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sarec

Swedish Agency for Research Cooperation
with Developing countries

**SAREC-IOC Workshop on Donor
Collaboration in the Development of
Marine Scientific Research Capabilities
in the Western Indian Ocean region**

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1. Opening of the Workshop

The Workshop was opened by Dr. Anders Granlund, Senior Research Officer, SAREC Marine Science Programme and Dr. Gunnar Kullenberg, Secretary IOC. Dr. Granlund gave a short overview of SAREC's marine programme history which started around 1977 with bilateral programmes with several East African countries. In the nineteen eighties SAREC then proceeded with a regional programme which was followed by the IOC-SAREC marine science cooperation programme in 1990. Dr. Kullenberg welcomed the participants on behalf of the IOC, and emphasized that this workshop was the third of its kind. He expressed great appreciation to SAREC for their cooperation and to the Flemish Government for their interest and support in hosting and co-financing this Workshop. Later in the Workshop Mr. Ruyffelaere, on behalf of the Flemish Government, welcomed the participants and expressed the Flemish interest in a potential cooperation between UNESCO-IOC and Flanders.

2. Introduction

The participants introduced themselves, their organizations and programmes.

Mr. TILAK VIEGAS (European Union) gave a short overview of the structures within the European Union involved with scientific research. He referred to the DG-XII and more particularly to the unit for Scientific and Technical Cooperation with Developing Countries.

Prof. Ph. POLK (VUB) referred to his role in the development of the Kenya Belgium Project in Marine Sciences which started in Mombasa, Kenya in 1985. He stressed the importance of the Brussels meeting and the need for complementarity in the donor activities.

Mrs. L. PIRIZ (SWEDMAR) introduced SWEDMAR. SWEDMAR, the Swedish Centre for Coastal Development of Aquatic Resources is a unit within the National Board of Fisheries of Sweden assisting SAREC with the operative and administrative aspects of the SAREC Marine Programme. SWEDMAR has a multidisciplinary team and acts as consultant for other agencies mainly in the field of fisheries and aquaculture development and coastal management in developing countries.

Dr. E. OKEMWA (KMFRI & IOCINCWIO), as Vice-Chairman of IOCINCWIO stressed the importance of the Workshop, saying that these annual meetings were essential to create links between different donors which traditionally work alone. Referring to the outcome of IOCINCWIO-III Dr. Okemwa pointed out that regional programmes have a more powerful and durable impact than national programmes or projects. Furthermore, living ocean resources don't respect borders and their investigation calls for regional coordination. Dr. Okemwa compared the situation of marine sciences ten years ago when there were only a few local trained scientists in the region, with the situation in 1993 whereby we count over 150 scientists.

Dr. M. NGOILE (IMS & WIOMSA) referred to IOCINCWIO-III where the important role of the Western Indian Ocean Marine Science Association has been recognized and the formal establishment of the organization as an NGO, endorsed.

Dr. N. GUEYE (IOCEA), as Chairman of the IOC Regional Committee for the Central Eastern Atlantic Dr. Gueye pointed out that the structural adjustment plan bestowed on many African countries is negatively affecting the budgets of scientific institutions in these countries and he expressed the hope that donors would focus also on West Africa. He also stressed the need for strong scientific cooperation links between East and West Africa.

Mr. M. GEENEN (RECOSCIX-WIO) announced that he will take on the responsibilities over the public awareness and publications activities of the RECOSCIX-WIO project at the project's regional dispatch centre (RDC) in Mombasa. Mr. Geenen also announced the project's proposal to make a video film on marine sciences in East Africa.

Prof. A. DISTECHE (ULg) provided information on the EIASO (European Institute for Advanced Studies in Oceanography) programme which he developed and which now includes 11 courses. He also introduced the plan for an International Summer Course on Upwelling Systems which will be held in the Canary Islands in 1995.

Mr. J. TACK (VUB) gave an overview of his activities with regard to the development of oyster cultures in Kenyan mangroves. He said that the culture is now ready for commercialization and said that the need had now arisen for taking into consideration socio-economic aspects in order to enable sustainable management. He introduced the project proposal 'Sustainable management of East African mangroves'.

Dr. K. DELBEKE (FAME) provided, as Assistant to the course FAME, some information on FAME as a course aimed at students from developing and developed countries. She also highlighted that thesis topics are, when possible, focusing on problems directly relevant to the student's region or country.

Prof. N. DARO (FAME), as Director of the course FAME, proposed the extension of the FAME programme to different regions in the South, whereby practical exercises could be organized in environments directly relevant to the students. On the other hand she stressed the importance of contacts of students of North and South which take place during the theoretical courses in Belgium.

Mr. D.F. CHEMANE (INAHINA) defined his institution, the Instituto Nacional de Hidrografia e Navegação as an advisory body to the Government of Mozambique on marine and maritime issues. Soon after its creation in 1989, out of the Serviço Nacional de Hidrografia e Balizagem, INAHINA received support from NORAD. This support was mainly targeted toward institution building and emphasis was put on training and education of personnel. The current support contract will expire at the end of 1993. INAHINA's main tasks include hydrography, physical oceanography, safety of navigation and sea-marking. INAHINA received a research vessel *Bazaruto* from DANIDA which is equipped for hydrographic purposes. INAHINA is active in Hydrology, Oceanography and Ocean mapping. Reference was made to a proposal for

the use of the INAHINA Research vessel for the benefit of the region.

Ms. C. ABSIL (EMIN) gave a short history of the 'European Marine Interdisciplinary Network' (EMIN) which was created by a number of young European marine scientists during the EIASO course in 1990. Since then, EMIN has met with great enthusiasm all over Europe and has witnessed a fast increase of membership to 240 at present. Recently a questionnaire on the wish to be involved in education projects directed at developing countries was distributed to EMIN members. The responses indicated great interest of the members in such activities.

Prof. E. SOMERS (RUG) provided information on the project 'Law of the Sea' which was initiated in 1989 between the University of Ghent and the University of Nairobi and will end in December 1993. Prof. Somers expressed his hope that the project would be extended towards the establishment of an Institute for Ocean Law and Marine Studies incorporating the University of Dar-Es-Salaam as well.

Prof. L. EGGHE (LUC), Director of the RECOSCIX-WIO project gave a short overview of the current status of the project and welcomed the planned collaboration with and gradual take-over by WIOMSA of RECOSCIX-WIO.

Mr. J. LENVAIN (VVOB) introduced his organization. He furthermore pointed out that developing countries have to decide themselves if any cooperation is a priority within National Planning before it can be considered as developing aid. As a consequence developing countries have to bring in more counterpart-effort. Projects need to be well identified before their implementation. Regional projects need a supported base in each of the countries. Finally he stated that MSc programmes related to Development Cooperation have to be transferred to the Third World, and that aid should provide maximum benefit to those it is intended for.

Mr. RUYFFELAERE (Flemish Government) introduced himself as liaison officer of the Flemish Government with United Nations organizations. Mr. Ruyffelaere made reference to the Mercator memorial celebrations which are planned by the Flemish Government. It was observed by the participants that IOC could play a role in this activity in view of its IOC-IHO bathymetric charts programme.

G. KULLENBERG (Secretary IOC) reflected on the small number of donors present at the workshop. He attributed this to the fact that the workshop was only dealing with one region and with one subject area i.e. marine sciences. Not many donors are dealing with sciences but rather with applied sciences. However, the essence of this workshop has to be seen in the variety of participants: donors, field workers, universities, networks, etc. The donors themselves have their own meetings where projects and programmes of a totally different scale are discussed. He continued with saying that the scientists have to make a linkage with the policy-makers. As scientists they have to make sure that their programmes are relevant to the Governments and as such that the programmes and institutions are sustainable on a long-term basis. Referring to UNCED, Mr. Kullenberg stressed that the scientists have to keep the UNCED conventions on Climate Change and Biodiversity fully in mind when developing programmes, as well as Agenda 21. The Arusha conference was a good step in this

direction. The participants adopted the Agenda as given in Annex I.

3. IOCINCWIO-III: The Action Plan and its implementation

Dr. E. Okemwa, Vice-Chairman of IOCINCWIO, introduced the report of IOCINCWIO-III (Vacoas, Mauritius, 14-18 December 1992). Dr. Okemwa highlighted the Workplan which had been agreed upon by the Regional Committee and welcomed the assistance, in addition to that provided by the IOC, from various donors including the Governments of Germany, Belgium and others, and of SAREC which would enable the successful implementation of the Workplan. The IOCINCWIO-III Workplan is attached in Annex III.

Dr. Okemwa highlighted that marine science in the Western Indian Ocean region is still facing several problems which endanger its sustainability. These include:

(i) **Infrastructure** is still insufficient and necessary equipment is often not available to enable active participation in regional or international programs. In those cases where equipment had been obtained through development cooperation on bilateral or multilateral basis, often no allocation was included for maintenance on a long-term basis. Due to the precarious financial situation of most of the countries in the region, the allocations made by the Governments for marine science are insufficient to cover costs. The early days of marine sciences in the North were recalled when equipment could not be purchased but needed to be built in the institutions. It was observed that this could maybe be considered in the South now.

(ii) **Low salaries** were identified as another serious problem. Low salaries force scientists to seek more than one income. Realizing that scientific work is not an eight hours a day job, this situation hampers the development of science in the developing world. The Workshop therefore called for the establishment of a research grant system which would provide topping-up of salaries. In this respect reference was made to the new NGO 'Western Indian Ocean Marine Science Association' (WIOMSA) and its 'Marine Research Grants' (MARGS). It was hoped that donors, and an invitation was extended to the Flemish Government, would actively support WIOMSA and MARGS.

(iii) **Communication** is essential to enable scientific and economic development and yet, in many developing countries, telecommunication infrastructure is under-developed. However, to a large extent, in the WIO region this problem has been solved by the RECOSCIX-WIO project which has generated strong intra- and inter-regional links between marine scientists. The Workshop stressed the need for a continuation of the project which will end in 1996.

(iv) **Capacity building** : Dr. Okemwa referred to the **FAME** (Fundamental and Applied Marine Ecology) as a successful training programme which had benefited a large number of students from developing countries, including nearly ten from the WIO region. However, it was suggested to implant part of the course in the WIO region to enable the students to work in a relevant tropical marine environment and within a regional framework related to UNCED's call for

Integrated Coastal Zone Management (ICZM). This proposal has been accepted by the region and was strongly endorsed by the Workshop inviting donors to assist in its realization.

The Workshop welcomed the increased involvement of experts from the South in training activities organized in the South. This was a clear change from the past when only experts from the North were invited as lecturers in such exercises. This shows that the expertise in the South is growing and is reaching a "core mass" essential for sustainable research. In this respect Dr. Okemwa referred to his own institution KMFRI where there were only 10 scientists in the early eighties. Now, in 1993, there are nearly 60.

The Workshop proceeded with discussions on the status of implementation of each of the actions of the IOCINCWIO-III action plan:

3.1 Ocean Dynamics and Climate

At IOCINCWIO-III it had been concluded that regional capacities to interpret and use the results from large-scale experiments like TOGA and WOCE are very limited. There is a need to enhance this capability and train human resources to both use the data and interpret the results so as to provide the advice on actions to the Governments.

The Workshop referred to the document '*Utilization of TOGA and WOCE data in the IOCINCWIO region*', prepared by Mr. M. Odido (KMFRI Mombasa). The document provides a provisional programme, timetable and list of participants for a '*Workshop on use of TOGA and WOCE data in IOCINCWIO*', proposed to take place in September 1994. The Workshop recommended the implementation and that funds be actively sought.

3.2 Ocean Sciences in relation to Living Resources

With regard to **OSLR** (Ocean Sciences in Relation to Living Resources) it was agreed that there was an urgent need to undertake a stock assessment in the region. Following the IOCINCWIO Officers Meeting (Mombasa, 12-16 July 1993) the Secretary IOC has approached the Norwegian Government with the request to consider the FRITJOF-NANSEN for the stock assessment. Unfortunately the vessel will not be available in 1995-96. However, Mr. Chemane then tabled a proposal to use the vessel of Mozambique BAZARUTO, donated by DANIDA, for regional oceanographic campaigns. The vessel needs to be adapted to oceanographic activities. Container laboratories could be used to obtain additional working space. Mr. Chemane provided an estimate for these modifications of approximately US\$ 300,000. The Workshop agreed that this size of funds could not be identified at present in its totality but that possibly certain parts could be done gradually. The Workshop suggested that the Mozambique authorities could also be asked about their commitment.

It was considered unclear whether Harmful Algal Blooms could currently be

identified as a problem in the region. The Workshop recommended that the decision on the establishment of a HAB programme for the WIO region would be deferred until the two scientists from the region who participated in the Copenhagen course on HAB could prepare a report on the occurrence of algal blooms in the region.

3.3 Global Investigation of Pollution in the Marine Environment/ Marine Pollution Monitoring Programme

Within the framework of **GIPME** and as part of the **Mussel-watch** programme the Regional Committee recommended the development of such a programme using the oyster as the "sentinel organism" for semi-quantitative pollution monitoring in the region. A project proposal has been prepared in draft form but the required funding, estimated at US\$ 200,000 needs to be identified. It was observed that the first Field Phase of the International Mussel Watch programme covering the Americas and the Caribbean had been quite successful as it was able, in a short time, to provide results which were relevant to policy makers. In view of this the implementation was recommended for 1996-97. It was suggested that IOC send a copy of the International Mussel Watch Master Plan to the Workshop participants.

It was observed that the initiation of Environmental Impact Assessment activities (EIA) was only attributed Middle Priority during IOCINCWIO-III. To this the Secretary IOC answered that UNEP's EAF/11 programme would provide essential information necessary for the development of an EIA programme. Furthermore the programme on the establishment of Baseline Stations (water quality) will also assist in the development of the EIA activities.

The state of implementation of the East African Action Regional Seas Programme (EAF) of UNEP was discussed. It was suggested that, although equipment had been delivered and installed there were serious problems due to the absence of spare parts and the local unavailability of high-quality Nitrogen gas. An expert was therefore sought who could modify the equipment to enable the use of local gas. Spare parts would also need to be supplied. The EAF/5 programme related to Coastal Zone Management was now well under way. A training course has taken place and, thanks to a substantial contribution from Belgium, a dedicated programme officer (Belgian) was employed at OCA/PAC Nairobi. A Marine Resources Atlas is in preparation and will be ready in June 1994. The Workshop emphasized the need to ensure proper coordination.

On **Coastal Zone Dispersion Modelling** the Workshop agreed that, although this had been given middle priority, this subject may be considered for North-South cooperation as, thanks to the regional SAREC programme on Physical Oceanography, expertise was now available in the region.

3.4 Joint Global Ocean Flux Study

The **JGOFS** Workshop took place in Mombasa (15-27 November 1993) and was very successful. The follow-up should be discussed in 1994 during the IOCINCWIO Officers meeting in Zanzibar (January 1994).

3.5 Bathymetry

Reference was made to the *Mercator* celebrations, organized by Flanders in 1994. In view of the relevance of Mercator to (Ocean) Mapping the Workshop recommended that the Flanders Government be invited to provide support to this regional mapping programme.

3.6 Ocean Sciences in Relation to Non Living Resources

The participants were informed by the Secretary IOC that the **OSNLR** activities 'Coastal Erosion Planning Workshop' and 'IOC-UNEP-WMO Pilot Activity on Sea-Level Changes and Associated Coastal Impacts in the Indian Ocean' will be merged into the 'Planning Workshop on an Integrated approach to Coastal Erosion, Sea-Level changes and their impacts, Zanzibar, Tanzania', 17-21 January 1994. This would enable experts from these two related subject areas to meet and jointly develop coordinated activities related to the sea-level pilot activity and coastal erosion studies.

In order to strengthen the link between East and West Africa, the Workshop agreed that one or two experts from the IOCEA region be invited to the above mentioned workshop. These could present a regional overview on coastal erosion and sea-level changes in the IOCEA region.

In this regard the possibility to convene a joint meeting of the officers of IOCINCWIO and IOCEA at the end of the Zanzibar Workshop was discussed. It was agreed that the Secretary IOC and SAREC would investigate the availability of funds for such a meeting, tentatively scheduled for 21-22 January 1994. It was also suggested that the Chairmen of IOCEA would visit some institutions in the WIO region subsequently, to further strengthen the links between the two regions.

3.7 Chemical Oceanography

The Workshop noted that the first activity 'Intercalibration Exercise for Nutrient Analysis' was completed in April 1993 (Zanzibar, Tanzania). A manual '*Nutrient Analysis in tropical Marine Waters: Practical guidance and safety notes for the performance of dissolved micronutrient analysis in sea water with particular reference to tropical waters*' is published as

IOC Manuals and Guides No. 28 and will be ready for distribution in January/February 1994.

The second activity involving a field exercise is planned to take place in Mombasa in April 1994. Dr. Ngoile added that nutrient analysis could be considered as one of the supported topics under the WIOMSA MARGS. As equipment was often lacking for this type of research in marine institutions, the Workshop suggested that cooperation be established with chemistry departments within the universities of the region.

3.8 Marine Information Management

It was observed that the current agreement for support to RECOSCIX-WIO will expire at the end of 1995. The spectrum of activities has widened considerably. Particular reference was made to *Public Awareness* and the employment by KMFRI, with additional assistance from the Flemish Association for Development Co-operation and Technical Assistance (VVOB), of a communications manager, Mr. Marc Geenen, was announced. He will develop Public Awareness activities and products including brochures, newsletter (WINDOW), school text books, films and other audio-visual tools in cooperation with regional experts. Mr. Geenen, who is a professional journalist with extensive experience in Belgian television will take up his function in January in Mombasa. The Workshop agreed that additional funding would be required to enable the development of the Public Awareness programme, as this was not included, to the extent needed today, in the original RECOSCIX-WIO project dating from 1987 which needed revision thanks to the dynamic developments in marine sciences that have taken place since. The Workshop recommended that donors pay attention to the need for public information, awareness and education.

The discussions at the Officers meeting in Mombasa (July 1993) were recalled where it had been suggested for WIOMSA to gradually take over the financing of RECOSCIX-WIO services and activities, provided the NGO could attract funding. This idea was supported by the Workshop. In order to quantify the required funding for these services Prof. Egghe was requested to submit budget figures to Dr. Ngoile, as well as statistics of RECOSCIX-WIO services, for follow-up actions.

However, as the building of NGO would take another few years, the Workshop recommended that the current RECOSCIX-WIO agreement with the Flemish Interuniversity Council (VLIR) should possibly be extended with another 2-3 years to enable a smooth transition.

3.8.1 Data dissemination responsibilities of RECOSCIX-WIO

At IOCINCWIO-III the need for capacity building to interpret and use the results from large-scale experiments like TOGA and WOCE was identified and it was recommended that TOGA data be delivered to Member States through the RECOSCIX-WIO dispatch centre where relevant facilities exist. The Workshop fully supported this idea.

The project proposal *'The creation of the biological databank on spatio-temporal*

structure and productivity of the tropical ocean ecosystems' submitted by Prof. Konovolov (Sevastopol), Dr. E. Okemwa (Mombasa) and Prof. Ph. Polk (Brussels) was discussed. It was agreed that this proposal fitted very well within the IOC **Global Oceanographic Data Archaeology and Rescue Project (GODAR)** as part of the IOC **International Oceanographic Data and Information Exchange programme**, and the Workshop recommended that the project be considered within, and as part of GODAR.

3.9 Training and Education

The Workshop observed that it is easy to set up courses. However, unless the student with MSc or PhD can be inserted in a national or regional programme then the training efforts may be lost. Accordingly there should be a link between the course, the thesis and a relevant programme in the student's home country or region. IOCINCWIO provides a regional framework for this approach, which also is the one adopted by the IOC. WIOMSA can complement the programme with its research grants. WIOMSA and RECOSCIX-WIO can play a crucial role in interpretation of problems, projects, programmes and data towards the policy-makers and general public.

The Workshop agreed that, although training in the North is useful and necessary, the provision of suitable equipment when the student returns home must be improved, so that he/she can train junior scientists and as such generate a "chain reaction".

The Workshop also stressed that in order for the scientists to reach the policy makers they need the required status and authority. It is therefore necessary to move from MSc training towards PhD training level. With a PhD the scientists have an improved formal ability to communicate with the policy maker level.

The need for a report on existing and required human capabilities in the region was identified. Training should be based on research priorities identified by the country or region. In order to achieve this the Workshop recommended that Marine Science Country Profiles be prepared through the network of Heads of Institutions, created at IOCINCWIO-III.

It was observed that donors should proceed from the traditional paternalistic approach of experts from the developed countries training students from the developing countries towards a research **partnership**. The recent CEC mangrove research programme involving Belgium, Kenya and The Netherlands was cited as an example of this partnership approach. Applied to training courses currently organized fully in the North it would therefore be appropriate to consider a gradual transfer of courses from North to South. FAME was cited as an example to which this could be applied.

3.9.1 Fundamental and Applied Marine Ecology (FAME)

Due to reductions in Government support and an increased number of applications for the course scholarships for students are urgently needed. It was reported that the a two-year

fellowship for FAME costs US\$ 32,000. This is too much for IOC and several other donors to provide single-handed.

The Workshop therefore agreed with the principle of **cost-sharing** for the allocation of FAME long-term fellowships. It was further agreed that IOC, SAREC and the Free University of Brussels would jointly contribute to the fellowships. It was hoped that this initiative would attract additional donors to safeguard the future of FAME. In this respect reference was made to the International Foundation for Science (based in Sweden) and the African Academy of Sciences (based in Nairobi). The need for donors which can provide assistance for PhD fellowships was again highlighted.

The '*Project Proposal for a Training Course at a MSc level for Tropical Coastal Ecology, Management and Conservation*', submitted by Prof. N. Daro (Brussels) and Dr. E. Okemwa (Mombasa) was tabled for discussion. In line with the recommendations made during earlier discussions during the workshop the course aims at organizing a training course in the South (Mombasa) with students from South and North. It was emphasized that this approach would establish links between young scientists from North and South and accordingly, would establish long-lasting partnerships, as was now seen between students/scientists in the North through EMIN.

The Workshop agreed with the proposal but observed that some issues related to the mutual acceptance of credits and degrees given by the various cooperating universities needed more discussions.

3.10 Global Sea-Level Observing System

The document '*Development of a Sea-Level Observing Network*', prepared by Mr. M. Odido (KMFRI, Mombasa) was tabled. The regional Workshop on '*Causes and Consequences of Sea-Level Changes on the Western Indian Ocean Coasts and Islands*' which took place in Mombasa, 1991 recommended the establishment of 15 extra Sea-level stations in the region (to the already 17 operational, existing or planned stations). The TOGA Sea-Level Centre in collaboration with the University of Hawaii has assisted in the installation and maintenance of a number of sea-level stations in the region since 1986. Now, close to the end of the TOGA programme in 1994 there is a need to review the state of the network in the region, the achievements, shortfalls and measures which should be taken not only to ensure that stations continue to operate, but also to complete the proposed regional network. Mr. Odido proposes a workplan which includes collection and compilation of a report with updated information on requirements at each sea-level station; a meeting of Heads of CMAS (Cells for Monitoring and Analysis of Sea-Level) will form the Group of Experts on the Pilot Experiment on Sea-Level Data Products; a visit of a technician to the region, to assist in installation, repair, maintenance and levelling of gauges as well as train local technicians; a follow-up meeting by the Group of Experts; and a follow-up mission by the technician. The Workshop fully endorsed these proposals and recommended donor support.

Mr. Chemane (INAHINA, Mozambique) said that his institution was involved in

GLOSS and looked forward to the installation of eight tide gauges. He hoped that Mozambique could become an active partner in TOGA-WOCE and GLOSS.

4. The SAREC and IOC-SAREC Regional Programme

Dr. Granlund gave an overview of the SAREC activities and philosophy (ref also to *IOC Workshop on Donor Collaboration in the Development of Marine Scientific Research Capabilities in the Western Indian Ocean Region, Brussels, 12-13 October 1992; IOC Workshop Report No.83*). He explained that SAREC is active in the region at three levels: (i) the bilateral level (Tanzania, Mozambique); (ii) the regional level (e.g. the Physical Oceanography regional programme); and (iii) through the IOC-SAREC cooperation in marine sciences. The link with the IOC is important to SAREC as a 'window' to the United Nations system. In the Caribbean region all SAREC activities are implemented by IOC. Of all the SAREC activities related to marine sciences 80% goes to Africa, the remainder to Latin America and South-East Asia. As far as the IOC-SAREC cooperation is concerned 1.7 MSEK goes to East-Africa and 0.5 MSEK to the Caribbean. For training activities SAREC seeks to develop an '*optimum training kit*'. SAREC's marine science programme focuses on four subject areas: Oceanography, Marine Geology, Marine Biology and Socio-Economy.

Dr. Granlund noted that the SPOT satellite was, in the past, 'switched off' when surpassing East Africa, due to a lack of commercial interest in this region. He was therefore pleased to inform the Workshop that SAREC was now purchasing SPOT images hereby starting SPOT coverage of East Africa. Mr. Granlund stressed the need for the region to take initiatives towards sustainable Coastal research and management, rather than continuing to expect these initiatives and funding to originate from the North. The Arusha policy workshop and resolution (Arusha, Tanzania, April 1993) can be considered as a first and essential step in this direction. Referring to the small number of donors at this Workshop, Dr. Granlund pointed out that budgets for development cooperation are being reduced in all agencies: SAREC's budget is being reduced by 20%, IDRC has been restructured, ICOD has been abolished, etc. It will therefore be obligatory to plan and implement carefully and ensure efficient and accountable activities. The involvement in the management of projects should gradually be transferred to the institutions in the region, rather than to be controlled by Swedish institutions.

The Socio-economic impact of projects is a new aspect of programmes which will grow quickly and considerably in importance: for example what is the impact of the development of a community-based seaweed culture (e.g. *Eucheuma* culture in Zanzibar) and oyster culture in Mombasa? Attracting relevant expertise and related capability development will be necessary. Development of programmes relevant to the economy of the country and to the industries (e.g. fisheries, tourism,...) can generate income for the marine research institutions (e.g. through specific research contracts, patenting, etc.).

With regard to the IOC-SAREC cooperation programme reference was made to the document '*IOC-SAREC Marine Coastal Management and Related Research Development Plan for Regional Capacity Building in East Africa - Workplan 1993-1994*'.

Dr. Granlund also reported that the IOC-SAREC cooperation had been extended until July 1996. This would bring the support provided by SAREC for this cooperation programme to 7,200,000 SEK for the period July 1993-July 1996, including 5,700,000 SEK for Eastern Africa and 1,500,000 SEK for the Caribbean region. The focus of the programme will be placed on **Integrated Coastal Zone management**, development of **WIOMSA** and **Public Awareness**, in line with the recommendations of UNCED and the Arusha Resolution, and conforming well with the IOC-IOCINCWIO philosophy and strategy.

4.1 Eritrea: a new partner

Dr. Granlund reported that a delegation of the Asmara University had visited SAREC twice in 1993 to discuss possible assistance to the University. Eritrea is a country with great possibilities as many people were trained throughout the world. The priority now is to attract this manpower and start-up the University. Presently the university has approximately eighty teachers. SAREC will support the development of University infrastructure. It would be appropriate to extend the IOC-SAREC, WIOMSA and IOCINCWIO regional programmes to include Eritrea. It was also observed that several other countries are providing bilateral support to Eritrea, including Norway, Sweden, The Netherlands and Germany. Italy is expected to come in as well. Reference was made to the request to UNESCO-IOC by the Government of Eritrea to undertake a mission to assess the fisheries potential and this in relation to tourism development. Following discussions with the Ministry for Marine environment and resources, the IOC has contacted experts in Sweden, Norway, Canada, Italy and Germany and a mission is planned in 1994 to elaborate further existing proposals for assessment of the marine resources.

Mrs. Piriz reported that SIDA is providing 65 MSEK for the period 1993-94 of which 5 MSEK will be used to bring Eritrean scientists currently working abroad back to their country. Main concerns related to the marine environment are coastal fisheries and the impact of refugees on the coastal zone. SIDA will support energy and infrastructure (including transport) development.

It was regretted that Eritrea is not identified by Belgium and Flanders as a priority country and it was hoped that this could be changed. This would enable joint efforts between Belgium/Flanders and SAREC towards the development of marine science capabilities in Eritrea.

With respect to FAME, the Workshop observed that SAREC support was possible to enable an Eritrean scientist to undertake part of his/her research in Belgium if the necessary technology is not available in Eritrea.

5. WIOMSA including its relation to IOCINCWIO and the IOC-SAREC programme

Dr. Ngoile introduced the document '*The Western Indian Ocean Marine Science Association: WIOMSA*'. He sketched the historical changes of marine scientific research in the region. He explained that in the 1960s the interest for the East African marine environment came mainly from overseas scientists with little involvement from locals. This has changed substantially through the years and now, in 1993, considerable and competent manpower exists within the region. Unfortunately from financial point of view, the increase of manpower was not joined by an increase in working funds: the infrastructure is, in many cases, still the same as in the 1960s when it was brought to the region by the overseas scientists.

WIOMSA is interested in linkages between the different sectors involved in **Integrated Coastal Zone Management (ICZM)**. These include policy-makers, economists, researchers & technologist, and users of resources. During the Arusha conference a dialogue was started between these sectors. It is the purpose of WIOMSA to facilitate this dialogue. The idea for WIOMSA was conceived in 1989 during a workshop that took place in Dar Es Salaam. The pilot phase of the organization was inaugurated in 1991 during a workshop in Mozambique. There it was decided to establish WIOMSA as a Non-Governmental Organization (NGO), registered in Zanzibar. It was then also decided to invite IOCINCWIO to endorse the organization and it was expected that funding would be forthcoming from donors, donations etc. to enable the implementation of its programme. This endorsement was provided at IOCINCWIO-III and subsequently confirmed by the IOC Assembly in March 1993.

The Workshop agreed that the development of WIOMSA is an important step and may well be essential for the successful implementation of IOCINCWIO priorities set by the region. The Marine Research Grants may well play a stimulating and catalytic role which cannot be overestimated and which will potentially reduce the brain-drain, a problem which has been recognized but for which no solution has been found so far.

An active membership-drive has been undertaken by the acting president (Dr. M. Ngoile). Following an article in the RECOSCIX-WIO newsletter '**WINDOW**' (1992, vol 3, no. 2), over 100 requests for membership were received.

The registration of WIOMSA as an NGO in Zanzibar is now well underway and is planned to be finalized by January 1994. Within the IOC-SAREC cooperation programme 1993-1994 a substantial allocation has been identified for the development of WIOMSA and its Marine Research Grants. Nevertheless it is hoped that other donors will join IOC-SAREC in order to create a wide basis of funding which is necessary to ensure sustainability of the non-governmental organization on a long-term basis. In this regard the possibility to attract funding from the private sector was also noted. Membership fees may also provide a regular income for the organization.

The need to create an operational link between WIOMSA and other marine-related

professional groups was also highlighted. In this respect contacts were made with the **African Fisheries Association** whereby it is planned to enable cross-membership.

A linkage between WIOMSA and RECOSCIX-WIO has already been discussed extensively during the IOCINCWIO Officers meeting (July 1993, Mombasa). In view of the extensive network of institutions and scientists established through RECOSCIX-WIO, and its technical capabilities, the complementarity of WIOMSA's **Public Awareness Programme** and RECOSCIX-WIO is obvious. In this respect it was suggested to consider the gradual take-over of funding of RECOSCIX-WIO by WIOMSA. However, the Workshop emphasized that this would not yet be possible at the end of the current Kenya-Belgium cooperation agreements for RECOSCIX-WIO in 1995 and that alternative plans were also needed.

5.1 Objectives of WIOMSA

The objectives of WIOMSA can be summarized as follows:

- (i) to promote and advance the educational, scientific and technological development of all aspects of marine science in the region;
- (ii) to provide a forum for discussion and dissemination of information through scientific meetings, seminars and workshop for the presentation of information, findings and experiences on subjects related to marine sciences;
- (iii) to promote the exchange of information on research work or findings in marine science and technology;
- (iv) to encourage the support for marine science research, technological development and educational activities by government and private sector;
- (v) to collect and foster inter-institutional linkages within and outside the region;
- (vi) to produce a newsletter, journal, information brochures, radio and television programmes, etc. ;
- (vii) to organize public seminars, workshops with a view of promoting awareness on the marine life and environment;
- (viii) to promote and support scientific research and technological innovation in the region related to sustainable (economic) development, environmental protection, marine pollution and conservation of marine biodiversity;
- (ix) to seek and solicit funding from individuals and donors (governmental and non-governmental) to finance research activities and programmes.

5.2 Membership

WIOMSA has six categories of membership i.e., (i) institutional membership; (ii) individual membership; (iii) associate membership (for individuals from outside the region); (iv) fellow membership (awarded to WIO scientists in recognition of their work); (v) student membership; and (vi) honorary membership (awarded to any individual who rendered a notable service to marine sciences of the WIO region).

5.3 The Marine Research Grants

With the objective of actively supporting and stimulating dynamic scientists in the region WIOMSA will provide Marine Research Grants. These include:

- MARG-1: these grants are aimed at assisting scientists in conducting research within the framework of national and regional priority programmes and this within the scientist's own institution;
- MARG-2: these grants provide support to enable scientists from the region to visit other laboratories which in those cases where the necessary equipment or know-how is not available within the scientist's own institution;
- MARG-3: these grants are 'travel-grants' and will enable the scientist to participate in important international conferences, seminars, etc.

6. Enhanced implementation of the IOCINCWIO Action Plan through coordinated action of IOC, donors, WIOMSA and other bodies and organizations

6.1 Donors: The European Union

Mr. Tilak-Viégas gave an overview of the European Union's development activities. The European Union has two DGs (Directorate General) related to development activities. These are DG VIII (Development) and DG XII (Science and Technology). The DG VIII manages the European Development Fund (EDF) under the Lomé Convention.

The **DG XII** is not a donor but handles scientific **cooperation** programmes which it finances: cooperation between scientists: the scientists submit the projects, not the governments. So there is never a donor-recipient but rather a partner relationship. The old aid attitudes, i.e. donor-recipient with a dominant role by the donor, are dying and, thanks to an increase in human capability and development of infrastructure, is being replaced by

partnership undertakings. The developing countries are now defining their own priorities. In the context of fisheries and fisheries resource management, several projects related to coastal

ecosystems management (including mangroves) have been funded. There is a worldwide commitment to focus on coastal management. This is partly due to UNCED and its follow-up. The available funds are intended for national priority programmes, not for global observation type programmes. The European Union focuses on man-made problems and solutions including socio-economics and policies.

The **DG VIII** handles project submitted by governments. Every five years the ACP countries identify national and regional priorities. These projects focus on building infrastructure and human resources. It is recognized that preparation of and reaching agreements on regional projects is quite difficult. In some cases regional bodies have the mandate to act on behalf of the governments of a region e.g. CARICOM in the Caribbean. Another possibility for regional support is co-sponsoring of NGOs. This was seen as relevant for WIOMSA and the matter needed looking into.

The Workshop noted that through the IOC and regional Governments in the IOCEA region, a project proposal on coastal sediments and related management had been submitted through the ALP group to DG VIII.

6.2 Funding of Marine Science

Extensive discussions occurred with regard to the relevance of marine science research to the countries of the region. It was considered that, although essential for the safeguarding of science **and** technology of the future, basic science cannot stand alone and must be accompanied increasingly by applied science. It was also noted, however, that without basic science there is no applied science. This brought the discussions to funding of science by the national governments: due to the increasing financial difficulties of developing countries, the funding for science is decreasing. On the other hand, donors insist more and more on self-sustainability. Marine institutions in developing countries therefore have to (i) ensure that their activities are directly relevant and essential for the economic development of the country; and (ii) look into the possibility to obtain funding from the private sector. In this respect reference was made to the *Mangrove Oyster Culture Project* which has been developed during the past four years by the Kenya-Belgium Project in Marine Sciences (Mombasa, Kenya). The marine scientist can offer valuable expertise to the private sector related to sustainable management of aquaculture farms, environmental impact assessment, pollution monitoring, toxicology testing, quality control, forecasting of potentially hazardous effects, etc. Attention was drawn to possible conflicts of interest between the different user sectors.

6.3 Public Awareness

In order to better define and explain the important role which scientists can and do play in the economy and environmental management of the countries of the region, the

Workshop agreed that a policy document should be prepared which will outline the rationale of marine sciences, with the policy makers and general public as target groups. In this way the IOCINCWIO Action Plan, its link to UNCED and relevance to the national economic development, can be clearly explained.

The Workshop proposed that a film will be produced on the marine environment of the Western Indian Ocean region. This film should be made in accordance with the philosophy of the Arusha and UNCED resolutions. In this respect reference was made to ICLARM which has made several successful public education products. It was suggested that a start would be made with this film in February 1994. In view of the 10th anniversary of the Kenya-Belgium Project, it was proposed to join efforts between IOC-SAREC and Belgium for cost-sharing the film.

6.4 Regional Research Vessel

Mr Chemane (INAHINA) tabled a proposal (Cooperation Proposal - Western Indian Ocean) for the use of the Mozambican research vessel BAZARUTO for regional joint scientific expeditions. He referred to the discussions in IOCINCWIO meetings where the need for a regional research vessel had been stressed repeatedly. The proposal was welcomed by the Workshop and Mr. Chemane was requested to prepare a detailed cost estimate for the use and upgrading of the vessel. It was agreed that this matter would be discussed during the January 1994 IOCINCWIO Officers meeting. Comparison could also be made with the Nigerian research vessel used for regional expeditions in West Africa within the framework of the IOCEA programme. On the basis of these discussion a project proposal will be prepared for submission to donors. It was noted that the Mozambique offer was most appropriate as the Research Vessel FRITJOF NANSEN would not be available in the region within the next few years. It was also observed that using a research vessel from within the region would better ensure full participation from local institutions and scientists.

6.5 European Marine Interdisciplinary Network

The EMIN representatives provided an introduction on EMIN. It is a network with the main objective to bring together junior oceanographers from all European countries so as to broaden their scope of interest, encourage collaborative research and exchange of expertise, and facilitate the communication across disciplinary as well as geographical borders. EMIN was founded in 1990 and has a membership of 240 from all over Europe. EMIN tries to accomplish its objectives by the following activities:

- (i) The EMINar. At this yearly meeting lectures are presented by members who are preparing a PhD;
- (ii) Networks: EMIN promotes the formation of specialized sub-networks;
- (iii) Bulletin: EMIN's quarterly newsletter;
- (iv) Database: EMIN encourages the development of a grey literature bibliographic database.

EMIN was founded through the European Institute for Advanced Studies in Oceanography (EIASO). EMIN is seeking links with scientists from developing countries. At some stage this could result in joint North-South research projects. It was observed that the link of EMIN should be seen as a long-term undertaking which will, in 5-10 years time, result in smooth cooperation between marine scientists of North and South who met as young scientists in the early 1990s.

7. UNCED follow-up and Integrated Coastal Zone Management: its implementation in the Western Indian Ocean region

The Workshop noted that an important step towards the integration of the UNCED resolutions within the marine science related programmes in the Western Indian Ocean region was made during the **Policy Conference on Integrated Coastal Zone Management in Eastern Africa including Island States** (23 April 1993, Arusha, Tanzania). The **Arusha Resolution on Integrated Coastal Zone Management in Eastern Africa including Island States** can be considered as a guideline for future programme focus. Eighteen recommendations were made. The delegations from Madagascar, Mauritius, Mozambique, Seychelles, Tanzania and Kenya recommended that the countries of the Eastern African region give emphasis to the sustainable development and integrated management of coastal areas for the primary benefit of coastal communities by:

- (i) establishing policies that promote and enhance integrated planning and management of coastal areas by integrating the coastal zone into national economic and physical planning;
- (ii) developing and implementing ICZM programmes which address environmental concerns, particularly resource over-exploitation, environmental degradation and loss of Biodiversity, and emphasize action at the local level;
- (iii) promoting effective sectoral implementation of ICZM programmes through creating mechanisms and means for cooperation of and coordination among sectoral agencies, and among regional, national and local agencies;
- (iv) clarifying the jurisdictional mandates of agencies and governmental units (geographical, sectoral and trans-sectoral) governing the use of coastal resources and assessing and clarifying all legislation (formal and customary) relating to coastal resources in particular property rights, occupancy patterns, and user rights in coastal areas;
- (v) promoting further links between marine and social sciences and the decision making process;

- (vi) strengthening management capabilities of relevant agencies, particularly at the local level, for effective management of the overall environment, especially coastal areas;
- (vii) implementing and rigorously enforcing effective legislative instruments and supporting incentives to reduce resource use conflicts as well as to prevent and control environmental degradation in coastal areas;
- (viii) investing in public education and awareness programmes to create a broader and stronger constituency for proper management of coastal areas;
- (ix) promoting approaches and strategies such as alternative livelihood programs and economic diversification to reduce pressure on coastal resources;
- (x) promoting the involvement of all stakeholders in the development and implementation of ICZM programmes particularly the involvement of local communities including women and resource poor groups;
- (xi) providing appropriate incentives and guidelines for the private sector to develop environmentally friendly economic activities;
- (xii) supporting the building of local capacity, *inter alia*, through establishing of centres of excellency for ICZM training in the region, such as Mbegani Fisheries Training Centre;
- (xiii) encouraging the preparation and implementation of contingency plans for handling oil pollution disasters;
- (xiv) establishing and strengthening other appropriate institutions, such as the proposed Marine and Coastal Biodiversity Centre in Seychelles; and
- (xv) giving consideration to the special problems faced by small island States.

It was also recommended by the Arusha meeting that scientists should:

- (i) adopt a multidisciplinary research approach involving ecological, economic and other social sciences to holistically address management problems in coastal areas; and
- (ii) provide information, including documentation on indigenous knowledge relevant to coastal development and management, particularly in providing a diagnostic profile of the coastal areas; resource valuation and environmental accounting; identification and analysis of resource use conflicts and their resolutions; policy and management options as well as investment opportunities.

The Workshop agreed that more linkages must be created between the different disciplines and between activities and programmes: multidisciplinary must be actively pursued.

It was also agreed that, during the IOCINCWIO Officers meeting in January 1994 (Zanzibar), the Arusha resolution and the relation to the IOCINCWIO programme actions should be analyzed.

8. Inter-regional cooperation between East and West Africa, and East Africa and other parts of the Indian Ocean

The Chairman IOCEA, Mr. Gueye stressed the strong need for regional cooperation saying that there was an important lack of information exchange and communication in West Africa. The IOCEA Regional Committee welcomed the development of the RECOSCIX-CEA project, supported by the IOC. The Workshop observed that the activities of IOCINCWIO and IOCEA are quite similar and accordingly the Workshop stressed the need to strengthen cooperative links between East and West Africa. It was remarked that the establishment of the RECOSCIX-CEA project could be seen as a first and essential step in collaboration between East and West Africa. Reference was also made to the project COMARAF. It was agreed that donors should be approached to support East-West Africa cooperative activities. ORSTOM was mentioned in this regard. The Workshop emphasized the need to organize joint East-West scientific meetings. Involvement of some West African scientists in WIO training activities and workshops would also be considered. SAREC agreed to provide assistance for the participation of Mr. Wellens-Mensah in the Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their impacts (Zanzibar, Tanzania, 17-21 January 1994).

It was agreed that the Chairman and Vice-Chairman of IOCEA will be invited to participate in the IOCINCWIO Officers meeting (Zanzibar, January 1994). This would then be a joint Officers' meeting. A mission of the Chair- and Vice-Chairman to some institution in the WIO region should also be considered.

Prof. Disteche provided information on the course '*International Summer Course on Upwelling Systems*' developed by the European Institute for Advanced Studies in Oceanography. He reported that the course is receiving support from MAST (European Union) and will be organized in July/August 1995. Approximately 30 European and 15 African Scientists are planned to participate. The Secretary IOC pointed out that this should be recognized as a joint activity with the IOC.

9. Closing of the Workshop

The Workshop was closed on Thursday 25 November by Dr. Anders Granlund. It was agreed upon by the Workshop that a next session could be considered in 1995 based on the discussions of future IOCINCWIO and IOCEA sessions. In his closing words Dr. Granlund thanked the Flemish Government for their support which enabled the successful organization of

the Workshop. He highlighted the importance of the participation of the Chairmen of IOCEA which indicated a new era in East-West African cooperation which would undoubtedly benefit marine science on the African continent.

ANNEX I

PROGRAMME OF THE WORKSHOP

<i>Opening</i>	Welcoming of the participants
<i>Introduction</i>	Short presentations by the participants Overview of the Workshop agenda Adoption of the Agenda
<i>Session 1</i>	IOCINCWIO-III : The Action Plan and its implementation
<i>Session 2</i>	The SAREC and SAREC-IOC Regional programme (Including Eritrea: a new partner
<i>Session 3</i>	WIOMSA including its relation to IOCINCWIO and the IOC-SAREC programme
<i>Session 4</i>	Enhanced implementation of the IOCINCWIO Action Plan through coordinated action of IOC, donors, WIOMSA and other bodies and organizations
<i>Session 5</i>	UNCED and Integrated Coastal Zone Management: its implementation in the Western Indian Ocean region
<i>Session 6</i>	Inter-regional cooperation between East and West Africa, and East Africa and other parts of the Indian Ocean

ANNEX II

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PROGRAMME ACTIVITIES & CATEGORY	PRIORITY & ESTIMATED COST	PARTICIPANTS	IMPLEMENTATION DATE & BY WHOM	RELATION TO UNCED & REMARKS
OSLR/HAB Training Course in Algae Identification & Taxonomy, & Preparation of Manual on Phytoplankton; Communication by telemail; (1,2)	Middle priority \$20,000	All Member States	IOC Secretariat & Head KMFRI, 1994/1995	Chapter 17: A,B,C,D Biodiversity Convention & FCCC
GIPME/MARPOLMON Participation in EAF-5, -6 possibly EAF-11 (1,2)	High priority	All Member States	Member States; 1993/1995	Chapter 17: A, B
Initiation of EIA activities (in conjunction with Workshop on Coastal Zone Management)	Middle priority	All Member States	IOC Secretariat SAREC; 1993/1994	Chapter 17
GIPME/MARPOLMON Oyster (mussel) watch, regional (2,3)	Middle priority	Interested Member States	Head, KMFRI & IOC Secretariat; 1994/1995	Chapter 17
Coastal Zone Dispersion Modelling (circulation) Workshop (1,2)	Middle priority \$20,000	Interested Member States	IOC Secretariat; 1994/1995	Chapter 17: A;E
Establishment of Baseline Stations (water quality coastal to be initiated through Workshop (2,3)	High priority \$20,000	Interested Member States	Head of national institutions, IOC, SAREC; 1994	Chapter 17: A,B,C,E,F
JGOFs Training Courses (1,2,3)	High priority	Interested Member States	Participating institutions, IOC Secretariat, SCOR; 1993/1994	Chapter 17: E FCCC Biodiversity
Ocean Mapping Training Course on Use of Bathymetric Charts (1,2)	Middle priority \$15,000	Interested Member States	Chief Editor IBCWO & IOC Secretariat; 1994/1995	--

¹ Note: The numbers 1,2,3 refer to category of project as identified in text (Item 1.1).

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PROGRAMME ACTIVITIES & CATEGORY	PRIORITY & ESTIMATED COST	PARTICIPANTS	IMPLEMENTATION DATE & BY WHOM	RELATION TO UNCED & REMARKS
OSNLR Coastal Erosion Workshop	High priority \$15,000	All Member States	IOC Secretariat, SAREC; 1993	Chapter 17: A,E
Workshop on Coastal Zone Management (1,2)	High priority \$25,000	All Member States	IOC Secretariat, SAREC; 1993	Chapter 17: A
RECOSCIX-WIO Training Course for Librarians (1,2)	Middle priority \$20,000	Interested Member States	RECOSCIX Co-ordinator KMFRI, IOC, Belgium; 1993/1994	
Preparations for MSCP (1,3)	Middle priority	Interested Member States	Heads of institutions, IOC Secretariat 1993 ...	
Provision of Fellowships for FAME (2)	2 X \$8,000 for one	Interested Member States	Donors 1993 ...	
Preparation of Regional Programme for High-level Training (1,2,3)	High priority	All Member States	<i>Ad hoc</i> Group under Prof. Polk, IOC Secretariat, EEC	
Provision of Mini-grants for Research Projects (1,2)	High priority \$1,000 - \$5,000 each	All Member States	WIOMSA, IOC Secretariat, SAREC, Heads of institutions; 1993 ...	
Intercalibration Exercise for Nutrient Analysis (1,2)	High priority	Interested Member States	IOC Secretariat, SAREC, Heads of institutions; 1993/1994	
Inventory of Critical Habitats (1,2,3)	High priority	Interested Member states	Heads of national institutions; IOC, FAME; 1994/1995	Biodiversity

ANNEX IV

LIST OF DOCUMENTS

Document Code	Title
WORKING DOCUMENTS	
-	Agenda
-	Annotated Agenda
-	Provisional List of Documents
-	Provisional List of Participants
IOCINCWIO-III/3	IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Third Session (IOCINCWIO-III). Vacoas, Mauritius, 14-18 December 1992. (Reports of Governing and Major Subsidiary Bodies, IOC)
IOCEA-III/3	IOC regional Committee for the Central Eastern Atlantic, Third Session. Dakar, Senegal, 18-22 January 1993. (Reports of Governing and Major Subsidiary Bodies, IOC)
-	Report of the Coordination Meeting on the Development of Marine Scientific Research Capabilities in the Western Indian Ocean Region - IOCINCWIO Officers Meeting. Mombasa, Kenya, 12-16 July 1993
-	IOC-SAREC Marine Coastal Management and Related Research Development Plan for Regional Capacity Building in East Africa - Workplan 1993-1994.
-	Arusha Resolution on Integrated Coastal Zone Management in Eastern Africa including Island States.
-	International Science Initiatives Directed at Assisting ICZM (G. Kullenberg, IOC)
-	Utilization of TOGA and WOCE data in the IOCINCWIO region (M. Odido, Mombasa).

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- Development of a Sea Level Observing Network in the IOCINCWIO region (M. Odido, Mombasa).
- Project Proposal : The creation of the biological databank on spatio-temporal structure and productivity of the tropical ocean ecosystems. (Prof. Konovolov, Sevastopol; Dr. E. Okemwa, Mombasa; Prof. Ph. Polk, Brussels)
- Project Proposal for a Training Course at a MSc level for Tropical Coastal Ecology, Management and Conservation (Prof. N. Daro, Brussels; Dr. E. Okemwa, Mombasa)

INFORMATION DOCUMENTS

- | | |
|----------------------------|---|
| IOC Workshop Report No. 83 | IOC Workshop on Donor Collaboration in the Development of Marine Scientific Research Capabilities in the Western Indian Ocean Region, Brussels, Belgium, 12-13 October 1992 |
| IOCINCWIO-III/3S | IOCINCWIO-III Executive Summary |
| IOC-XVII/6 | IOC Annual Report 1992 |
| IOC-XVII/8 Annex 1 | Draft Action Plan for IOC Follow-up to UNCED and Implementation of Agenda 21: Overall Strategy and Goals |
| - | Report of the United Nations Conference on Environment and Development (UNCED): Chapter 17 |
| - | IOC-SAREC Marine Coastal Management and Related Research Development Plan for Regional Capacity Building in East Africa - Summary of Activities 1990-1992 |
| - | EMIN - Subgroup Education: results of the questionnaire on Education |
| - | European Institute for Advanced Studies in Oceanography: Plan for an International Summer Course on Upwelling Systems (Prof. A. Distèche, Liège) |
| - | Training Courses in Marine Science & Services: A |

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German Contribution to IOC's TEMA-Programme (Dr. G. Giermann, Bremerhevan)

- Partners in Science: Seychelles - Dutch Cooperation in Marine Science. 1992-1993 (Department of Environment, Victoria; Seychelles Fishing Authority, Victoria; Netherlands Marine Research Foundation, The Hague)

- Marine Science for developing Country Assistance for the Government of the Netherlands - Partners in Science (Netherlands Marine Research Foundation, The Hague)

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