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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

Nineteenth Session of the Assembly
Paris, 2-18 July 1997

**EXECUTIVE SUMMARY OF THE FOURTH SESSION OF THE IOC REGIONAL
COMMITTEE FOR THE CO-OPERATIVE INVESTIGATION IN THE NORTH AND
CENTRAL WESTERN INDIAN OCEAN (IOCINCWIO-IV) AND RELATED DRAFT
RESOLUTION**

Mombasa, Kenya, 6-10 May 1997

UNESCO

The IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean (IOCINCWIO) held its Fourth Session in Mombasa, Kenya between 6 and 10 May 1997.

IOCINCWIO-IV was organized back to back with the 'First WIOMSA Scientific Symposium' which was held in Mombasa, Kenya on 2 and 3 May 1997.

The Fourth Session was attended by over 70 participants including representatives from Member States (Comores, France, Germany, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Tanzania), organizations and projects (Commission de l'Océan Indien, Commonwealth Science Council, UN-ECA, IGBP-LOICZ, KBP, UNEP, UNESCO, WIOMSA, WMO) and several observers.

During this Session a wide range of topics covering all aspects of marine sciences were discussed. The Regional Committee noted the wide range of activities and the implementation of the agreed programme of the Third Session of the Regional Committee which constituted an example of regional capacity building. The Regional Committee expressed appreciation to donors supporting the programme, in particular Sida (SAREC) of Sweden.

OCEAN DYNAMICS AND CLIMATE (ODC)

With regard to Ocean Dynamics and Climate (ODC) the Regional Committee requested that a Group of Experts on ODC be established in order to address the analysis and interpretation of data collected in the region for global programmes such as JGOFS, TOGA and WOCE.

OCEAN SCIENCES IN RELATION TO LIVING RESOURCES (OSLR)

The Regional Committee recommended that a regional programme for the monitoring of marine algae (including harmful algae) be developed and called attention to the need for assessing the unknown impact of harmful algae on human health including awareness campaigns for the benefit of the coastal communities in particular.

The Regional Committee decided that a biodiversity database should be developed for the region through joint action of the Committee. Emphasizing the importance of fisheries to the Member States the Regional Committee concluded that ecosystem management methodologies should be applied to fisheries, and that IOC programmes could contribute to this effect. The Regional Committee noted with appreciation UNEP's 'Eastern African Coastal and Marine Environment Resources Database and Atlas Project' which has been implemented in Kenya and Tanzania, and requested that it be expanded both geographically - to the entire region - and subject wise to include coral reefs and mangroves.

The Regional Committee recommended that the Mascarene Plateau be identified as a Large Marine Ecosystem (LME) being of great importance to the region as a highly productive area. The Regional Committee welcomed the planned 'Shoals of Capricorn' expedition which would visit the region in 1998 and looked forward to active participation by IOCINCWIO scientists in this and other research expeditions..

The Regional Committee adopted Resolution IOCINCWIO-IV/1.

OCEAN MAPPING (IBCWIO)

The Regional Committee was informed that the sheet Assembly diagram for the IBCWIO now consists of a network of 21 sheets, and that the plotting sheets, together with the collected depth figures (on CD-ROM) were to be distributed before the end of May 1997. The next Session of the Editorial Board for

IBCWIO is planned for September/October 1997.

The Regional Committee adopted Resolution IOCINCWIO-IV/1.

OCEAN SCIENCE IN RELATION TO NON-LIVING RESOURCES

The Regional Committee stressed the importance of the study of shoreline change in general, and of coastal erosion in particular, as a pre-requisite of Integrated Coastal Zone Management (ICZM).

The Regional Committee was informed that the draft of the Manual 'Guidelines for Coastal Erosion Assessment, Monitoring and Management in the West Indian Region' is to be circulated in the region in June 1997. The Regional Committee recommended that a workshop be organized, late 1997, to clarify, finalize, and adopt the Manual, and to agree upon the implementation of the common methodology in selected pilot study sites.

MARINE POLLUTION

With regard to marine pollution the Regional Committee recommended that monitoring programmes of nutrients and coastal water quality, including heavy metals, pesticide residues, hydrocarbons and marine debris should be implemented, but that these programmes should be preceded by a baseline study of 6-12 months. The Regional Committee recommended the organization of a symposium on marine debris in the region in 1997.

GLOBAL OCEAN OBSERVING SYSTEM (GOOS)

In order to better ensure full participation of the region in the Global Ocean Observing System (GOOS), the Regional Committee decided to organize a GOOS awareness workshop, and stressed the need for ongoing oceanographic projects to feed their data into GOOS.

GLOBAL SEA-LEVEL OBSERVING SYSTEM (GLOSS)

The Regional Committee stressed the importance of the Global Sea-Level Observing System (GLOSS) and adopted a project proposal involving the installation of additional sea level stations as well as a comprehensive station maintenance programme.

INTERNATIONAL OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE (IODE)

In order to strengthen the national data management capabilities, and to ensure full involvement of national institutions in the IODE programme, the Regional Committee adopted the ODINEA (Ocean Data and Information Network for the IOCINCWIO region) project proposal. This project will develop a regional co-operative structure linking national oceanographic data centres, ensure access of scientists to data sets located within as well as outside the region, disseminate data products for the benefit of scientists and policy makers, and establish exchange of data and information within the IODE framework.

The Regional Committee welcomed the continuing support by Belgium of the RECOSCIX-WIO network but recommended that the project be strengthened and supported beyond 1999.

CAPACITY BUILDING - TEMA

With regard to capacity building the Regional Committee thanked the various donors and agencies for the support provided. The Regional Committee also noted with appreciation the establishment by Belgium of the ECOMAMA (Ecological Marine Management) course. The Regional Committee recognized the bilinguality of the region and recommended that this should be built into the capacity building programmes.

The Regional Committee noted with appreciation the development of the Western Indian Ocean Marine Science Association (WIOMSA) which was made possible thanks to financial support by SAREC of Sida through the IOC. Recognizing the importance of sustaining the use and conservation of the marine resources of the Western Indian Ocean region, WIOMSA is actively participating in the building of marine science and technological capability of the WIO region by focussing on the following activities: (i) improving communication among the scientific community of WIO states; (ii) assisting in the development of institutional linkages within the region; (iii) defining and developing research into problems which may require a national and/or regional approach to their solution; (iv) identifying workable mechanisms for the co-ordination of marine science research and development within the region; (v) strengthening the awareness of marine sciences research and its importance in the development and management of the marine sector of IOCINCWIO states; (vi) fostering the linkage between policy/management, science and stakeholders (community, NGOs, and private sectors); and (vii) development and management of marine research grant programme.

The Regional Committee recalled the endorsement, during IOCINCWIO-III, of WIOMSA as a tool which can enhance the development of marine science in the region, and commended WIOMSA for the establishment of its Marine Research Grants (MARG) which supported over 20 marine scientists in the region since 1995. The Regional Committee invited the IOC, Member States, international organizations and donors to actively support WIOMSA, and especially its MARG programme.

The Regional Committee adopted Resolution IOCINCWIO-IV.2.

CO-OPERATION WITH OTHER BODIES, PROGRAMMES, DONOR AGENCIES AND REGIONAL ORGANIZATIONS

Discussing co-operation with other bodies, the Regional Committee noted with appreciation the existing close collaboration between IOC and several international organizations and donors, but stressed the need for continued and intensified collaboration in order to avoid duplication and to ensure optimum use of limited resources. In this regard it was suggested to develop close links between the IOCINCWIO Officers and the Regional Co-ordinating Unit of the Nairobi Convention (RCU/EAF), established in Seychelles.

The Regional Committee also noted with appreciation the increased collaboration between IOC and WMO, encouraged co-operation with, amongst others, the Indian Ocean Commission, the Commonwealth Secretariat and with the AUPELF-UREF (Association des Universités pour l'Enseignement en Langue Française).

1998 INTERNATIONAL YEAR OF THE OCEAN

In order to ensure active participation in the 1998 International Year of the Ocean the Regional Committee invited Member States in the region to identify national focal points with the task of setting up a national committee to co-ordinate the events taking place at the national level. It was further recommended

to develop public awareness and education campaigns, and to participate in the PACSICOM Conference (Mozambique, 1998).

PROGRAMME OF WORK 1997-2001

The Regional Committee adopted a comprehensive and detailed five year (1997-2001) work plan with a budget of approximately US\$ 3,000,000. Recognizing that this exceeds the financial resources of the IOC, the Regional Committee invited Member States as well as other international organizations and donors to provide support for the implementation of the work plan.

The Regional Committee adopted Recommendation IOCINCWIO-IV.2

The Regional Committee elected Dr. Ezekiel Okemwa (Kenya) as its Chairman, and Dr. Jean Maharavo (Madagascar) for the next intersessional period. It was further decided to organize the next Session in 2001. Madagascar offered to host that Session.

ANNEX I

Draft Resolution IOC-XIX-...

**FOURTH SESSION OF THE IOC REGIONAL COMMITTEE
FOR THE CO-OPERATIVE INVESTIGATION IN THE NORTH AND CENTRAL
WESTERN INDIAN OCEAN (IOCINCWIO-IV)**

The IOC Assembly,

Recalling the successful implementation of the IOCINCWIO-III Programme of Work during the past intersessional period 1992-1997,

Noting with satisfaction that a considerable amount of training activities have been carried out, and **thanking** the various donors, and agencies for their financial and in-kind assistance,

Noting the results of UNCED and the importance of its follow-up at the national and regional level,

Noting further the 1998 International Year of the Ocean and its objectives to create awareness and to obtain commitments from governments to give priority to the Oceans,

Having considered the Executive Summary of the Fourth Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, together with the 2 Resolutions and 2 Recommendations adopted during the Session,

Takes note of the Executive Summary and the Resolutions;

Takes the following decisions on the Recommendations:

Recommendation IOCINCWIO-IV.1 - Large Marine Ecosystems (LME)

- (i) **Approves** the Recommendation subject to the availability of resources;
- (ii) **Instructs** the IOC Executive Secretary to issue a Circular Letter to invite Member States to identify suitable experts for the Group of Experts on LMEs in the IOCINCWIO region;
- (iii) **Urges** Member States to assist in the LME related capacity building in the region;

Recommendation IOCINCWIO-IV.2 - Programme of Work 1997-2001 (*)

- (i) **Approves** the Recommendation subject to the availability of funds;
- (ii) **Urges** Member States to contribute financially and in-kind to the implementation of the Programme of Work;
- (iii) **Urges** donor agencies, organizations and national institutions to actively communicate, co-ordinate and collaborate with the IOC, its IOCINCWIO and Member States to achieve the highest level of complementarity and co-ordination;

(*) ANNEX TO THE RESOLUTION: SEE ANNEX TO RECOMMENDATION IOCINCWIO-IV.2)

ANNEX II

RESOLUTIONS AND RECOMMENDATIONS

Resolution IOCINCWIO-IV.1

**INTERNATIONAL BATHYMETRIC CHART OF THE WESTERN INDIAN OCEAN
(IBCWIO)**

The Regional Committee,

Noting with appreciation that two further Member States have joined the Editorial Board, namely the Russian Federation and South Africa,

Taking note that the assembly diagram had been modified and the number of sheets increased by 3 to 21,

Taking also note that the preparatory work has been successfully completed, that the plotting sheets together with a diskette are being distributed now to sheet co-ordinators, and the first 2 sheets will be printed in 1998,

Stresses the great importance of an early presentation of the whole Chart in particular for the benefit of the countries of the region;

Invites Member States to further closely co-operate in the finalization of the Chart;

Thanks the German government for its continuous support of the work of the Chief Editor to enable him to issue the Chart in time.

Resolution IOCINCWIO-IV.2

WIOMSA CONTRIBUTION TO IOCINCWIO ACTIVITIES

The Regional Committee,

Recalling its endorsement of WIOMSA as a tool which can enhance the development of marine sciences in the region, during its Third Session,

Further recalling the endorsement by the Regional Committee during its Third Session, of the request to support WIOMSA,

Noting the establishment of the WIOMSA Marine Research Grants programme and their provision to cover twenty marine scientists in the region since the Association's registration in 1994,

Noting further the registration by WIOMSA of over 300 members,

Recognizing the relevance of the objectives and activities of WIOMSA which are attached in Annex to this Resolution,

Encourages IOC Member States, other international organizations, and donors to provide support to assist in the further development of the Association, especially to its Marine Research Grants programme;

Requests IOC to continue its assistance to WIOMSA through support of its Secretariat and its operational activities.

Annex to Resolution IOCINCWIO-IV.2

Aims and objectives of WIOMSA

- to promote and advance the educational, scientific and technological development in all aspects of marine sciences in the Western Indian Ocean region;
- to encourage the support of marine science research, development and educational activities undertaken by governments and private sectors;
- to provide forum for discussion and dissemination of information and organize meetings, seminars and workshops for the presentation of findings and experiences on subjects related to marine science;
- to collect and disseminate scientific, technical and other information relevant to marine sciences;
- to foster the linkage between scientists, government policy-makers, managers and stake-holders (coastal community and private sector)
- to promote and foster inter-institutional linkages within and outside the region.

Activities of the Association

- improving communication among the scientific community of the IOCINCWIO region;
- assisting in the development of institutional linkages within the region;
- defining and developing research into problems which may require a national and/or regional approach to their solution;
- identifying workable mechanisms for the co-ordination of marine science research and development within the region;
- strengthening the awareness of marine sciences research and its importance in the development and management of the marine sector of the IOCINCWIO region; and
- development and management of marine research grant programme.

Recommendation IOCINCWIO-IV.1
LARGE MARINE ECOSYSTEMS (LME)

The Regional Committee,

Noting the recommendations made by:

- (i) the International Symposium and Workshop on “Status and Future of Large Marine Ecosystems (LME) of the Indian Ocean” held in Mombasa 1993 and the First Session of the IOC-FAO Group of Experts on the Programme on Ocean Science in Relation to Living Resources for the IOCINCWIO Region held in Mombasa, 1994,
- (ii) IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME) held in Paris, January 1997,
- (iii) First WIOMSA Scientific Symposium on Advances in Marine Science in Eastern Africa: Application of Scientific knowledge in Marine and Coastal Management (Mombasa, Kenya, 2-3 May 1997),

Recognizing that two large Marine Ecosystems have been identified in the Western Indian Ocean Region, namely the Somali Current and Agulhas Current LMEs,

Recommends the recognition of the Mascarene Plateau as a third LME in the WIO Region because:

- (a) it is a shallow topographic ridge extending in an area over 2,200 km from Mauritius to the Seychelles;
- (b) it is a large area of more than 115,000 sq km of banks and shoals which are largely between 33-90 m with a shallow rim of 8-20 m depth;
- © it spans between South Equatorial Current and the north Equatorial Current;
- (d) it is a highly productive area, of significant importance to the IOCINCWIO region;

Recommends:

- (i) capacity building to meaningfully address LME activities. Lack of expertise both scientific and technical as well as scientific understanding of the biological and physical components of LMEs inhibit assessments of pollution, habitat degradation and overexploitation of resources;
- (ii) development of project proposals for GEF and other donor funding for the implementation of the three LMEs in the WIO Region for submission to GEF and other donors;

Requests IOC to provide support for development of these proposals and identification and establishment of a Group of Experts (minimum of three experts [Somali Current, Agulhas Current and Mascarene Bank LME]) to co-ordinate the LME activities in the region;

Recommends that, in developing these proposals, consideration should be given to:

- (i) application of new technologies and techniques, such as airborne instruments e.g., compact airborne spectrophotometric instruments, acoustic assessments of sedimentary habitats, GIS and assessment on the status and changes in LMEs;
- (ii) analysis of existing information and programmes with a view of providing a basis for further investigation of topics, such as the dynamics of the ecosystems, socio-economic and impact of human activities and degree of resistance and resilience, ecological role, maintenance of biodiversity, and existing management systems. The scientific information will assist in the formulation of policies and management strategies for the protection and conservation of marine ecosystems;

Recommendation IOCINCWIO-IV.2

PROGRAMME OF WORK 1997-2001

The Regional Committee,

Recalling the successful implementation of its programme during the past intersessional period 1992-1997,

Noting with satisfaction that a considerable amount of training activities have been carried out,

Noting the results of UNCED and the importance of its follow-up at the national and regional level,

Noting further the 1998 International Year of the Ocean and its objectives to create awareness and to obtain commitments from governments to give priority to the Oceans,

Decides to adopt the programme of work for IOCINCWIO for the period 1997-2001 and indicated in the Table annexed to this Recommendation;

Expresses its appreciation to the Member States, donors and organizations who have provided support to IOCINCWIO during the intersessional;

Urges Member States to actively participate in the IOCINCWIO programme in accordance with their national priorities, interests and capabilities;

Urges the IOC, other organizations and donor agencies to assist in the implementation of the 1997-2001 Programme of Work.

Annex to Recommendation IOCINCWIO-IV.2

WORKPLAN 1997-2001

(Budget in thousands of US Dollars); 'x' indicates implementable with no cost

	<i>Para. No.</i>	1997	1998	1999	2000	2001
4.1.1 OCEAN DYNAMICS AND CLIMATE						
- Co-operation in CORP-WIO (CSC): Chairman to correspond with CSC	21	x	-	-	-	-
- Establishment GE-ODC						
= Send out invitation to Member States to identify experts	35	x	-	-	-	-
= Meeting of the GE-ODC	35	-	15	-	-	15
4.1.2 OSLR						
<i>4.1.2.1 HAB</i>						
- Nomination of Regional Co-ordinator	40	x	-	-	-	-
- Manual	40	15(E,F)	-	-	-	-
- Training Course	40	-	25	-	-	-
- Baseline monitoring	40	-	-	40	15	15
<i>4.1.2.2 Biodiversity</i>						
- Set up and maintain biodiversity database	43	5	5	5	5	5
- Desk study available biodiversity capacity (to be implemented by RECOSCIX-WIO)	44	x	-	-	-	-
<i>4.1.2.3 Recruitment and Stock Assessment</i>						
- Training on sampling strategies for assessment of artisanal fisheries, including manual and planning of operational workplan (sampling of fish eggs and larvae in coral reefs, mangroves and inshore waters)	48, 49	-	15	-	-	-
<i>4.1.2.4 Inventory Critical Habitats IOC/UNEP - Seagrasses + other habitats</i>	53-57					
- Phase 1: Kenya and Northern Tanzania (North)		12	-	-	-	-
- Phase 2: Comores, Madagascar, Mauritius, Seychelles, La Reunion, Mozambique, and Southern Tanzania		-	40	-	-	-

	Para. No.	1997	1998	1999	2000	2001
4.1.2.5 LME						
- Establishment GE-LME	68 (Rec.1)	x	-	-	-	-
- Meeting GE-LME		-	25	-	-	-
- Consultative meeting for drafting proposals for submission to GEF		-	10	-	-	-
- Including support of scientists in 'Shoal of Capricorn' Cruise		-	10	10	10	-
4.1.3 Ocean Mapping						
- Next Session of IBCWIO	72	10	-	10	-	-
4.14 OSNLR						
- Finalization of draft manual	77	10	-	-	-	-
- Workshop on Methodology and Selection of Sites	83	20	-	-	-	-
- Monitoring - Pilot Studies (Kenya, Tanzania, Madagascar, Comores, La Reunion, Seychelles, Mozambique)	82	-	50	50	50	-
- Provision of equipment		-	130	-	-	-
4.1.5 Marine Pollution - Operational Activities (*)						
<i>4.1.5.1 Regional Nutrient and Water Quality Monitoring Network</i>						
- Nutrients, Sediment transport and Turbidity monitoring	86	18	18	27	27	36
- Intercalibration exercises	86	-	20	-	20	-
- Organic Pollutants, heavy metals	88	-	6	6	6	6
- Marine Debris Study	90	25	-	-	-	-
<i>4.1.5.2 Musselwatch</i>	92	-	6	6	6	6
(*) no allocation made for data management guidelines						
4.1.6 Integrated Coastal Zone Management	94-100					
- Workshop on data and information requirements and standardization for ICZM (Output: manual/report)		-	30 (E,F)	-	-	-

	Para No.	1997	1998	1999	2000	2001
4.2.1 Regional Component of GOOS						
- Regional GOOS awareness workshop	106	-	30	-	-	-
- Publication of the manual on use of remote sensing data	-	-	15 (E,F)	-	-	-
- SST maintenance and expansion to mainland States	104	-	25	-	10	-
4.2.2 GLOSS						
- Training course for sea-level station technicians	109-114	-	10	-	-	-
- Maintenance of sea-level stations (travel technicians)	"	-	7	7	7	7
- Data Analysis	"	7.5	7.5	-	-	-
- Establishment of new sea-level stations (15K/unit)	"	-	30	30	30	30
4.2.3.1 Data Exchange - ODINEA						
- Development and Operational Support (as per project proposal)	119	80	80	90	40	40
4.2.3.2 Information Exchange - RECOSCIX-WIO						
- Operational support	126	25	25	100	100	100
- support for WINDOW	"	x	6	6	6	6
- e-mail support to national institutions	128	20	20	20	20	20
- provision of ASFA to national institutions	124	x	15	30	30	30
5.1 WIOMSA						
- Secretariat Support	167	x	30	30	30	30
- MARG support (1998 and onwards: 10 x MARG I, II; 10 x MARG III)	(res.2)	30	90	90	90	90
- Publication of MSCPs	"	x	-	-	20	-
- Consultations on regional Marine Science Journal	169	x	x	-	-	-
- Fellowships (6-7) for participation of students from the region in Marine Science	150	10	20	-	-	-
- Field course (Kenya)	145					
5.2 METHODS AND TECHNOLOGIES						
- Survey on available and appropriate modern technology tools for human capacity building	171	-	5	-	-	-

	Para No.	1997	1998	1999	2000	2001
6. CO-OPERATION WITH OTHER BODIES						
- Meeting of IOCINCWIO Officers with Regional Co-ordinating Unit for the Nairobi Convention (Seychelles)	182	4	4	4	4	4
- Provision of seed money for course on marine meteorology and physical oceanography (Nairobi, Kenya)		-	100	-	-	-
- Regional Project Information database (RCU, in collaboration with RECOSCIX-WIO)		-	20	20	10	10
- Procurement of SOOP XBT and meteo units (10 units/year)		20	20	20	20	20
7. INTERNATIONAL YEAR OF THE OCEAN	185					
- Seed money for national and regional activities		-	40	-	-	-
- Support to participants from the region in PACSICOM		-	60	-	-	-
- Support for national ICRI event (Nosy Bé, Madagascar)		30	-	-	-	-
- Support WIOMSA 1998 Year of the Ocean activities			10			
TOTALS PER YEAR (in thousands of US Dollars)		341.5	1074.5	601	556	470
TOTAL REQUIRED BUDGET 1997-2001: US\$ 3,043,000						