

ASCLME MEDA Template

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MEDA ANNEXES

GUIDELINES FOR THE CONTENT OF EACH SECTION OF THE MEDA

Preamble (Introduction, and placing the MEDA in National context)

The national Marine Ecosystem Diagnostic Analyses (MEDAs) form the basis for the contribution of each country to the regional Transboundary Diagnostic Analyses (TDAs). As such they are fundamentally important to the success of the ASCLME Project. MEDAs will capture essential information relating to the dynamic biophysical processes that define the LMEs, and identify areas of concern that will feed into the Transboundary Diagnostic Analyses (TDAs), and the Strategic Action Programmes (SAPs), one for the Agulhas Current LME, and the other for southern part of the Somali Current LME. The parallel UNEP (WIO-LaB) and World Bank (SWIOFP) Projects will also feed pertinent information into the TDA/SAP formulation process, and identify policy, legal and institutional reforms and needed investments to address transboundary priorities.

A Executive summary

B Current status

Current status of the national marine ecosystem, socio-economics, governance and management in a logical structure (see pages 2-5 below). This should include areas that WIO-LaB and SWIOFP are covering, as they are not producing national MEDAs. At the same time, there is no need to duplicate work between sister projects, so we should reference WIO-LaB / SWIOFP documents/products eg. the WIO-LaB TDA when required. We do need to remember to cover all aspects of the marine & coastal ecosystem. Any and all contributions should be fully acknowledged, even if from unpublished sources.

Recent history as well as palaeo-science must be reviewed if relevant to the current status of the national marine ecosystem.

Each section has a recommended length; this is a **rough** guide for text, and excludes maps, tables, graphs, areas of concern, lists of data, and gaps.

The data sets listed below, issues and gaps are **suggestions and examples** only. The examples may not be relevant to every country, and are by no means the only areas to be addressed. The MEDA is expected to reflect a **complete review** of each section.

The general description should be comprehensive, exhaustive, fully referenced and make use of any national state of the coast/ocean/environment reports that are available. It should review current ecosystem knowledge and knowledge gaps. The document should be written in a style suitable for publication. Throughout the text, for each numbered section, inserts should be provided on:

i) AREAS OF CONCERN Identification of National Marine Ecosystem Resource Issues and Problems. Particular attention should be paid to a) Issues within your country that are caused or influenced by other countries / international activities, b) Regional issues (shared by neighboring countries, c) Activities or issues within your country that have an influence externally – on other countries or on areas beyond national jurisdiction.

ii) DATA. Data sets relevant to each section (not raw data sets, here I refer to numeric or spatial information). Summarised in Annex II and III.

iii) GAPS. What is not known (gaps in knowledge) and recommendations to address these gaps. Also to be summarized in Annex IX.

➤ All literature used should be entered into the extended bibliography (Annex I)

- All data sets cited should be captured into the metadatabase, records from which should be appended to the MEDA (Annex II).

1. COUNTRY OVERVIEW

Including a general introduction to the economy

2. BIOPHYSICAL ENVIRONMENT

2.1 Description of the coast and distinctive features

Approximately one page of text

An exhaustive description of the coast and distinctive features, fully referenced.

i) Areas of concern

ii) Data

Data type	Theme	Format	Metadata record*	Description
Spatial data	Coastline	Shapefile		
Spatial data	Continental shelf	Shapefile		
Spatial data	Deltas	Shapefile		
Aerial photographs				(availability, dates, vertical/oblique, scale)
Spatial data	Bathymetry data			
Spatial data	Coastal topography data			
Nautical charts of the coast				list of charts, availability in hardcopy / electronic / themes digitized separately

* Insert a unique ID for the full metadata record(s), or a hyperlink to a URL for the metadata record.

iii) Gaps

Data or information still required to complete this section.

Eg a lack of published baseline points

2.2 General description of the climate

Approximately one page of text; *an exhaustive description of the climate, seasonality and trends over time. This should be a general description of the climate.*

i) Areas of concern

eg. Environmental variability / unpredictability

ii) Data

Data type	Theme	Format	Metadata record	Description
	National meteorological observations			Parameters measured and periodicity

iii) Gaps

Data or information still required to complete this section.

2.3 Marine and coastal geology and geomorphology

Approximately one page of text; *an exhaustive description of the geology and geomorphology, fully referenced.*

i) Areas of concern

eg. Coastal erosion

Mineral exploration

ii) Data

Data type	Theme	Format	Metadata record	Description
	Soil types			
	Minerals			
	Geohazards			
	Sediment			

iii) Gaps

Data or information still required to complete this section.

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

Approximately one page of text;

An exhaustive description of freshwater resources and drainage basins, fully referenced. Including coastal aquifers.

i) Areas of concern

eg. Freshwater input into the coastal environment – impacts of water abstraction or pollution.

Eg availability of fresh water resources

Eg water abstraction and pollution -pollution input (agricultural or industrial)

Eg. Sediment input

ii) Data

Data type	Theme	Format	Metadata record	Description
	Rivers (perennial and non-perennial)	Shapefile		

	Drainage basins	Shapefile		
	River discharge			
	Flow regimes (and seasonality of flow)			
	Flow regimes of major rivers	Tabular data		

iii) Gaps

Data or information still required to complete this section.

2.5 Physical Oceanography

2.5.1 Currents (Coastal hydrodynamics and offshore current systems)

- **3-5 pages of text**
- Patterns and variability

i) Areas of concern

ii) Data

Data type	Theme	Format	Metadata record	Description
Satellite data				
Mooring data				
Cruises				
Drifter data				
Indigenous knowledge				Descriptive information on coastal currents
Model outputs				

iii) Gaps

2.5.2 Tidal regime and waves

Half a page, tidal ranges

Wave patterns

i) Areas of concern

Storm surges, flooding, extreme waves

ii) Data

Data type	Theme	Format	Metadata record	Description
Tide gauge data				
Satellite data - waves				

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iii) Gaps

Eg. Lack of tide gauges (gaps in the regional array) is a possible data gap.

2.5.3 Sea level change

One page, include paleontology AND prediction.

i) Areas of concern

ii) Data

Data type	Theme	Format	Metadata record	Description
Tide gauge data				
Satellite data - waves				

iii) Gaps

2.5.4 Ocean temperature (climatologies and features / anomalies)

- SST and in-situ measurements

➤ **One page**

i) Areas of concern

Coral bleaching

Fish kills

Loss of colour, and hence value in seaweed products.

ii) Data

Data type	Theme	Format	Metadata record	Description
Satellite				
UTRs				
Thermister chains				
CTD				

iii) Gaps

2.5.5 Salinity patterns (climatologies and features / anomalies)

One page eg. Different water masses - description

i) Areas of concern

ii) Data

Data type	Theme	Format	Metadata record	Description
CTD				
Inshore measurements				

iii) Gaps

2.5.6 Ocean-atmosphere interaction

1-2 pages

Heat flux, carbon exchange, cyclogenesis, and evaporation. Indian Ocean Dipole, prediction/forecasting,

i) Areas of concern

- extreme events
- ocean acidification

ii) Data

Data type	Theme	Format	Metadata record	Description
Co2 – ship based				
CTD – ship based				
Drifters				
Model outputs				

iii) Gaps

2.6 Chemical and Biological Oceanography

2.6.1 Nutrients

i) Areas of concern

ii) Data

Data type	Theme	Format	Metadata record	Description

iii) Gaps

2.6.2 Persistent organic / inorganic pollutants (if not addressed in other sections)

i) Areas of concern

ii) Data

Data type	Theme	Format	Metadata record	Description

iii) Gaps

2.6.3 Primary production (climatologies and features / anomalies; biomass and phytoplankton taxonomy)

One page

i) Areas of concern

- dead zones
- harmful algal blooms (HABs)
- ocean acidification

ii) Data

Data type	Theme	Format	Metadata record	Description
Satellite data	Ocean colour			
In-situ water samples				

iii) Gaps

2.6.4 Secondary production (Zooplankton – biomass and taxonomy; patterns and features)

One page

i) Areas of concern

- trophic relationships

ii) Data

Data type	Category	Format	Metadata record	Description
Ship-based sample				

collection				

iii) Gaps

2.7 Coastal zone and continental shelf

2.7.1 Description and extent of coastal and marine habitats

2-3 pages

i) Areas of concern

- Bleaching,
- acidification,
- destructive fishing methods eg. dynamite fishing, IUU fishing, trawling
- coral mining
- sand mining
- seagrass clearing / beach cleaning
- urban expansion
- nutrient loading

ii) Data

Data type	Theme	Format	Metadata record	Description
Maps of coastal habitats (millennium products and ASCLME mapping activity)				
Previous assessments of marine habitats				
Classification schemes used in country for habitat assessment				
WIO-LaB TDA/SAP for issues and concerns				

iii) Gaps

2.7.2 Productivity of the coastal zone (corals, mangroves, seagrass beds)

2-3 pages

i) Areas of concern

- overharvesting
- unsustainable mangrove harvesting
- pollution

- sedimentation
- sea level change
- ecosystem health

ii) Data

Data type	Theme	Format	Metadata record	Description

iii) Gaps

2.8 Microfauna and meiofauna

i) Areas of concern

- dead zones
- harmful algal blooms (red tide)

ii) Data

Data type	Theme	Format	Metadata record	Description

iii) Gaps

2.9 Macrofauna (state of biological knowledge)

Under each one, describe important species commercially (including for tourism), as well as species of conservation concern.

2.9.1 Invertebrates

- Biodiversity and genetics
- Key species / groups that are being exploited or impacted, referring to section below for catch/economic stats

i) Areas of concern

- overharvesting
- exotics
- pollution (refer to 2.9.5)
- destructive fishing methods eg trawling, dynamite fishing
- effects of aquaculture
- habitat destruction

ii) Data

Data type	Category	Format	Metadata record	Description
	Abundance,			

	biomass, diversity, species distributions			

iii) Gaps

2.9.2 Fish and fish resources

- Biodiversity and genetics
- Key species / groups that are being exploited, referring to section below for catch/economic stats
- [Catch locations of non-commercial threatened species (eg coelacanths, dugongs)]

i) Areas of concern

- overharvesting, **note MCS cross-ref**
- exotics
- pollution (refer to 2.9.5)
- destructive fishing methods eg trawling, dynamite fishing
- effects of aquaculture
- habitat destruction
- effects of tourism

ii) Data

Data type	Theme	Format	Metadata record	Description
	Abundance, biomass, diversity, species distributions			

iii) Gaps

2.9.3 Mammals

i) Areas of concern

- overharvesting, **note MCS cross-ref**
- pollution (refer to 2.9.5)
- destructive fishing methods – damage to habitat eg trawling, dynamite fishing
- effects of aquaculture
- habitat destruction
- effects of tourism (viewing dolphins)

ii) Data

Data type	Themes	Format	Metadata	Description
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			record	
	Abundance, biomass, diversity, species distributions			

iii) Gaps

2.9.4 Reptiles

i) Areas of concern

- overharvesting, **note MCS cross-ref**, illegal fishing/poaching
- pollution (refer to 2.9.5)
- destructive fishing methods eg trawling, dynamite fishing, gill netting
- destruction of breeding and nesting sites (habitat destruction)
- sea level rise
- effects of tourism (hotel development)

ii) Data

Data type	Themes	Format	Metadata record	Description
	Abundance, biomass, diversity, species distributions			

iii) Gaps

2.9.5 Birds (seabirds and coastal birds)

i) Areas of concern

- pollution
- destruction of breeding and nesting sites (habitat destruction)
- lack of knowledge
- fishing methods
- introduced animals destroying nesting sites of ground-breeding birds.

ii) Data

Data type	Themes	Format	Metadata record	Description
	Abundance, biomass, diversity, species distributions			

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iii) Gaps

2.9.6 Exotics and invasive species (state of knowledge and issues they cause)

i) Areas of concern

Ballast water
 Aquaculture and diseases.
 Invasive: Crown-of thorns

ii) Data

Data type	Themes	Format	Metadata record	Description
	Abundance, biomass, diversity, species distributions, area of impact			

iii) Gaps

2.10 Long term predicted atmospheric changes (and potential vulnerability of each country).

i) Areas of concern

- lack of knowledge
- poor models
- data availability
- coefficient of variation!

ii) Data

Data type	Themes	Format	Metadata record	Description
models				
(eg. for Cape Town, Kenyan cities)				

iii) Gaps

3 HUMAN ENVIRONMENT

3.1 Coastal and island populations – current status and trends

One page

- distribution, abundance
- cultural diversity
- age structure
- gender structure
- migration

i) Areas of concern

- (causing) pollution
- accessibility (hospitals, markets) - lack of infrastructure (cross ref to infrastructure section)
- population pressure

ii) Data

Data type	Themes	Format	Metadata record	Description
	Location of towns and villages			
	current demographics of coastal populations			
	Trends			
	Age structure of the population / economically active sector.			

iii) Gaps

3.2 Sites of religious or cultural significance

1-2 pages

i) Areas of concern

- accessibility
- cultural erosion – loss of appreciation of the importance of cultural sites
- physical erosion of culturally important sites
- economic pressures

ii) Data

Data type	Themes	Format	Metadata record	Description
	Sites of religious or cultural			

	significance (where they are and what they are)			
	Restoration efforts			
	Status of preservation (eg UNESCO cultural heritage status)			

iii) Gaps

3.3 Human health

One page

- Link to planning, infrastructure and management section

i) Areas of concern

- malnutrition
- education – literacy levels
- disease
- access to potable water
- access to health services

ii) Data

Data type	Themes	Format	Metadata record	Description
	Distribution and impact			

iii) Gaps

3.4 Infrastructure (transport, road, rail, internet)

One page

i) Areas of concern

- lack of investment / poor maintenance
- level of education

ii) Data

Data type	Themes	Format	Metadata record	Description
	Roads			

	Rails			
	Airports			
	Communication networks			
	Ports and marine transport(in 4.3)			

iii) Gaps

4 ECONOMY

4.1 General description, including:

- GDP
- Key economic and social indicators
- Wage employment, by sector and province
- Balance of, and importance of imports/exports
- Importance of sectors

THEN a detailed description of sectors (information coming largely from Coastal Livelihoods Project) including economic valuation info on:

4.2 Tourism

4.3 Ports and marine transport

4.4 Manufacturing (boat building - here or under fisheries)

4.5 Mineral extraction (including oil and gas)

4.6 Aquaculture, agriculture and forestry

4.7 Fisheries (ornamental, artisanal, subsistence) and associated activities

- Fishing grounds (trawlable/untrawlable, nature of gear used)
- Fish market sites
- Fish landing sites
- Catch rates of key species/grounds
- Trends of catch rates (past 50 years where available)
- Frame survey results
- Bait collection activities

5 POLICY AND GOVERNANCE

5.1 Administrative regions on land (coastal districts, municipalities)

Half a page (figure)

i) Areas of concern

ii) Data

Data type	Themes	Format	Metadata record	Description
	Boundaries of admin regions, and names			

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iii) Gaps

5.2 Administrative/legislative zones of the sea (territorial waters, EEZ)

One page

i) Areas of concern

- administrative boundaries are political, based on land, not water.
- countries haven't necessarily negotiated EEZs.
- baselines may be inadequate.

ii) Data

Data type	Themes	Format	Metadata record*	Description
Spatial data	National baseline	Points		
	Boundaries of other managed areas			
Spatial data	EEZ	Shapefile		

* Insert a unique ID for the full metadata record(s), or a hyperlink to a URL for the metadata record.

iii) Gaps

5.3 Legislation (national, provincial or local) relevant to the coastal and marine environment (fisheries and coastal zone policy and legislation etc).

- including MPAs

Two pages

i) Areas of concern

- implementation/enforcement of legislation
- overlapping legislation

ii) Data

not necessarily any data – mainly documents

Data type	Themes	Format	Metadata record*	Description

iii) Gaps

5.4 Continental shelf extents (current claim and any proposed extensions)

One page

i) Areas of concern

- deadline for submitting shelf claims
- technical capacity

ii) Data

Data type	Themes	Format	Metadata record*	Description
	Current baseline			
	Proposed extensions			

iii) Gaps

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

Current status

i) Areas of concern

- unclear mandate on some marine issues
- overlapping mandate

ii) Data

LISTS of organizations

Data type	Themes	Format	Metadata record*	Description

5.6 NGOs / private sector

Include fisheries organizations

Current status

i) Areas of concern

- non-fulfillment of commitments, lack of monitoring, inadequate accountability
- lack of transparency and accountability
- participatory planning is good, but implementation is poor

ii) Data

LISTS of organizations

Data type	Themes	Format	Metadata record*	Description

5.7 International relations, conventions and committees

Current status

i) Areas of concern

- inadequate nationalization of international conventions
- inadequate implementation

ii) Data

LISTS of organizations

Data type	Themes	Format	Metadata record*	Description

6 PLANNING AND MANAGEMENT

6.1 National disaster management plans

One page

(eg. Oil spills, Tsunamis, storm surges, extreme weather events, cyclones, coastal pollution)

i) Areas of concern

- lack of coordination between agencies
- Awareness and communication of plans in place
- Implementation of the plan (when the event happens, institutions aren't prepared to implement measures)
- contingency plans
- ALERT network for tsunami early warning.

ii) Data

Data type	Themes	Format	Metadata record*	Description

iii) Gaps

- lack of good models for dynamics of seawater (to for example show oil spill movement, tsunami run-up, storm surges)
- Inundation maps etc required.

6.2 Environmental sensitivity mapping

1-2 pages

i) Areas of concern

ii) Data

Data type	Themes	Format	Metadata record*	Description

iii) Gaps

Lack of data

Also lack of skills and tools to interpret and use data to develop sensitivity maps.

6.3 Coastal management / development plans

2 pages

Mitigation of sea level change

Spatial development plans

Integrated development planning

Environmental management plans

Coastal management plans,

Wastewater management plan

i) Areas of concern

- lack of coordination between agencies
- Awareness and communication of plans in place
- rapid coastal population growth, population grows faster than the plan.

ii) Data

LISTS of organizations

Data type	Themes	Format	Metadata record*	Description

iii) Gaps

6.4 Areas under special management

One page

Include marine managed areas, marine protected areas, parks and reserves, community-managed areas.

i) Areas of concern

- poaching activities
- coastal development
- conflict between users
- lack of participation in planning process (leading to conflicts)
- lack of education and awareness of the value of managed areas
- conflict over increasing area under protection

ii) Data

LISTS of organisations

Data type	Themes	Format	Metadata record*	Description
	Managed areas			

iii) Gaps

6.5 Monitoring, Control, Surveillance

One page

Approaches and technologies:

SADC MCS project – scanning using planes/satellites. Implemented VMS. Successful in some countries, not in others (Seychelles Government has taken over the support of SADC MCS project)

Satellite surveillance,

i) Areas of concern

- policy issues
- adequate enforcement of regulations
- economic issues – how much can be spent
- regional cooperation
- availability of resources (manpower etc, patrol vessels)
- lack of communication with policy makers – don’t understand the value of the resource, so government spending on MCS systems is not easy.
- permits are issued for quotas but there is no monitoring of catches.

ii) Data

Data type	Themes	Format	Metadata record*	Description

iii) Gaps

7 REFERENCES

Numbering system, including the section number.

C National Causal Chain analysis

(FROM all sections i) **AREA OF CONCERN** above)

1. Issues and concerns (under modular headings)
2. Impacts on the environment, community, economy
3. Causes/root causes
4. Priority transboundary issues requiring action

D Cost benefit analysis

Independent cost benefit analysis of effective and sustainable management of the national marine ecosystem.

E Monitoring and Indicator Assessment Programme

F Policy briefing document (possibly later moved up to section A)

MEDA ANNEXES

I Extended bibliography (may be a virtual annex, linked to searchable website)

II. Metadatabase records

- Where data were already available online in the national metadatabase, the existing metadata record is sufficient. Where data were digitized or identified from *another* source, the metadata should be written and uploaded. A list of data sets relevant to the ASCLME Project must be listed in this annex.

III. List of data sets

- Where *actual* data sets were handled during the process of MEDA development, in addition to ensuring the data are described in the metadatabase, these should be stored in a standard FTP folder structure, the contents of which should be listed in this annex.

IV. Capacity building and training review and work programme

V. Report on the assessment: Current capacity for GIS, RS, and marine & coastal data and information management in the ASCLME countries in support of the ecosystem approach, with recommendations for capacity building. D&I management capacity reviews should take into account those already undertaken by ReCoMaP, as well as those planned by ODINAFRICA IV (possibly a co-funded activity).

VI. A summarized, prioritized, list of requirements for data collection OR analysis (processing/modeling/integration) OR repatriation to inform the national MEDA. Each recommendation should be associated with a brief budget and activity plan for the transformation of the raw data into useful information for the MEDA.

VII. A detailed record of national projects recently undertaken or currently underway which are relevant to the ASCLME MEDA, TDA or SAP.

VIII. Official designation of territorial waters; other statutes relating to marine governance.

IX. National Data and Information Management Plan

X. Peer-review results for each section and each annex of the MEDA (link to website).

Other regional reports that will inform the MEDA

1. Project report: Coastal livelihoods assessment, including community welfare and governance. Key findings should be written into section B.

2. Communications strategy

3. Project report: Assessment of the extent and distribution of coastal habitats. Key findings should be written into section B.

MEDA STAGES OF DEVELOPMENT

Stage 1. Month 4

Sections to be completed:

Section B

- 2. Biophysical environment

Annexes

- VII. A detailed record of national projects recently undertaken or currently underway
- IX (*due on 13 March anyway*)

Stage 2. Month 6

Sections to be completed:

Section B

- Remainder

Annexes

- I Extended bibliography
- II. Metadatabase records
- III. List of data sets
- VIII. Governance Annex(es)
- X. Peer-review

Between stages 2 and 3 there will be a review process to

- A) Review the content of the MEDA in a national meeting with key institutions, to comment on and improve the MEDA.**
- B) A peer-review.**

Stage 3. Month 8

Sections to be completed:

Section A: Executive summary and list of acronyms

Section C: Causal chain analysis for Issues

Section D: Cost benefit analysis

Section E: Monitoring and Indicator assessment programme

Section F: Policy briefing document

Annexes

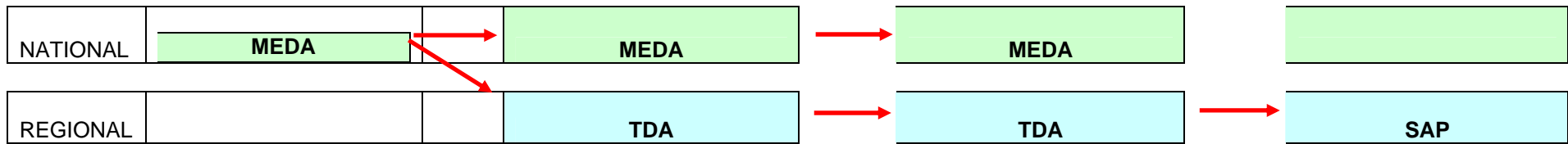
- IV. Capacity building and training review and work programme
- V. Report on the assessment: Current capacity for GIS, RS and data management
- VI. Requirements for data collection / modeling / repatriation

TIME LINES

Month 1 begins after Steering committee approval

2009 dates	Deliverable
MEDA month 1	MEDA plan and TORs for D&I coordinators and thematic specialists complete
MEDA month 1	Countries advertise for MEDA specialists
MEDA month 2	Appointment of MEDA specialists
MEDA month 4	MEDA stage 1 complete
MEDA month 5	Dates set and submitted to the PCU for National meetings in support of the MEDA (from Sep to Dec)
MEDA month 6	MEDA stage 2 complete for national meetings
MEDA month 8	MEDA Peer review
MEDA month 8	MEDA stage 3 completed, including causal chain analysis

2010: Adoption of MEDA at National level.



STATUS
Fish and Fisheries
Productivity
Ecosystem Health & Pollution
Economics
Governance
Environmental change

All 5 modules

ISSUES AND CONCERNS
Fish and Fisheries
Productivity
Ecosystem Health & Pollution

FIRST 3 LME MODULES

IMMEDIATE AND ROOT CAUSES
Social and Community based
Economic
Governance
Management

SECOND 2 LME MODULES

FOCUS OF EFFORTS
Capacity Building and Training
Data and Information Management/Delivery
Monitoring and Evaluation
Policy realignment
Community Management and inputs
Economic Awareness
Valuation of Marine Resources