**

The Institute of Marine Sciences (IMS) has enjoyed donor support for several years from a number of international organizations such as the Swedish Agency for regional co-operation (SAREC), Canadian International Development Agency (CIDA), Intergovernmental Oceanographic Commission (IOC), UNESCO, etc. The extent of involvement varies between projects as well as content from simple research to capacity building, supply of equipment, etc.

The support has enabled IMS to make tremendous progress in the field of Marine sciences through training and research programs and has been able to form collaborations both at local and international levels in conducting various projects

#### **2. BACKGROUND INFORMATION ON IMS**

The Institute of Marine Science, Zanzibar (IMS) was established on 1st July, 1979 by a Resolution of the Council of the University of Dar es Salaam which was approved by Parliament in the same year. It is an offshoot of the defunct East African Marine Research Institute (EAMFRO) under the former East African Community Period.

The aims and objectives of the Institute include:

- To undertake research in all aspects of Marine Sciences.
- To provide postgraduate training and establish undergraduate training programmes in accordance with the country's Manpower requirements.
- To provide advisory and consultancy services in Marine Affairs.
- To engage in utilization of Marine Resources as part of merging theory and practice.

In order to achieve these objectives the research priorities fall into four broad areas designated by the Institute for organizational and development purposes:

- Living resources and Ecology: Includes Fisheries, Ecology and Marine Botany.
- Chemical and Environmental Marine Sciences: This includes Chemical Oceanography and Marine Pollution.
- Physical and Applied Marine Sciences: This includes Physical Oceanography, Marine Geology and Ocean Engineering.
- Marine Education Extension and Development: This includes Marine Affairs, Resources Economics and Extension.

Currently IMS has 19 research Staff distributed in the different sections mentioned above.

#### **3. BACKGROUND INFORMATION**

From several years until the late eighties IMS did not have any outside assistance. The institute was running its activities depending mostly on the government budget allocation to the Institute, with some contribution of funds from other local sources such as Research and Publications Committee University of Dar es Salaam and the Tanzania Commission for Sciences and Technology. Unfortunately this amount was not enough for research and training. Therefore the Institute was faced with a number of problems such as:

- Lack of suitable equipment to conduct research.

- Research activities were few and slow due to financial constraints.
- Training in form of seminars, workshops was limited.
- Collaboration with outside institutions was very weak.
- The means to publicize research activities to the public in general and decision makers etc. was absent.

From the early nineties IMS started to collaborate with a number of institutions under donor support, and therefore the following has been made possible:

- Some modern equipment is available at IMS for conducting research.
- Education and training are taking place. Under the programme there are 9 Msc and 5 PhD students. Under the CIDA programmes there is 1 PhD and 3 Msc students.
- Seminars and workshops (both local and national) are being conducted regularly.
- Research in all aspects of oceanography is now being conducted. Several publications have been possible. IMS is very active than it has ever been before.
- Visiting scientists from outside institutions pay short term visits regularly to IMS to conduct research in collaboration with IMS staff.
- Dissemination of information is now possible through videos (CIDA project) and seminars.
- Easy access to literature through the regional dispatch programme RECOSCIX WIO is now possible.

#### **4. BRIEF REVIEW ON THE CO-OPERATION BETWEEN IMS AND INTERNATIONAL CO-OPERATING AGENCIES**

##### **A. Swedish-Tanzania Bilateral and Regional Programme**

The Swedish Agency for Research Co-operation with Developing countries (SAREC) Bilateral Marine Science Programme was initiated by with the University of Dar es salaam in Tanzania in 1990. It involves IMS, The Botany Department University of Dar es salaam, the Zoology Department of Stockholm University and the Department of Physiological Botany of Uppsala University, both in Sweden. The aim of the programme is to assist Tanzania in improving Marine Research Capability in the broader fields of Marine Botany, Marine Ecology, and specific fields such as nutrient dynamics and algal physiology, Emphasis is on education (Msc/PhD) and training as well as research concerning the sustainable use of coastal and marine resources and environmental management of the coastal Zone.

The SAREC Regional Marine Science Program was initiated through a workshop organized by SAREC together with the University of Dar es salaam, Tanzania in 1989. The programme aims at providing a regional framework for co-ordination of marine science programmes. This programme also includes countries of the East African Region which do not have SAREC supported bilateral programmes. The Institute of Marine Sciences is the Co-ordinating Institution in the region for the programme.

The programme aims to support and strengthen the national capacity building for research in the coastal and marine zone, to encourage a multidisciplinary approach to coastal and marine research and the inclusion of socio-economic aspects in traditional scientific research, to encourage the collaboration between donors in order to make the support more effective and to make research results known to the different user groups of the coastal zone, the public in general and decision- makers in order to make them useful in the development process.

The Coordinators of the Programme are Prof. O. Linden, Department of Zoology, Stockholm University, and Dr. M. Ngoile of the IMS. The regional program was officially started in 1992 and has been planned to operate for a period of 10 years.

The following is the progress made so far under this program:

- Msc Training in Physical Oceanography, six Msc students (Sandwich programme) between the University of Dar es salaam, IMS and Gothenburg University Sweden. One of them form IMS.
- Workshops on Tropical and Coastal Lagoons in East Africa have been held.
- A workshop on policy conference on integrated coastal zone management in East Africa and island states

was held in Arusha, Tanzania.

- Seminars on Nutrient Fluxes/Dynamics have been held in Kenya, Tanzania and Mozambique.
- Diving course for Marine Scientists. IMS now has 6 Certified Divers.
- The program is also providing support to the newly established Western Indian Ocean Marine Science Association (WIOMSA) whose headquarters is in IMS.
- A field guide to the Fauna and Flora of the African Coast is in preparation, the co-ordinator of book is based at IMS.
- Fellowships have been offered to IMS staff to attend seminars abroad.
- Various equipments including diving gears, boats and a car on use at IMS.

B. Memorial University Newfoundland (MUN) and/IMS Co-operative Programme: for the Development of a Marine Education Extension and Development Unit

This is a co-operative venture between IMS and MUN. The activities are based at IMS and are carried out over a period of five years. The objective of the project is to develop a fisheries extension resource unit at IMS through which school children, adult education students and artisanal fisher folk will be educated on the need to conserve the reef environment and stocks, and diversify into other fishery sectors such as aquaculture. Major activities include training in Canada up to PhD and Master's level in marine resources management/aquaculture and in country (Tanzania) training on extension methods using media techniques specifically videos. Curricula is to be developed for vocational based school and adult education programs emphasizing the need for marine ecosystem management.

Under this link IMS has benefitted with getting the necessary equipment needed for making video programmes from cameras, editing machinery to a car. IMS in collaboration with MUN have so far made the following videos which have been shown from the Zanzibar Television and have been distributed to various institutions in the world.

Sustainable development:

- A resource for all generation (Mangrove resource)
- Women involvement in Fisheries
- Community in Transition (The impact of seaweed farming to the women of Paje)
- Boat building in Zanzibar
- The sunken treasure (Misali coral reefs)

A book on the Mangrove resources in Zanzibar is in progress by a staff member of IMS and a staff member from MUN to be used by undergraduates and high school students.

Training and education, One PhD candidate in Physical oceanography is currently training in MUN, Other two IMS staff are pursuing their Msc in aquaculture and Library and information respectively. Also short term training has been provided for one IMS staff in MUN Canada.

Three seminars have been conducted in collaboration with the Ministry of Education Zanzibar on education extension and use of media in the scientific information and the introduction of Marine Science in the school curriculum.

C. CIDA/IMS Cooperative Programme on Coastal Zone Development and Management

This programme provides on the site training in marine environmental impact studies and assessment of the fish stocks exploited by the artisanal fishermen. The programme is a two phase programme supported by CIDA. The first phase was completed last year. Currently the project is in its second phase. There are two components under this project, these are Fish Stock Assessment and Environmental Impact Studies.

The Objectives of the project are: To provide professional services to IMS Zanzibar and to strengthen the Staff capabilities in Fish Stock Assessment and Environmental Impact Studies.

1. ENVIRONMENTAL IMPACT ASSESSMENT

- Training course on coral reef monitoring techniques for IMS counterparts.
- Collection of coral samples for stable isotope analyses (coral reef sites)

2. FISH STOCK ASSESSMENT PROJECT

- Seminar/Workshop on Fish Stock Assessment,
- Trap Fishery methodology,
- Bill Fishery (Age and Growth),
- Holothurian association with pearl fish.

Under this project IMS has received several equipments required for fisheries research and coral reef monitoring which includes a computer and scanner for data analysis and report writing. This project has made it possible to integrate the Zanzibar Fisheries Sub Commission staff members to participate in this project in collaboration with IMS staff.

- Short training for one IMS staff in University of British Columbia has been provided.
- A study of the collection of catch statistics in Zanzibar was also initiated under this project.

D. CIDA/IMS socio economic and environmental impact assessment of seaweed farming in Zanzibar

This is a study of seaweed culture on the development potential and social fabric of the main islands of Zanzibar, within the context of international markets and alternate forms of coastal development at the same time looking at the impact farming has to the environment. Seaweed research was given priority due to the government interest on this product. Seaweed farming was introduced in Zanzibar in 1989. Currently it is the third foreign economic earner for Zanzibar. This project is nearing its completion.

5. THE WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION (WIOMSA)

This is a non-governmental and non-profit regional organization dedicated for promoting the educational, scientific and technological development of all aspects of Marine Sciences throughout the Western Indian Ocean Region (WIO). The Association gathers and disseminates marine science information, it holds all types of meetings to foster marine science development and information enhances better communication among the marine scientists and other professionals involved in the advancement of marine science research and development in the WIO region.

The Association is registered in Zanzibar and the headquarters is at IMS.

The Association is capable of issuing three types of Grants to scientists working in the region. These grants are:

**MARG 1** This is aimed at assisting scientists to conduct research in the field of their own interest but within a framework of national and regional priorities. The work is to be carried in their own institutions. The maximum duration is three years.

**MARG 2** This grant is to facilitate scientists visit other laboratories which may have equipment and expertise that is lacking in their own institutions. The maximum periods is three months.

**MARG 3** This is intended to facilitate scientists to attend conferences, seminars, workshops, symposium etc.

WIOMSA strongly urges Donor agencies to give financial support to MARGs and collaborate with WIOMSA in its efforts to coordinate marine science development within the WIO region.

Opportunities and constraints

Within the region every nation is performing their own projects. Normally there is no communication. Some of the results from projects are not published but are quite important. There is a need for a scientific journal to be initiated within the region where scientist can send their papers for publication. There is also a need for scientists to meet annually or biannually to present results in a regional seminar or workshop. This could bring a closer working relationship in the region and provide a forum for dissemination and discussion of information by the participants. Probably this could take place under the newly formed WIOMSA provided it gets enough Donor support.

Equipments provided to institutions are normally new to the country. Local technicians need to be trained to service and maintain these equipments so that they don't have to be shipped overseas to be repaired when out of order.

There is need for some free money to be allocated aside by Donors to assist in running projects in recipient countries when stuck due to existing economic constraints so that the programs run efficiently and effectively as planned. This added money can assist support, local costs such as fuel and field costs.

There is still lack of awareness among the general public on marine and environmental issues at both national and regional levels. IMS is capable of making these video programs for awareness since it has all the necessary equipment. It needs more support in terms of field, travel and running costs to enable the making of these programs at a faster pace.

It is important that recipient countries and their institutions are fully involved from the early stages of project development, i.e. write up and execution of the project so that the project during the implementation does not appear to have been imposed upon any one. There should be a clear understanding between the two parties and the local institutions should specify their needs clearly from the beginning and not wait until the implementation phase and start to regret that what they agreed upon was not correct.