



**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION**  
(of UNESCO)

**Thirty-third Session of the IOC Executive Council**  
**Paris, 20-30 June 2000**

Agenda Item: 4.4.1

**THIRD SESSION OF THE IOC COMMITTEE FOR THE NORTHERN AND  
CENTRAL INDIAN OCEAN,**

**Tehran, 21-23 February 2000**

**EXECUTIVE SUMMARY REPORT**

In response to Resolution XX-16 the Third Session of the IOCINDIO Regional Committee was convened in Tehran, Islamic Republic of Iran from 21-23 February 2000, preceded by the Regional Workshop on ICAM and Marine Pollution. Among the issues discussed at the third session was the in-depth consideration of the programme implementation adopted by IOCINDIO-II with emphasis on the storm-surge programme, marine pollution studies and coastal zone management.

The Executive Council will be requested to **review** the IOCINDIO activities, to **approve** the executive summary report, to **adopt** the recommendations of IOCINDIO-III, to **provide advice** to Member States on the priorities and to **identify** resources for the regional programme implementation.



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### ANNEXES

- I. Agenda
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## 1. OPENING

The Third Session of the IOC Regional Committee for the Central Indian Ocean (IOCINDIO-III) was called to order at the Iranian National Centre for Conferences, in Tehran, Islamic Republic of Iran on 21 February 2000. After the traditional prayer and national anthem of Islamic Republic of Iran, the floor was given to Prof. H. Zomorrodian, President of the Iranian National Centre for Oceanography (INCO).

The IOCINDIO Chairman, Dr. Muthunayagam, addressed the session, as well as the Executive Secretary IOC, Dr. P. Bernal.

The Honourable Dr. Moin, Minister for Culture and Higher Education of the Islamic Republic of Iran then took the floor and declared the Session open.

## 2. ADMINISTRATIVE ARRANGEMENTS

### 2.1 ADOPTION OF THE AGENDA

The Chairman recalled that the provisional Agenda had been circulated to Member States through IOC Circular Letter 1633 of 15 November 1999. He invited comments from the floor. The Vice-Chairman proposed that International Oceanographic Data Exchange be discussed under Item 4. The Technical Secretary suggested that Ocean Mapping issues also be included under the same item. The Chairman recommended deleting an item dealing with "Cooperation with other organizations" as it is already covered under item 5. **The Regional Committee agreed** with the changes and adopted the Agenda as given in Annex I.

### 2.2 CONDUCT OF THE SESSION, TIME TABLE AND DOCUMENTATION

The Technical Secretary reviewed the List of Documents (Document IOCINDIO-III/4) and the provisional Timetable of the Session (Document IOCINDIO-III/1 add.prov.). He recalled that the Regional Committee is expected to work in plenary. The time schedule should lead the Regional Committee to a concluding afternoon session on 23 February.

**The Regional Committee agreed** not to designate a Rapporteur of the session taking into account the presence of few IOC staff. The Chairman requested those who introduce agenda items for discussion to provide inputs to the Summary Report through the Technical Secretary. The Vice-Chairman provided the participants with information on local arrangements.

The Chairman drew the attention of the Delegates that an *Ad Hoc* Sessional Drafting Group should be established on Programme and Budget. The Regional Committee appointed the representative of Pakistan as Chairman of this Group. India, the Islamic Republic of Iran, Sri Lanka expressed their wish to participate in the sessional group. The Chairman requested the Technical Secretary to assist the Group. Other countries were invited to join.

## 3. REPORT OF THE CHAIRMAN ON INTERSESSIONAL ACTIVITIES

The Chairman presented a summary of the main inter-sessional activities conducted by the Regional Committee (Document IOCINDIO-III/6). He made special references to his participation at IOC Governing Bodies meetings and presented Resolutions adopted there relevant to the Committee's activities.

He highlighted three groups of actions to which special attention was given during the inter-sessional period: organization of regional workshops, implementation of sub-regional workshops, and organization of the third session of IOCINDIO. He emphasized that because of lack of resources not all planned activities were implemented.

He then presented an extensive list of IOC activities which have been organized within the region as a contribution to the IOC technical and scientific programmes.

The Chairman informed the Regional Committee of his participation at the IOC Assembly and of the discussions taking place relevant to IOCINDIO activities. Resolution XX-16 was accepted and the progress achieved by the Regional Committee was appreciated. Drawbacks were identified and guidance was given to him, the Vice-Chairman and the Member States of the region for facilitating the implementation of IOCINDIO-II decisions.

**The Regional Committee expressed** its satisfaction with the actions taken by the Chairman in supporting the implementation of IOCINDIO-II recommendations, thanked the IOC Assembly for the guidance provided and decided to consider in detail the progress achieved under relevant agenda items.

**The Regional Committee acknowledged** the efforts made within the region to improve cooperation between oceanographic and meteorological communities in response to the decisions of IOC and WMO Governing Bodies and called on Member States to continue these efforts at the national and regional level in order to avoid duplication of activities and to use available resources in the most effective way.

**The Regional Committee appreciated** the creation of the IOC Perth Office and considered that as an example to follow in bringing resources of meteorological and oceanographic agencies closer.

**The Regional Committee noted** with concern that only very few Member States submitted national reports to the session. The Regional Committee noted the importance of national reports for increasing awareness of national activities within the region as well as for the entire international community. The Member States were requested to submit to the Technical Secretary by 30<sup>th</sup> March their national reports in electronic format to be included as an annex to the Summary Report.

**The Regional Committee requested** the Technical Secretary to develop instructions on the format of the national reports to be submitted to IOC and send them together with the invitation letter of the next IOCINDIO session.

#### **4. IN-DEPTH DISCUSSION ON IMPLEMENTATION OF THE PROGRAMMES ADOPTED BY IOCINDIO-II**

##### **4.1 SEA LEVEL NETWORK**

In accordance with the Resolution XIX-19 of IOC Assembly, the office of the Chairman IOCINDIO formulated a project proposal for the establishment of a network of about 40 tide gauges in the region, based on the inputs obtained at the second Session of IOCINDIO. The report was circulated in September 1997 among the Member States requesting for comments and their willingness to participate in the proposal. The Chairman GLOSS was also consulted. It was expected to seek the financial assistance from international funding agencies for implementation of the project. The five following countries responded : the Islamic Republic of Iran, Iraq, Sri Lanka, Bangladesh and India. A revised project proposal on sea level network was prepared considering the participation of the five countries and was circulated among them in September 1998. The Member Countries were requested to confirm their commitments of local fund and infrastructural support for implementation of the project. There was response only from Islamic Republic of Iran and India.

Mr. B. N. Krishnamurthy of India presented the proposal on sea level network. The proposal was discussed by the Regional Committee in depth. The Committee appreciated the efforts of the office of the Chairman IOCINDIO in formulating and pursuing the proposal with Member States.

**The Regional Committee observed** that one of the reasons for inadequate response from Member States is due to lack of identified focal points in the Member States.

**The Regional Committee recommended** that the proposal should be pursued and that the project may be implemented even if one or two countries are interested and with the resources available within the region. That would be an example to encourage other Member Countries to follow.

**The Regional Committee recommended** reporting the progress achieved to IOCINDIO-IV.

#### 4.2 STRORM SURGE PROGRAMME

Dr. B. N. Krishnamurthy from India as a representative of the country which hosted the IOCINDIO workshop on Storm Surges (20-21 October 1999, New Delhi, India) provided information on the results of the Workshop. He pointed out that the Workshop was divided into four sessions covering the presentation by Member States on existing storm surges forecast systems, presentations by experts on modelling using finite differences and finite element approaches, on-hand demonstration of storm surge and tidal models, and adoption of conclusions and recommendations. The Workshop recommended enhancing the infrastructure in the member countries for collection of data on meteorological, oceanographic and hydrological parameters. The Workshop also recommended the development of the state-of-the-art cyclone and storm surge forecast models.

**The Regional Committee congratulated** the organizers of the Workshop for the successful meeting and endorsed the Workshop recommendations.

**The Regional Committee invited** IOCINDIO Member States to provide necessary resources for accomplishing activities recommended by the Workshop.

Speaking in his capacity as the Pre-Project Manager, Dr. Krishnamurthy referred the Regional Committee to the progress achieved in the implementation of the project proposal on storm surge disaster reduction in the northern part of the Indian Ocean. He informed the Regional Committee of the meeting held in New Delhi, India, from 22-26 October 1999, at which representatives of eight Member States took part. The meeting formulated the plan of action for the pre-project period which contained, *inter alia*, the appeal to the Member States to continue their efforts to get clearance and funding from all concerned authorities of their governments for the implementation of the project.

Dr. B. N. Krishnamurthy reported then on the progress achieved by him in taking up activities as authorised by the regional meeting. He presented responses from some international funding agencies whom he approached seeking their interest in funding the regional project. In conclusion he invited Member States concerned to take actions following the plan of action of the October meeting.

**The Regional Committee congratulated** the Project leader, Pre-Project manager and the Secretariat on the progress achieved and expressed its strong support to the project considering it as the main regional activity in mitigating natural disasters and preventing their effects.

**The Regional Committee endorsed** the need for consolidating efforts at the national and regional levels for providing support to the project. In this regard the **Regional Committee adopted** Recommendation IOCINDIO-III.2 as presented in Annex II.

#### 4.3 CLIMATE STUDIES

The Chairman invited Member States to comment on their activities contributing to the implementation of the GOOS Climate Module and on other activities related to climate studies. A few Member States provided brief comments.

The Delegate of India reported on India's Climate Research Program which is a counterpart to the World Climate Research Program. The program encompasses five projects including sea-level measurements, the completed JGOFS project, LOICZ Carbon Flux Studies, INDOEX which focuses on clouds and the inter-tropical convergence zone and BOBMEX, a time series study of monsoons.

The Delegate of Pakistan referred to the work of the inter-ministerial committee on Global Warming and Sea level Rise. It conducts a project in the North Arabian Sea with 62 observing stations for obtaining data and information on chemistry, biology, physical oceanography and meteorology. It also conducts research cruises to study monsoons and impacts on ocean productivity.

The Delegate of the Islamic Republic of Iran reported on a network of tide gauges in the northern coastal area of the Persian Gulf which is in operation since 1990. He stressed the need for information from other Member States about their observing stations in the Persian Gulf and Sea of Oman and emphasized a need to facilitate the exchange of data.

The Delegate of Bangladesh reported that the Department of Meteorology and the Bangladesh Water Development Branch are involved in the measurement of temperature and rainfall. Bangladesh Inland Water Transport Authority (BIWTA) also collects water level data in the northern part of the Bay of Bengal.

Mr. William Erb, the Director of the IOC Regional Office in Perth reported on a Workshop on Sustained Observations of Climate in the Indian Ocean planned for November 13-15, 2000. The Workshop is being organized as a follow-up to a recommendation made at the Working Meeting on Indian Ocean held in Perth in September 1999. Delegates invited from Indian Ocean countries will receive IOC support. Other meetings taking place in Perth in November include:

Indian Ocean Climate Initiative Workshop	9-10 November
TAO Implementation Panel Meeting	16-17 November
Workshop on southern Ocean Observations	16-18 November

Mr. Erb also reported on the ARGO Project which will deploy 3,000 profiling floats, globally, to support climate studies. Cooperation from Indian Ocean countries is desirable to support deployment of floats. The data will contribute to a better understanding of the Indian Ocean Dipole and monsoon events, which will directly benefit Indian Ocean countries. India has expressed interest in contributing profiling floats for the project.

#### 4.4 COASTAL STUDIES INCLUDING COASTAL MARINE POLLUTION

Dr. Raj Murthy, Chairman of the Regional Workshop on Integrated Coastal Area Management, including Marine Pollution, held in Tehran, Islamic Republic of Iran (19-21 February 2000) presented the recommendations of the Workshop. The Workshop was attended by experts from Bangladesh, Canada, India, the Islamic Republic of Iran, Kuwait, Qatar, Sri Lanka, and Thailand as well as representatives from IOC, IOMAC, and ROPME.

The Workshop recommended that as a first step a broad regional strategic ICAM action plan should be formulated and invited IOC, through the Regional Committee to take steps for its formulation by organizing a regional meeting of experts. The Workshop also recommended the necessity of designing specific demonstration projects (for example on coastal megacities, and the vulnerability of the Persian Gulf to oil pollution) with a view to develop methodology in the ICAM process, taking advantage of emerging new science and technology (including ICAM tools and techniques).

**The Regional Committee recommended** that the regional meeting on Strategic ICAM Action Plan should be organized by IOC, in consultation with the ROPME Secretariat and held within a year, preferably in one of the Member States of ROPME.

**The Regional Committee suggested** that IOC provide technical assistance for the preparation of the Strategic ICAM Action Plan and that IOC and ROPME support the participation of experts from the IOCINDIO region.

The ROPME Representative informed the Regional Committee that his organisation has produced regional guidelines on Integrated Coastal Area Management which could be disseminated in the region and used in the regional strategy meeting. He also expressed the willingness to cooperate with IOC in this field. ROPME would be ready to support some joint ICAM-related activities with IOC, and in particular a pilot study on an ICAM demonstration project in one of the Member States of ROPME.

**The Regional Committee took note** of the kind offer made by ROPME, and instructed the Secretariat to follow it up.

The Chairman of the Workshop also reported on the Training Programme on Modelling and Monitoring of Coastal Marine Processes (MAMCOMP), sponsored by IOC, which last took place in November 1999, in New Delhi, India. The Course has been running successfully for the last five years, having trained around 100 participants in the field of coastal sciences related to ICAM. He also informed the Regional Committee of the initiative of India to organize an International Symposium on ICAM for Coastal Cities, 20-22 November 2000 in Chennai, as a follow-up of the IOC-SOA Hangzhou Workshop which took place in September 1999. This event will be also co-organized by the National Ocean Institute of Technology/DOD, and Ocean Engineering Centre. The International Ocean Institute (IOI) in Malta and its regional office in India have already expressed willingness to support this event.

**The Regional Committee congratulated** Dr. R. Murthy (Canada) and Prof. P. Sinha (India) for their work in co-organizing the MAMCOMP programme, and invited them to share the benefits of such programme to the other countries of the region, especially to countries of the ROPME Sea Area.

**The Regional Committee endorsed** the proposal of organizing a Symposium on Coastal Cities for the region, and recommended that this event be supported by IOC. **The Regional Committee invited** ROPME to support the participation of ROPME Member States in the next MAMCOMP Training Course and the Symposium on ICAM on Coastal Cities.

#### 4.5 MARINE LIVING RESOURCES AND CORAL REEF PROGRAMMES

The Delegate of India informed the Regional Committee that the IOC-HAB Centre and the regional training course suggested at IOCINDIO-II were not implemented due to a lack of financial support. However India initiated activities on HAB and marine taxonomy as part of their on-going activities on Marine Living Resources.

Occurrence of algal blooms is common phenomena along the Indian coasts and incidents of human mortality due to algal toxins have been reported. The objectives of the on-going projects are: (i) identification of toxic phytoplankton, (ii) study of physico-chemical factors affecting their growth and distribution, (iii) assessment of their toxic influence on marine organisms, (iv) modelling for the prediction and detection of HAB, (v) prediction of the threshold limits of the blooms to understand the extent of environmental hazards.

The Delegate of Pakistan informed the Regional Committee on national activities in this field, and in particular on algal taxonomy and monitoring of algal bloom occurrences along the coast of Pakistan.

The Representative of ROPME stated that a major fish mortality affected the region last year. He communicated that a regional meeting on HAB will take place from 6-9 March 2000 in Kuwait

with a view to conclude a plan of action on marine mortality for the region. IOC has been invited to participate.

**The Regional Committee recommended** that Member States forward their proposals for the establishment of a Regional Centre for the Study of HAB to the Technical Secretary within a period of six months.

**The Regional Committee also recommended** the organization of a HAB Training Course to be implemented during the intersessional period.

The Technical Secretary informed the Regional Committee about the development of the Global Coral Reef Monitoring Network (GCRMN) in the Indian Ocean. Two regional nodes already exist, one based in Sri Lanka (covering India, Maldives, and Sri Lanka), and a second one based in Mauritius covering the island states of the western Indian Ocean. No node exists in the Gulf area yet. He called upon Member States to prepare national reports on the state of coral reefs in view of the preparation of the *Status of Coral Reef of the World 2000* report which will be published this year. He invited Member States to contact the GCRMN Coordinator, Dr. C. Wilkinson as soon as possible, in case financial or technical support was needed for the preparation of the national reports.

The Representative of ROPME informed the Regional Committee on the results of the Workshop on Coral Bleaching in the Arabian region which took place in Riyadh, 6-9 February 2000. The meeting endorsed the need for expanded monitoring capacity in the region and recommended the formation of a Node for the Red Sea region at a location that has the capacity to support the training and data management.

Mr. Erb identified a project proposal submitted by Dr. Russel Reichett, Director of AIMS in Townsville, Australia, in September 1999. It proposed a coral reef study and monitoring of reefs in the Indian Ocean and addressed coral reef bleaching and reef re-generation techniques. Cooperation from institutes in the region is being sought and Member States should contact the IOC Regional Office in Perth for additional information.

The Delegate of the Islamic Republic of Iran informed the Regional Committee that in Iran around 15 islands presenting coral reef covers were located in the Persian Gulf. He stressed that they were poorly studied and invited other countries of the region to cooperate with INCO in developing monitoring of these coral reefs.

**The Regional Committee endorsed** the proposal that the GCRMN should look at the possibility of including the Islamic Republic of Iran within the South Asia regional node, or within the emerging regional initiative led by PERSGA and ROPME in the Persian Gulf.

#### 4.6 SUB-REGIONAL WORKSHOP ON OIL SPILL MONITORING

The Representative of ROPME reported on the Regional Workshop on Oil Spill Trajectory Modelling, which took place in Bahrain, 15-17 February 1998. The workshop was co-sponsored by IOC, ROPME/MEMAC and NOAA. He reported also on the follow-up activities towards the adoption of the NOAA Trajectory Model to suit the requirements of the ROPME region. He explained the measures taken in upgrading the GIS and Remote Sensing capabilities of ROPME and in developing a digital electronic bathymetry chart as well as the preparation of habitat mapping and hyperspectral characteristics of the coastal area natural formations and anthropogenic influences. To this effect, he informed the Committee that the digital charts in two scales have been developed and sent to NOAA, available data for species in the ROPME Sea Area coded, wind data of the region collected, and the high resolution spectrometry is in the final calibration phase.

The **Regional Committee** acknowledged the efforts of the ROPME/MEMAC Secretariat in meeting the needs of the Member States in oil spill trajectory modelling.

The **Regional Committee** further urged all concerned Member States to provide data and information to support the regional efforts.

The **Regional Committee** further recommended that IOC cooperates with ROPME/MEMAC in the organization of the Regional Workshop on the Final Version of the Trajectory Modelling.

#### 4.7 PARTICIPATION IN GOOS

Mr. William Erb presented a summary of the GOOS program and recent developments in the Indian Ocean region. Document IOCINDIO-III/11 provided the basis for this presentation and was available as a meeting document.

**The Regional Committee noted** that only few countries in the Indian Ocean region have national GOOS programmes but this is expanding. There exists in the region, already, elements of the GOOS Initial Observing System. The proposed Storm Surge Disaster Reduction Project, when funded, will provide a major focal point for GOOS in the region, as well as globally.

The Delegate of India described several national GOOS-related activities it conducts, including projects involving moored buoys, XBT's, current meter arrays, satellites and modelling.

The Delegate of the Islamic Republic of Iran and the Representative of ROPME pointed out the problem of data sharing in the region and the need for additional monitoring systems and networks.

A discussion on the scope of the coastal module ensued with Dr. Bernal explaining the parameters of coastal GOOS. Problems related to vandalism associated with offshore buoys and instruments were discussed. It was explained that IOC is giving attention to this problem.

Capacity building was identified by several Member States as an important need in the region. The IOC Perth Regional Office offered its assistance to develop GOOS capacity building to respond to the needs of IOCINDIO Member States. It will also seek to identify, in general, regional activities that will support the development of GOOS in the Indian Ocean.

#### 4.8 INTERNATIONAL OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE

Dr. I. Oliounine, Deputy Executive Secretary IOC reported on a wide range of the activities relevant to oceanographic data and information exchange and management implemented in the region during the intersessional period such as training courses held in India and the Islamic Republic of Iran in 1997 and 1998, missions to Pakistan and the countries of the Persian Gulf area in 1997, development in 1999 by the WDC-B, MGG with IOC support of a CD-ROM containing geological, geophysical and OSNLR data from the Indian Ocean and others.

He stressed the need to strengthen or establish ocean data management national and regional infrastructures that ultimately would contribute to different IOC activities in the region as well as to meeting national needs in science, research and technology.

Dr. I. Oliounine referred the participants to a proposal submitted to the UNESCO Regional Office in the Arab States of the Gulf, in Doha, Qatar "*to establish a regional data and information centre which will include besides the Arab Gulf universities the local and regional environmental research agencies. The centre which is planned as a part of an inter-university network in the Arab Gulf Region is proposed to be hosted by the deanship of scientific research of the Sultan Qaboos University*". It was also envisaged that the Centre be located in Oman due to the need to include data of the interaction of the Indian Ocean/ the Arabian Sea/Strait of Hormuz/ to that of the Persian Gulf.

He reminded the participants of the IODE rules for selection and nomination of RNODC's and of the conclusions of the IOC/ROPME mission to the State of Kuwait, the Kingdom of Saudi Arabia, the State of Bahrain, the United Arab Emirates and the Sultanate of Oman which took place from 15 March – 2 April 1997. One of the conclusions of the mission was a need for a regional centre which will be a regional node for oceanographic data collection and exchange in the region. At the same time the mission expressed a view that a regional centre whenever and wherever established should have facilities necessary for an effective response to the regional needs, objectives and tasks. The mission also strongly recommended that while establishing a centre, existing internationally agreed data collection, processing and exchange rules and procedures as well as the data policy of the IOC/IODE system should be strictly followed for the benefits of all Member States of the region.

The Delegates of Pakistan and the Islamic Republic of Iran provided information on national activities in the IODE area and thanked the Executive Secretary of IOC for his support in training and strengthening national data and information management facilities.

The Delegate of Pakistan thanked the Secretariat for sending the IOC mission to Pakistan, on the development of an information and data gathering system in support of integrated coastal zone management for coastal Pakistan. The recommendations of the mission are under consideration for implementation.

**The Regional Committee expressed** satisfaction with the progress made in capacity building related to data and information management. However the Committee stressed an urgent need for enhancing national capabilities and strengthening the IODE infrastructure in the region.

**The Regional Committee noted** that there is still not enough knowledge on the IODE system in the region and proposed that the IOC and ROPME Secretariats with the support of the Iranian NODC and RNODC for the Indian Ocean in Goa, India, spare no effort in increasing awareness of the benefits of participation in the system. The added value of exchanging data freely was emphasized. A joint plan of actions should be developed on improving the IODE activities in the region and its implementation reported to IOCINDIO-IV.

**The Regional Committee accepted** the provisions of the IOC/ROPME mission to the Persian Gulf on strengthening national facilities and recommended that the compilation of information and data on coastal and marine areas from all national sources be implemented.

**The Regional Committee acknowledged** with thanks the readiness of the Islamic Republic of Iran to provide advice and support to the Member states of the Persian Gulf in establishing national data and information management infrastructures and in training the personnel on bilateral or regional basis.

**The Regional Committee noted** the interest of the Iranian Oceanographic Data Centre to become a Regional Oceanographic Data Centre for the Persian Gulf area with a focus on marine pollution monitoring data (RNODC for the Persian Gulf). The Committee emphasized the importance to follow strictly to the IODE rules and procedures in selection and nomination of RNODC's as they are presented in the IOC Manual No.9 Annex II published in 1991.

Noting the plans of establishing a regional oceanographic data centre in Oman, **the Regional Committee recommended** the Executive Secretary IOC jointly with the Executive Secretary of ROPME and the Director of UNESCO Regional Office in the Arab States of the Gulf to organize consultations with Oman to discuss the Proposal and make an assessment of data management facilities of the Sultan Qaboos University of Oman. It was stressed that wide consultations with the Member States of the region should be arranged prior to any final decisions for the establishment of a regional RNODC for the Persian Gulf area is taken.

#### 4.9 OCEAN MAPPING

The Technical Secretary introduced this item by referring to the IOC Assembly Resolution XX-5 on Ocean Mapping which “*invites Member States (ii) to assist developing countries, at their request, in the exploration and protection of their Exclusive Economic Zone (EEZs) in providing technical assistance or assisting in the production of large scale bathymetric charts for areas of particular interest such as the coastal zones and nearshore shelf areas; (iii) to give increased support on TEMA and capacity building in Ocean Mapping in national and regional programmes*”.

Member States were requested to express their wish to prepare such detailed maps and obtain related TEMA support by contacting the Chairman of the Consultative Group on Ocean Mapping (CGOM), Dr. G. Giermann.

**The Regional Committee thanked** the Chairman of CGOM, and **invited** Member States to forward their requests on ocean mapping activities to him.

### 5. COOPERATION WITHIN THE REGION AND WITH OTHER REGIONAL BODIES OF IOC

The Vice-Chairman, Prof. Zomorrodian presented this item recalling that one of the most important objectives of the IOCINDIO Regional Committee is the cooperation with other regional and international marine-oriented organizations.

The many Member States of the Regional Committee and the vast expanse of the marine area, makes it necessary, in most cases, to define and implement the programs and projects of the Regional Committee for the Central Indian Ocean, in the form of sub-regional projects. On the other hand, dividing the projects into sub-projects that can be implemented by only a few countries decreases the scientific capabilities of implementing them. In order to maximise the success of regional projects, it is necessary for the Committee and other regional bodies of IOC to maintain close cooperation.

Improved cooperation within the region and with other regional bodies of the IOC will result in:

- (i) Strengthening the human and financial resources and facilities of the projects currently being implemented;
- (ii) Utilizing common resources in implementing projects;
- (iii) Exchanging technologies and experiences between different countries;
- (iv) Constant linkages between the Regional Committees of IOC;
- (v) Decreasing international tensions within a framework of scientific cooperation.

In the Central Indian Ocean region, priority is given to the following regional organizations :

- (i) Regional Organization for the Protection of the Marine Environment (ROPME)
- (ii) Indian Ocean Marine Affairs Co-operation (IOMAC)
- (iii) Regional Organization for the Preservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)

Prof. Zomorrodian stressed that the cooperation of the Regional Committee for the Central Indian Ocean with other regional programmes of the IOC in the region such as IOCINCWIO and WESTPAC is of special importance. An important point in regional co-operation is the attempt to avoid overlapping of activities, which does not only interrupt the progress, but brings projects to a standstill.

The Representative of IOMAC re-affirmed the interest in ICAM as indicated at the preceding IOCINDIO-ICAM Workshop. He invited IOC to participate in IOMAC-ESCAP ICAM planned

projects under the ESCAP work programme for the Great and Little Basses region and Weligama Bay in Sri Lanka. IOC was also invited to join IOMAC in reporting to a similar need for the Maldives. He also drew the attention of the Regional Committee to the need for specialized training programmes as well as the resumption of the IOMAC integrated ocean management training programmes to which IOC could contribute as well as to the production of a compendium of marine space information for coastal states of the Indian Ocean region to which IOMAC is also committed. IOC could also help in facilitating the participation of Member States in planned oceanographic cruises in the region, by working closely with IOMAC. IOMAC welcomed closer on-going cooperation with the IOC, through the provision of technical backstopping in responding to national needs in the region through project formulation and capacity building. Finally, he informed the Regional Committee that the Third Indian Ocean Conference (IOMAC III) was also planned and that IOC inputs would be welcomed.

Mr. William Erb, as Director of the IOC Perth Regional Office, offered to fully cooperate with IOCINDIO in the development of GOOS. He explained the genesis of the office and the partnership of IOC and the Government of West Australia in establishing it. The Office is staffed by one person now, but expects that over time it will be expanded by secondments, perhaps from the Indian Ocean region. The Office has a responsibility to work with the South Pacific region, Southern Ocean, coastal Australia and the Indian Ocean. Therefore its activities will require the creation of partnership with countries and institutions since the Office's resources (funds and manpower) will not allow it to operate as a "funding source". It will work with partners to identify and contact funding agencies and potential donors of GOOS activities in all regions.

The ROPME Representative emphasized the need to increase the working relationship between his organization and IOC, and in particular through the implementation of joint activities. To this effect, the following ROPME planned activities which were presented to the Regional Committee for information and consideration of possible areas of cooperation:

- (i) Open Sea Cruise on physical, chemical, and biological oceanography of the ROPME Sea Area (planned for Summer 2000),
- (ii) Water exchange study through the Strait of Hormuz,
- (iii) River basin management programme for Shatt Al-Arab, focusing on the river and coastal zone interaction,
- (iv) Regional action programme for monitoring of coral reefs in the ROPME and PERSGA Regions,
- (v) Workshop on technical guidelines for environmentally sound management of marine sources of pollution, and
- (vi) Training course on oceanographic data management.

The Technical Secretary reacted positively to the intervention of ROPME, and IOMAC and invited their representatives to discuss cooperative activities.

**The Regional Committee noted** with appreciation the kind offers of ROPME and IOMAC and invited the Secretariat to build stronger links with these two organizations as well as with other IOC sub-regional bodies. **The Regional Committee noted** with interest the proposal to undertake a feasibility study on a real time forecasting system in the Persian Gulf with the following objectives: (i) operational use for the prediction of extreme climatic events and (ii) for combating accidental spills and transboundary movement of marine pollution.

The Vice-Chairman then continued his report, referring to Resolution XX-16 presented at the 20th IOC Assembly. In this Resolution, a request was made to the Executive Secretary to consult with Member States with regards to the establishment of an IOCINDIO Regional Support Office. This proposal was made by the distinguished Delegate of India, but as the other Representatives of the region were not present at the Paris Session, the proposal was deferred to the IOCINDIO-III Session in Tehran.

**The Regional Committee was requested** to express its opinion on the establishment of the IOCINDIO Regional Support Office.

The Delegate of India reaffirmed his offer to host such an office for a three-year period and to provide support to the Chairman regardless of his location in the region, and also brought to the attention of the Regional Committee that similar arrangements exist in other IOC regions.

The Delegate of Pakistan expressed his concern with the fact that it would create logistical difficulties if the Chairman and Office were not located in the same country.

The Executive Secretary IOC informed the Regional Committee that the issue of regional policy would be discussed at the next session of the Executive Council. He emphasized the importance of implementing activities at the regional level without stretching the Secretariat beyond its capacity. He welcomed the proposal for establishing this kind of mechanisms and stressed that the regional support office if established, should be flexible, dynamic, committed to attract external funds, and should be on a fixed term basis.

**The Regional Committee discussed** the matter in detail and decided that it was too early to establish a Regional Support Office for IOCINDIO at the present time.

**The Regional Committee recommended** addressing the matter again at the next meeting of the Regional Committee.

**The Regional Committee recommended** that in order to improve communication within the region, the Technical Secretary would circulate an electronic newsletter in consultation with the Chairman, to inform about the state of implementation of the regional workplan.

## 6. CONTRIBUTION OF IOCINDIO COUNTRIES TO IYO

The Technical Secretary reported on the implementation of the *1998 International Year of the Ocean* programme as it was accepted by the Nineteenth Session of the IOC Assembly. He referred to the various activities organized by Member States, governmental and non-governmental organizations and the IOC Secretariat in promoting global concerns on ocean use. He also informed the Regional Committee about the decision of the 20<sup>th</sup> Session of the IOC Assembly relevant to the issue and of plans for IYO follow-up activities.

Member States were invited to inform the Session about their participation in the IYO and on the plans to contribute to the realization of the plan of follow-up activities.

The Delegate of Pakistan informed the Regional Committee of the actions taken during the 1998, which included seminars, media events, signing of the Ocean Charter. He also announced that his country would organize an International Conference on Trace Metal Contaminants in the Marine Environment, in January 2001.

The Delegate of India informed the Regional Committee that India organized in 1998 several events including: cruises, production of stamps, workshops, signing of ocean charters, and has prepared a document on national activities, which was available for information.

The Representative of ROPME informed the Regional Committee that ROPME has published the First State of the Marine Environment Report, and the Manual of Oceanographic Observations and Pollutant Analyses Methods (MOOPAM) during the IYO. ROPME also organised the First International Environmental Technology Exhibition during April 1998. The ROPME Secretariat and MEMAC are further planning to organize the Second International Environmental Technology

Exhibition in April 2000, and the Second Conference and Exhibition on the Protection of the Marine Environment and Contingency Planning in the Middle East in September 2000, as a follow-up to the activities carried out during IYO.

The Delegate of the Islamic Republic of Iran informed the Regional Committee that his country organized workshops involving decision-makers, and issued a series of IYO stamps. Beach Clean-up campaigns also took place, with the involvement of schools, local communities and universities, as well as the publication of the first issue of the *Journal of Oceanography*.

The Delegate of Bangladesh informed the Regional Committee that his country contributed to the 1998 IYO by organizing programmes which included public lectures on El Niño, and sea-level rise, and special publications. A short course on oceanography is planned to be organized at the end of the year.

The Delegate of Sri Lanka recalled that his country organized a workshop on oceanographic studies in Sri Lanka, produced articles on oceanography, and broadcasted oceanographic research films.

**The Regional Committee expressed** its support to the Assembly resolution and acknowledgement of the progress achieved.

## 7. PRIORITIES FOR REGIONAL CAPACITY BUILDING ACTIVITIES

### 7.1 DEVELOPMENT OF IOC CAPACITY BUILDING STRATEGIES

The Vice-Chairman presented a summary report on relevant issues concerning regional capacity building and priorities. The report concluded:

- (i) As most of the countries in the IOCINDIO region are developing countries, the issue of education and capacity building mechanisms in the region is vital and needs special consideration;
- (ii) Despite the vast development over the past few decades of the IOC/TEMA program, capacity building in developing countries is still facing numerous problems.
- (iii) Short-term training courses and workshops should be strengthened by long-term activities to satisfy fully the need of Member States.

In view of the fact that the programmes of the courses and workshops do not take fully into account scientific and technical needs of developing countries, and due to the lack of coordination between educational and capacity building programs and regional needs, **the Regional Committee agreed** that new mechanisms must be sought for the regional capacity building based on particular conditions of developing countries in the region.

### 7.2 USAGE OF NEW TRAINING TECHNOLOGIES IN THE REGION; PROBLEMS AND MEANS TO SOLVE THEM

The IOC Deputy Executive Secretary informed the Committee of the mechanisms, principles and tools of the IOC/TEMA Programme and presented some data on the TEMA activities in the region. In 1999, twelve countries of IOCINDIO received support within the TEMA Programme with the total number of trainees – 29. For comparison during the period 1984 –1994 the number of experts who received training within on-going programmes of IOC, was for the IOCINDIO region 188. He then focused on new approaches for achieving the goals in education and training such as computer-aided learning, distance teaching and networking and called on the Committee to try finding answers to a number of questions:

- (i) What new occupational areas in marine research, protection and exploitation can be foreseen in the region as developing in the new millennium?
- (ii) What key knowledge in marine research, ocean data and information collection and management will be required and how will they differ from today?
- (iii) What major problems the region is facing in the marine science and monitoring fields?
- (iv) What education, training and techniques towards solving these problems are required? Will distance learning help to solve the problem?
- (v) What will be the main obstacles in applying educational and training methods and new ones particularly in the region and what is needed to overcome them?
- (vi) What should be the balance between the training of local communities and the calling on outside expertise in order to address the problems faced?
- (vii) What type of assistance is expected from IOC and what assistance to supporting regional capacity building efforts can be provided by countries of the region, and regional and other international bodies?

**The Regional Committee thanked** the speaker and decided on a number of actions which should be urgently implemented in order to meet effectively the needs of the region in capacity building.

**The Regional Committee recommended** that the TEMA Coordinator within IOC would initiate an assessment of capacity building activities conducted in the IOCINDIO region during 1996-2000. This report will be evaluated and commented by the IOCINDIO officers and TEMA focal points in the Member States of IOCINDIO.

**The Regional Committee urged** the Member States of the region to identify TEMA focal points, key capacity building experts and centres of excellency.

**The Regional Committee called** on the Member States to participate actively in effort of IOC to identify needs of countries of IOC in different types of TEMA activities and respond to the IOC request to provide necessary information.

**The Regional Committee decided** to establish an *ad hoc* regional group on capacity building without any financial implication for IOC. This group will develop a capacity building plan for IOCINDIO using the strategies and framework contained in Document IOC/TEMA-CB-II/3. The *ad hoc* group will assist in identifying regional priorities and needs and will start the work immediately.

**The Regional Committee requested** the Chairman of the *ad hoc* group, Dr. Partovian of the Islamic Republic of Iran, with the assistance of the IOC Perth Office to propose an interim status report by June 2000 and present it to the IOCINDIO Chairman during the IOC Executive Council planned for 20-30 June 2000. If possible the next meeting of the *ad hoc* group will take place during the Executive Council.

## **8. PROGRAMME AND BUDGET OF THE REGIONAL COMMITTEE FOR 2000-2002**

### **8.1 IDENTIFICATION OF SCIENTIFIC PROGRAMME PRIORITIES**

The Chairman of the *ad hoc* intersessional group on programme and budget of the Committee for 2000-2002 presented the report of the group containing a draft Recommendation on the programme and budget. The report and Recommendation were written taking into account discussions and agreements achieved under earlier agenda items of the session.

**The Regional Committee noted** the group's report and discussed and commented on the draft Recommendation. The Committee adopted the Recommendation IOCINDIO-III.1 as presented in Annex II.

## 8.2 IDENTIFICATION OF RESOURCES

The Chairman of the Committee informed Member States of the decisions taken by the IOC Assembly at its 20th Session (29 June-9 July 1999, Paris, France) on the Programme and Budget for IOC for 2000-2001 with special emphasis on funds allocated for regional activities implementation.

The Technical Secretary for the Session informed of the decisions taken by the UNESCO General Conference at its 30th Session (26 October to 18 November 1999, Paris, France) on the UNESCO Programme and Budget for 2000-2002 and of the new budgetary policy of UNESCO.

**The Regional Committee proposed** the budget for the implementation of activities presented in the Recommendations adopted under Agenda Item 8.1. Member States and representatives of international organizations were invited to provide advice in the ways of raising additional funds for the IOCINDIO programme implementation.

**The Regional Committee recommended** that a maximum number of Member States of the region and regional bodies concerned should actively participate in the IOC Assembly, and contribute to the discussion, in order to give strong support to the regional programme.

## 9. ELECTION OF OFFICERS

The Technical Secretary reminded the Committee of existing procedures for the election of officers of the IOC main subsidiary bodies based on new statutes of IOC and on the *IOC Manual Part I*, 1989.

**The Regional Committee expressed** its satisfaction with the work achieved by the present Chairman and Vice-Chairman. Taking into account that they served only one intersessional period and that there were no other applications for the positions, **the Regional Committee elected** them by acclamation for the next intersessional period.

**The Regional Committee stressed** the need for clear definition of the responsibilities of the Vice-Chairman and recommended that the Vice-Chairman should take the responsibility of assisting the Chairman in TEMA and capacity building activities.

## 10. DATE AND PLACE OF IOCINDIO-IV

The Chairman invited proposals. The Delegate of Sri Lanka proposed to host the fourth session of the Committee in the period December 2002-January 2003.

**The Regional Committee expressed** its thanks for this offer. In order to reduce implementation costs, the Committee proposed to hold a Training course on HAB or Coral Reef, back to back with the 4<sup>th</sup> Session of the Regional Committee.

**The Regional Committee requested** the Executive Secretary IOC to send a letter to the IOC focal point in Sri Lanka in order to start planning the arrangements.

The Technical Secretary was invited to contact the focal points of the region, so as to ensure that they are still operational, and when necessary request Member States to appoint a new focal point. A revised list should be sent to all Members of the Regional Committee.

**11. ADOPTION OF REPORT, RECOMMENDATIONS AND CLOSURE**

**The Regional Committee adopted** a draft summary report and the recommendations. **The Regional Committee thanked** the Government of the Islamic Republic of Iran for its excellent arrangements, and in particular Prof. H Zomorrodian, and the INCO staff for the quality of the hospitality and services they provided during the Session.

The Chairman closed the Session at 15.00 p.m. on 23 February 2000.



ANNEX I

**AGENDA**

- 1. OPENING**
- 2. ADMINISTRATIVE ARRANGEMENTS**
  - 2.1 ADOPTION OF THE AGENDA
  - 2.2 CONDUCT OF SESSION, TIME TABLE & DOCUMENTATION
- 3. REPORT OF THE CHAIRMAN ON INTERSESSIONAL ACTIVITIES**
- 4. IN-DEPTH DISCUSSION ON IMPLEMENTATION OF THE PROGRAMMES ADOPTED BY IOCINDIO-II**
  - 4.1 SEA-LEVEL NETWORK
  - 4.2 STORM SURGE PROGRAMME
  - 4.3 CLIMATE STUDIES
  - 4.4 COASTAL STUDIES INCLUDING COASTAL MARINE POLLUTION
  - 4.5 MARINE LIVING RESOURCES AND CORAL REEF PROGRAMME
  - 4.6 SUB-REGIONAL WORKSHOP ON OIL SPILL MONITORING
  - 4.7 PARTICIPATION IN GOOS
  - 4.8 INTERNATIONAL OCEANOGRAPHIC DATA EXCHANGE
  - 4.9 OCEAN MAPPING
- 5. COOPERATION WITHIN THE REGION AND WITH OTHER REGIONAL BODIES OF IOC**
- 6. CONTRIBUTION OF IOCINDIO COUNTRIES TO IYO**
- 7. PRIORITIES FOR REGIONAL CAPACITY BUILDING ACTIVITIES**
  - 7.1 DEVELOPMENT OF IOC CAPACITY BUILDING STRATEGIES
  - 7.2 USAGE OF NEW TRAINING TECHNOLOGIES IN THE REGION; PROBLEMS AND MEANS TO SOLVE THEM
- 8. PROGRAMME AND BUDGET OF THE REGIONAL COMMITTEE FOR 2000-2002**
  - 8.1 IDENTIFICATION OF SCIENTIFIC PROGRAMME PRIORITIES
  - 8.2 IDENTIFICATION OF RESOURCES
- 9. ELECTION OF OFFICERS**
- 10. DATE AND PLACE OF IOCINDIO-IV**
- 11. ADOPTION OF REPORT AND RECOMMENDATIONS, CLOSURE**



ANNEX II

**RECOMMENDATIONS OF THE THIRD SESSION OF THE IOC COMMITTEE FOR THE  
NORTHERN AND CENTRAL INDIAN OCEAN**

**Recommendation IOCINDIO-III.1**

**PROGRAMME OF WORK AND BUDGET ESTIMATE FOR 2000-2002**

The Regional Committee for the Central Indian Ocean (IOCINDIO),

**Having** reviewed the implementation of its programme agreed at the Second Session,

**Having** considered the proposals on the IOCINDIO programme activities for the next intersessional period made during the Session,

**Taking into account** available funds as contained in the Approved Programme and Budget of IOC for 2000-2001,

**Noting** the need for continuing commitments by Member States of the region in providing extrabudgetary funds for programme implementation,

**Decides** to adopt the Programme of Work for the Committee over the period 2000-2002 as indicated in the Table annexed to this Recommendation;

**Urges** Member States of the region to participate in, and support the implementation of the regional cooperation programme to the best of their interest and capabilities.

**Annex to Recommendation IOCINDIO-III.1**

<b>Activities</b>	<b>Action and objectives</b>	<b>Date and Place</b>	<b>Estimated Budget (US\$)</b>	<b>Participation</b>	<b>Remarks</b>
<u>I. Sea Level Network</u> Training Course on GLOSS	Training in use of modern instruments To achieve uniformity in data acquisition in the IOCINDIO Network	2000-2001	Maximum \$30,000	All countries	Approved by IOC Assembly Resolution XX-16
<u>II. Integrated Coastal Area Management</u>					
1) Preparation of Strategic ICAM Action Plan (SAP)	To hire a consultant to collect information and inputs from Member States and other resources with a view to provide a regional synthesis on ICAM and prepare a draft proposal.	2000	\$10,000	All countries	
2) Regional Meeting on SAP	To discuss and approve SAP and identify pilot projects	2001	\$15,000	Interested countries	
3) MAMCOMP Training Course and Symposium on Coastal Cities and ICAM	To support participants to attend the MAMCOMP course and coastal cities Symposium	2000	\$25,000	Interested countries	
4) ESCAP Bay Programme, Sri Lanka	To provide technical assistance for a planning meeting, in collaboration with IOMAC	2000-2001	\$5,000	Sri Lanka	

Activities	Action and objectives	Date and Place	Estimated Budget (US\$)	Participation	Remarks
<u>III. Marine Living Resources</u>					
1) Training Course on HAB Taxonomy	Training regional scientists in HAB identification and taxonomy	2001	\$20,000	Interested countries	Approved by IOCINDIO-II
2) Coral Reef Monitoring Course/Workshop	Training in monitoring techniques	2000-2001 Persian Gulf	\$15,000 GCRMN, ROPME		Approved by IOCINDIO-II
<u>IV. Marine Pollution</u>					
1) Workshop on Oil Spill Trajectory Modelling	To adapt and finalise the NOAA Model in collaboration with ROPME	2000 Persian Gulf	US\$ 5,000 (IOC)	Interested countries	
2) Forecasting for marine pollution in the Persian Gulf	To support a resource person to undertake a Feasibility Study	2000 Persian Gulf	US\$5,000	Interested Member States	
<u>V. TEMA</u>					
IOCINDIO Intersessional Meeting of <i>Ad Hoc</i> Group on TEMA	Meeting of a group of experts	2000 June, Paris Prior to the 33 <sup>rd</sup> EC	\$5,000		
<u>VI. IOCINDIO-IV</u>					
	Meeting of the regional committee	2003	\$30,000	All Member States	
<b>TOTAL REQUESTED</b>		<b>2000-2003</b>	<b>\$ 165,000</b>		



**Recommendation IOCINDIO-III.2**

**STORM SURGE PROJECT**

The Regional Committee for the Central Indian Ocean (IOCINDIO),

**Noting** the conclusions of the IOC-WMO Regional Meeting on Storm Surges in the Northern Indian Ocean and the progress achieved in the implementations of its decisions,

**Emphasizing** that the availability of external financial support is crucial for the implementation of the regional project,

**Reaffirming** that IOC should continue its support to the project,

**Urging** Member States concerned to contribute to the project implementation within the context of government policies,

**Recommends** the following steps be implemented urgently:

- a) Each Member State interested in the implementation of the project, through the Heads of National Weather Service and the National Ocean Service, unless a Member State identifies another agencies as more suitable for their needs, will submit to their Ministry of Finance or another appropriate agency, a letter recommending that the Storm Surge proposal be given a high national priority. Appended to the letter will be a copy of the project proposal. This should be done in a coordinated way to ensure that all requests of participating Member States reach the identified funding agencies at approximately the same time;
- b) The letter from the Ministry of Finance or another appropriate agency, with the Appendix will be submitted to the World Bank and other funding agencies;
- c) The letter submitted to the funding agencies by each Member State will explicitly identify the intention of the Member State to fully cooperate with all other Member States identified in the project proposal in accordance with the protocols identified therein. The letter should emphasize the readiness to provide required national contributions;
- d) The IOC Regional Office in Perth will work with the pre-project manager to identify appropriate funding agencies to whom the proposal should be sent;
- e) The IOC Secretariat in Paris will draft a letter of endorsement for a joint signature by IOC, IHP (UNESCO) and WMO. This letter will be sent to the funding agencies to demonstrate support for the project and to express the intention of the UN agencies to work fully with the countries involved to ensure success;

**Urges** the Executive Secretary IOC to bring this recommendation to the IOC and IOCINDIO focal points in the countries concerned and to the Heads of WMO, and IHP of UNESCO.