

MOZAMBIQUE ANNEX II. METADATA RECORDS

2. BIOPHYSICAL ENVIRONMENT

2.1 Description of the Coast and distinctive features

Data type	Theme	Format	Metadata record*	Description
Spatial data	Coastline	Shapefile	http://geoportal.inahina.gov.mz/Portal/DiscoveryServlet	Nautical charts numbers: available in hardcopy

2.2 General description of the climate

Data type	Theme	Format	Metadata record	Description
Spatial and temporal data	Temperature	Hard copy (archaic format)	view	Time series of temperature along the Meteorological stations (Maputo, Inhambane, Beira, Quelimane, Pebane, Nacala, Angoche and Pemba)

2.3 Marine and coastal geology and geomorphology

Data type	Theme	Format	Metadata record*	Description
Map	Geomorphologic Chart of Mozambique	hard copy	view	Map of the main geomorphologic characteristics of Mozambique

2.4 Freshwater resources and drainage, including rivers, estuaries, deltas and coastal lakes

Data type	Theme	Format	Metadata record*	Description
Table	River base name	Hard copy	view	An overview of the hydrological data of the major rivers in Mozambique.
table	River area in Mozambique	Hard copy	view	The area of the main Rivers in Mozambique
table	Maximo, minimum and mean discharges	Hard copy	view	Discharges in m ³ /s of the main Rivers in Mozambique

*Publication of the National Directorate of Fresh Water

2.5 Physical Oceanography

2.5.2 Tidal regime and waves

Data type	Theme	Format	Metadata record*	Description
Files	Tides	digital	view	Tide Data base of INAHINA. Digital observations of tides
Maps	Tides	Hard copy	view	Description of amplitude and phase of tide wave propagation in Maputo Bay. Maps of amplitude and phase in Maputo bay

2.5.3 Sea Level Change

Most of the tide data are in simple text files, dubbed IH files, very useful to apply in data analysis software used for tide forecasting at INAHINA. Topographic data, considered crucial in establishing the sea level station are found at CENACARTA and INAHINA.

Data type	Theme	Format	Metadata Record	Description
Time Series	Tides in this Ports: Nacala, Beira, Maputo and Pemba	Txt and Excel spreadsheets	Cenado view	Hourly tides
Time Series	Tides in this Ports: Nacala, Beira, Maputo and Pemba	IH (Txt files)	view	Hourly tides

2.5.4 Ocean Temperature

Data type	Theme/title	Format	Metadata record	Description
CTD	Water Temperature in Maputo bay (2007,2008,2009,2010), Beira (2006,2009) and Pemba bay(2007)	txt, CNV files	view Cenado, Inahina	Periodic data collected and analyzed to help understand the physical processes

2.5.5 Salinity patterns

Data type	Theme	Format	Metadata record	Description
CTD	Water Salinity in Maputo bay (2007,2008,2009,2010); Beira (2006,2009) and Pemba bay(2007)	TXT, CNV files	view	Periodic data collected and analyzed that help understand the physical process

2.5.6 Ocean Atmosphere Interactions

As far as heat flux and evaporation is concerned, data exist in the National Institute of Meteorology (INAM), both for inland and oceanic stations. Even though there are no recent known studies and results from these data.

Data type	Theme	Format	Metadata record	Description
Atmospheric	Pollution in Maputo City	Txt files	view	Climatology. CO2, PM10, PM2.5
Atmospheric	Pollution in Maputo City	Txt files	view	Climatology. SO2, CO, NO2, VOC

2.6 Chemical and Biological Oceanography

2.6.1 Nutrients

- Chlorophyll-a
- Silicates
- Phosphates
- Nitrites

Data type	Theme	Format	Metadata record	Description
Satellite data	Chlorophyll-a)	Images, ASCII	-	http://.www.gionanni oceancolor, SEAWiFS
In-situ data water sample	Chlorophyll-a Nutrients (silicates, phosphates and nitrites)	Table (Hard copy and digital copy), graphics	-	RV Dr. Fridjof Nansen cruise, 2007
In-situ data water sample	Chlorophyll-a, Nutrients (silicates, phosphates and nitrites)	Table (Hard copy and digital copy), graphics	-	DR Dr. Fridjof Nansen cruise, 2008

Comment [R1]: Whereis the data available from?

2.6.2 Persistent organic/inorganic pollutants

Data type	Theme	Format	Metadata record	Description
Satellite data	Oils spills	Satellite Image, TIF	-	MODIS AQUA, MERIS
In-situ data sample	Oils spills, suspended solids	Table (Hardy copy and digital copy)	-	Unpublished (MICOA, report)
In-situ data sample	NO3	Table (Hardy copy and digital copy)	-	Unpublished (Analysis by National Laboratory for Food and Water, Maputo)

Comment [R2]: Where can the data befound?

2.6.3 Primary production

Data type	Theme	Format	Metadata record	Description
Satellite data	Ocean color	Jpg, ascii	-	www.giovanni
In-situ water samples	chlorophylls	Table(Hardy copy and digital copy), graphics	-	Dr. Fridjof Nansen report cruise 2007, Special study
In-situ water samples (Pigment information, HPLC)	Prochlorophytes, haptophytes, bacillariophytes, cyanophytes and dinophytes	Table(Hardy copy and digital copy), graphics	-	Dr. Fridjof Nansen report cruise 2007, Special study

Comment [R3]: Where can this data be found?

2.6.4 Secondary production

Data type	Theme	Format	Metadata record	Description
In-situ water sample		Hardy copy and digital copy	-	RV Dr. Fridjof Nansen cruise, 2008
In-situ water sample	<i>Herklotsichthys quadrimaculatus</i>	Table (Hardy copy and digital copy),	-	- RV Dr. Fridjof Nansen cruise, 2007
In-situ data water sample		Hardy copy and digital copy	-	RV Dr. Fridjof Nansen cruise, 1979

2.7 Coastal zone and continental shelf

2.7.1 Description and extent of coastal and marine habitats

Data	Theme	format	Metadata record	Description
Map of coastal zone and continental shelf	Extension, general characteristics	Digital (pdf)	(1)Hoguane 2007	Mapping of the Mozambican coast and continental shelf; the Coral coast, Swamp cost and Parabolic dune coast
Map of coastal zone and continental shelf	Extension, general characteristics	Digital (pdf)	(3) Hatton and Munguambe 1997	Mapping of the Mozambican coast and continental shelf; the Coral coast, Swamp cost, Parabolic dune coast and Deltas
Textual description, extension and general characteristics		Digital (pdf)	(4)MICOA 2006	General description of the Mozambique ecosystems (including the coastal) and its Biodiversity.

Table containing threats to coastal ecosystems in Mozambique	Threats for coastal ecosystems in Mozambique	Digital (pdf)	(4)MICOA 2006	Threats to coastal ecosystems (mangroves, sand beaches, coral reefs). Threats to sea turtles and destructive fishing methods
Preliminary assessment of coral bleaching in Mozambique to asses the extent of reef loss during the 1997 to 1998 El Nino phenomenon	A preliminary assessment of Coral Bleaching in Mozambique	Digital (pdf)	Schleyer <i>et al.</i> 1999	Assessment of the extent of reef loss in Mozambique during the 1997 to 1998 El Nino phenomenon. Surveys performed from March 24 to April 8, 1999. Results present status and condition of each reef surveyed based on ranking of benthic cover and fish trophic groups.
Results from the second year of coral reefs monitoring program in Mozambique	Coral Reef Monitoring in Mozambique. II: 2000 Report	Digital (pdf)	Motta <i>et al.</i> 2002	Results from the second year of monitoring. Status and condition of each reef surveyed based on ranking of benthic cover and fish trophic groups. Analysis of the effect of El Nino bleaching. Analysis of the effects of COTs Outbreaks

2.7.2 Productivity of the coastal zone

	Data type	Theme	format	Metadata record	Description
Corals	Tables showing percentage of coral and reef cover of the main coral reefs	Abundance (% coverage)	Digital (pdf)	Schleyer <i>et al.</i> 1999	Percentage of coral and reef cover of the main coral reefs in Mozambique.
	Tables showing percentage of coral and reef cover of the main coral reefs	Abundance and diversity (percentage of coral and reef coverage).	Digital (pdf)	Motta <i>et al.</i> 2002	Average percentage cover of life form categories and substratum composition of the main coral reefs in Mozambique.
	Tables showing abundance, diversity and size class structure of coral reefs fish species	Abundance, diversity and size class structure of coral reefs fish species.	Digital (pdf)	Motta <i>et al.</i> 2002	Abundance, diversity and size class structure of reefs fish species of the main coral reefs in Mozambique. Include abundance of trophic groups

	Table showing the Number of genera and species of main reef-associated fishes.	Number of genera and species of main reef-associated fishes of Mozambique	Digital (pdf)	Pereira 2000	Diversity of reef fishes in main reef systems of Mozambique
	Map of the Mozambican coastline depicting reef distribution	Reef type and distribution of coral reefs at Mozambique	Digital (pdf)	Schleyer <i>et al.</i> 1999	distribution of the coral reefs along the Mozambican coast (northern, central and southern region)
Mangroves	Description of mangroves diversity in Mozambique	Diversity of mangroves in Mozambique	Digital (pdf)	Barbosa <i>et al.</i> 2001	Nine species described. Diversity in Northern, Central and Southern regions of Mozambique
	Table showing Changes in mangrove cover (hectares) in Mozambique between 1972–1990	Abundance and Changes in mangrove cover (hectares) in Mozambique between 1972–1990	Digital (PDF)	Barbosa <i>et al.</i> 2001	Mangrove areas in ha per province and changes occurred between 1972 and 1990
	Map of distribution and description of mangroves in Mozambique	Mangrove habitats and distribution	Digital (PDF)	Barbosa <i>et al.</i> 2001	Distribution and extension of mangroves in the Northern, Central and Southern part of Mozambique
Seagrass beds	Table showing diversity seagrass and common macroalgae species in Nampula Provinces	Seagrass and common macroalgae species in Nampula Provinces, Northern Mozambique	Digital (PDF)	Massingu e and Bandeira 2005	Compares abundance between different sites.
	Table showing diversity and abundance of Seagrass and seaweed at Moçambique Island	Seagrass and seaweed abundance at each plant community at Moçambique Island	Digital (PDF)	Massingu e and Bandeira 2005	Eleven species described. It is a very high diversity taking in count the small area of this island, when compared to the whole diversity in western Indian region (13 spp)
	Map of the seagrass communities in	Distribution of seagrass communities in	Digital (PDF)	Massingu e and Bandeira	It was estimated the Seagrass and seaweeds communities cover

	the intertidal flats of Moçambique island	the intertidal flats of Moçambique island		2005	about 70% of the intertidal flats with <i>Thalassia hemprichii</i> / macroalgae being the largest community
	Description of seagrass diversity around Inhaca Island	Diversity of seagrass species around Inhaca Island	Digital (PDF)	Gullström and Dahlberg 2004	9 seagrass species were identified at Inhaca Island.
	Abundance, biomass and mean length of the main fish species on seagrass habitats	Abundance, biomass and mean length of fish captured from seagrass sites around Inhaca Island	Digital (PDF)	Gullström and Dahlberg 2004	Fish data from 4 seagrass sites around Inhaca Island, Mozambique. The commercial importance of fish is mentioned
	Dominant fish taxa (abundance and biomass by families)	Ranking order of total density and biomass (in percent) of all fish families caught at Inhaca Island, Mozambique.	Digital (PDF)	Gullström and Dahlberg 2004	26 fish families listed.
	Table showing density of sea grass in intertidal flats on Inhaca island.	Shoot density, number of leaves, leaf length and width and total area of seagrass species on the tidal flats of Inhaca island.	Digital (PDF)	de Boer 2000	Shoot density, number of leaves, leaf length and width and total area of seagrass species on the tidal flats of Inhaca island, Mozambique. Includes the seasonal variation
	Table showing decomposition rates of seagrass leaves	Proportion of initial biomass remaining after 35 days	Digital (PDF)	de Boer 2000	The decomposition of seagrass leaves in terms of DW decomposition

EAF/14 data?

2.9 Macrofauna (state of biological knowledge)

2.9.2 Fish and fish resources

The data sets relevant to the fish resources are the information related to diversity and species distributions along the coast, such as Cruise Reports of Fridjof Nansen, Visconde de Eça and shallow and deep water prawn cruises (yearly), stock assessment report of the main commercial and demersal fish as well as the annual reports of the monitoring program of artisanal fisheries implemented by IIP. These data sets are summarized in table I, below.

Data sets relevant to the fish resources.

Data type	Theme/ title	Format	Metadata record	Description
text file	Abundance, biomass, diversity, species distributions	Hard copy and digital copy	view	Fridjof Nansen cruise Complete and historical archive. IIP and FAO, 2007
text file	Investigação do Camarão no banco de Sofala realizado a bordo do N/C ARPEM IV	Hard copy and digital copy	view	Relatório do Cruzeiro. Complete and historical archive. IIP 2008
text file	Estatísticas da Pesca Artesanal em Moçambique	Table: Hard copy and digital copy	view	Historical archive and on-going process. IIP 2006
text file	Abundance and Fisheries assessment of Hilsa kelee (Magumba)	text : Hard copy	view	-Abstract; -Stock assessment; Loureiro <i>et al.</i> 2006
text file	Macrodiagnostico da Zona Costeira de Moçambique	text : Hard copy	view	MICOA 1998
text file	Catch and Effort trends in the artisanal line fishing in Maputo Bay, Mozambique	text: Hard copy	view	Universidade Apolitécnica 2009
text file	Preliminary Checklist of Reef-associated Fishes of Mozambique	digital copy	view	Fishery Checklist of Reef-associated Fishes. MICOA
text file	Fisheries assessment. Species Profile and Towards a management plan for the Mozambican Linefishery	text: Hard copy	view	Fishery Description and Stock assessment. Van der Elst <i>et al.</i> 2003
text file	Assessment of Mozambican linefishes	Text and table: Hard copy	view	Stock assessment .Torres and Jakobsen 2007

Comment [R4]: Hyperlink to data source

2.9.3 Marine Mammals

	Data type	Theme	format	Metadata	Description
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Dugong	Description of abundance of dugongs In Bazaruto Bay in 1993	Abundance of dugongs In Bazaruto Bay in 1993	Hard copy	view	150 individuals (In Bazaruto Bay). Guissamulo 1993
Dolphin	Description of abundance of humpback dolphins inhabiting Maputo Bay	Abundance of humpback dolphins inhabiting Maputo Bay	Digital (PDF)	view	humpback dolphins inhabiting Maputo Bay (Dec 1995-Dec 1997) Guissamulo and Cockcroft 2004
	Description of diversity of dolphins at Maputo Bay and Bazaruto archipelago	Diversity of dolphins at Maputo Bay and Bazaruto archipelago	Digital (PDF)	view	Maputo Bay and Bazaruto archipelago. Guissamulo and Cockcroft 1996
Wales	Description of abundance, diversity and distribution of wales in Mozambique	Abundance, diversity and distribution	Digital (PDF)	view	Abundance, diversity and distribution of wales in Mozambique. Guissamulo & Cockcroft 1997
Seals	Description of abundance, diversity and distribution of seals in Mozambique	Abundance, diversity and distribution	Digital (PDF)	view	Abundance, diversity and distribution of seals in Mozambique. Guissamulo and Cockcroft 1997

Comment [R5]: Hyperlink to data source

2.9.4 Reptiles

Data type	Theme	format	Metadata record	Description
Description of abundance of marine turtles in Mozambique coast	Abundance of marine turtles in Mozambique coast,	Digital (PDF)	view	General relative abundance. Costa <i>et al.</i> 2007
Description of diversity of marine turtles in Mozambique coast	Diversity of marine turtles in Mozambique coast	Digital (PDF)	view	5 species reported to occur and breeding in Mozambican coast and Islands. Costa <i>et al.</i> 2007
Description of diversity of marine turtles in Mozambique coast	Diversity of marine turtles in Mozambique coast	Digital (PDF)	view	5 species reported to occur and bread in Mozambican coast and Islands. Louro <i>et al.</i> 2006
Maps of general distribution of the	Distribution marine turtles along the	Digital (PDF)	view	Presence of turtle species across the three coastal

Comment [R6]: Hyperlink to data source

five species of marine turtles that occur in Mozambique	Mozambican coast			regions. - Presence of nesting turtles across the three coastal regions of Mozambique. Costa <i>et al.</i> 2007
Maps of general distribution of the five species of marine turtles that occur in Mozambique	Distribution marine turtles along the Mozambican coast	Digital (PDF)	view	general distribution of the five species of marine turtles that occur in Mozambique - Presence of nesting turtles across the three coastal regions of Mozambique. Louro <i>et al.</i> 2006

2.9.5 Coastal and Marine Birds

Data type	Theme	Format	Metadata	Description
Maps	Abundance of marine and coastal birds at South of Save River, Mozambique	Hardcopy (Atlas)	view	Birds at South of Save River, Mozambique. Parker 2000
	Table (List)	Digital (PDF)	view	Numbers of waders at two sites in Mozambique (Bazaruto and Inhambane bay). Bento and Rufino 2000
	Table	Digital (PDF)	view	Total number Shorebirds counted at Inhaca Island (1995-1997) and relative abundance. de Boer 2002
	Table	Digital (PDF)	view	Abundance of Shorebirds at Inhaca Island January- June 1994. de Boer and Longamane 1996

Comment [R7]: Hyperlink to data source

2.9.6 Exotic and invasive species

Data type	theme	format	Source	Description
Table showing the distribution of COTS damage and outbreaks on some reefs of Mozambique	Distribution of COTS damage and outbreaks on some reefs of Mozambique	Digital (PDF)		ORI record of COTS damage and outbreaks on some reefs of Mozambique. (See table 3). Schleyer 1998
Table of area of impact caused by COTS in Mozambique	Area of impact caused by COTS	Digital (PDF)		Area of impact caused by COTS at Bazaruto Island. Schleyer 1998

Comment [R8]: Hyperlinks or references need to be added to this column

5. POLICY AND GOVERNANCE

5.1 Administrative Regions on land (Coastal districts, municipalities)

Data about governance are not so lake and they reflect not only the law but also the rearrange in district policy. The Ministry of statal Administration is the lead in data and Instituto Nacional de Estatistica (INE) also has historical data in governance as female in decision employment and in parliament (*Mulheres e Homens*. INE 2009). The documents, "PerfisDistritais" are basic and important metadata, created by Ministry of statal Administration about the districts.

Data type	Themes	Format	Metadata record	Description
Pdf document	Perfil of ... District	Digital	view	Administrative and cultural profile of coastal district.
Pdf document	Perfil of ...District	Digital	view	Administrative and cultural profile of ..coastal district.
Pdf document	Marracuene coastal district of Maputo)	digital	view	Administrative and cultural profile of ..coastal district.

Comment [R9]: This table is incomplete, it gives no useful information and needs to be redone with hyperlinks and more information added

5.2 Administrative / Legislative Zones of Sea (Territorial Waters, EEZ)

Information on the exclusive economic zones of Mozambique can be found in the website on environmental legislation, <http://www.legisambiente.gov.mz> in the Constitution of the Republic of Mozambique, and in the UN Convention on the Law of the Sea.

5.3 Legislation

Data type	Themes	Format	Metadata record*	Description
Pdf document	Law of the Sea	digital	view	
Pdf document	Law of Water	digital	view	
Pdf document	Law of fish, N°3/90	Digital	view	

5.5 National, Provincial and local authorities in coastal / marine affairs

The data of coastal administrative activities can be found in the municipalities and administration stations. Most of them are hard copy data archived in files

5.6 NGOs / Private sector

[LISTS of organizations](#)

Data type	Themes	Format	Metadata record*	Description
	WWF-Mozambique	Digital		
	Conservation Trust Fund	Digital		
	Forum nature in danger	Digital		

Comment [R10]: This table is incomplete

5.7 Internatinal Relations, Convections and Committees

Treaties and Conventions to which Mozambique (MOZ) is a Member

Data type	Themes	Format	Metadata record*	Description
Pdf document	Convenção para protecção, gestão e desenvolvimento marinho costeiro da região Oriental de Africa	digital	view	Prevent negative phenomenon of marine and Coastal environment
	African Convention	Digital	view	
	Resolution nº64/2004	Digital	view	
	Resolution nº 21/81	Digital/Hardcopy	view	

Comment [R11]: Please translate into English and add hyperlinks to the data sources.

6. PLANNING AND MANAGEMENT

6.1 National Disaster Management Plans

Data type	Themes	Format	Metadata record*	Description
Text File	Floods and Tropical Cyclones	Hardcopy	view	

Comment [R12]: Please complete this tabeland add a hyperlink to the data source

6.2 Environmental Sensitivity Mapping

Data type	Themes	Format	Metadata record*	Description
Text File	Flood	hardcopy		Results of maximum recorded water flows in these basins and comparison with the levels of alert for each hydrometric station.
Text File	Climate change	Hardcopy		The results of the study show that is expected the increase of maximum and minimum temperature and precipitation, in some coastal areas the sea level will increase, some farming areas are going to be reduced and the problems of coastal erosion will increase. The

				results also refer to increased tropical cyclone activity in the region.
Text File	Food Security	Hardcopy		The report presents the results of mapping areas of vulnerability to food security, natural disasters and recommends intervention measures for different stakeholders.

Comment [R13]: This table needs hyperlinks to the data sources

6.3 Coastal Management / Development Plans

Data type	Themes	Format	Metadata record*	Description
Laws/conventions	Sea; Fisheries; protection against pollution; Water	Hard copy/digital	MICOA	Coastal zone legislation

Comment [R14]: Hyperlink to data source

6.4 Areas under Special Management