STATE OF THE MARINE ENVIRONMENT

BENGUELA CURRENT LARGE MARINE ECOSYSTEM

By Antonia Hjort, David Boyer, Helen Boyer, Mark Ssemakula, Elsa da Patria and Sandy Davies

NFDS Africa
INTRODUCTION TO SOMER

**Purpose?**

- To provide a comprehensive overview of the current and potential situation in the BCLME, including the economic and social benefits of the ecosystem, the key problems, and what remains to be done to tackle the issues.

**Audience?**

- Produced for a broad audience, with the intention to provide easily accessible information to anyone with an interest in the marine environment.
OVERVIEW OF PRESENTATION

Economic and social benefits of BCLME
Major pressures
State and trends
Responses
Gaps in responses
Future outlook
The SOMER process
ECONOMIC & SOCIAL BENEFITS

- Government revenue
- Employment
- Food security

- Desalination
- Salt production
- Mariculture
- Tourism and recreation
- Marine transport
- Capture fishing
- Mineral mining
- Petroleum and gas
Estimated minimum total economic value of the BCLME (Sumaila, 2012)

- USD 54 billion per year as direct annual output
- USD 269 billion as total economic impact per year.
## ECONOMIC & SOCIAL BENEFITS CONTINUED...

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum</td>
<td>• Angola dominates.</td>
</tr>
<tr>
<td>Coastal mining</td>
<td>• Namibia accounts for over 95% of the economic benefit.</td>
</tr>
<tr>
<td>Fisheries</td>
<td>• Namibia and South Africa account for 80% of the economic benefit.</td>
</tr>
<tr>
<td>Mariculture</td>
<td>• South Africa dominates with over 75% of the economic benefit.</td>
</tr>
<tr>
<td>Tourism and recreation</td>
<td>• South Africa dominates with almost 75% of the economic benefit.</td>
</tr>
</tbody>
</table>
MAJOR PRESSURES

Unsustainable utilisation of marine living resources

Disturbance and physical modification of coastal and marine habitats

Marine pollution

Invasive species

Climate change
MAJOR PRESSURES CONTINUED...

**UNSUSTAINABLE UTILISATION OF MARINE LIVING RESOURCES**
- Overexploitation
- Bycatch and discards
- Incidental deaths of vulnerable species

**MARINE POLLUTION**
- Oil, nutrients, microbiological & chemical pollution
- Litter & suspended sediments
- Thermal, noise & air pollution

**DISTURBANCE AND PHYSICAL MODIFICATION OF COASTAL AND MARINE HABITATS**
- Mining
- Trawling
- Coastal development

**INVASIVE SPECIES**
- Ship ballast water
- Mariculture

**CLIMATE CHANGE**
- Ocean warming & ocean acidification
- Extreme weather events
## STATE & TRENDS

<table>
<thead>
<tr>
<th>Variability and productivity</th>
<th>Water quality</th>
<th>Biodiversity</th>
<th>Human dimension</th>
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<tbody>
<tr>
<td>• Benguela Niños</td>
<td>• Hypoxia</td>
<td>• Species health</td>
<td>• National development</td>
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<td>• Regime shifts</td>
<td>• Sulphur eruptions</td>
<td>• Habitat health</td>
<td>• General human well-being</td>
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<tr>
<td>• Climate change</td>
<td>• Harmful algal blooms</td>
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<tr>
<td>• Phytoplankton</td>
<td>• Pollution</td>
<td></td>
<td></td>
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<tr>
<td>• Zooplankton</td>
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<tr>
<td>• Recent changes in oceanographic and biological processes</td>
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In the last decades a regime shift to a new, warm regime in the northern Benguela and Angola.
A number of ecological regime shifts have affected fishing and been effected by fishing activities.

The interannual and decadal environmental signals are strong so distinguishing long term trends is difficult.
Human activities, e.g. fishing, also contribute to dynamics.

Primary production measurements show variability but no clear long term trends.
Long-term increases in biomass and shifts in zooplankton community structure may be due to changes in predation pressure or large-scale environmental effects (or both).

A number of oceanographic and biological processes have been changing since a turning point around 1990, e.g. strengthening of the flow of the Agulhas Current.
### Water quality

#### Hypoxia
- No trends but considerable commercial losses – e.g. rock lobster walkouts, oyster mortalities, and the loss of almost an entire year-class of young hake.

#### Sulphur eruptions
- Inshore regions are impacted by the formation of hydrogen sulphide.
- In 2001, 9 hydrogen sulphide eruptions occurred, with the largest covering 22,000 km² of ocean.
- Their relevance to the fishery resources, including lobsters, are not known but likely to be high.

#### Harmful algal blooms
- The frequency of occurrence, spatial extent, and duration of HABs appears to be increasing, can be due to nutrient loading.
- Primarily in inshore regions, fisheries, mariculture industries, and nursery areas for commercial and recreational species.

#### Pollution
- Contamination by petroleum-related chemicals has been documented from oilrigs.
- Sediment plumes from diamond mining are blamed for a localised deterioration in rock lobster habitat.
- A rapidly expanding urban population poses a serious pollution threat.
STATE & TRENDS CONTINUED...

*Biodiversity*

- **Species health**
  - Nine confirmed alien species along the South African part of the BCLME that have well-established populations, e.g. the Mediterranean mussel
  - Vulnerable/threatened species include seabirds, sharks, skates, rays, guitarfishes, turtles, cetaceans
  - Harvested species include Cape hakes, horse mackerels, sardine & sardinella, Cape fur seal, the status in respect to MSY variable with rebuilding success also variable but in many cases earring towards optimism.

- **Habitat health**
  - Modification to habitats, including the seabed and coastal zone is severe in localised areas, but generally large areas of the BCLME are in a near-pristine form.
  - The 2011 national biodiversity assessment for SA - 47 % of marine and coastal habitat types are threatened – more coastal than offshore
  - Vulnerable habitats: e.g. estuaries, lagoons, wetlands, some intertidal zones, mangrove swamps, rocky offshore islands, etc.
Human dimension

National development

• The three BCLME countries are at different stages of human and economic development
• Population – Angola 21, Namibia 2 and South Africa 53 million
• Projected GDP growth 2014 Angola 5%, Namibia 4% and South Africa 2%
• Carbon dioxide emissions (t/capita) Angola 2, Namibia 1 and South Africa 9

General human well-being

• Angola - improvements in urban centres (electricity, water and sanitation) in the rural coastal communities many social challenges including unemployment are still prevalent.
• Namibia has a very small coastal population (3 towns), fishing is an important employer, however due to the decline in fisheries new focus on the tourism sector.
• South Africa, many west coast settlements suffer from low levels of income and employment. Access to basic household services varies considerably.
Unsustainable utilisation of marine living resources

Disturbance and physical modification of coastal and marine habitats

Marine pollution

Invasive species

Climate change

RESPONSES

What is being done to tackle the major pressures?

What responses have been taken?
RESPONSES CONTINUED...

- **Improved governance framework**
  - International best practices
  - Regional cooperation & preparedness
    - Policy
    - Legislation
  - Management approach – ecosystem

- **Improved capacity**
  - Science
  - Monitoring & control

- **Public involvement**
  - Awareness
  - Direct involvement

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  - Awareness
  - Direct involvement
RESPONSES CONTINUED...

Unsustainable utilisation of marine living resources
RESPONSES CONTINUED...

Marine pollution

- BCC makes commitment to stop pollution
- Angolan partnerships to prepare for responding to oil spills
- Public involvement in beach clean-ups to reduce marine litter across the BCLME
RESPONSES CONTINUED...

Disturbance and physical modification of coastal and marine habitats

Industry undertakes oversight of seabed recovery monitoring
RESPONSES CONTINUED...

*Invasive species*

Global Ballast Water Management Programme (GloBallast)
RESPONSES CONTINUED...

Climate change

- Regional cooperation to link ocean climate with fisheries – NansClim
- Early warning and vulnerability assessments – South Africa
- Improving resilience to climate change in fisheries – BCC & partners
Interaction between pressures

Oceans policy – a first for the region (South Africa)

Support from the Global Environment Facility

The Benguela Current Commission – the world’s first permanent Oceans Commission
GAPS IN RESPONSES

- Implementing policy and legal frameworks
- Understanding the human dimension
- Strengthening participation and cooperation
- Sharing data and information
- Improving the understanding of transboundary stocks
- Identification and monitoring of pollution sources
- Building and retaining capacity
FUTURE OUTLOOK

Joint vision and cooperation all the way

Understanding the value of BCLME and treating this value respectfully

Key for a sustainable future!
FUTURE OUTLOOK... Continued

Blue economy and blue growth
**WHAT IS A SOMER?**

<table>
<thead>
<tr>
<th>An attempt to collect, collate and publicise key information about the ecosystem</th>
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<tr>
<td>• Economic and social contributions of an ecosystem</td>
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<tr>
<td>• Current and potential future pressures impacting on the ecosystem</td>
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<tr>
<td>• State and trends of some key ecosystem health indicators</td>
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<tr>
<td>• Past, current and potential future responses to these pressures</td>
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<td>• Reflection on the future outlook of the ecosystem</td>
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<td>• Standardised process</td>
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<td>• Building on relevant national and regional data and information made available through studies, reports and impact assessments on a timely basis</td>
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KEY CHALLENGE
IN THIS SOMER PROCESS...

Comprehensiveness

Obtaining existing information and data!

Timeliness

Robustness
THE SOMER PROCESS... Continued

What kind of publication is needed?

Purpose?

How often?

The information & data challenge?

Audience?
THANK YOU FOR LISTENING!