United Nations
Environment Programme

Global Environment
Facility

UNEP-GEF WIO-LaB PROJECT

ADDRESSING LAND BASED ACTIVITIES IN THE WESTERN INDIAN OCEAN

Regional Workshop on the Development of a Clearinghouse Mechanism and Information Sharing System on Eastern African Coastal and Marine Environment Resources

9-11 May 2006, Nairobi, Kenya

REPORT OF THE MEETING

First published in Kenya in 2006 By the United Nations Environment Programme.

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Cover illustration:

For citation purposes this document may be cited as:

UNEP, 2006. Addressing Land-based Activities in the Western Indian Ocean. Report of the First Regional Workshop on the Development of a Clearinghouse Mechanism and Information Sharing System on Eastern African Coastal and Marine Environment Resources. *UNEP/GEF/WIOLAB/CHM.1/06*

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LIST OF ACRONYMS AND ABBREVIATIONS

ACEP	African Coelacanth Ecosystem Programme
ASCLME	Agulhas and Somali Current Large Marine Ecosystem
ASFA	Aquatic Sciences and Fisheries Abstracts
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CBT	Computer Based Training
CC	National Government Collaborating Centre
CENACARTA	National Remote Sensing and Cartography Centre
CNRE	Chercheur au Centre National de Recherches sur l'Environnement
COSMAR	Coastal and Marine Environment Programme of NEPAD
COP	Conference of Contracting Parties
CHM	Clearinghouse Mechanism
DEWA	Division of Early Warning and Assessment of UNEP
EAF/14	Eastern Africa coastal and marine environment resources database and atlas project
EAC	East Africa Community
FAST	Faculty of Aquatic Sciences and Technology of the University of Dar es Salaam
FOA	Food and Agriculture Organization
GEF	Global Environment Facility
GIS	Geographic Information System
GODAR	Global Oceanographic Data Archeology and Rescue
GOOS	Global Ocean Observing System
GPA	Global Programme of Action for the Protection of the Marine Environment from Land-based Activities
GRID	Global Resource Information Database of UNEP
ICAM	Integrated Coastal Area Management
IHSM	Institut Halieutique et des Sciences Marines, Université de Toliara
INASP	International Network for the Availability of Scientific Information
IMO	International Maritime Organization
IMS	Institute for Marine Sciences, Dar es Salaam, TZ
IMS	Internet Mapping Solutions/Server
IODE	International Oceanographic Data and Information Exchange Programme
IOC	Inter-Governmental Oceanographic Commission of UNESCO
IOCINWIO	IOC Regional Committee for Cooperative Investigations in the Western Indian Ocean
IOCINDIO	IOC Regional Committee for Central Indian Ocean
IOCARIBE	Inter-Governmental Oceanographic Commission Caribbean
IOCEA	IOC Regional Committee for Central Eastern Atlantic
IUCN	The World Conservation Union
LME	Large Marine Ecosystem
KeNODC	Kenya National Oceanographic Data Centre
KMFRI	Kenya Marine and Fisheries Research Institute

MACEMP	Marine and Coastal Environment Project
MARG	Marine Research Grant Competitive Programme of WIOMSA
MASMA	Marine Science for Management Competitive Grant Programme of WIOMSA
MBREMP	Mnazi Bay Ruvuna Estuary Marine Park
MEA	Multi-lateral Environmental Agreements
MEDI	Marine Environmental Data Information Catalogue
MoU	Memorandum of Understanding
NEMA	National Environment Management Authority of Kenya
NEMC	National Environment Management Council of Tanzania
NCS	Nairobi Convention Secretariat
NEPAD	New Partnership for Africa's Development
NFP	National Focal Point
NGFPA	National Government Focal Point Agencies
NGO	Non-Governmental Organization
NOAA	National Ocean and Atmospheric Administration
NODC	National Oceanographic Data Centre
PSMSL	Permanent Service for Mean Sea Level
AU	African Unity
ODINAFRICA	Ocean Data and Information Network of Africa
OBIS	Ocean Bibliographic Information System
ONE	L'Office National pour l'Environment
RCU	Regional Coordinating Unit (supports Nairobi Contention Secretariat
SADCO	South Africa Data Centre for Oceanography
SADC	Southern Africa Development Community
SAP	Strategic Action Programme / Plan
SWIOFP	South Western Indian Ocean Fisheries Project
TAFIRI	Tanzania Fisheries Research Institute
TCMP	Tanzania Coastal Management Programme
TDA	Transboundary Diagnostic Analysis
TRANSMAP	Tranboundary Networks of Marine Protected Areas
ToR	Terms of Reference
TzNODC	Tanzania National Oceanographic Data Centre
UNDP	United Nations Development Programme
UHSLC	University of Hawaii Sea level Centre
UNESCO	United Nations Scientific and Cultural Organization
UNEP	United Nations Environment Programme
USAID	United States Aid for International Development
WCS	Wildlife Conservation Society
WESTPAC	IOC Sub-Commission for the Western Pacific
WIO	West Indian Ocean
WIO-LaB	GEF Project: Addressing land-based activities in the Western Indian Ocean
WIOMSA	Western Indian Ocean Marine Sciences Association
WIPO	World Intellectual Property Organization

WMO	World Meteorological Organization
WWF-EAME	World Wildlife Fund - Eastern Africa Marine Eco-Region
WWW	World Wide Web

SUMMARY

A regional Workshop on the Development of an Eastern Africa Coastal and Marine Environment Clearinghouse Mechanism was held in the period 9-11 May 2006 at UNEP Headquarters in Nairobi in Kenya. The meeting was attended by 25 delegates from Western Indian Ocean Region countries participating in the implementation of WIO-LaB Project, namely South Africa, Mozambique, Tanzania, Kenya, Seychelles, Comoros, Madagascar and Mauritius. The meeting was also attended by representatives of international and regional organizations and programmes including WIOMSA, NEPAD, IOC-UNESCO, ODINAFRICA, SADCO, WWF-EAME, ASCLME, SWIOFP and ACEP. The goal of the workshop was to seek opportunities and agree on strategies for development of a consolidated, regionally coordinated and integrated Regional Clearinghouse Mechanism for the exchange of data and information on the coastal and marine environment, for the Nairobi Convention, through establishment of synergies with other regional initiatives. The key outcomes of the meeting were the following decisions and recommendations:

1. Representatives of Participating Countries and international / regional organizations recognized the importance of the Regional Clearinghouse Mechanism as a facility for exchange and sharing of information in the Western Indian Ocean Region and agreed to fully participate in and support this initiative.

2. Took note of the national and regional data and information management initiatives focused on coastal and marine resources / environment, based upon the presentations made by participating countries and regional organizations including NEPAD, IOC-UNESCO ODINAFRICA framework, ACEP, WWF-EAME, SADCO, WIOMSA, among others, and recognized the need for CHM project to establish links with such initiatives at both national and regional levels.

3. Took note of the current status of the EAF-14 Eastern Africa Coastal and Marine Resources Database and efforts initiated by UNEP (Nairobi Convention / WIO-LaB Project and DEWA) to improve / update the system in order to play an expanded role of a Clearinghouse Mechanism.

4. In order to ensure its relevancy and sustainability, the CHM should be owned by the national focal institutions in the WIO region and be responsive to the needs of the various categories of stakeholders / users at both national and regional levels.

5. The Clearinghouse Mechanism should ideally be built upon the existing national institutional frameworks and mechanisms and participating countries should explore strategies of ensuring long-term sustainability of the system through mobilization of support from the respective governments and other stakeholders.

6. While recognizing the importance of using the existing National Oceanographic Data Centres of IOC-UNESCO ODINAFRICA framework as the focal Points for the CHM, it was decided that the National Focal Points for the UNEP / Nairobi Convention should

facilitate consultation at national level in regard to the designation of an appropriate national institution as a CHM focal point, based upon criteria developed during the meeting.

7. Took note of the preliminary findings of the survey on the development of an information management strategy for CHM conducted by Information Management Systems consultant, Prof. T.M. Waema. It was recommended that the final results of the survey be integrated with the deliberations of the workshop and the consultancy report be distributed to all the participants.

8. Reviewed and adopted with amendments the Terms of Reference for the Lead National Institutions (detailed in background document *UNEP/GEF/WIOLaB/CHM. 1/6)* that will coordinate the Clearinghouse Mechanism activities at national level and recommended that the selection of the lead national institution be based on an objective criteria developed during the meeting.

9. Reviewed and adopted with amendments the draft data sharing policy for the Clearinghouse Mechanism, as presented in background document *UNEP/GEF/WIOLaB/CHM. 1/7.*

10. A Technical Working Group composed of ODINAFRICA, ACEP, DEWA representatives and other interested parties, be constituted at regional level to review the existing metadata formats and recommend the most appropriate standard metadata format that will be adopted by the Clearinghouse Mechanism.

11. Reviewed and adopted with amendments the draft implementation plan for the development of the Clearinghouse Mechanism as presented in background document *UNEP/GEF/WIOLaB/CHM.1/12.*

12. Representatives from participating countries agreed to widely share the outcome of this meeting with relevant national institutions and organizations at the country level.

1. OPENING OF THE MEETING: WELCOME REMARKS

1.1. Welcome Remarks by the WIO-LaB Project Manager

1.1.1 The WIO-LaB Project Manager, Mr. Peter Scheren called the meeting to order at 9.10 am on Tuesday 9th May 2006 and made introductory remarks. Following his introduction of the Staff of the WIO-LaB Project Management Unit (PMU), UNEP/Nairobi Convention and UNEP/DEWA, he briefed the delegates that the meeting was graced with the presence of representatives of countries participating in the WIO-LaB Project, as well as representatives of international and regional organizations and programmes including WIOMSA, NEPAD, IOC-UNESCO, ODINAFRICA, SADCO, WWF-EAME, ASCLME, SWIOFP and ACEP. He then proceeded to brief the delegates on the key objectives of the meeting.

1.1.2 Mr. Scheren also recalled the outcomes of the regional workshop held in the period 20-22 October 2004 at the South African Institute for Aquatic Biodiversity in Grahamstown, South Africa that discussed the development of a regional framework for information sharing between programmes and countries in the Western Indian Ocean region. He observed that the Grahamstown workshop recommended the establishment of a regional data and information system in the Western Indian Ocean (WIO) region. He noted that the present meeting aims at fulfilling the goals set in the Grahamstown meeting and hoped that the participating countries would provide guidance on what is required in order to establish such a system in the WIO Region. He emphasized on the need for the participating countries to actively participate in the development of a Clearinghouse Mechanism and Information Sharing System on coastal and marine resources of Eastern Africa by providing necessary inputs.

1.1.3 Mr. Scheren also introduced Prof. Timothy Mwololo Waema, an Information Systems Consultant who was mandated by the WIO-LaB Project to carry out a study on the needs for creation of a regional data and information management system for the WIO Region.

1.2. Welcome Address by the Director, DEPI

1.2.1 Mr. Tim Kasten, Chief of Water Branch and Deputy-Director in the UNEP's Division of Environmental Policy Implementation (DEPI) read an official speech on behalf of Ms. Veerle Vandeweerd, the Director of the Global Programme of Action for the Protection of the Marine Environment from Pollution from Land-based activities (GPA), based in the Haque, the Netherlands, and the acting Director UNEP DEPI.

1.2.2 In his speech, Mr. Kasten observed that one of the objectives of initiating this project is to find suitable ways of documenting and sharing information on the rich coastal and marine life of the Western Indian Ocean Region which forms one of the most important components of global natural heritage. He observed that the highly productive ecosystems found in WIO coastal areas play a crucial role in the economic and social development of WIO countries

and noted that recently the focus has shifted from trade and communication along the coastal area, to greater efforts of tourism and environmental management.

1.2.3 Mr. Kasten noted that the necessity to manage the coastal and marine environment of the Western Indian Ocean is growing rapidly as the need for environmental protection and conservation on one hand, and the increasing pressure of human development activity on the other hand, lead to conflicts between various different and often opposing resource users. He observed that a comprehensive knowledge of the coastal resources and their uses is required before any meaningful resolution of these conflicts can be achieved. He also noted that access to and use of the increasingly diverse, comprehensive data and information on coastal and marine environment is required by the Contracting Parties to the Nairobi Convention, and its partners in the region and beyond, in order to deal with the vast array of policy, management, scientific and other practical issues. This information must be placed in the hands of decision makers in a usable form so that they can intellectually address the interests of the various stakeholders and resource users.

1.2.4 Mr. Kasten noted that the meeting would discuss various technical issues desirable for sustainable coastal resource development and encouraged participants to come up with the way forward on the following five key points:

1. Discuss the strategies of streamlining the development of the information clearinghouse mechanism,
2. Explore the strategies of improving cooperation and coordination with stakeholders and partners in order develop an all inclusive information harnessing and dissemination system for the region,
3. Examine the strategies for creating an enabling environment for integration of the information system and sharing of data,
4. Come up with a suitable policy on data sharing and on the ownership of the information system and,
5. Discuss and agree on strategies to sustain the information system and clearinghouse mechanism in the longer term.

1.2.5 Mr. Kasten also advised the participants to endeavor to meet the needs of a wide cross-section of people, among them politicians, administrators, planners, resource managers, scientists and the general public, noting that this will effectively translate into a better understanding of the outputs of the clearinghouse mechanism and the information system by all key players in the Government and the private sector.

1.2.6 Mr. Kasten also noted that many decision makers have realized that access to information and scientific data is one of the most crucial means to start any meaningful economic development and environmental management at the coast. Similarly, accurate, readily available, up-to-date scientific advice is a fundamental requirement for the protection of the environment and sustainable development. He observed that political leaders and our managers depend on this advice to identify both problems and the solutions associated with sustainable development. They rely upon scientific objectivity to faithfully monitor the

impacts of their decisions. The purpose of the workshop, he observed, was to fill this existing information gap and to meet the needs for harmonized information for planners and decision makers.

1.2.7 Mr. Kasten encouraged the idea of building a centralized data portal, which can cater for all aspects of information needs for coastal managers in each country, noting that this would ensure that integrated information on the coastal environment is readily accessible, and enhance local networking for information from the various coastal stakeholders. He noted that from a centralized location, it will also be possible to synthesize parts of the primary raw data to produce secondary data, so that trends on issues and problems can be established easily and possible solutions formulated and scenarios modeled.

1.2.8 Mr. Kasten also hoped that the national coastal database existing in institutions of participating countries would link up with the extensive network of information technology available in the WIO region as a vehicle for data exchange. He also hoped that more networks that are cheaper and easily accessible would become operational at national institutions so that a larger number of people can use them. He advised that in order to make the information easily available to the end-users, information in the national databases should be distributed widely within the country and region, and the origin of the information be fully acknowledged, noting that in this way, the outputs would be used as sources for management plans for coastal development in the Western Indian Ocean region. He noted that UNEP is willing to continue to make the information on the coastal environment in the Western Indian Ocean readily available from the Internet and other offline means.

1.2.9 Mr. Kasten noted that by making scientific facts and data about the region's coastal environment easily accessible and reported, the CHM would enhance the ability of decision makers to use accurate and up to date information. Better information would lead to better management of the region's coastal and marine resources.

1.2.10 In his final remarks, Mr. Kasten conveyed his gratitudes to the UNEP-GEF WIO-LaB Project entitled "Addressing land based activities in the Western Indian Ocean", the Government of Belgium, Norway and WIO countries who have provided the necessary funds for the development of the Regional Clearinghouse Mechanism.

1.3 UNEP/Nairobi Convention

1.3.1 Mr. Dixon Waruinge, the Programme Officer in Charge of UNEP/Nairobi Convention briefed the delegates on the roles and mandates of the Nairobi Convention for the Protection, Management and Development of the coastal and marine environment in the Western Indian Ocean Region. He informed the meeting on the various strategies that were adopted by the Contracting Parties in order to revitalize the convention.

1.3.2 Mr. Waruinge also briefed the meeting on the organizational structure of the Nairobi Convention, expounding on the roles of the Conference of Contracting Parties (COP), Regional

Coordination Unit (RCU) based in Seychelles, Focal Points, Task Forces and the Secretariat based at UNEP headquarters in Nairobi, Kenya.

1.3.3 Mr. Waruinge outlined the objectives of the information and database component of the Nairobi Convention based on the decisions made during the Fourth Conference of Contracting Parties (COP). Quoting extensively from Articles 12, 13, 15, 16 and 23 of the Convention, he emphasized on the requirements of the convention in regard to the dissemination of data and information on the coastal and marine environment, noting that information generated must be available to other contracting parties. He noted that the issue of how to archive and share information is critical and needs to be addressed.

1.3.4 Mr. Waruinge also informed the meeting that the Conference of Contracting Parties to the Nairobi Convention, in adopting the 2001 biennium Work plan, requested countries of the region to implement certain activities that are related to the objectives of the present meeting: Theme 1 (Assessment - develop Regional information system, disseminate information, and support internet links), Theme 2 (management of the coastal and marine resources) and Theme 3 (coordination and legal aspects). He emphasized on the need to develop a good information and database system for Western Indian Ocean region, noting that the Governments of the region have mandated the Convention to develop such a system.

2. ELECTION OF OFFICERS OF THE MEETING

2.1 Mr. Dixon Waruinge, the Programme Officer in charge of the UNEP / Nairobi Convention requested delegates to introduce themselves, stating the countries and institutions they represented. There followed a *tour de table* during which all delegates introduced themselves.

2.2 WIO-LaB Project Manager, Mr. Peter Scheren brought to the attention of the delegates of the various background documents of the meeting (as listed in document *UNEP/GEF/WIO-LaB/CHM.1/.3*) that would facilitate informed discussions of the various agenda items. He also brought to the attention of the delegates of the requirement of the meeting to designate the Chair and Rapporteur and subsequently requested the delegates to nominate candidates for the two positions.

2.3 For the Chairship of the meeting, delegate from Tanzania nominated Kenya. This proposal was supported by South Africa and was subsequently unanimously agreed upon by the delegates. Mr. Ali Mohammed, Deputy-Director in-charge of the Coastal and Marine Sub-Department of the National Environment Management Authority (NEMA) of Kenya and also the Coordinator of the Coastal and Marine sub-Programme (COSMAR) of the New Partnership for Africa's Development (NEPAD) accepted the nomination on behalf of Kenya.

2.4 For the position of Rappoteur, the delegates unanimously elected Mauritius to the position and the delegates of Mauritius accepted the nomination. The task of the Rapporteur was defined as basically to work closely with the WIO-LaB Project Secretariat in tracking key outputs of the meeting particularly the decisions and recommendations. WIO-LaB Project Secretariat drafted the substantial report of the meeting.

3. CONSIDERATION AND ADOPTION OF THE AGENDA

3.1 The elected Chair, Mr. Ali Mohammed introduced the draft provisional agenda of the meeting as presented in document UNEP/GEF/WIO-LaB/CHM.1/2. The Chair took the delegates through all the agenda items and requested delegates to suggest any necessary amendments.

3.2 The delegates considered and adopted the draft provisional agenda without any amendments. The adopted agenda is presented in this report as document UNEP/GEF/WIO-LaB/CHM.1/2.

3.3 Following the adoption of the agenda, the Chair made some few remarks on the importance of the current meeting and in particular the importance of a Regional Clearinghouse Mechanism in the management of the coastal and marine environment in the WIO Region. He observed that despite the fact that a lot of data and information has been generated in Africa demonstrating how coastal and marine resources are contributing to development in Africa; he regretted that this information is not channeled to decision makers.

3.4 The Chair urged the delegates to explore strategies for proper storage and dissemination of data and information generated in Africa so that the same is not lost. He also emphasized on the importance of coming up with strategies that will enhance communication between the National (Ocean) Data Centres and various stakeholders in order to enhance the use of data and information for the management and development of the coastal and marine resources in the region. He also urged the Information and Data Managers in the WIO Region to break the notion and or misconception that there is lack of data and information on the coastal and marine resources in the WIO Region and in Africa, at large.

3.5 The Chair noted that the objectives of the meeting were noble, since the aim is to develop a Regional Clearinghouse Mechanism that will facilitate collection and dissemination of data and information on the coastal and marine resources in the WIO Region. He recognized the willingness of WIO-LaB Project to facilitate the development of the system in the region in order to enhance collection of data and information, including subsequent dissemination to various users in the WIO region.

4. PRESENTATION BY THE REGIONAL AND INTERNATIONAL STAKEHOLDERS ON THE EXISTING INFORMATION SYSTEMS INCLUDING GENERAL PERSPECTIVES ON THE MANAGEMENT OF THE COASTAL AND MARINE ENVIRONMENT

4.0.1 The Chair introduced the above mentioned agenda item noting that the representatives of various regional and international initiatives in the WIO Region would be expected to brief the meeting on the various activities that they have undertaken in regard to the management of data and information on the coastal and marine environment in the WIO Region.

4.0.2 The Chair invited Prof. Timothy Waema, the Regional Information Management Systems Consultant to brief the meeting on what the representatives of the participating international

and regional initiatives are expected to present during the meeting. Prof. Waema was contracted by the WIO-LaB Project to carry out a survey on the regional needs for coastal and marine resources data and information management and subsequently advise on the development of an Eastern Africa Coastal and Marine Environment Clearinghouse Mechanism (CHM),

4.0.3 Prof. Waema, referring the delegates to background document UNEP/GEF/WIO-LaB/CHM.1/1, briefed the delegates on key objectives of the meeting. He also took the delegates through the background document UNEP/GEF/WIO-LaB/CHM.1/5 that contains guidelines for presentations by both the international/regional initiatives representatives as well as representatives of participating countries. Delegates were urged to base their presentations on the requirements of the above documents.

4.1 Background on UNEP-GEF WIO-LaB Project

4.1.1 The Chair invited the UNEP-GEF WIO-LaB Project Manager, Mr. Peter Scheren to brief the participants on the goals and mandates of the WIO-LaB Project '*Addressing land-based activities in the Western Indian Ocean Region*' under whose jurisdiction the Regional CHM would be developed and its contributions to the CHM.

4.1.2 Mr. Scheren briefed the delegates on the goals and objectives of the WIO-LaB Project including the key components that have been designed to address the specific objectives of the project. He elaborated on the various activities that are being undertaken in each of the components of the project. He also briefed the meeting on the duration of the project including the main funding agencies, namely GEF, Norway and Participating Countries in the WIO Region.

4.1.3 Mr. Scheren also briefed the delegates on the linkages between the WIO-LaB Project, the UNEP/Nairobi Convention and UNEP/GPA. He also briefed the delegates on the organization structure of the WIO-LaB Project including the policy and decision making organ – the Steering Committee. He expounded on the composition of the Steering Committee including the key responsibilities played by the Committee.

4.1.4 Mr. Scheren informed the meeting that UNEP/GPA Concept of Clearinghouse Mechanism provides the basic definition upon which the Eastern Africa Clearinghouse Mechanism would be built. He noted that the role of WIO-LaB Project is basically to facilitate the development of the system in the WIO Region. He briefed the meeting on the nature of the CHM noting that the system would be expected to provide a portal linking various national and regional networks that have relevant information for the management and development of the coastal and marine environment. He briefed the meeting on different GPA nodes, such as pollution sources nodes, regional nodes, national nodes, etc. Other nodes targeted are ICAM and Biodiversity.

4.1.5 Mr. Scheren urged the delegates to take note of key issues while deliberating on the kind of CHM that will be developed to serve the WIO Region. He noted that in order to ensure

long-term sustainability of the CHM, the system should be proactive and responsive to various user needs in the WIO region. He also emphasized that the system should build upon the existing capacities and be fully owned by countries participating in the implementation of the project in the WIO region.

4.1.6 During discussions that followed the presentation delegates noted that it will be important to recognize similar initiatives that have been implemented or are in the process of being implemented in the WIO region. It was also noted that since the capacities and needs of participating countries are different, the provision of support to countries as defined in the Terms of Reference of the lead institutions should not necessarily be uniform.

4.2 Division of Early Warning and Assessment

4.2.1 Mr. Johannes Akiwumi, the acting head of the Science and Technical information Section and Programme Officer responsible for GRID in the Division of Early Warning and Assessment **(**DEWA) of UNEP made a presentation on the various activities that are being undertaken by DEWA, particularly the role of the division in regard to assisting developing countries to develop human and technical capacity for data and information management.

4.2.2 Mr. Akiwumi briefed the meeting on the DEWA Global Environment Outlook and processes that are pursued in order to generate data and information used in compiling the Global Environment Outlook report.

4.2.3 Mr. Akiwumi also made a live presentation and demonstration of the contents and capabilities of the UNEP / Nairobi Convention Eastern African Coastal and Marine Resources Website, including the EAF / 14 GIS Data for the Kenya coast.

4.2.4 Mr. Akiwumi briefed the meeting on the progress made in regard to the development of GIS capabilities in the countries, particularly Mozambique, Seychelles and Comoros. He noted that GIS training and capacity was provided to most of the countries in Africa by UNEP but regretted that the GIS system collapsed soon after the support from UNEP ceased. He also noted that in some of the participating EAF / 14 countries, there was no adequate data comparable to that that was generated for Kenyan component. He noted that development of GIS capability at national level was limited due to the fact that in some countries, the GIS experts who were trained during EAF / 14 Project left their institutions for greener pastures. In countries, the development was limited by the fact that in some of countries the people who were trained were basically managers who did not subsequently undertake technical assignments related to GIS.

4.2.5 Mr. Akiwumi also briefed the meeting on recent assistances that UNEP has provided to countries in order to build their GIS capabilities, but regretted lack of response in some of the countries in Africa.

4.2.6 During discussions that followed the presentation, delegates noted that in some of the countries, the internet capability may be lacking and other strategies should be exploited in order to make it possible for institutions that do not have internet access benefit from the

system. It was noted that this could be in form of CDs or printed reports that could be prepared. Where there is not internet connection, the institutions should strive to produce outputs in papers.

4.2.7 It was noted that in order to ensure long-term sustainability of the CHM, the system should be fully integrated into the operations of National Data Centres. It was noted that ODINAFRICA Framework is pursuing this strategy.

4.2.8 In regard to the publication of Reports and Atlases of other countries that participated in the EAF/14 Project, Mr. Akiwumi noted that it is the desire of UNEP to have the reports published and hoped that participating countries would express their willingness to participate in the endeavor.

4.3 Eastern Africa Coastal and Marine Resources Database and Atlas

4.3.1 Mr. Mwangi Theuri, the staff in-charge of the Eastern Africa Coastal and Marine Resources Database and Atlas (EAF/14 Project) in DEWA, briefed the meeting on the current status of the Eastern Africa Coastal and marine Resources Database developed under the EAF/14 Project.

4.3.2 While briefing the delegates on the genesis of EAF-14 Project as well as its objectives, Mr. Mwangi informed the meeting that the Eastern Africa Coastal and Marine Environment Resources Database and Atlas project was initiated in 1993 within the framework of UNEP's Regional Seas Programme with a focus on the Eastern Africa Region and was completed 2002. Countries that participated in the project are Kenya, Tanzania, Mozambique, Seychelles and Comoros (Madagascar, Mauritius).

4.3.3 Mr. Theuri noted that the goal of the EAF-14 Project was to improve the understanding of Eastern Africa's coastal and marine resources and promote management and planning of resources through provision of correct and usable information as well as raising of public awareness on the vulnerability of resources. The project was also intended to enhance the assessment of the coastal and marine resources through mapping of the coastal landscape, conducting of ecological survey of base-line data, establishment of operational GIS databases in the national institutions, training of personnel in the interpretation of satellite acquired data and production of land use maps and training of local personnel in data and information management using GIS techniques.

4.3.4 Mr. Theuri also provided the delegates with statistics on data requisition including the main features of the Eastern Africa Coastal and Marine Environment Resources Database. He reported that as of 30th March 2006, there were nearly 3000 different items in the database. He also provided an analysis of Regional Seas Documents and Reports available in the database

4.3.5 The delegates took note of the current status of the EAF/14 Eastern Africa Coastal and Marine Resources Database and appreciated efforts initiated by UNEP (Nairobi Convention/WIO-LaB Project and DEWA) to improve and update the system in order to

play an expanded role of a Regional Clearinghouse Mechanism for the Western Indian Ocean.

4.4 IOC-UNESCO

4.4.1 Mr. Mika Odido, the Coordinator of the IOC-UNESCO ODINAFRICA Project based in Nairobi, Kenya, briefed the meeting on the various initiatives of the IOC-UNESCO in the WIO region. He briefed the meeting on the mandate of IOC. He also briefed the meeting on the objectives of IODE and IOC data policy. Mr. Odido informed the meeting that IOC was established in 1960 with a special focus on the promotion of international cooperation (including coordination of programmes in research, services and capacity-building), in order to learn more about the nature and resources of the ocean and coastal areas and to apply that knowledge for the management, sustainable development, and the protection of the marine environment in member states.

4.4.2 Mr. Odido provided a short history of IOC-UNESCO since its inception in 1960 including also the organizational structure and Regional Subsidiary bodies such as WESTPAC, IOCARIBE, IOCEA, IOCWIO and IOCINDIO.

4.4.3 He briefed the meeting on the main lines of action of IOC focused on (1) Addressing scientific uncertainties for the management of the marine environment and climate change; (2) Developing operational capabilities for the management and sustainable development of the open and coastal ocean and (3) Strengthening of capacity of Member States in marine science for the coastal ocean.

4.4.4 Mr. Odido also briefed the meeting on the International Oceanographic Data and Information Exchange programme (IODE) noting that its primary objectives are : (i) promotion of exchange of marine data and information (including metadata, products and information) (ii) ensuring long-term archival, management and services of all marine data and information; (iii) promotion of the use of international standards, and develop or help in the development of standards and methods for the global exchange of marine data and information; (iv) assist Member States to acquire the necessary capacity to manage marine data and information and become partners in the IODE network; and (v) support international scientific and operational marine programmes of IOC and WMO and their sponsor organizations with advice and data management services.

4.4.5 Mr. Odido highlighted some of the activities that IOC has implemented in the WIO Region through the IODE Programme, particularly the Electronic Repository of marine related publications, Union of Catalogue of Libraries of Marine Institutions, Aquatic Sciences and Fisheries Abstracts (ASFA) Programme, Global Oceanographic Data Archeology and Rescue (GODAR), Marine Environmental Data Information Catalogue (MEDI), Global Directory of Marine and Freshwater Professionals (OceanExpert), Ocean Portal, Africa Ocean Portal and Ocean Teacher, etc.

4.4.6 Mr. Odido also briefed the meeting on the IOC Data policy. He noted that IOC advocates for timely, free and unrestricted international exchange of data and information, noting in

particular that this policy is applicable for IOC Programmes, non-IOC Programmes, and Research and Educational Communities. He noted that for IOC Programmes, the data policy advocates for timely, free and unrestricted access to all data, associated meta-data and products generated. He noted that the policy of IOC is to encourage timely, free and unrestricted exchange of data and information.

4.4.7 Mr. Odido informed the meeting that for non-IOC Programmes, the policy on the timely, free and unrestricted exchange of data and information is only applicable in the following cases: (a) data and information essential for application to the preservation of life; (b) beneficial public use and protection of the ocean environment; (c) forecasting of weather; (d) operational forecasting of the marine environment; (e) monitoring and modelling of climate and (f) finally sustainable development in the marine environment.

4.4.8 Mr. Odido also noted that in case of use of data and information by the Research and Educational Community, IOC encourages timely, free and restricted exchange on condition that products or results of such use shall be published in open literature without delay or restriction.

4.5 WWF-EAME

4.5.1 Ms. Modesta Medad, Fisheries Community Officer, representing Dr. Amani Ngusaru, the Coordinator of the Eco-Regions Programme based at the WWF-Eastern Africa Regional Programme Office (EARPO) in Dar es Salaam, Tanzania, briefed the meeting on the vision of WWF-EAME programme and its operations in five countries in the WIO Region. The vision of the EAME is basically to achieve a healthy marine and coastal environment that provides sustainable benefits for present and future generations.

4.5.2 Ms. Modesta informed the meeting that the WWF's work focuses on the following areas: (1) MPAs Management as exemplified by the creation and implementation of six protected areas; (2) Conservation of key habitats with a special focus on the coral reefs, sea grasses, mangroves; (3) Species conservation with activities on the dugongs and sea turtles; (4) Policy, legislation and advocacy with activities focussed on the turtle excluder devices, fair fishing access agreements, oil and gas development, (5) Community empowerment through application of seascape approach.

4.5.3 Ms. Modesta noted that WWF-EAME operates at different scales: (1) Global scale where MEAs with impact on local dynamics and national policies are negotiated; (2) Regional scale where trans-boundary issues are addressed in order to provide support to national governments in the region; (3) National Scale where policies that have an impact on the local level dynamics are formulated and (4) Local Scale where the dynamics between poverty and ecosystems occur.

4.5.4 Ms. Modesta also briefed the meeting on the WWF- EAME Priority sites in Eastern Africa, namely Lamu Archipelago, Tana Delta and Mida Creek, Rufiji-Mafia-Kilwa, Mtwara-Quirimbas, Zambezi Delta, Bazaruto Archipelago and Greater St. Lucia wetland. She

expounded on the importance of these priority sites including the key activities that are been undertaken by WWF EAME.

4.5.5 Ms. Modesta also briefed the meeting on the WWF-EAME database including their contents such as maps, pictures, documents (proceedings of meetings, technical reports, books, papers, newsletters, brochures), stakeholders database, endangered species (status dugongs in the WIO region, status of marine turtles in Tanzania), site specific data on key habitats and socio-economic information, documentaries, site specific monitoring (coral reefs, fisheries in Kiunga, Mafia and Quirimbas) and aerial census of Dugongs in Bazaruto. However, she noted that information and data archived in national databases has not been incorporated in the WWF-EAME database. Data and information lacking in the WWF-EAME Database include, spatial data on regional distribution of key underwater aquatics (coral reefs and sea grass), fisheries data (frame surveys, catch statistics, stock assessment at both national and site levels), socio-economic data (regional, national, provincial / district data and site specific data); Limnological and hydrological data, coastal development plans (including infrastructure, tourism, oil & gas).

4.5.6 Ms. Modesta also briefed the meeting on the end users of data generated by WWF-EAME Programme. Such users include: (1) WWF for adaptive management; (2) national and regional programmes / projects (e.g. MACEMP), (3) managers-Governments (central and local); (4) policy makers; (5) research Institutions including universities (local and international); (6) consultants and (7) EAME stakeholders. She also expounded on how WWF could benefit from the shared information system

4.5.7 Ms. Modesta also expounded on the challenges WWF-EAME faces in the management of data and information system. These include (1) lack of a comprehensive database, (2) most of the data and information is scattered in different projects, (3) data not in easily accessible format, (4) lack of GIS based information system, (5) lack of data management specialist and (6) most data and information is in grey literature.

4.5.8 Ms. Modesta also briefed the meeting on how WWF-EAME could benefit from a shared regional information system. She noted that such a regional system will be useful since: (1) it is cost effective and therefore will fit into individual organizations budget; (2) it will reduce reported errors and mistakes, (3) it will catalyze harmonization of methodologies, (4) it will reduce communication costs, (5) donor agencies can be easily be attracted through regional data than individual country data (6) it will promote regional cooperation and development and (6) reduce duplication of effort and waste of resources.

4.5.9 Ms. Modesta suggested that the long-term sustainability of the national nodes of the CHM could be ensured through (a) Provision of financial and technical support by global programmes / projects and (b) enhanced commitments from the participating Governments, regional bodies including donors.

4.6 The African Coelacanth Ecosystem Programme (ACEP) and the Agulhas Somali Currents Ecosystems (ASCLMEs) Project

4.6.1 Ms. Lucy Scott, the Information Manager of ACEP, based in Grahamstown, South Africa, briefed the meeting on the African Coelacanth Ecosystem Programme (ACEP) and the Agulhas Somali Currents Ecosystems (ASCLMEs) Project, focusing mainly on data and information management system for the ACEP.

4.6.2 Ms. Scott informed the delegates that the goal of ACEP is to establish a multidisciplinary ecosystem programme to investigate the deep water habitats in the Western Indian Ocean that are ideally the habitats of coelacanth. She briefed the meeting on the key 9 components of the project including details on countries that are participating in the implementation of the project.

4.6.3 Ms. Scott briefed the meeting on the achievements of ACEP noting that ACEP has so far carried 10 research and capacity building cruises in the Western Indian Ocean and the project has contributed to the significant increase in understanding of ecosystem processes through research. She also reported that the project has led to discovery of new species and habitats that are new to science. She noted that scientists throughout the WIO have been given the opportunity to carry out ship-board research and so far 31 submarine canyons have been mapped for the first time. She also reported that more than 1000 schools have been involved in ACEP activities and the project has had more than 400,000 interactions with scholars (at schools, on board ship, and at expositions) and has had more than 700 interactions with marine stakeholders.

4.6.4 Ms. Scott also briefed the meeting on the Agulhas and Somali Currents Large Marine Ecosystems Project (ASCLMEs) Project noting that it is one of the three (3) GEF funded international waters projects in the South West Indian Ocean namely, WIO-LaB, SWIOFP, ASCLMEs. She informed the meeting the project will have a duration of five years and the participating countries includes the Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa and Tanzania. She noted that ASCLMEs project will aim at building on the existing activities in the WIO region where feasible. In view of the fact some of the objectives and geographical jurisdiction of the ASCLMEs project overlaps with those of ACEP, and the two projects will carry out some activities jointly (e.g ship based oceanography, training courses). The Secretariats of both projects will be located in Grahamstown, South Africa.

4.6.5 Ms. Scott also brief the meeting on the outcomes of the Grahamstown Information Sharing Workshop held in October 2004. The Grahamstown Information Sharing Workshop noted that the western Indian Ocean is a complex environment, with many stakeholders, programmes, interested parties and key persons. It was noted that although data sets that have been collected in the past are often not easily available and some data sets are private or protected, it is still important for the WIO community to know where they exist. It was also recognised that there are programmes in the WIO that would benefit by joining resources and collaborating on certain activities and this will be facilitated by improved knowledge management.

4.6.6 Ms. Scott also informed the delegates that the Grahamstown meeting concluded that the state of knowledge in the western Indian Ocean in general need to be improved through the development of a regionally owned, shared system with a long term vision. Such a system should be a portal or hub of information for the WIO, and its development should be a process driven by the region.

4.6.7 Ms. Scott also briefed the meeting on the progress that has been achieved in regard to actualization of ACEP's data and information management System. She reported that national and international teams have been formed to lead the process.

4.6.8 Ms. Scott also reported that efforts are underway to expand national and international teams (including additional stakeholders and interested parties) that will be made up of key persons that were present at the Grahamstown meeting. She also reported that efforts are underway to establish an online resource (and CD) of information relevant to the western Indian Ocean, beginning with directories of scientists and institutions, and links to programmes and institutions, that will later on build up to metadata inventories.

4.6.9 Ms. Scott also informed the meeting that provision has been made for the African Ocean Portal (an IOC-UNESCO framework of global marine portals) and directories, links and metadata inventories have already been established (ACEP, ODINAFRICA, African Ocean Portal, WIOMSA).

4.6.10 Ms. Scott also noted that the project will collaborate with other data centres throughout the WIO region (particularly WIOMSA, ODINAFRICA and UNEP) in order to produce a marine and coastal atlas for the WIO region. ACEP has already produced a pilot WIO GIS atlas that is currently under review. She noted that it would be important to establish synergies with the Nairobi Convention information Clearinghouse Mechanism.

4.6.11 Ms. Scott also briefed the meeting on the modalities of dissemination of data and information including also the key products that will be produced such as scientific papers, reports, networks of scientists and educators in each country, inventory of ACEP data (137 data sets), Geographic Information System established, ACEP's historical spatial data (153 coverages), meta database developed and uploaded to server (in progress), integration and analysis of spatial data, Coelacanth Conservation Council database and WIO contacts database. She reported that a server has been established for the processing and archiving of near-real time remote sensed data for sea surface temperature and chlorophyll surfaces, with an online internet portal.

4.6.12 Ms. Scott also expounded on the challenges faced in data and information management. Such challenges include different categories of data and data formats, different geographical range, physical / biological data, time-series, and sensitivity. Other challenges include different categories of data, existence of several data and metadata formats, large study area; many data sets have not been digitized, limited and slow internet access and finally diverse policies on data sharing.

4.7 SWIOFP

4.7.1 Mr. Harrison Ong'anda, Research Officer at the Kenya Marine and Fisheries Research Institute (KMFRI), based in Mombasa, Kenya, briefed the meeting on the Data and Information Management Plan of the South West Indian Ocean Fisheries Project (SWIOFP) whose Regional Office will be located at KMFRI in Mombasa, Kenya. He informed the delegates that the three objectives of SWIOFP are (1) to identify and study exploitable offshore fish stocks within the WIO and to understand the relationship between environmental and anthropogenic impacts, (2) to develop the region's institutional and human capacity in fisheries and marine science through training and career building, and (3) to implement a regional fisheries management programme and associated harmonized legislation in collaboration with the FAO- South West Indian Ocean Fisheries Commission.

4.7.2 Mr. Ong'anda also briefed the meeting on the key performance indicators that would be used to gauge the success of the project, namely: (1) production and adoption of joint fisheries TDA and SAP by all nine countries participating in project, (2) formal agreement by all countries on policy, institutional and legal framework governing ecosystem-based management of specific transboundary fisheries; (3) adoption by all SWIOFP countries of environmental status and stress reduction indicators that define ecosystem health within the framework of a regional management institution legally mandated to undertake this function; (4) adoption of at least one national or multi-national management plan for a specific demersal, pelagic or crustacean fishery by each country participating in the project and (5) establishment of a regional fisheries database based on new and historic data including repatriated data.

4.7.3 Mr. Ong'anda also briefed the meeting on the key components of the SWIOFP: Component 1: Data gap analysis, data archiving, and information technology; Component 2: Assessment and sustainable use of crustaceans; Component 3: Assessment and sustainable use of demersal fish; Component 4: Assessment and sustainable use of pelagic fish; Component 5: Monitoring of fishing effort and catch; Component 6: Mainstreaming biodiversity in national and regional fisheries management; Component 7: Strengthening of regional and national fisheries management.

4.7.4 Mr. Ong'anda also briefed the meeting on the objective of the Data and Information Plan Component of SWIOFP noting that the aim is to develop an overall plan for data and information management, including capture, processing and dissemination for the benefit of the SWIOFP programme and its members. The data and information management plan strategies include: relating data and information requirements to the Science Plan; development of data gathering procedures; facilitating the setting up of protocols necessary for data capture and reporting; defining the basic statistics and graphics that may provide information from the data sets; discussing on the methods of data and information exchange, including web based communication platforms and finally, evaluating the existing capacity needs, including host agencies and sustainability.

4.7.5 Mr. Ong'anda also briefed the meeting on the Subcomponent 1.1: Fisheries data collection and evaluation and activities that will be undertaken such as review and evaluation of key

national datasets of fish and fisheries; sourcing of published information on WIO from peer-reviewed journals, grey literature, conference proceedings and FAO manuals; repatriation and evaluation of data from national academic and research institutions, international scientific surveys, programs and commissions; repatriation and evaluation of data from selected foreign fishing companies; sourcing and description of unconventional and outdated data held in formats that are incompatible with modern operating systems and software, including non-digitized raw data and; and finally inter-calibration of national and historic data sets.

4.7.6 Mr. Ong'anda also briefed the meeting on the Subcomponent 1.2 of SWIOFP that is focussed mainly on the compilation of a data atlas for SWIOFP indexing and storage of data; assessing the quality of the various data types, and their compatibility; gap analysis to determine projects to be supported by SWIOFP and; valuation of data to serve as an in-kind contribution from member countries to SWIOFP.

4.7.7 Mr. Ong'anda finally briefed the meeting on the Subcomponent 1.3: Establishment of Information Technology, data handling and communications systems noting the activities to be undertaken such as upgrading and / or procurement of national information technology (IT) and communications infrastructure; training of skilled manpower for data handling; new data handling and; review of existing database systems for adoption by SWIOFP.

4.8 ODINAFRICA

4.8.1 Dr. Desiderius Masalu, the Regional Coordinator of the Data and Information Management component of ODINAFRICA Project, made a presentation on the ODINAFRICA for the Management of Coastal and Marine Environment. He informed the meeting that ODINAFRICA project is a capacity building initiative that started in 1997. The first phase of the project was known as ODINEA. He informed the meeting that during the first phase of the project, the focus was mainly on the basic oceanographic data and information. However, in the second phase of the project, ICAM, data and information management were taken onboard. He noted that ODINAFRICA is part of the IODE network that has a network of 25 countries / Data Centres.

4.8.2 Dr. Masalu also briefed the meeting on the ODINAFRICA-III noting that the project started in July 2004 and was designed within the framework of End-to-End data and information management. The project has three major components; Coastal Observation (WP2); Data and Information Management (WP3) and Product Development and End-User Outreach (ICAM) (WP4). One of the major initial activities in ODINAFRICA-III is to organize National ICAM Consultative Workshops.

4.8.3 Dr. Masalu also informed the meeting that data available in ODINAFRICA Data Centres include data repatriated during ODINAFRICA-II. He noted that most of the Data Centres have developed databases of different data types depending on the local demands and requirements. Other data include sea-level data from ODINAFRICA tide gauges and other existing networks in the region. He noted that new data types in ODINAFRICA Data Centres include biodiversity and hydrological data.

4.8.4 Dr. Masalu also briefed the meeting on the major plans of ODINAFRICA-III noting that there will be an effort towards the development of an African Marine Atlas in order to support several tools to deliver data, products and maps on narrowly focused topics and thus support decision making. He reported that data mining workshop is will be held sometimes in early June 2006 to discuss the above issues.

4.8.5 In order to ensure sustainability of the proposed Clearinghouse Mechanism for Nairobi Convention at national level, he suggested that collaboration with ODINAFRICA Data Centres be encouraged.

4.8.6 Dr. Masalu also informed the meeting that as an African Portal, IOC-UNESCO is collaborating with NEPAD in the preparation of NEPAD COSMAR Newsletter.

4.8.7 In his concluding remarks, Dr. Masalu noted that ODINAFRICA has played a key role in shaping ocean data and information management in Africa including the WIO Region and there is potential for creating synergies between ODINAFRICA and the proposed Clearinghouse Mechanism for the Nairobi Convention.

4.9 WIOMSA

4.9.1 Dr. Julius Francis, the Executive Secretary of the Western Indian Ocean Marine Science Association (WIOMSA), based in Zanzibar, Tanzania, briefed the meeting on the role of WIOMSA in the WIO Region. He informed the meeting that WIOMSA is a regional professional non-governmental organization with a membership of over 1000 marine science (and related areas) professionals in the WIO Region. He informed the meeting that the Association was formally established in 1993 and registered as NGO in 1994. The objectives of WIOMSA are to (1) promote and advance marine sciences in the WIO region; (2) support marine research by offering research grants ;(3) provide a forum for discussion and dissemination of information and finally (4) promote and foster inter-institutional linkages.

4.9.2 Dr. Julius also briefed the meeting on the databases managed by WIOMSA. These basically includes (1) WIOMSA membership database that contains contact details of about 1000 members and their CVs; (2) Publications in peer-reviewed journals and (3) Western Indian Ocean Journal of Marine Science.

4.9.3 Dr. Julius informed the meeting that WIOMSA Database is contributing information to various databases such as that of the Transboundary Networks of Marine Protected Areas (TRANSMAP)for integrated conservation and sustainable development (http://www. transmap- metadata.org.za). It is also contributing to Sustainable Coastal Communities and Ecosystems (SUCCESS) mariculture development project. Other information includes reports produced through MARG I and MASMA grants, and publications produced under Jakarta Mandate Programme.

4.9.4 Dr. Julius also briefed the meeting on the meta data format as well as the data validation and quality control processes adopted by WIOMSA. He also briefed the meeting on the institutional arrangements for managing the information system noting that information input

is done by WIOMSA staff or experts contracted by WIOMSA or country coordinators. He reported that WIOMSA databases are hosted on WIOMSA website while TRANSMAP database is hosted by Oceanographic Research Institute. SUCCESS database is hosted at the Coastal Resource Center of the University of Rhode Island, USA.

4.9.5 Dr. Julius also briefed the meeting on the common end users of the WIOMSA data and information. He noted that the users are mainly researchers and practitioners from within and outside the WIO region. However, in case of TRANSMAP database, current use is limited to project participants and the European Union. In case of SUCCESS database, the users are project participants and USAID. He also elaborated on the challenges faced in the management of the information systems. These include challenges related to regularly updating of data and information, limited capacity at the WIOMSA Secretariat to maintain databases, absence of clearly defined strategy for data and information management and general lack of institutional standards.

4.9.6 In regard to WIOMSA's information needs, he noted that WIOMSA would be more than willing to receive information on the national research agendas, on-going research projects, training needs in the WIO countries, status of MPAs and ICM programs, etc. He noted a shared regional information system / portal could have many benefits such as (1) identification of priority research areas for competitive research grant programme and (2) knowing what key partners of the association are doing.

5. PRESENTATION BY THE NATIONAL INSTITUTIONS ON THE EXISTING INFORMATION SYSTEMS INCLUDING GENERAL PERSPECTIVES ON THE MANAGEMENT OF THE COASTAL AND MARINE ENVIRONMENT

5.0.1 The Chair introduced the above agenda item and requested country representatives to brief the meeting on the various data and information management activities in their respective countries and what they see as the relevancy of a regional Clearinghouse Mechanism.

5.1 Comoros

5.1.1 Mr. Farid Anasse, the Head of the GIS Unit of the Department of Environment in the Union of the Comores, made a presentation on the data and information management in the Union of the Comores, detailing the challenges faced and the future plans. Mr. Farid briefed the meeting on the management structure of the GIS Unit in the Comoros noting that the unit involves various agencies and Government Department such as Departments of Environment in Anjouan, Moheli and Ngadzija (Grand Comores), National institutes, Non-Governmental Organizations and projects. He emphasized the need for close linkages between the GIS Unit of the Department of Environment and the ODINAFRICA Framework of IOC-UNESCO.

5.1.2 Mr. Farid also briefed the meeting on the data collection methodology as applied in the Comores noting that the objective is to collect existing information and data from each islands

through several public and private institutions. The collection of data normally targets national institutes, international agencies, and other sources of data and information found in the three islands. He noted that the generated information is used for integrated coastal zone management.

5.1.3 Mr. Farid also briefed the meeting on the computer based data and information available in the Comores, including the structure of the database. He noted that different types of data and information have been collected, synthesized and stored in the database available at the GIS Unit. He noted that spatial Data that are available include those on Climate, Oceanography, Geomorphology, Hydrology, Land cover, Biological Resources, Cultural and recreational sites, Socio economic environment particularly Population, Fisheries, Ports and shipping, Administration.

5.1.4 Mr. Farid also enumerated successes in data management in the Comores noting that an electronic database in GIS and national atlas of coastal resources were successfully developed in the Comoros and institutional capacity has been built in human resources through GIS training and database management at national level (Mohéli, Anjouan and Grande Comores). He also reported that one of the successes is that data and information on coastal resources status in the Comores is now available to various users thus enhancing good environmental management. He also reported that public awareness campaigns to generate public interest in environmental issues have been organized and implemented in the Comores.

5.1.5 With regard to management of available data, he noted that different types of data have been integrated in a structured database that contains pictures, reports, hardcopy maps, digital maps, statistical data, etc. He also noted that other available information in the database include that on the sensitivity mapping, typology of sea floor, and biodiversity.

5.1.6 He also briefed the meeting on the data and information dissemination strategies that have being pursued in the Comoros with the objective of facilitating access to data and information required for effective planning and development in the country.

5.1.7 Mr. Farid also briefed the meeting on data gaps noting that marine biodiversity is not well studied in the Comoros and hence data in this area is limited. He also noted that the existing data is dispersed in several institutes thus limiting its access. He noted that lack of human, financial, logistical resources including lack of GIS equipment have limited the operations of the database in the Comoros.

5.1.8 Mr. Farid concluded his presentation by suggesting that all existing electronic databases in the Comoros should be centralized and there should be some deliberate attempt to build the capacity at the national and regional level.

5.2 Seychelles

5.2.1 Ms. Abirami Pillay, the System Analyst in the Environmental Engineering Section (EES) in the Department of Environment of the Ministry of Environment and Natural Resources (MENR), Seychelles and Mr. Francis Coeur de Lion, the Director of the Centre for GIS in the

Ministry of Land Use and Habitat, Seychelles, briefed the meeting on the current status in regard to data and information management in the Seychelles. They briefed the meeting on the computer based information systems available in Seychelles. They informed the meeting that GIS is widely used in Seychelles for analyses and decision-making, beach profile analysis to monitor, control and mitigate coastal erosion.

5.2.2 Ms. Pillay and Mr. de Lion also briefed the meeting on the Electronic Government Project that aims at connecting various Government / Parastatals institutions on a central network. They noted there are also websites in the Seychelles that provide information on various topics like coastal, marine, eco-system, biodiversity etc (www.env.gov.sc).

5.2.3 They also briefed the meeting on the institutional data management structures noting that many organisations have networking abilities and that many are already involved in partnerships with others. Most partnerships established are between organisations with similar objectives in terms of management and conservation of the environment and sustainable development. Such partnership exists in the field of plant conservation for the development of a National Plant Conservation Strategy or networking in the field of turtle conservation for the ultimate establishment of a management plan for turtles of the Seychelles.

5.2.4 They listed the key institutions involved in data and information management in the Seychelles. These include the Centre for GIS at the Ministry of Land Use and Habitat; Ministry of Environment and Natural Resources; Ministry of Local Government, Sports and Culture; Seychelles Fishing Authority; and Seychelles Centre for Marine and Research Technology.

5.2.5 Ms. Pillay and Mr. de Lion enumerated the responsibilities and mandates of institutions involved in data and information management in the Seychelles. Centre for GIS in the Ministry of Land Use and Habitat is the central focal point for GIS and offers technical support, sets national standards for spatial data and guidelines. The Ministry of Environment and Natural Resources responsibility includes the preservation of the Seychelles environment through application of various specific laws and policies and has databases on environment indicators. The Ministry also has databases for terrestrial / coastal / marine activities including core datasets for sustainable management. Ministry of Local Government, Sports and Culture is involve with the management and planning at district level, promotion of sports and cultural activities and has databases for management of daily activities mainly in Microsoft Access / Excel. Seychelles Fishing Authority manages fisheries and fish stocks in Seychelles and has databases for exploitation of various aquatic species and marine ecosystems and GIS for sea cucumber stock assessment and exploitation. Seychelles Centre for Marine and Research Technology manages, monitors, and studies marine ecosystems through research and has databases for exploitation of various aquatic species and marine ecosystems.

5.2.6 They also reported on the common end users of data and information in the Seychelles. These include Government organization, private sectors, and educational institutions, scientific community, consultants, regional / international institutions and the general public. The main challenges faced in the management of data and information include difficulties in locating all existing data and cataloguing them in a centralized system for easy access; lack of specialized human skills (national capacity assessment survey revealed that 50% to 63%

organizations did not have any human skills with respect to management of information systems). Other challenges faced are related to harmonization of existing data in order to avoid overlaps and duplication. They also noted that data sharing for certain data types is limited in the Seychelles.

5.2.7 In regard to the development of a regional Clearinghouse Mechanism, they noted that such system is justified since it will provide guidance and expertise including knowledge on data management. The system would also build capacity on data management and ensure that regional stakeholders actively contribute to data sharing. They suggested that the Regional institution should link up with the National institutions in order to ensure better data management strategies.

5.2.8 Ms. Pillay and Mr. de Lion also briefed the meeting on the data sets generated in Seychelles. These include Coastal Sensitivity Atlas, GIS Database for sea cucumber mapping project and other information etc), beach and turtle monitoring data sets; coral reef data sets; reports, brochures, newsletters, maps, diagrams etc. They suggested that in the case of sharing the above data, some data sets are too large to go through a web portal and in this regard more specialized tools will be required.

5.2.9 They noted that institutions in the Seychelles stands to benefit from a shared regional information system since the system will ensure easy and quick access to data and more information will be available for research activities. The system will also assist in timely, effective and informed decision making including improved networking among institutions. They also noted that the system would help in comparison, analysis of data sets of various countries and assist in disaster reduction platforms in various countries. The system could also assist in obtaining external aid / donor support for various projects.

5.2.10 In regard to the sustainability of information at national node, they suggested that partnership among the institution sharing the data should be promoted and they should be proper database management including better ways of data transfer, maintenance and servicing of the system. They also emphasized on the regular updating of the system with new information and capacity building.

5.3 Madagascar

5.3.1 Mr. Jean Roger Rakotoarijaona, the Director of Environmental Information in the Office National pour l'Environnement, Madagascar, made a presentation on the data and information systems for coastal and marine resource management at the Office National pour l'Environnement (ONE) in Madagascar. He informed the meeting that the ONE is the main driver of the National Environment Action Plan (NEAP) since 1990 and the mission of the institution is environmental mainstreaming. The current roles include legislation on environmental compliance (One-stop-shop of EIA) and management of the National Environmental Information System (Tableau de Bord Environnemental and CHM for the Convention for Biological Diversity (CBD)).

5.3.2 He noted that the Tableau de Bord Environnemental has an established system of environmental indicators whose objective is to make available information that decision-makers need to manage the environment.

5.3.3 Mr. Rakotoarijaona, also briefed the meeting on the existing computer-based information systems for coastal and marine resource management noting that SIAG has a database on islets and oral reef, The National Oceanographic Data Centre (MD NODC) is hosted by IHSM. He also noted that several data are gathered and managed by different institutions such as WWF, Conservation International, WCS, CNRO, CNRE, Blue Ventures, ONE, and PRE-COI.

5.3.4 In regard to the current institutional arrangements, Mr. Rakotoarijaona noted that there is no specific arrangement in Madagascar and data management is always project-based. He noted that ARSIE, an association of institutions and organizations generating and/or managing environmental information was formed with an objective of facilitating data exchange, provide technical support /collaboration (metadata, networking), legal /operational framework (charter, information diffusion and management policy for each member).

5.3.5 Mr. Rakotoarijaona also briefed the meeting on the common end users of the data and information generated by the institutional/national information systems in Madagascar. He noted that the users include the decision-makers, international community, environmental institutions and organizations, and industrial sector (fishing, port, shrimp rearing). He also noted that data and information is also used in research and environmental impact assessment.

5.3.6 Mr. Rakotoarijaona, also elaborated on the challenges faced in data and information management in Madagascar. Key challenges include lack of availability of reliable and recent data, fluidity of data exchange, lack of facilitated access to information, limited capacity building efforts, lack of visibility and synergy between data generators, lack of prioritization of national/local needs, lack of ownership by national/local decision-makers, and lack of systematic use of information in decision-making. He noted that the system is also limited by lack of regional data which is expensive to obtain.

5.4 Mauritius

5.4.1 Mrs. S. Meeheelaul, the Acting Divisional Environment Officer, Information and Education Division in the Department of Environment, Ministry of Environment and National Development Unit, Mauritius and Mr. S. Buskalawa, Environment Officer in the Ministry of Environment and National Development Unit, Mauritius, made a joint presentation on the existing information systems for coastal and marine resource management in Mauritius. They informed the meeting that up to date there is only one such information system in Mauritius namely the National Oceanographic Data and Information Centre (NODC) that was set up in 1999 by the Mauritius Meteorological Service. NODC follows the guidelines of the International Ocean Data and Information Exchange (IODE) and the main functions includes: networking with the data custodians involved in coastal and marine

resource management (MOE, UOM, AFRC, MOI). They noted that network is easily accessible through the website and associated links.

5.4.2 They briefed the meeting on the data types hosted by the NODC noting that these include archival of marine sciences related data (physical, chemical and biological oceanography), meta data base for all national data holdings, archival of data sets from World Data Centres, Web page on data and products and organization of training workshops/seminars for the benefit of data collectors, providers and end users.

5.4.3 The two also briefed the meeting on the institutional arrangements for managing the NODC noting that the Mauritius Meteorological Services works in close collaboration with the University of Mauritius and Albion Fisheries Research Centre. The Meteorological Services chairs the NODC Coordinating Committee that has membership of various stakeholders. NODC ensures an integrated capacity building program that combines training and online support to stakeholders in order to ensure their active participation in the National Program.

5.4.4 The meeting was informed that the Mauritius Meteorological Services provides assistance in the development and maintenance of national meta data, development and dissemination of marine data and information products responding to the needs of a variety of stakeholders. It also provides hardware and software and improved communications links through the provision of support in the use of latest available technologies.

5.4.5 Mrs. Meeheelaul and Mr. Buskalawa also briefed the meeting on the common end users of the data and information in Mauritius noting these include resource managers, policy makers, organisations working on coastal and marine protection, conservation and management (MOE, MOI, AFRC, UOM), private companies (consultancy firms), Researchers/Scientists, Educational Institutions, NGO's (MMCS, Forever Blue, Grand Bay Watch), Public in general, Regional and International Organisations (COI).

5.4.6 The main challenges faced by Mauritius in the management of data and information systems were also elaborated. These include the need to develop the required ICT capacity at the national level including for the data custodians, lack of adequate IT infrastructure (hardware/software), lack of adequate trained human resources, availability of dedicated personnel at the institutional level, commitment of stakeholders to provide the required information, harmonisation of indicators/indices/ parameters/units of measurement and methodology.

5.4.7 In the presentation it was noted that a Regional Information System is indeed required and would have many benefits. They noted collection of data and research activities are time consuming and expensive and the economic benefit of obtaining data through exchange rather than collection is huge. The system would also ensure optimum use of resources and thus avoid duplication of reporting/ information search at the regional level through development of a pool of resources and a knowledge hub that will be available to all member states. The system would also enable capacity building for all member states and therefore promote coastal and marine resources management in the Indian Ocean Region, particularly cross-boundary issues that need the input and collaboration of all member states for effective and

efficient monitoring and decision making. They also noted that the regional system will act as a platform for the provision of harmonised data/information for integrated regional state of the environment assessment and reporting and could also facilitate donor funding of projects at regional level. The system will also coordinate and facilitate drafting of project proposal for funding, monitoring and reporting.

5.4.8 Mrs. Meeheelaul and Mr. Buskalawa also reported that at present, the NODC is maintaining meta data on marine and coastal resources and relevant national agencies provide the necessary data that could be used for marine forecasts and warning programs (Cyclones, Tsunamis), commercial fishing activities, ship routing, offshore resource exploitation and development, pollution prevention and clean up and climate modeling and prediction.

5.4.9 The two noted that a regional CHM would have great benefits to the Ministry of Environment and NDU, the national focal institution for the implementation of the Mauritius strategy. Marine and coastal resources management is one of the priority issues, particularly the assessment of fish stock, surveillance of EEZ, delimitation of EEZ, and coastal Resources management e.g. tuna fish. The availability of relevant up to date information will help in the implementation of projects focussed on the above areas.

5.4.10 In regard to the sustainability of the System at the National Node, Mrs. Meeheelaul and Mr. Buskalawa suggested that NODC must maintain coordination role and enlist support of all stakeholders in the regular supply of information. They noted that there is a need to build upon the synergy created by the networking process through combination of expertise and resources to modernise marine data collection, products delivery and services for the benefit of the marine user community at large. They emphasised that the system should cater for the needs of different target groups and there should be no barriers in the sharing of information among the various data custodians. Other suggestions were related to harmonisation of methodology for data collection and management, integration into existing Environmental Monitoring Plans/programmes and provision of adequate resources for the implementation of the system at national level.

5.5 Mozambique

5.5.1 Mr. Simao Pedro Santos Joaquim of the National Remote Sensing and Cartography Centre (CENACARTA) of the Ministry of Agriculture, Mozambique, made a presentation on the activities of CENACARTA in as far as data and information management is concerned. He briefed the meeting on the organizational structure of CENACARTA, noting that the vision of the institute is to carry out geo-cartographic and remote sensing activities, production, updating of official cartography and archiving of all geo-referenced data. CENACARTA was created in 1990, as an autonomous state company. Status and assignments of the institute were revised in 2004 to include the areas of geodesy, photogrammetry, cartography and political geography.

5.5.2 Mr. Joaquim reported that the main responsibilities include topographic and thematic maps production; satellite images processing and space maps; maintenance and updating of

the national geodetic network; GIS analysis in aid of decision making; and training facilities. The main users of data and information include the Government institutions; Public institutions; NGOs and private companies; Universities and development projects.

5.5.3 Mr. Joaquim also informed the meeting that satellite images used in Mozambique include RadarSat, Spot, Landsat, Aqua ou Terra, and NOAA. Others are Ikonos, Eros, MNTs and QuickBird. He briefed the meeting on the objectives of the Land Use Land Cover Data Base that includes production of updated land use, land cover maps, provision of statistics at provincial and district level in order to support planning and decision making and multidisciplinary studies. He also briefed the meeting on the Floods Data base that provides information on the areas affected by floods in Mozambique including statistics on the number of people affected.

5.5.4 Mr. Joaquim also informed the meeting that several good results have been achieved including the production of thematic maps at a scale of 1:250,000 for the whole country, production of thematic maps at a scale of 1:50,000 for priority districts and production of detailed statistics up to district level and land use / land cover database.

5.5.5 Mr. Joaquim finally briefed the meeting on the main challenges in the management of the system in Mozambique that include the need to improve capacity building especially professional skills for data Base management. Other challenges include updating of data bases information, application of standards, and definition of clear strategies and institutional framework for data sharing.

5.6 Kenya

5.6.1 Mr. Harrison Ong'anda, the Programme Coordinator of the Data and Information Management Programme of KMFRI, Mombasa, made a presentation on the information and data management systems relevant to the management and conservation of the coastal and marine environment in Kenya.

5.6.2 Mr. Ong'anda briefed the meeting on the existing (computer-based) information systems for coastal and marine resource management noting in particular the Eastern Africa Coastal GIS Resource Database and Atlas, Environmental Sensitivity Atlas for the Coastal Area of Kenya, Coastal observation systems and Bibliographic information management.

5.6.3 In regard to the Eastern Africa Coastal GIS Resource Database and Atlas project that was implemented in the period 1995-1998, Mr. Ong'anda, noted that the main objectives were (1) to provide information needs for the programme of activities of the UNEP; (2) protection and management of marine and coastal areas, (3) assessment and control of pollution in the coastal and marine environment, (4) contingency planning for marine pollution emergencies and finally, (5) addressing problems of coastal erosion and siltation.

5.6.4 Mr. Ong'anda informed the meeting that KMFRI was the focal institution for the Environmental Sensitivity Atlas for the Coastal Area of Kenya project that was implemented in Jan 2005-Dec 2005. The environmental sensitivity atlas is part of the data dictionary in the

national oil spill contingency plan, and contains both the coastal resources and the environmental sensitivity indices (ESI) to be used by the environmental advisors during an oil spill. Outputs of the project include coastal resources map sheets at a scale of 1:50000 and 1:10000; shoreline sensitivity maps; operational and logistics maps at a scale of 1:50000 depicting the various shore types, the physical environment and facilities along the shoreline.

5.6.5 Mr. Ong'anda informed the meeting that KMFRI is also housing the coastal observation systems that are generating sea-level data for local and international community. Data is also sent to the global sea level database at University of Hawaii Sea Level Centre (UHSLC) and Permanent Service for Mean Sea Level (PSMSL) in the UK. Presently KMFRI has two tide gauge stations located in Mombasa and Lamu.

5.6.6 Mr. Ong'anda also informed the meeting about the bibliographic information management, noting that KMFRI is managing electronic databases that include library holdings; records of publications on Kenyan waters; directory of marine and freshwater professionals; and e-document delivery services. Other complimentary E-databases include the INASP (International Network for the Availability of Scientific Information) and AGORA program of FAO.

5.6.7 Mr. Ong'anda also briefed the meeting on the institutional arrangements for managing the information systems. He noted that data and information is managed as part of the Institute's research activity as a distinct research program called Information and Data Management program. KMFRI is also participating in the data management program of IOC-UNESCO through the ODINAFRICA-III project and through this, there is a National Oceanographic Data Center (KeNODC) through which national and international networking is possible.

5.6.8 Mr. Ong'anda also briefed the meeting on the common end users of the data and information generated by the Institutional/national information systems in Kenya. He noted that these users include consultants carrying out environmental studies. Other users are Government planning and regulatory departments that require detailed information on resource use patterns as a means of formulating policies. Pollution control agencies also use data and information in order to determine pollution threats and existing cases.

5.6.9 Mr. Ong'anda also briefed the meeting on the challenges faced by KMFRI in managing the information systems. He noted that these include the maintenance of existing equipment, training of staff on information technology, replacement of aging equipment and outdated software, lack of information and data exchange policy (in-house/national), and spelling out the rights and obligations of data and information generating agencies.

5.6.10 Mr. Ong'anda noted that a regional information system would play an important role in the achievement of coastal and marine resource management strategies through standardization of the data description and set up an integrated database for regional metadata information. The system would also facilitate a shared vision and development of strategic plans for national information systems, mobilization of resources for pilot information systems in each of the participating countries and also facilitate negotiations for

concessions with commercial organizations for software, remote sensing data, etc on behalf of participating countries.

5.6.11 Mr. Ong'anda also briefed the meeting on the data sets or information that is generated by KMFRI that can be shared in the regional information system. He noted that these include sea level data, bibliographic information (methodologies, resource use patterns, and research findings, GIS and remote sensing data).

5.6.12 Mr. Ong'anda provided some suggestions on the sustainability of the information systems at the national node noting the importance of ensuring good working conditions for staff working at such nodes, including also coming up with appealing career prospects and setting realistic goals against available resources. He also emphasized on the commitment of host agencies and demonstration of the relevance of system to the national government policies and development planning.

5.6.13 Mr. Joseph Masinde, Environment Management and Information System Officer in the National Environment Management Authority (NEMA) of Kenya, briefed the meeting on the data and information management activities at NEMA and in particular the operations of the national node of the CBD Clearinghouse Mechanism housed at NEMA in Nairobi, Kenya.

5.7 South Africa

5.7.1 Mr. Carl Wainman of the Southern Africa Data Centre for Oceanography (SADCO), a node of Sub-Saharan Ocean Bibliographic Information System (OBIS), briefed the meeting on the activities of SADCO and OBIS in South Africa. He informed the meeting that OBIS was started in 2005 and has various types of databases. He noted that many institutions in South Africa have different types of data. He also elaborated on various strategies to promote AfriOBIS data systems.

5.8 Tanzania

5.8.1 Dr. Christopher A. Muhando, Research Fellow in the Institute of Marine Sciences (IMS), Zanzibar, Tanzania, made a presentation on the Coastal and Marine Information and Data Management Systems in Tanzania. He informed the meeting about the existing Information Centres such as the Tanzania National Oceanographic Data Centre (TzNODC) at the Institute of Marine Sciences; National Environment Management Council (NEMC) / Tanzania Coastal Management Programme (TCMP); Fisheries Division, MBREMP, Marine Managed Areas (Tanga TCZDCP), Research and Training institutions (FAST, TAFIRI, Mbegani FDC), Regional and International NGOs and Projects (WWF, IUCN, WIOMSA) etc.

5.8.2 In regard to the arrangements for managing information and data, Dr. Muhando noted that TzNODC has Oceanographic data and information and Biological and Socio-economic data and information. However, it has loose responsibility / mandate since there is no elaborate environmental data policy and contribution of data is voluntary. He noted that different

institutions, separately or jointly collects, analyses and archives its own data and information. Data summaries are shared or distributed to requesting / interested institutions.

5.8.3 Dr. Muhando also briefed the meeting on the common end-users of data in Tanzania such as ICM managers (Parks, Reserves and Marine Managed Areas, NGOs and CBOs), Scientists and students; National and international Agencies (IUCN, WWF, WIOMSA, etc) and the Private sector.

5.8.4 Dr. Muhando also elaborated on the challenges faced by Tanzania in data and information management. These include (1) constraints in data gathering and updating process; (2) expensive and not consistent data; (3) limitation related to capacity building (personnel and equipment) ;(4) restricted data and information sharing and (5) lack of long-term sustainability.

5.8.5 Dr. Muhando also elaborated on the expected contribution of the proposed Regional Information System for Nairobi Convention noting in particular that the system would (1) facilitate linkages and connections to information and data archived at different centres at regional level through meta-database; (2) facilitate production of thematic data summaries, including case studies useful at regional level and (3) provide assistance in obtaining large scale data sets from international sources, e.g. satellite images, etc.

5.8.6 Dr. Muhando also noted the benefits of shared regional information such as access to regional data and information (Worked examples, challenges, etc), and provision of an venue through which scientists and managers in the WIO Region could demonstrate innovative approaches in research and management and also advertise products.

5.8.7 In order to ensure sustainability of the Regional system, Dr. Muhando suggested strategies that could be pursued. These include the involvement of national Government by making the activity part of the national activity. He also noted that collaboration with partners interested in data and information management could also help in sustaining the system on long-term basis.

5.9 KenSEA Project

5.9.1 Dr. John Tychsen of the Geological Survey of Denmark and Greenland made a presentation on the KenSea Project that was focussed on the Classification and Oil Sensitivity Ranking of the Kenyan Coastline. He informed the meeting that KenSEA Project was funded by UNDP-Kenya and the counterpart institution in Kenya was KMFRI based in Mombasa. The project was implemented by GEUS, DEPHA, GeoQuest and AquaSim.

5.9.2 Dr. Tychsen reported that consultants from Denmark used maps of the Kenya Coast, particularly the logistic and topographic Maps at scales of 1:50,000 and Coastal Resource Maps at a scale of 1:50,000 to prepare the environmental Sensitivity Maps at a scale of 1:50,000.

5.9.3 Dr. Tychsen noted that the project helped Kenya to finalize the National Oil Spill Contingency Plan that has three components, namely engineering and management Plan;

environmental sensitivity ranking and strategy for the use of dispersant. He also briefed the meeting on the Environmental Sensitivity Ranking process that was achieved through the compilation of existing data, collecting new data, ranking of the coastal features and production of the map sheets.

5.9.4 Dr. Tychsen informed the meeting that the Coastal Resource Base which is now hosted at KMFRI, Mombasa is composed of an interactive database, GIS System, topographic maps, Coastal Resource Maps. The system provides tools that can be used for environmental sensitivity mapping, petroleum exploration, mineral exploration, power plants and marine protected areas.

5.9.5 Dr. Tychsen also informed the meeting that the Environmental Sensitivity Ranking was based on the sensitivity index (SI) for a section of the coastline calculated as the sum of index values based on the coast type, biological resources and human use.

5.9.6 Dr. John Tychsen also briefed the meeting on the Tsunami Damage Modeling / Projection Project for the Coastal Area of Kenya that will be an extension of the KenSea Project. He reminded the participants on the Tsunami that hit the Western Indian Ocean on 26th of December 2004, causing some damage in Kenya. He noted the project would come up with an improved terrain (topographical) model for the land area bordering the Kenya coast. Through KenSea Project, the project would produce maps indicating parts of the Kenya coast that will be flooded if another tsunami occurs. The project would also provide a new set of aerial photographs of the whole coastal area of Kenya that will be invaluable for demonstration of long-term changes of the coast. The project will also carry out a socio-economic assessment to establish the potential effects of a tsunami on the coastal area of Kenya.

6. GROUP DISCUSSIONS ON THE EXISTING NATIONAL AND REGIONAL INFORMATION SYSTEMS

6.1 Introduction to group discussions

6.1.1 The Chair invited the Regional Information Systems Consultant, Prof. Timothy Waema to sum up key issues that arose during previous presentations by representatives of participating countries and regional initiatives / programmes. Prof. Waema took the floor and provided a summary of the presentations made by participating countries, ACEP, ASCLME, WWF-EAME, IOC-UESCO, IODE, ODINAFRICA, and WIOMSA. He also provided a summary of the end users, information needs, challenges faced and the benefits of the Clearinghouse Mechanism. He also provided a summary of main issues raised in regard to strategies for the long-term sustainability of the system.

6.1.2 Prof. Waema noted that it was clear that national institutions and regional initiatives / programmes have data and information systems operating under different frameworks in the Western Indian Ocean region and they would really like to see a Regional Clearinghouse Mechanism put in place. Most of the participating countries and regional programmes are willing to share data and information within the framework of a Regional

Clearinghouse Mechanism. It was appreciated that there are many benefits that could be derived from such a regional system.

6.1.3 Prof. Waema also provided a synthesis of the discussions on the strategies for long-term sustainability, particularly, different suggestions made by institutions represented in the meeting.

6.1.4 Prof. Waema also briefed the meeting on the arrangements for group discussions. Two groups were formed: Group 1 made up of country representatives was tasked with the responsibility of deliberating on the human resources capacity, institutional frameworks and ICT Capacity necessary for the operation of a Regional Clearinghouse Mechanism. Group 2 made of international organizations/programme representatives was tasked with the responsibility of discussing the strategies for building up synergies and operational linkages, including policy and standards to facilitate data and information exchange under the auspices of a Clearinghouse Mechanism.

6.1.5 Following briefing by the Consultant, the participants retired to their respective groups and discussed the above mentioned issues at length. Group 1 was chaired by Mr. Farid of the Comores and the Rapporteur was Mr. Lyon of Seychelles. Group 2 was chaired by Dr. Julius Francis of WIOMSA and the Rapporteur was Ms. Ulrika of UNEP/Nairobi and Abidjan Convention Secretariat. During Plenary session, the Rapporteurs of the two groups made summary presentations on the outcomes of their group discussions. These are presented in the following sections.

6.2 Group 1 presentation on human resources capacity, institutional frameworks and ICT Capacity necessary for the operation of a Regional Clearinghouse Mechanism

6.2.1 The Country representatives in Group 1 noted that the National Data Centre (NDC) should act as coordinating body at national level with the sole purpose of facilitating data sharing with other institutions. In this regard the NDC should manage data according to national priorities. Spatial data infrastructure will need to be available in order for NDC to offer a mechanism for assisting in the coordination of various institutions/stakeholders that would be involved in data sharing at national level. The role of the NDC is to identify existing data externally and facilitate its integration. The country representatives also noted that it would be important to define the role of different stakeholders in regard to meta-data collection and also put in place mechanisms for quality control.

6.2.2 The Group also felt that the NDC should not necessarily hold data but should periodically publish metadata on agreed standards and share this information through the Clearinghouse Mechanism. They emphasized that the role of NDC as the national node should basically be to formulate polices and assign responsibilities to the collaborating institutions that should on their own right be regarded as a sub-national node.

6.2.3 In regard to the human resource capacity, the Group felt that a dedicated Data Coordinator with good knowledge of the technical aspects of data management e.g. data

formats, should be in-charge of the NDC and provide the necessary linkage with the regional node. The Data Coordinator should not necessarily sit at the national node but must always be available to discharge the responsibilities of the NDC. The coordinator should also be responsible of coordinating capacity building activities in collaborating institutions. In certain instances, the coordinators who do not have appropriate knowledge and skills related to data management should be trained.

6.2.4 The Group also noted the importance of having sound information and communication technology resources in order to enable the CHM operate appropriately. They noted that the NDCs should be equipped with good and functional equipment, hardware and software and in particular, computers, plotters, scanners, printers, GPS, etc. They also noted the importance of having a reliable internet access (preferably 24/7) with appropriate bandwidth. The Group also noted that it is important to have a good data back up policy and good backup system (data storage media and devices, mirrored onsite storage, offsite data storage, Uninterrupted Power Supply (UPS). In general, it was emphasized that the NDCs should also have good IT plans.

6.2.5 During the discussions that ensued following the Group 1 presentation, it was recommended that the CHM should use as much as possible the existing National Oceanographic Data Centres established under the auspices of IOC-UNESCO ODINAFRICA Framework. It was noted that these centres are already operationing in most of the participating countries.

6.2.6 There were some discussions on the sustainability of the CHM and it was suggested that there is a need to establish mechanisms for long-term sustainability of the system at national level. Part of the suggested strategy is to integrated data and information centres into governmental operational frameworks. It was noted that it is a big challenge to sell the idea to the Government circles in view of many other more competing national priorities. It was however noted that some countries in the WIO Region have factored ODINAFRICA National Data Centres into the existing governmental frameworks.

6.2.7 It was also emphasized that it would be important to build capacity at national level in order to facilitate effective linkages with the regional node. It was noted that national node would facilitate identification and collection of data at both national and regional level. Countries would therefore be expected to come up with a list of basic requirements in order to establish a good and fully operational National node of the Clearinghouse Mechanism.

6.2.8 It was also noted that there is a shift in data management paradigm where centralized data management is being replaced by the distributed data management framework where different institutions plays different roles in the management of data and information, depending on their comparative advantages.

6.3 Group 2 presentation on the strategies for building up synergies and operational linkages, including policy and standards to facilitate data and information exchange

6.3.1 Group 2 noted the proposed CHM for the Nairobi Convention has certain commonalities with those that will be developed under the auspices of ACEP, ASCLME, and SWIOFP. In this regard it was noted there is a need for collaboration and or integration between these systems. It was also noted that the CHM may overlap with the Africa Ocean Atlas (AOA) that is being developed under the auspices of the ODINAFRICA Framework. It was however noted that there are clear differences in operational structures and functions as well as products and outputs of CHM and AOA. The CHM for the Nairobi Convention has a unique niche since it focuses on the needs of participating governments and the focus would specifically be on the dissemination of data and information to the governments of the countries that are contracting parties to the Nairobi Convention. The Group however suggested further analysis of the commonalities and differences of the two systems in order to avoid duplication of effort.

6.3.2 In regard to linking regional projects on a national level, members of Group B noted the importance of creating national working groups involving focal points of different national institutions and projects in order to enhance coordination and establish synergies between various related activities at national level. It was noted that where in some countries, inter-agency environmental working groups and inter-ministerial committees exists, effort should be made to facilitate collaboration.

6.3.3 In regard to establishment of regional linkages, members of Group B suggested that the system should **k**eep all relevant organizations in the loop and make sure that all key regional organizations/Programmes in the Western Indian Ocean region, e.g. IUCN, Indian Ocean Commission, ACEP, etc are fully involved in the development and subsequent operation of the CHM for the Nairobi Convention.

6.3.4 In regard to data sharing, members of Group B noted that there is at present no need for a regional level policy that will govern data sharing at regional level. However, there is a need to have one at national level. In some cases, the data sharing policy may be needed to be discussed with donors. It was also noted that it will be easier to share data at national level if the specific aim of usage is known. In this regard, the meta-databases should provide access information. It was also noted that free data access policy may limit income generation for local institutions.

6.3.5 In regard to the national ownership and data sharing, it was noted that local ownership should be the main incentive for submission of data to the Clearinghouse Mechanism. The emphasized should at first be on the building of the capacity at national level and then ensuring national ownership. It was suggested that experience of ARSIE (Association de Réseaux des Systèmes d'Informations Environnemental) on data sharing mechanism at national level should be sought.

6.3.6 In conclusion, the members of Group B suggested several options for CHM. The Group emphasized that participating countries need to be facilitated in order to collect data and information and contribute it into the central national data node. It was suggested that where participating countries cannot provide data and information to the CHM, they should be encouraged to post it on a national or institutional websites and establish appropriate linkages

with the CHM. It was also suggested that some countries may require assistance from the CHM in order to set up national web sites that would be linked to the CHM.

6.3.7 During deliberations that ensued following the above presentation by Group 2, several issues cropped up. These included the structure of the CHM particularly whether it will be led by a kind of a Regional Working Group. There was also a suggestion that there is a danger of duplicating what other initiatives are doing since they have similar objectives as those of the CHM. The importance of establishing linkages with other initiatives in the WIO Region was emphasised.

6.3.8 On data sharing policy where free access is implied as in the case of IOC-UNESCO IODE, it was noted that national institutions have their own policies and in certain cases existing donor and government policies guiding data sharing will need to be respected. It was suggested that national institutions should be left alone to decide on the appropriate data sharing policy. However, national institutions in the region were urged to consider the free data and information sharing policy.

7. GROUP DISCUSSIONS ON THE STREAMLINING THE DEVELOPMENT OF THE INFORMATION CLEARINGHOUSE MECHANISM FOR NAIROBI CONVENTION

7.1 Introduction

7.1.1 The Chair introduced the above agenda item and invited Prof. Waema, the Regional Information management consultant to brief the meeting on the formats for group discussions. Following a short briefing by the Consultant, the participants discussed issues related to the value and functions of the CHM (to the existing IT systems), its products and services and appropriate institutional arrangements that should be established.

7.1.2 Two groups were formed to discuss the above issues. Group 1 was chaired by Mr. Wainman of SADCO, South Africa and Group 2 was chaired by Mr. Harrison Ong'anda of KMFRI, Kenya. Following the group discussions, the representatives of the two groups briefed the meeting on the outcomes of their discussions. These are presented in the following sections.

7.2 Group discussions on the value and functions of the Regional CHM, its products and services and institutional arrangements

Report of Group 1:

7.2.1 The group noted that a Regional CHM has potential benefits such as (1) The system is cost effective and will result in less duplication of data and efforts in data collection ; (2) the system will allow for standardization of data and thus facilitate regional analysis and error reduction (3) CHM will act as a guiding mechanism to assist the national nodes in getting

access to software license, working methodologies and coordinating process; (4) CHM will have a general purpose data and links to other data from regional nodes and will thus market institutions in the region; (5) CHM will allow for harmonization of methodologies between countries and in this respect improve networking capabilities and information sharing; (6) certain regional donor agencies may become attracted to activities of participating institution through data and information posted in the CHM; (7) The system will promote regional cooperation and development; (8) the system will facilitate action on priority areas for coastal management; (9) the system will add value to the national programmes; (10) the system will facilitate links to other existing CHMs and finally, (11) the system will provide a forum where countries can obtain information on the available donor funding opportunities.

7.2.2 In regard to the functions of CHM, the group noted that Regional CHM could have several important functions, such as (a) creating a portal of linkages to national nodes and also to other relevant nodes and resources; (b) provide a list of directories of experts (scientists, stakeholders, institutions, etc) and metadata; (c) act as a search engine for relevant web sites, with ratings on their usefulness for different subjects; (d) offer a possibility for building a map server; (e) provide access to 'grey' literature; and (f) act as a central server that can also serve national nodes that do not have the ability to host their own sites. It was noted that it was important for the system to be regionally attractive and focused specifically on transboundary issues.

7.2.3 In regard to Institutional arrangements, the group noted that the system should have a dual capability with centralized services at regional level and more specialized service at national level. In order to ensure provision of services at national level, it was noted that it would be important for countries to come up with a development plan that clearly defines the requirements of the national nodes. The national nodes should also strive to obtain buy-ins from regional partners such as UNDP, World Bank and other multilateral agencies. The importance of strengthening national nodes and then scaling up to regional level was emphasised. There was a suggestion that under the framework of the Nairobi Convention COP, countries should be requested to formalise their designated national data centre representation.

Report of Group 2:

7.2.4 In regard to the roles and responsibilities of CHM, the group suggested (a) that the system should serve the interests of the Nairobi Convention and facilitate access to data and information for both national and regional projects including the government agencies; (b) provide coordination for regional initiatives; (c) act as a catalyst for capacity building in the WIO region; (d) provide financial and technical assistance to country nodes; (e) provide communication facilities such as email list-server; (f) define basic information required to address key thematic of the Nairobi Convention and finally (g) provide tools for decision-making and policy formulation.

7.2.5 In regard to the products and services that would be derived from the CHM, the Group came up with the following: Website, map server, publication of metadata, newsletters for new information and reports, portal for key literature and reports for the Nairobi Convention,

promote/publicize the services of national nodes, provide an online forum for guided discussion on relevant issues, provide information about each country (on the website), and finally provide information on the disaster management plans.

7.2.6 In regard to the structure of the CHM, the Group suggested that data management activities should be coordinated between existing NODCs and Nairobi Convention national and regional task forces. It was also suggested that Nairobi Convention countries should ensure that the national governments support the concept of CHM. There was also a suggestion that the region should strive to benefit from the experience of other CHMs in order to define an appropriate structure for the system. It was also suggested that CHM nodes in each of the participating countries should be established in a focal lead national institution and there should be a dedicated national focal point.

7.3 Plenary discussions on the value and functions of the Regional CHM, its products and services and institutional arrangements

7.3.1 Following the presentations of the outcomes of the above two group discussions, there followed some discussions on the suggestions made by the two groups. There was a spirited deliberation on the designation of the national institutions that will act as national coordinating institutions for the CHM. There was a suggestion that the ODINAFRICA National Oceanographic Data Centres (NODC) should act as the national focal institutions for the Clearinghouse Mechanism developed under the auspices of the Nairobi Convention. However, in view of the fact that most of the key institutions in participating countries were not represented in the meeting, further consultations should be facilitated at national level before a national institution is designated as the focal institution for the Clearinghouse Mechanism. It was suggested that the Focal Points of the Nairobi Convention and WIO-LaB Project be requested to facilitate national consultations and communicate the outcome to the WIO-LaB Project Management Unit.

7.3.2 In regard to the designation of the lead national institutions for the CHM, it was suggested that the capacity of targeted institutions should be ascertained before the appointment is made. It was noted that there is a need for selected institutions to be committed and be capable of continuing with the implementation of CHM activities even after support from WIO-LaB Project ceases. A detailed selection criteria that will guide the Focal Points in the selection of the focal lead national institutions for CHM was discussed by a small working group (outcomes presented in other sections of this report).

7.3.3 It was finally suggested that at national level, there should be a committee composed of the designated national data centre and their sub-national nodes that will offer a mechanism for the coordination of activities at national level.

7.3.4 Following the above discussions, the information systems consultant, Prof. Waema provided a short summary of the issues that were raised by the two groups, particularly those related to the value and functions of CHM including the institutional arrangements that are appropriate in order to facilitate an effective CHM.

8. GROUP DISCUSSIONS ON THE NATIONAL NEEDS AND PRIORITIES FOR ACTION

8.1 The Chair invited the Regional Information Management Systems Consultant, Dr. Timothy Waema to brief the meeting on the results of the survey on the national and regional needs for the development of the Regional Clearinghouse Mechanism / Eastern Africa Regional Coastal Data Base. Dr. Waema while taking the floor briefed the meeting on the key objectives of the assignment and as well as the process that was adopted in the collection of data from various sources in the region. He then presented the results of the survey. The delegates congratulated the Consultant for the survey that was well executed.

8.2 During the deliberations that followed this presentation, the question of integration into government programmes cropped up. Delegates noted that the integration of the system into government work programmes will guarantee long-term sustainability of the national node of the regional CHM and thus guarantee long-term sustainability of the whole system. In order to convince the Governments to take onboard the CHM, national institutions must convince the governments that the regional CHM has benefits that are relevant to national development agenda.

8.3 There was also a suggestion that the consultant carries out a geographical analysis of the respondents in order to provide a good picture of responses from countries and various categories of users.

8.4 The meeting generally took note of the preliminary findings of the survey on the development of an information management strategy for CHM conducted by Information Management Systems Expert, Prof. T.M. Waema. It was recommended that the final results of the survey be integrated with the deliberations of the workshop and the consultancy report be distributed to all the participants.

8.5 Following discussions on the results of the survey on the national and regional needs, the Chair introduced the document *UNEP/GEF/WIOLAB/ CHM.1/6* containing the Terms of Reference for National Focal Institutions in the development of the national node of the Eastern African Coastal and Marine Resources Clearinghouse Mechanism. He took the participants through the Terms of Reference outlining the specific tasks that will be expected to be undertaken. Following presentation of the TORs, he requested the delegates to provide any suggestions on how the TORs could be improved further, noting also that most of the issues mentioned in the TORs were deliberated during the previous sessions.

8.6 Following discussions on the TORs, the delegates recommended a further review of the Terms of References, and the development of specific criteria for the selection of National Focal Institutions be developed, as part of group discussions under agenda item 9.

9. DISCUSSIONS ON THE LONG-TERM SUSTAINABILITY AT NATIONAL AND REGIONAL LEVELS INCLUDING THE WAY FORWARD

9.1 The Chair introduced the above agenda item and requested the Regional Information Management Systems Consultant to brief the meeting on the following group-focused discussions. Three groups were established as follows:

Group 1: Discuss the criteria for designation of the lead national institutions for the CHM and the Terms Of Reference of the Lead National institutions that will act as the focal institutions for the Clearinghouse Mechanism as detailed in document *UNEP/GEF/WIOLaB/ CHM. 1/6)* .

Group 2: Discuss data sharing policy as detailed in document *UNEP/GEF/WIOLaB/ CHM. 1/7)*.

Group 3: Discuss the CHM implementation plan as detailed in document *UNEP /GEF/ WIOLaB CHM. 1/12.*

9.2 The three groups retired for discussions that took place in the period 10.30 am to 12 noon. In the afternoon the representatives of the two groups presented the outcomes of their group discussions.

Group 1: Terms Of Reference of the Lead National institutions and criteria for selection of focal lead institutions

9.3 Group 1 under the Chairmanship of Dr. Carl Wainman of SADCO, South Africa discussed the Terms Of Reference of the Lead National institutions that will act as the focal institutions for the Clearinghouse Mechanism as detailed in document *UNEP/GEF/WIOLaB/ CHM. 1/6)* and suggested some amendments. The group also discussed the criteria for designation of the lead national institutions for the CHM and suggested that the selection of the lead institutions in participating countries be based on the following criteria;

- **Availability of infrastructure:** The institution must have adequate office space and information technology infrastructure such as websites and internet access.
- **Human Resources:** The institution should have professionals with adequate skills in information technology / geospatial expertise / GIS skills. They must have good communication skills, particularly skills in the management of marine scientific data with special reference to databases, geospatial information and information technology.
- **Financial / Administrative management**: Good financial management system should be in place and there should be a significant national government budgetary support.
- **Data management:** The institution should demonstrate the existing databases that they host.

- **Outreach capability**: The institution should demonstrate good outreach capability as exemplified by the existing websites and newsletters.

- **Organizational mandate and motivation:** The institution must have appropriate mandate and must have experience and willingness to host the national node.

- **Coordination and networking capabilities:** The institution must have established good links with a network of key institutions and stakeholders at both national and regional level.

- **Ability to train:** The institution must demonstrate that it has resources and capability of training different cadre of experts in information systems and database management.

9.4 Following the above discussions, the Terms Of Reference of the Lead National institutions that will act as the focal institutions for the Clearinghouse Mechanism as detailed in document *UNEP/GEF/WIOLaB/ CHM. 1/6)* with suggested amendments was adopted. The agreed Terms of References are presented in Annex 5 of this report. A recommendation was further made for the WIO-LaB Project Management Unit to liaise with the National Focal Points with regard to the designation of the appropriate National Focal Institution, based upon the criteria for selection as agreed during the workshop.

Group 2: Data sharing policy

9.5 Group 2 chaired by Ms. Lucy Scott of ACEP, South Africa (with Ms. Ulrika of UNEP taking notes) discussed data sharing policy as detailed in document *UNEP/GEF/WIO-LaB/ CHM. 1/7*) and came up with suggestions for amendment of the document in some of the areas. The following are the key issues that were raised:

- **Timeliness of data sharing:** it was noted that different types of data have different value at different times and there is a need to establish a reasonable frequency of updating. While data from short term projects implemented within a limited time period may be submitted at the end of the project or when reports are produced, it may not be necessary to regularly update long term data series from monitoring programmes.

- **What kinds of data are candidates for sharing:** three levels of regional data sets were suggested (e.g. meteorology, ocean currents etc), national data sets (available upon request) and site specific data (e.g. MPAs). It was suggested that the national/site specific data of regional importance should be highlighted on regional web site and the open access data be stored on regional level. It was noted that nationally owned data could be stored on national level. Ocean chemistry and meteorology should be shared. All data sets are candidates for sharing and it would be up to the countries and institutions to decide on best options. While data with no intellectual property rights should be shared, other data should be shared at the discretion of the National nodes. Effort should be made to share all meta-data.

- **Data formats:** It was noted that data formats may be too complex and difficult to standardise. Technical working groups/committee should be formed to address this issue. It was noted that there will be different formats for different data and it will require a lot of resources to standardise at regional level. It was suggested that the focus at the first instance be on establishing what data is available (a regional assessment of formats and softwares used) in what format and later if the resources allows, come up with guidelines for standard formats in order to facilitate access. Meanwhile the possibility of creating a central search system for many types of data formats shall be explored.

- **Data documentation and meta-data format:** It was suggested that a technical team should be constituted to advice how to design metadata format that will fit with other systems (e.g. ASCLME, ACEP, SWIOPF, IODE, etc). In certain instances, we may use what is already there in order to avoid duplication of effort and re-invention of the wheel. There are at least 7 different metadata systems existing in the region at the moment and it will be important to see how these systems can be searched and linked with as little effort as possible.

- **Data sharing policy:** It was suggested that there should not be a one blanket data sharing policy. Data policy of CHM needs to be adapted to the needs of different institutions. Data policy should be drawn from the existing policies at national level and effort should be made to maintain the control of data at national level. It was also suggested that national policy should provide recommendations for transboundary and regional data sharing policy which would then be negotiated on a regional level. Policy should be made in regard to data quality control at an institution level.

9.6 Following the above discussions, the data sharing policy as detailed in document *UNEP/GEF/WIO-LaB/ CHM. 1/7*) was adopted with reservation for further development in line with the recommendations made by the group discussion (see above).

Group 3: CHM Project implementation plan

9.7 Group 3 that was Chaired by Mr. Ali Mohammed (Mr. Mwangi taking notes), discussed the CHM implementation plan as detailed in document *UNEP/GEF/WIOLaB/ CHM. 1/12.* The group suggested some amendments of the draft implementation plan and in particular suggested that there is a need for additional regional meetings at the end of the second year in order for the countries to share experiences in regard to progress in the implementation of the project. They also suggested that there should be a final regional meeting that will chart the long-term strategy for the CHM. It was also suggested that the countries should hold national meetings and present the outcomes to the Regional meetings suggested above.

9.8 In order to avoid misinterpretation of different activities, the group also suggested that the terms used in the CHM implementation plan need to be consistent with those stated in the Terms of Reference.

9.9 It was also suggested that a Technical working group that will examine the data formats be factored into the CHM Project implementation plan.

9.10 Following suggestions made by the group, the three (3) year CHM Project implementation plan as detailed in the document *UNEP/GEF/WIOLaB/ CHM. 1/12.*was adopted with amendments. The agreed implementation plan is presented in Annex 7 of this report.

10. REVIEW OF THE CONSULTATIVE MEETING PRIMARY OUTPUTS AND THE WAY FORWARD

10.1 The Chair invited Dr. Waema to present to the participants the CHM sustainability strategy based on the survey that he carried out in the region and also based on the presentations made by the representatives of national and international institutions, organizations and programmes.

10.2 Dr. Waema took the participants through the various proposed strategies and requested participants to review and state whether they are in agreement with them. He emphasized on the need to secure ccommitment and ownership by national governments and national focal points. He pointed out that the sustainability of the CHM could be guaranteed if there is an adequate capacity at national nodes. Other factors that could enhance sustainability include provision of updated and relevant data, collaboration and support from other regional frameworks, commitment of development partners for extra funding, dissemination to key stakeholders in an appropriate format, and provision of information to support policy making at national level. It was emphasized that the information value addition is very important for the sustainability of the CHM.

10.3 During discussions that followed, it was suggested that CHM should support the implementation of the mandate of the national nodal institutions and there should be continuous capacity building and exchange between national nodes in order to share experiences. In this regard, it was noted that it would be important to establish direct communication and information exchange channels between national nodes. It was suggested that the national CHM systems should strive to find funding from the national budgets. In this regard, resource mobilisation strategies should be one of the subjects for the institutional capacity building training. It was also suggested that there should be a mechanism of regular monitoring and review of the CHM system in order to ensure long-term sustainability.

10.4 It was also suggested that the activities of the CHM be incorporated into the work plan of Nairobi convention work programme in order to ensure long-term sustainability. It was also suggested that regular evaluation and monitoring should be built into the system in order to ensure evolution and updating with new functions and structures when needed. It was also emphasised that value addition is critical to ensure sustainability.

10.5 There was also a suggestion that the system should have permanent staff at regional level to manage the system. Also, there is a need to have a person at national level who will be dedicated specifically to the CHM process.

10.6 The meeting concluded that in order to ensure its relevancy and sustainability, the CHM should be owned by the national focal institutions in the WIO region and be responsive to the needs of the various categories of stakeholders / users at both national and regional levels.

11. CONSIDERATION AND ADOPTION OF DECISIONS AND RECOMMENDATIONS

11.1 The Chair invited the Rapporteur to present the decisions and recommendations of the meeting. Ms. S. Meeheelaul, Acting Divisional Environment Officer in the Information and Education Division of the Department of Environment in the Ministry of Environment, Mauritius, took the floor and presented the draft decisions and recommendations. She took the participants through each of the decision / recommendation and requested suggestions for amendments.

11.2 Following discussions on the draft decisions and recommendations, the meeting adopted them with amendments. The final versions of the decisions and recommendations of the meeting are presented in the summary section of this report.

12. ADMINSTRATIVE MATTERS

12.1 The Chair introduced the above agenda item and invite the WIO-LaB Project Manager, Mr. Peter Scheren to make any administrative announcements. Dr. Scheren invited delegates to a Cocktail party hosted by the WIO-LaB Project in their honour.

13. CLOSURE OF THE MEETING

13.1 The WIO-LaB Project Manager, Mr. Peter Scheren thanked the Chair, Mr. Ali Mohammed for excellently chairing the meeting and leading discussions on various agenda items. He noted that the meeting achieved it set objectives and thanked the participants for their active participation.

13.2 Mr. Scheren noted that the role of the WIO-LaB Project is simply facilitative and that the enthusiasm and support of the representatives of participating countries will to a large extent determine national ownership and also determine what will be achieved. Mr. Scheren also thanked all the participants for their cooperation and noted that he looks forward to meeting them again in the next Regional meeting of the CHM.

13.3 The Chair, Mr. Ali Mohammed thanked the participants for their cooperation throughout the various sessions of the meeting and noted that the objectives of the meeting were achieved as envisaged. He noted that there is a general agreement that there is indeed a need to establish a CHM system in the Western Indian Ocean region and urged the participating countries and regional/international organizations/programmes to cooperate in order to ensure the system is established to enhance data and information exchange and dissemination.

13.4 Mr. Mohammed also emphasized on the regional ownership of the CHM noting that the system should serve the interests of the participating countries in the Western Indian Ocean region. He hoped that strategies will be put in place to ensure long-term sustainability of the system.

13.5 Mr. Mohammed finally noted that WIO-LaB Project is vital to the Nairobi Convention and thanked WIO-LaB Project Manager and his team for an excellent work done in the organization of the meeting. While wishing the delegates safe journey back to their respective countries, he urged the delegates to widely share the outcomes of this meeting in their countries.

14. ANY OTHER BUSINESS (AOB)

14.1 There was no any other business and the Chair declared the meeting closed at 5.07 pm on Thursday 11th May, 2006.

ANNEX 1: CONTEXT AND OBJECTIVES OF THE WORKSHOP
UNEP/GEF/WIO-LaB/CHM.1/1

Development of an Eastern Africa Coastal and Marine Environment Clearinghouse Mechanism

9-11 May 2006
Conference Room 7 UN Gigiri Complex
Nairobi, Kenya

Context

The UNEP/Nairobi Convention stakeholders, in developing the 2004–2007 work programme and framework, tasked the Secretariat with the establishment of an information system to meet the needs of Contracting Parties in implementing the Action Plan for the protection, management and development of the marine and coastal environment of the Eastern African Region. The Contracting Parties are the States of Comoros, Seychelles, Madagascar, Mauritius, Mozambique, Reunion (France), Somalia, Kenya, South Africa and Tanzania.

Access to and use of the increasingly diverse, comprehensive data and information on coastal and marine environment is required by Contracting Parties to the Nairobi Convention in order to deal with the vast array of policy, management, scientific and other practical issues. To accomplish this, the Nairobi Convention need to be able to compile and link disparate sets of data and information to create the required information base and develop access services to quickly provide information to decision-makers.

In working with partners, a comprehensive capability is required by the Nairobi Convention to collect, integrate and analyze the rich data collections available in the Western Indian Ocean region and present the results in forms that specialists and non-specialists can comprehend. Within this context, the Nairobi Convention, under the auspices of the Project "Addressing land-based activities in the Western Indian Ocean" (WIO-LaB), has embarked upon the development of a web-based information clearinghouse mechanism, building upon the existing Eastern African Coastal and Marine Resources Database and Atlas established under the Nairobi Convention (www.unep.org/easternafrica). The activity will furthermore involve upgrading of the GIS-based data and information management system as developed under the UNEP implemented EAF/14 Project.

The activity will be guided by UNEP's Division of Early Warning and Assessment (UNEP/DEWA), and will cooperate with national-level institutes involved in data management and GIS. It is intended that MOUs will be established with such institutes in order to collect data and input such into the information system. In addition, it should be noted that it is anticipated to build as much as possible on other existing national, regional and international information systems and GIS databases in order to create synergy and efficiency.

Key audiences for the information system

- Contracting Parties to the Nairobi Convention (the WIO Countries)
- International, national and local NGOs, and Community-Based Organizations (CBOs)
- UN agencies and other International Organizations
- Collaborating institutions (current and potential)
- Donor institutions

The WIO-LaB Project

The WIO-LaB Project was launched in Madagascar in July 2004 during the fourth meeting of the Contracting Parties to the Nairobi Convention. The project is implemented by the United Nations Environment Programme (UNEP) and is regarded as a demonstration project for the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA/LBA). The Project represents a strong partnership between the Eastern African countries including the Island states of the Western Indian Ocean (Kenya, Tanzania, Mozambique, South Africa, Madagascar, Seychelles, Comoros and Mauritius), and has three main objectives: 1) Reduce stress to the ecosystem by improving water and sediment quality; 2) Strengthen regional legal basis for preventing land-based sources of pollution; and 3) Develop regional capacity and strengthen institutions for sustainable, less polluting development.

Purpose of the workshop

To seek opportunities and agree on strategies for development of a consolidated, coordinated and integrated regional information Clearinghouse mechanism, under the auspices of the Nairobi Convention, in synergy with other regional initiatives.

Objectives of the workshop

- Review the existing Eastern African Coastal and Marine Resources Database and Atlas and the lessons to be learned from its implementation.
- Discuss the general Clearinghouse Mechanism concept and agree on why we need it, who it shall serve, what gaps it seeks to fill, etc.
- Explore mechanisms and/or strategies of streamlining the development of the Information Clearinghouse Mechanism for the Nairobi Convention.
- Explore strategies of improving cooperation and coordination with partners within the UN, governments and other stakeholders in order develop an all inclusive information harnessing and dissemination system for the Western Indian Ocean region.
- Explore strategies for creating an enabling environment for integration of the information system (to be developed) and sharing of data with existing systems at institutional, national and regional levels.

- Explore mechanisms and/ or strategies of enabling better institutional networks, knowing what they do, what mandate they have, and what capabilities they possess.
- Establish the information requirements and priorities for the proposed information system.
- Explore strategies for improving and promoting the ability to find, select, access and retrieve data and scientific products and services for sustainable management and development of the coastal and marine environment in the Western Indian Ocean Region.
- Explore strategies that could be used to disseminate environmental information products and services to national, regional, and global audiences.
- Discuss and agree on data and system ownership.
- Discuss and agree on the strategies to sustain the Information Clearinghouse Mechanism in the longer term.

ANNEX 2: PROVISIONAL AGENDA
UNEP/GEF/WIO-LaB/CHM.1/2

Development of an Eastern Africa Coastal and Marine Environment Clearinghouse Mechanism

9-11 May 2006
Nairobi, Kenya

AGENDA

Tuesday May 9

8.30-9.00	Registration	
9.00-9.30	Opening: Welcome remarks and introductions	WIO-LaB Nairobi Convention UNEP
9.30-10.00	Election of Officers of the meeting (Chair and Rapporteur); Consideration and adoption of the Agenda	WIO-LaB PMU to call for nominations
10.00-10.30	Break	
Session 1: 10.30-1.00	**Presentations by Regional and International Stakeholders on existing information systems and general perspectives on management of coastal and marine environmental information in the WIO region**	
15 minutes	UNEP/Nairobi Convention: the mandate and relevant COP recommendations	D. Waruinge
15 minutes	WIO-LaB Project: • Objectives • GPA concept of a CHM	P. Scheren/J. Kitheka
20 minutes	Division of Early Warning & Assessment: • Objectives on assessment, data synthesis and information sharing	J. Akiwumi
20 minutes	Existing Eastern African Coastal and Marine Resources Database and Atlas	M. Theuri
20 minutes	IUCN in Eastern Africa	M. Samoilys
20 minutes	IOC-UNESCO	M. Odido
20 minutes	WWF Eco-regions	A. Ngusaru
20 minutes	ACEP (and ASCLME)	L. Scott
1.00-2.00	Lunch	
Session 2: 2.00-4.00	**Presentations by national institutions on existing databases and general perspectives on management of coastal and marine environmental information in the WIO region**	
20 minutes	SWIOFP	H. Ong'anda
20 minutes	ODINAFRICA	D. Masalu
20 minutes	WIOMSA	J. Francis
15 minutes	Comoros	F. Anasse
15 minutes	Seychelles	A. Pillay/F. Coeur de

		Lion
15 minutes	Madagascar	J.R. Rakotoarijaona/ R. Rakoto
15 minutes	Mauritius	S. Meeheelaul/S. Buskalawa
4.00-4.30	Break	
15 minutes	Mozambique	S. Joaquim
15 minutes	Kenya	H. Ong'anda/J. Masinde
15 minutes	South Africa	C. Wainman
15 minutes	Tanzania	C. Muhando
Session 3: 5.30-6.00	**Group discussion 1 (introduction): Existing national and regional information systems (3 groups):** • challenges of existing institutional/national/regional information systems • lessons from existing Eastern African Coastal and Marine Resources Database and Atlas • existing human and technological capacities for ICT in national institutions • synergy between information systems • functional tasks, including operational linkages between data and information systems • approaches to information policy and standards (best practices) - creating an enabling environment for integration of the information system promoting the ability to find, select, access and retrieve data	**T. Waema**

Wednesday May 10

9.00-9.15	Recap Day 1	
30 minutes	KENSEA	J. Tychsen
Session 3: 9.45-10.45	**Group discussion 1 (continued): Existing national and regional information systems (3 groups)**	
10.45-11.00	Break	
11.00-12.00	**Plenary presentation on Group Discussion 1 by group rapporteurs**	
Session 4: 12.00-1.00	**Group discussion 2: Streamlining the development of the Information Clearinghouse Mechanism for the Nairobi Convention (3 groups)** • why the CHM? • what data is required, what gaps will it (CHM) fill and who will it serve? • creating, collating and providing scientific and technical environmental information: identification of data gaps • institutional arrangements and instruments; coordination • the means for effective data and information integration and sharing	**T. Waema**
1.00-2.00	Lunch	
Session 4: 2.00-3.00	**Group discussion 2 (continued): Streamlining the development of the Information Clearinghouse Mechanism for the Nairobi Convention (3 groups)**	

3.00-4.00	**Plenary presentation on Group Discussion 2 by group rapporteurs**	
4.00-4.30	Break	
Session 5: 4.30-6.00	**Plenary: Results of questionnaire and discussions**	**T. Waema**

Thursday May 11

9.00-9.15	Recap Day 2	
Session 7: 9.15-10.30	**Group discussions 3: National needs and priorities for action as components of the information system and clearinghouse - enabling better institutional networks (3 groups)**	**M. Theuri**
10.30-11.00	Break	
11.00-12.00	**Plenary presentation on Group Discussion 3 by group rapporteurs**	
Session 8: 12.00-1.00	**Plenary: Discussion on long-term sustainability at national and regional level**	**T. Waema**
1.00-2.00	Lunch	
Session 9 2.00-4.00	**Plenary: Review of the consultative meeting primary outputs and way forward (**including a regional strategy and processes for cooperation, lessons learnt from similar initiatives, regional gaps, presentational aspects of the information system, identification of key users, public awareness, means for keeping abreast of technology development, national sustainability)	**T. Waema**
4.00-4.15	Break	
4:15-4:45	Summary consideration of the decisions and recommendations of the meeting	
4:45-4:55	Administrative Matters and AOB	
4.55-5.00	Closing remarks	

ANNEX 3: LIST OF DOCUMENTS DISTRIBUTED DURING THE MEETING
UNEP/GEF/WIO-LaB/CHM.1/3

UNEP/GEF/WIOLAB/CHM. 1/1	Context and Objectives of the Workshop
UNEP/GEF/WIOLAB/CHM. 1/2	Provisional Agenda
UNEP/GEF/WIOLAB/ CHM.1/3	List of Documents
UNEP/GEF/WIOLAB/ CHM.1/4	List of Participants
UNEP/GEF/WIOLAB/ CHM.1/5	Guidelines for presentations
UNEP/GEF/WIOLAB/ CHM.1/6	Terms of Reference for National Institutions in the development of the national node of the Eastern African Coastal and Marine Resources Clearinghouse Mechanism.
UNEP/GEF/WIOLAB/ CHM.1/7	Eastern African Coastal and Marine environment resources Clearinghouse Mechanism: Draft Data sharing policy
UNEP/GEF/WIOLAB/ CHM.1/8	Background to the Eastern African Coastal and Marine environment resources database and atlas (EAF/14) Project.
UNEP/GEF/WIOLAB/ CHM.1/9	Comparative overview of the EAF 14 Database and the Global GPA Clearinghouse Mechanism
UNEP/GEF/WIOLAB/ CHM.1/10	Questionnaire for an Information System for the Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern Africa Region
UNEP/GEF/WIOLAB/ CHM.1/11	Draft Metadata Format for the Clearinghouse Mechanism
UNEP/GEF/WIOLAB/ CHM.1/12	Draft Implementation Plan
UNEP/GEF/WIOLAB/ CHM.1/13	Decisions and recommendations of the Regional Workshop on the Development of a Clearinghouse Mechanism and Information Sharing System on Eastern African Coastal and Marine Environment Resources

Information Documents

UNEP/GEF/WIOLAB/ CHM.1/inf.1	Proceedings of a workshop held on the 20-22 October 2004 at the South African Institute for Aquatic Biodiversity in Grahamstown, South Africa (to be send as a separate document)

ANNEX 4: LIST OF PARTICIPANTS
UNEP/GEF/WIO-LaB/CHM.1/4

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ANNEX 5: DRAFT TERMS OF REFERENCE OF COLLABORATING INSTITUTIONS ON DATABASE DEVELOPMENT UNEP/GEF/WIO-LAB/CHM.1/6

Introduction

The Contracting Parties to the UNEP/Nairobi Convention, in developing the 2004–2007 work programme, directed the Convention Secretariat based at UNEP, Nairobi, to establish an information system to meet the needs of Contracting Parties in implementing the Action Plan for the protection, management and development of the marine and coastal environment of the Eastern African Region. The Contracting Parties to the UNEP/Nairobi Convention are the States of Comoros, Seychelles, Madagascar, Mauritius, Mozambique, Reunion (France), Somalia, Kenya, South Africa and Tanzania.

Access to and use of the increasingly diverse, comprehensive data and information on coastal and marine environment is required by Contracting Parties to the Nairobi Convention in order to deal with the vast array of policy, management, scientific and other practical issues related to the management of the coastal and marine environment.

Within this context, the WIO-LaB Project entitled "Addressing land-based activities in the Western Indian Ocean" operating under the auspices of the UNEP/Nairobi Convention and technically implementing the work programme of the convention, has embarked upon the development of a web-based information Clearing House Mechanism for the UNEP/Nairobi Convention and UNEP Global Programme of Action for the protection of marine and coastal environment from land-based activities (GPA). This Clearing House Mechanism will build upon the existing Eastern African Coastal and Marine Resources Database and Atlas established under the Nairobi Convention (www.unep.org/easternafrica). The activity will furthermore involve upgrading of the GIS-based data and information management system as developed under the UNEP/EAF/14 Project.

The Development of a Clearing House Mechanism and Information Sharing System on Eastern African Coastal and Marine Environment at the national level will be executed by national institutions. In each of the participating countries, a national focal institution will be appointed to coordinate the collection of data and meta-data for the Information System. In this respect, an MOUs will be established with such institutions in order to facilitate this work.

The actual data collection exercise will occur in collaboration with the Intergovernmental Oceanographic Commission (IOC) of UNESCO, which is undertaking a large-scale initiative to develop African-wide Marine Atlases. The IOC has established National Oceanographic Data Centers in each country, which will play a key role in the actual collection of data at the national level.

Specific Terms of Reference for the National Focal Institution

The national focal institutions will be charged with the following responsibilities:

(a) Constitute a national working group and identify sources of data through establishment of linkages with key stakeholders;

1. Identify and constitute a team of experts at national level with a broad range of expertise representing different institutions/stakeholders to act as a National Working Group (note: this may be an existing coordination mechanism) for the coordination of the activities related to collection, collation and formatting of data and information to be uploaded into the Eastern African Coastal and Marine Environment Clearing House Mechanism, including coordination of capacity building activities at national level.

2. Define and apportion responsibilities and/or tasks to institutions and/or stakeholders for the coordination of the activities related to collection, collation and formatting of data and information to be uploaded into the Eastern African Coastal and Marine Environment Clearing House Mechanism.

3. Coordinate the process of identification of sources of data and information and encourage stakeholders to provide their data to the Eastern African Coastal and Marine Environment Clearing House Mechanism, whether as actual data or in the form of metadata.

4. Establish links and engage various institutions and/or organizations at national level in order to obtain broad consensus on data and information ownership and in particular establish linkages with the national hubs that may be existing in Universities, Research Institutions, National Data Centers, Government Ministries (Departments/Agencies), CBOs, NGOs, Petroleum and Mining Agencies, Museums and Aquariums, etc.

5. Process queries received from national, regional and international data users, partners and stakeholders on the uploaded data and subsequently request concerned institutions or stakeholders to provide the required data or information.

(b) Collection and collation of data and information;

1. Convert (where necessary) data into a standard format for uploading to the Eastern African Coastal and Marine Environment Clearing House Mechanism.

2. Regularly update national databases and archive data from all programs and projects using a standard format.

3. Coordinate and supervise the overall preparation and uploading of data and information prepared by institutions and experts into the Eastern African Coastal and Marine Environment Clearing House Mechanism.

(c) Ensure quality control on the data before uploading into the Eastern African Coastal and Marine Environment Resources Clearing House Mechanism;

1. Establish a mechanism of validating the quality of data and information collected by experts, and other stakeholders, through internal or external review of the data, in liaison with the relevant National Working Group and/or any other appropriate national coordination mechanism.

2. Advice stakeholders on how to improve on the quality of their data following internal or external review of data.

(d) Create awareness and feedback mechanisms on the Eastern African Coastal and Marine Environment Resources Clearing House Mechanism;

1. Create awareness of the existence of the Eastern African Coastal and Marine Environment Resources Clearing House Mechanism and encourage Universities, Research Institutes, National Data Centers, Government Ministries, Departments, Agencies, CBOs, NGOs, Petroleum and Mining Agencies, Museums and Aquariums, etc to make use of the system.

2. Distribute awareness creation materials prepared by the project, such as brochures and newsletters, to key stakeholders.

3. Identify the needs and requirements of users of the Eastern African Coastal and Marine Environment Clearinghouse Mechanism and feedback and act on recommendations to this extent to the Clearinghouse Mechanism.

(e) Build capacity for collection, quality control and uploading of data;

1. Identify capacity building needs and suggest appropriate capacity-building activities targeting key stakeholders at national level.

4. Train key persons in participating institutions on the formatting of data and uploading of the same into the Eastern African Coastal and Marine Environment Clearing House Mechanism.

ANNEX 6: EASTERN AFRICAN COASTAL AND MARINE ENVIRONMENT RESOURCES CLEARING HOUSE MECHANISM: DRAFT DATA SHARING POLICY UNEP/GEF/WIO-LaB/CHM.1 /7

Context

The Nairobi Convention strongly affirms the important need to exchange and share information on the coastal and marine environment as a basis for effective, sustainable coastal management. More accessible, timely and accurate data, information and knowledge are expected to promote better environmental assessment, decision-making and improved management at the regional and national levels and enable Western Indian Ocean countries to fully participate and benefit from lessons learned from national and cross-border activities. The Nairobi Convention is tasked with building a technical support service and an information clearinghouse to offer partner organizations, multilateral operations and governments a cost-effective service with high standards of data management and structuring to maximize sharing of data, ideas, strategies and reporting.

Why Data Sharing?

Data sharing is expected to achieve many important goals for the coastal community.

1. Data sharing will expedite translation of research results into knowledge, products and procedures critical to coastal management. Increasingly policymakers and practitioners are using research data to make informed decisions.

2. It will reduces costs by avoiding expensive duplicate data collection efforts by making known what data have been collected so that additional resources are not spent to gather essentially the same information.

3. Data sharing will make it easy to access data that cannot be readily replicated e.g. large surveys that are too expensive to replicate; studies of unique populations; studies conducted at unique times such as a natural disaster; and studies of rare phenomena.

4. Data sharing will ensure that these significant materials are accessible in perpetuity to the society.

5. To researchers, sharing data reinforces open scientific inquiry, encourages diversity of analysis and opinion, promotes new research, supports studies on data collection methods and measurement, and permits the creation of new datasets when data from multiple sources are combined.

Timeliness of Data Sharing

Recognizing that the value of data often depends on their timeliness, data sharing should occur in a timely fashion. The success of data sharing endeavour ultimately depends on the data providers' willingness to deposit their data for other to use.

What kinds of data are candidates for sharing?

Potentially all kinds of data are candidates for sharing regardless of whether the data is published or unpublished reports.

Data can be shared in many ways including as publications, public archives, and websites that build in access protections for restricted data. In some cases, mixed mode sharing is common to allow for more than one version of the dataset and to provide different levels of access depending on the version. The method for sharing that a data provider selects is likely to depend on several factors, including the sensitivity of the data, the size and complexity of the dataset, and the volume of requests anticipated.

Dataset to be archived must be organized in such a way that other people can read it. The common methods are ASCI data files or software-specific system files. System files are compact and efficient, but one should keep in mind that older system files may not be cross-platform compatible. Recently, a number of online analysis-ready files packages have been developed such as ArcIMS for georeferenced datasets. These programs have the advantage of allowing users not only to perform analysis online, but also to select only those variables and cases actually required for an analysis.

Data Documentation

Regardless of the mechanism used to share data, each dataset will require documentation (metadata). Proper documentation ensures that others can use the dataset and prevents misuse, misinterpretation, and confusion. The precise content of documentation will vary by the type of data collected, and characteristics of the dataset (document, map, picture, bibliography etc).

The Dublin Core Metadata Initiative (DCMI) is a standard promoting the widespread adoption of interoperable metadata standards and developing specialized metadata vocabularies for describing resources that enable more intelligent information discovery systems. Standard intellectual property notice and legal disclaimers are available for adoption from http://dublincore.org/. Coordinate-based geographic metadata formats are good compliment for spatial datasets.

Availability of data is publicly announced on the Web site through the recent updates & additions feature.

Data Sharing Policies:

Data sharing may be limited, in some cases, by institutional policies as well as national laws and regulations, including the privacy rule. However, ethical codes are widely accepted as a good practice to avoid compromising individual subjects' rights and privacy, protect patentable and other proprietary data, adhere to restriction on data sharing imposed by agreements with third parties, and to protect an endangered resource.

Since policies with respect to data sharing vary across countries it would be helpful for participants to address any specific limitations in the data-sharing, determine what standards and best practices should be proposed in order to create a social environment that supports data sharing.

1. As a general policy, it is the data provider who will own the datasets in the repository because the project squarely places the responsibility for quality, timeliness, maintenance, versioning and other issues on the initial data producer or provider.

2. In situations where data contain detailed geographic information, archive staff may opt to produce a restricted-use version of the data file. The restricted version maintains the detailed geographic information, but may be obtained only by special arrangement with the data provider and/or the institutions. Spatial display of the data will be via appropriate GIS software

3. Uploading staff are encouraged to submit data for archiving, with the permission of the original data producer.

4. Participating institutions will be required to commit to standard operating procedures necessary to acquire, process, store, distribute and freely share and exchange information

ANNEX 7: IMPLEMENTATION PLAN FOR DEVELOPMENT OF THE CLEARINGHOUSE MECHANISM
UNEP/GEF/WIO-LaB/CHM.1 /9

	ACTIVITY	YEAR 2006	YEAR 2007	YEAR 2008/9	ACTION
	Develop a comprehensive national data inventory with common standards and built-in functions				
1	Regional Strategic project planning workshop (stakeholders, focal points, potential Collaborating Centres)	May			DEWA, NC, WIOL, CC
2	Report of the workshop	Jun			WIOLAB
3	Identify lead national node	July			DEWA, WIOL, CC
4	Appoint Country Coordinator by lead collaborating Centre (CC)	Jul			CC
5	Develop ToR and MoU for implementation, maintenance, updating of database by CC	Jul			DEWA
6	Set up the country working group	Jul			CC
7	National planning meeting of the Coordinator and committee (working group)	Aug			CC, DEWA, WIOL
8	Transfer funds on basis of MoUs concluded	Sept			DEWA, WIOLAB
9	Provision of appropriate information and communication technology based on needs assessment and questionnaire	Sept-Oct			DEWA, WIOLAB
10	Set up hardware, LAN for communication with central system at CC including support to national website	Oct-Nov			CC
	Provision of basic, selected and/or critical datasets by participating institutions				
11	Develop national databases template for data storage	Aug			DEWA, WIOL
12	Database documentation to ease transitional management/training	Sept			DEWA, WIOL
13	Country level training of working groups on data formatting and uploading of the same in coordination with Odinafrica programme	Oct-Dec			DEWA, WIOL, CC, Odinafrica
14	Identify relevant information available in-country	Sept			CC
15	Acquire and collate existing data and information in-country	Oct-Dec	Jan-Dec	Jan-Dec	CC
16	Validate data and information by the	Dec	Jan-Dec	Jan-Dec	CC

	ACTIVITY	YEAR 2006	YEAR 2007	YEAR 2008/9	ACTION
	Country working group				
17	Identify 'indicator' information for decision makers (Nairobi Convention & GPA priorities)	Dec	Jan-Dec	Jan-Dec	NC, CC, WIOL
18	Input relevant info into the national database	Oct-Dec	Jan-Dec	Jan-Dec	CC
19	Facilitate and coordinate capacity building and training at national level to improve collection, collation, analysis, data management and archiving	Nov-Dec	Jan-Dec	Jan-Dec	DEWA, CC
20	Identify significant gaps in the country data		Jan-Dec	Jan-Dec	CC, DEWA, WIOL
	Internet data dissemination and automation of the data to information and information to knowledge process				
21	Develop and adopt regional clearinghouse and information system design	Sept			DEWA, WIOL
22	Document database design to ease transitional management and training	Sept			DEWA, WIOL
23	Restructure EAF/14 website for additional categories and functions	Oct-Dec			DEWA, WIOL
24	Upgrade EAF/14 list server and automate it to respond to participants/subscribers	Oct-Dec			DEWA, WIOL
25	Register collated data into the central database via internet		Jan-Dec	Jan-Dec	CC
26	Design, develop and deploy automated web services		Jan-Dec		DEWA
27	Create interconnectivity of projects and networks active in the region	Oct-Dec			DEWA, Regional initiatives
28	Online Survey		Jan- Dec	Jan- Dec	DEWA, CC
29	Prepare quarterly project e-newsletter	Oct	Jan-Apr-Jul-Oct	Jan-Apr-Jul-Oct	DEWA, WIOL
30	Prepare and print outreach promotional materials for the project		June		DEWA, WIOL
31	Country-level workshops for coastal planners, managers and administrators		Aug	Jan-Sept	DEWA, CC, WIOL
32	Regional level workshop to review progress at national level & long term sustainability		Oct	Oct	DEWA, WIOL