



# Combating Living Resource Depletion and Coastal Area Degradation in the Guinea Current LME through Ecosystem-based Regional Actions

## Governance of the Guinea Current Ecosystem during Global Warming

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IGCC-GCLME PROJECT  
ACCRA, GHANA





## WHAT IS THE GCLME

The Guinea Current Large Marine Ecosystem (GCLME) Project is an ecosystem-based effort to assist countries adjacent to the Guinea Current Ecosystem to achieve environmental and resource sustainability



## 16 PROJECT COUNTRIES:

Angola  
Benin  
Cameroun  
Congo  
Congo D.R  
Cote D'Ivoire  
Equatorial Guinea  
Gabon  
Ghana  
Guinea  
Guinea Bissau  
Liberia  
Nigeria  
Sao Tome and Principe  
Sierra Leone  
Togo





# Combating Living Resource Depletion and Coastal Area Degradation in the Guinea Current LME through Ecosystem-based Regional Actions

## Presentation Outline

- Impacts of Climate Change
- Governance of the GCLME
- Conclusions

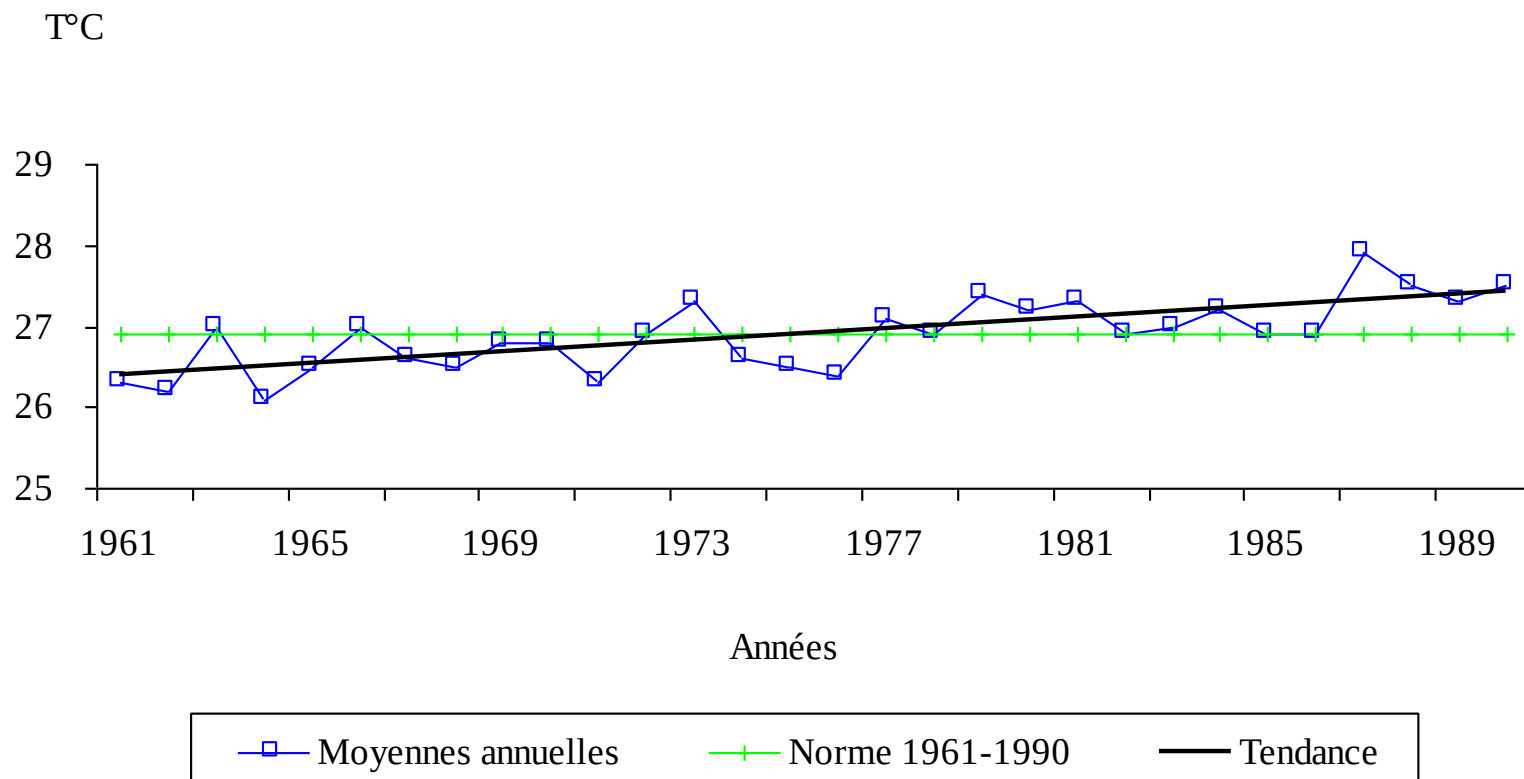




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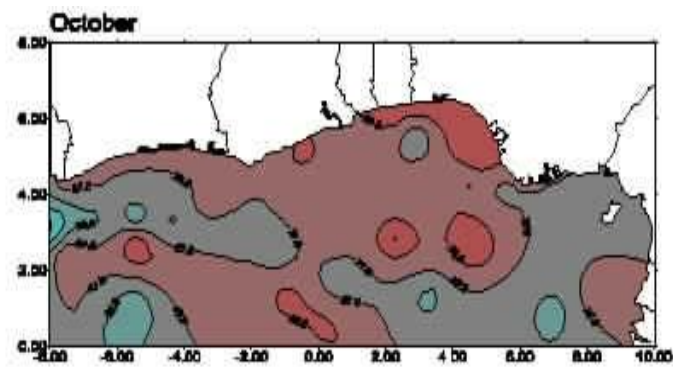
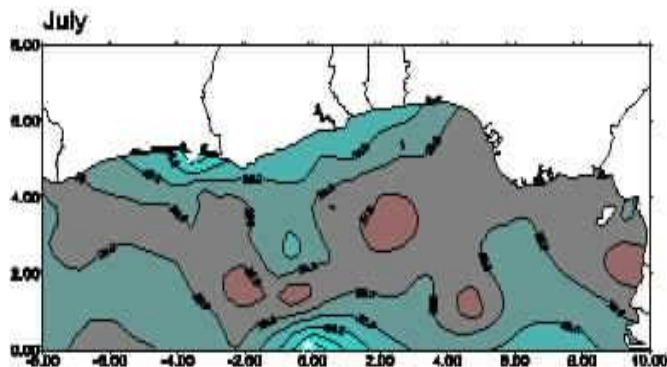
## Productivity



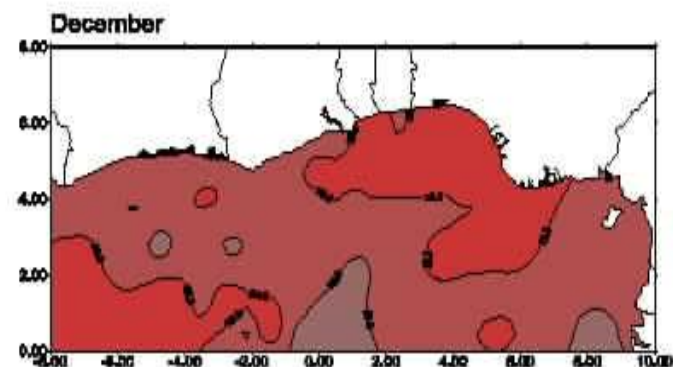
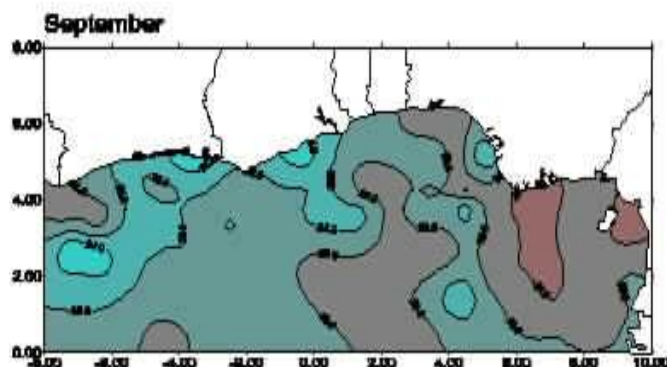
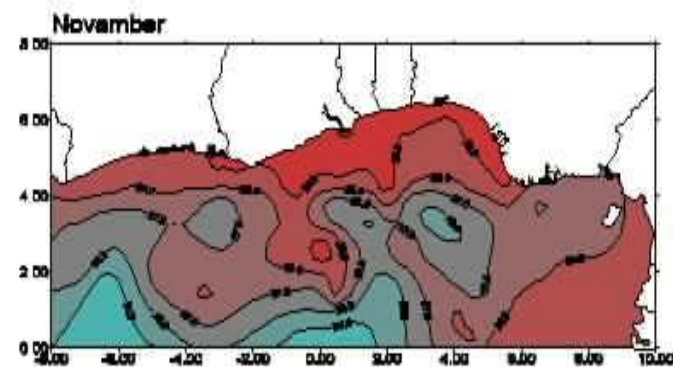
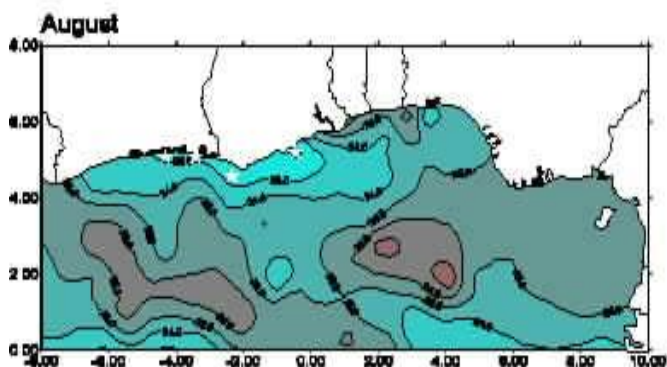


## Temperature variability in the West African region

# Gulf of Guinea SST distribution



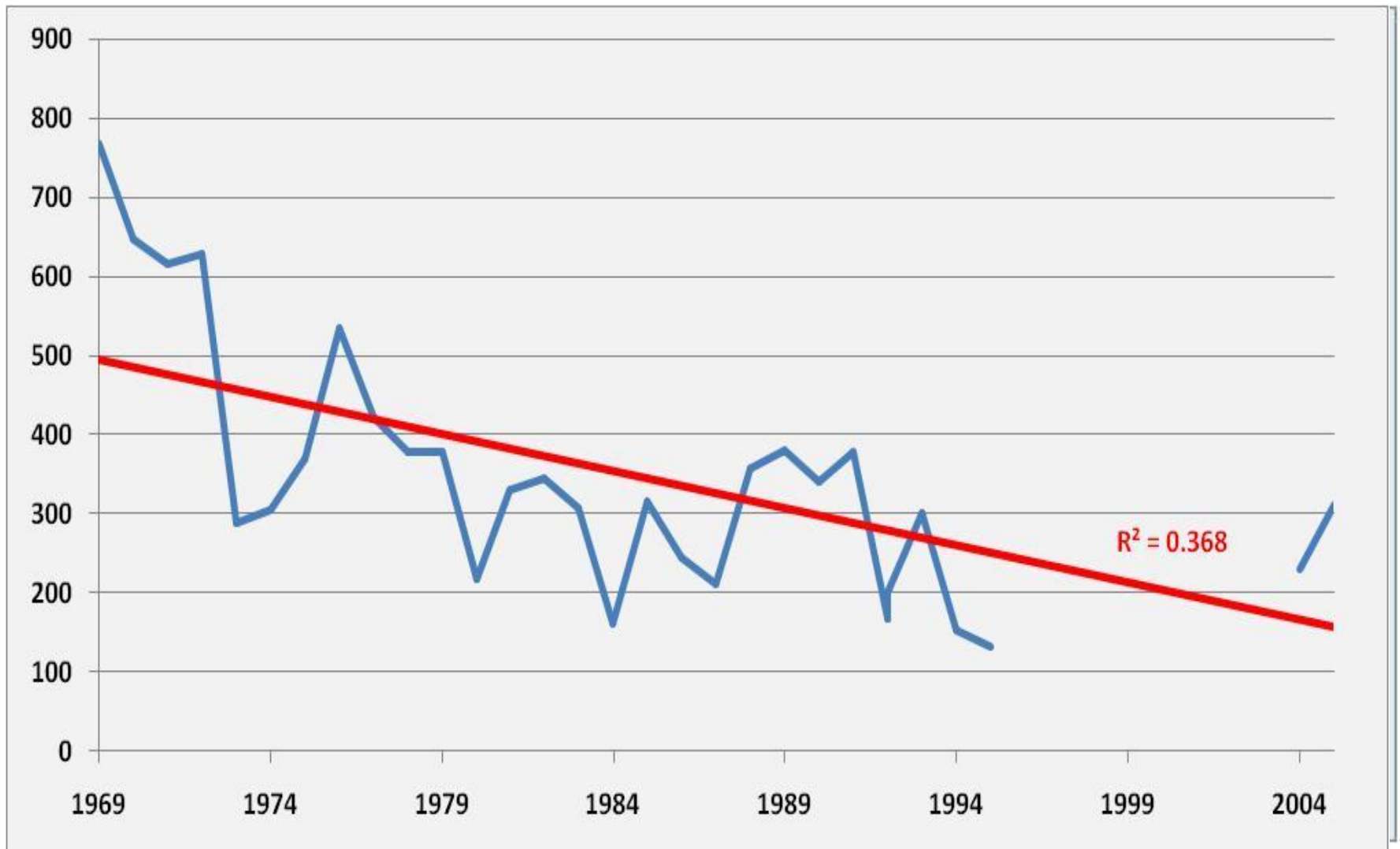
Jul  
to  
Dec



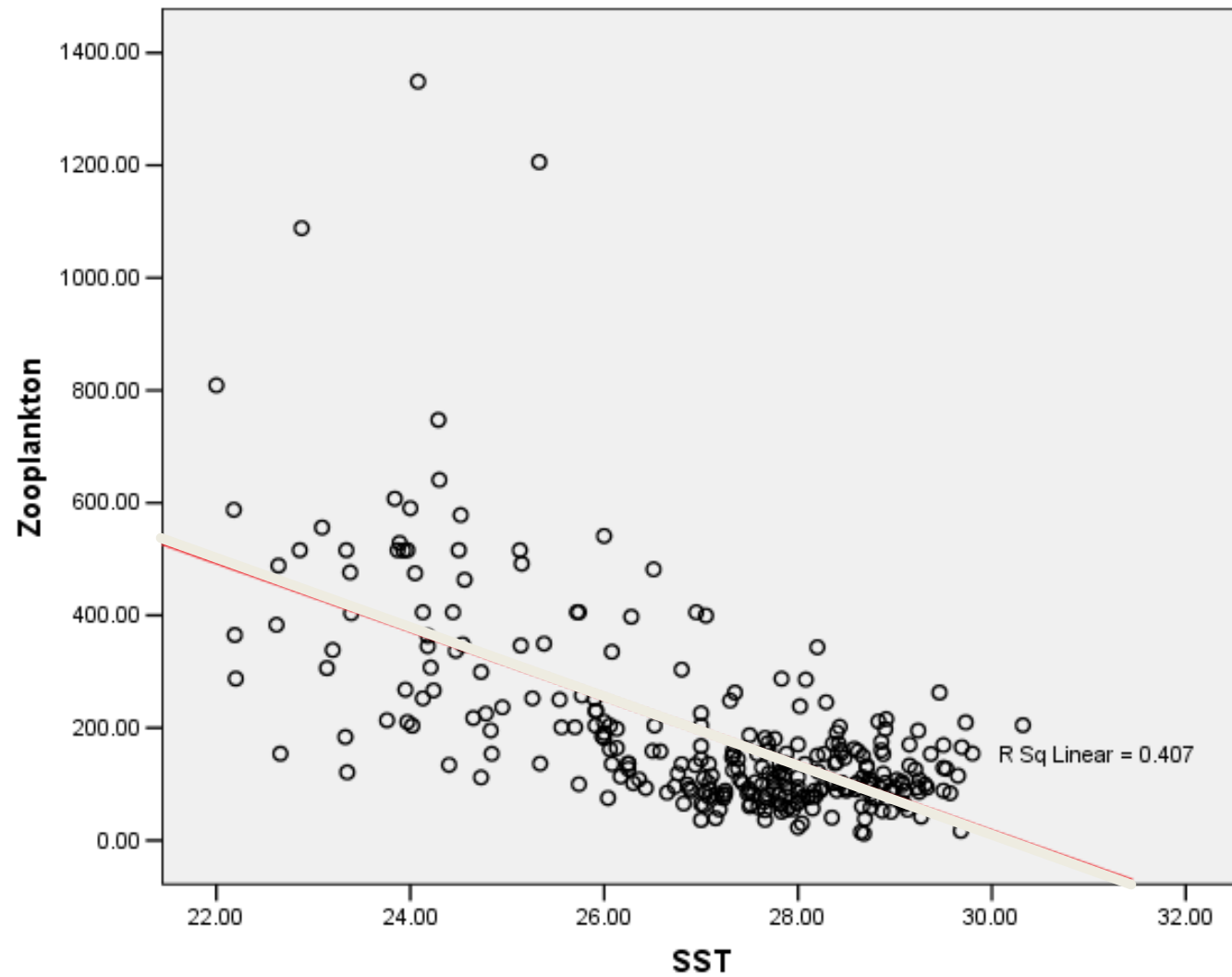
China (11 - 13 Sept, 2007)



# Zooplankton (+ GCLME)



# Zooplankton vrs SST





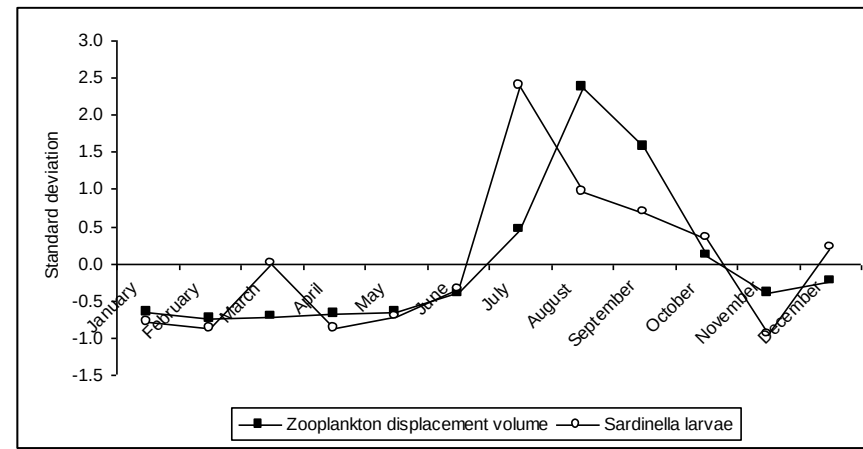
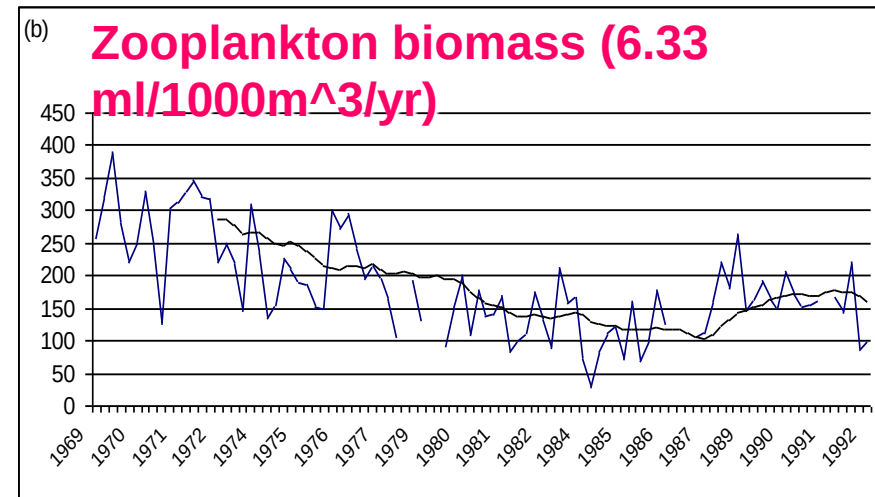
# General decline in zooplankton

## Long term zooplankton monitoring (Ghana: 1966 – 1995)

- General decline in biomass (Wiafe, 2002)
- SST increasing; Reduction in upwelling intensity
- Fisheries significantly influenced (e.g. McGlade et al., 2002, Koranteng & Pezennec, 1998)

Major upwelling (July - Sept)

**ZPK<sub>b</sub> = Sardinella larvae + SST + Wind**  
**(R<sup>2</sup> = 54; p = 0.001)** (Wiafe, 2002)

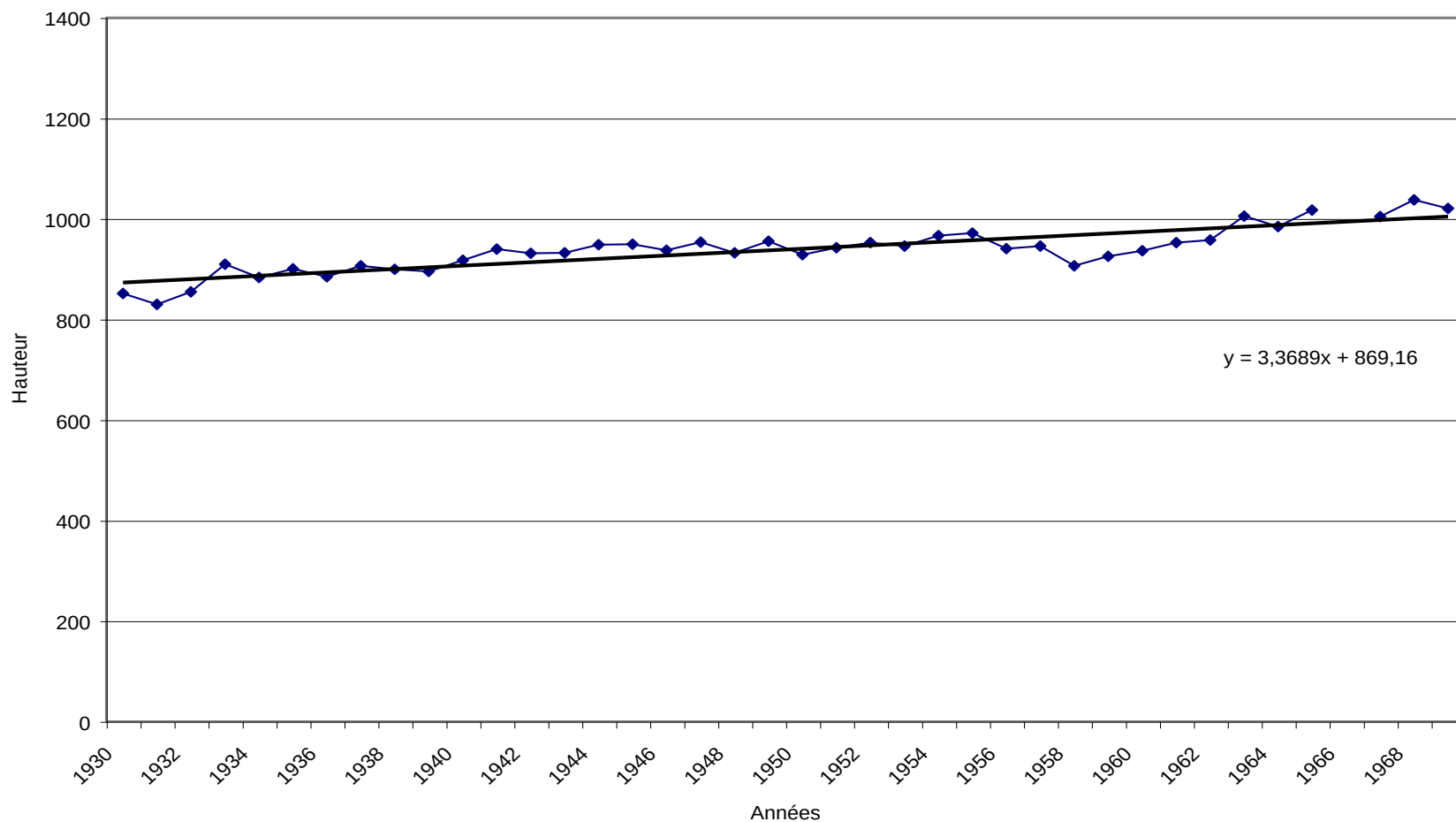




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# Sea Level Rise





## Mean Sea level 1930- 1969

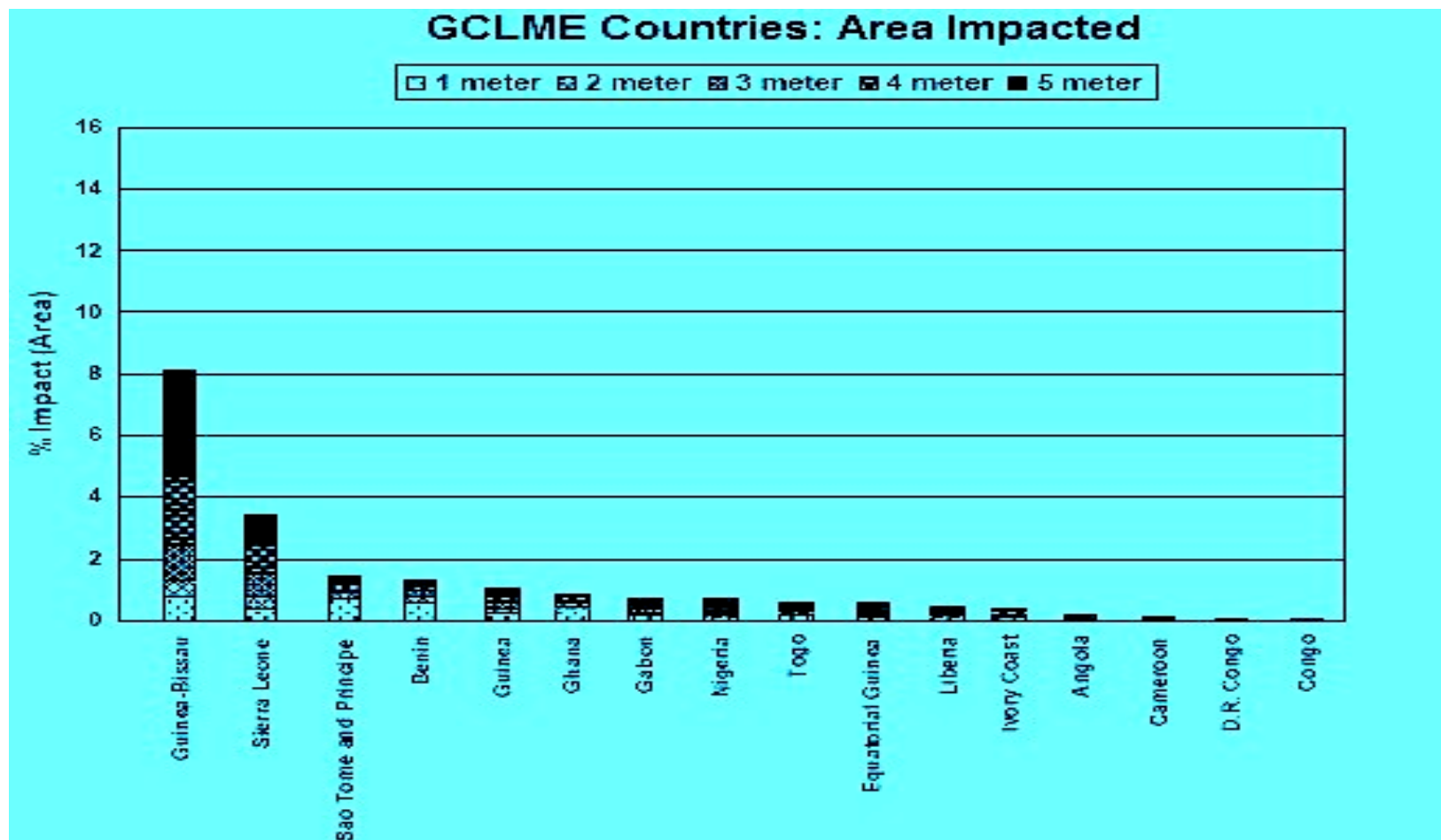


Figure 1: Impact on the area of various GCLME countries by sea level rises of 1-5 m. (Source: Dasgupta et al., 2007)

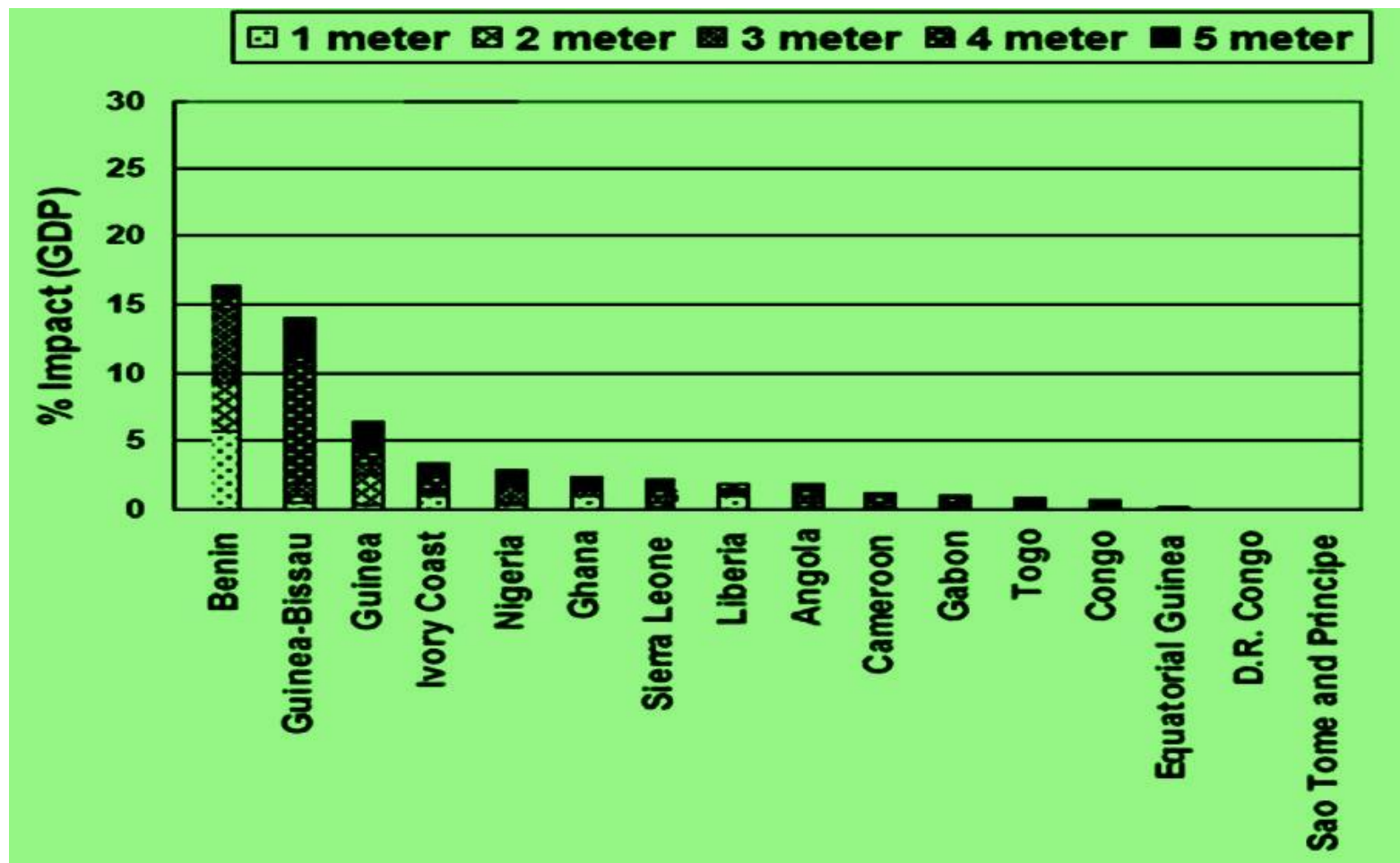


Figure 2: Impact on the GDP of various GCLME countries by sea level rises of 1-5 m (Source: Dasgupta et al., 2007)





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Cotonou, Hotel PLM, 29 October 2005







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Protection structure built along the Keta beach in 2002-2003 to protect the city from erosion.



Communication of the sea with the Keta Lagoon







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Example of Coastal retreat in Cotonou,  
BENIN

27 13:47





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## Example of Coastal degradation in the GCLME Region





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# Coastal Erosion in Assinie, Côte d'Ivoire







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**Protection structures in Lome, Togo. A successful case of land reclamation, 1988**







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# Algae Bloom





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**STRANDED ALGAE ON THE BEACH AT HALF ASSINI ( THE WESTERN SHORES OF GHANA CLOSE TO COTE D'IVOIRE) IN MAY 2009. PHOTO COURTESY CARL FIATI-ENVIRONMENTAL PROTECTION AGENCY -GHANA**







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NEAR SHORE WATERS IN THE  
WESTERN REGION OF GHANA  
(NEAR THE BORDER WITH  
COTE D'IVOIRE) WITH  
INTENSE BLOOM OF THE  
ALGAE ENTEROMORPHA  
FLEXUOSA, MAY 2009.  
GREENISH COLOUR OF THE  
WATER SHOWS THE  
INTENSITY OF THE BLOOM  
(PHOTO COURTESY CARL  
FIATI – ENVIRONMENTAL  
PROTECTION AGENCY -  
GHANA







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## Urban Pollution in Gabon





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# Mangrove destruction







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## ***Degraded Mangrove***







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Beach  
degradation by  
water weed  
near Luanda,  
Angola







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## Forest Clearing for Charcoal Production -Libreville Gabon





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## Governance







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## GCLME Project

obstacles for sustainable management and joint governance of natural resources

- fragmented data sets, not shared
  - lack of national budget
  - inadequate regional institutional capacity and human resources
  - no regional cooperation
  - ill defined property right regimes
- => uncertainty in ecosystem status





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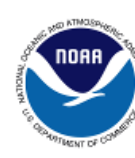


## GCLME Project

long term development goals

- recover and sustain depleted fisheries
- restore degraded habitats
- reduce land and ship-based sources of pollution

by establishing a regional management framework for sustainable use of living and non living resources







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## GCLME Project

### Strategic Action Program

- negotiated policy document, ratified by all 16 GCLME countries (2007)
- describes policy, legal and institutional reforms and investments needed to address problems identified in TDA
- measurable and quantifiable performance indicators





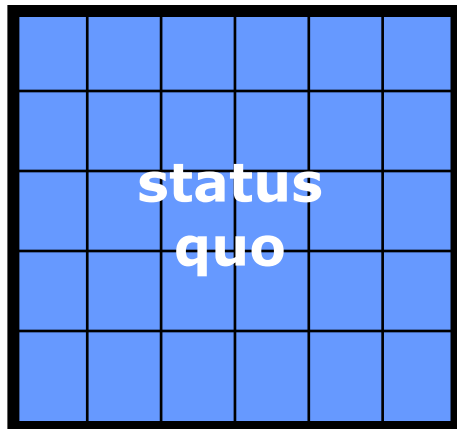
## GCLME Project

# National Action Programs

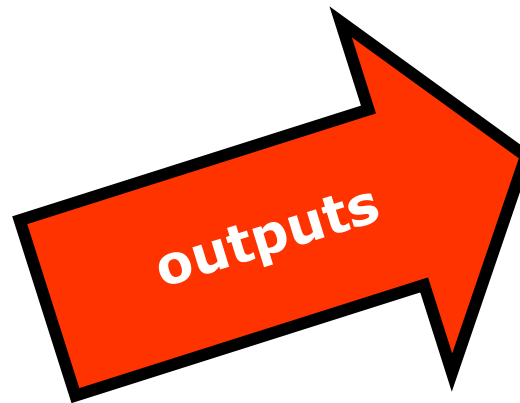
- to translate the SAP's political goals into concrete action at national level
- identify concrete actions and commitments
- national baseline and incremental processes and costs
- identify regional and national arrangements for monitoring the environmental status and trends, pressure relief
- each NAP is to be adopted and endorsed by the relevant by-laws to be enacted by each member country



from analysis to outcome



TDA



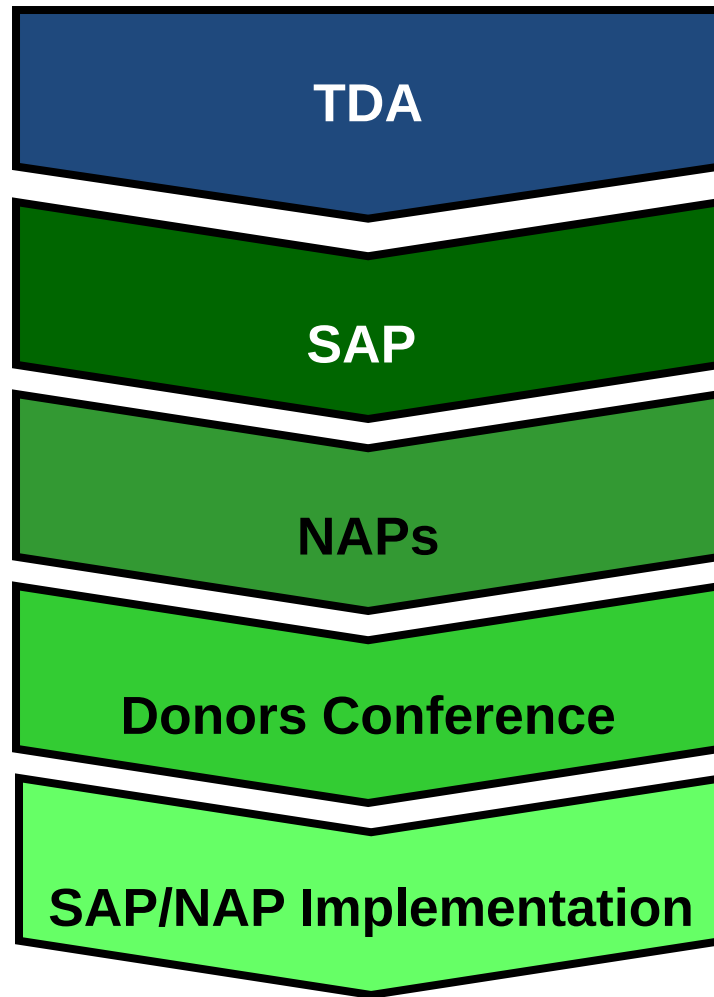
SAP/NAP Implementation



sustainable fisheries  
reduced pollution  
healthy habitats



milestones



# INSTITUTIONAL BASIS FOR IMPLEMENTATION

- NATIONAL DIRECTORATE
- INTER-MINISTERIAL COMMITTEE
- REGIONAL ACTIVITY CENTRES ( eg FISHERIES AT INIP)
- NATIONAL DEMONSTRATION PROJECTS
- NATIONAL CONSULTANTS ( NAPs , Legal, Socio-economic, etc)
- NGOs, CBOs and CIVIL SOCIETY
- PRIVATE SECTOR STAKEHOLDERS
- SCIENTIFIC COMMUNITY



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## GCLME Project

institutions for sustainable management and joint governance

- Regional Coordination Unit
- Interministerial Committees in each country
- Ministerial Committee
- Regional Activity Centers
- Interim Guinea Current Commission (Abuja Declaration 2006)
- Guinea Current Commission







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## GCLME Project

tools for sustainable management and joint governance

- standardized monitoring programme
- regional biodiversity strategy
- ecosystem wide stock assessment methodology
- fisheries management plans for transboundary stocks
- economic instruments
- national demonstration projects, regionally disseminated
- ecosystem trend reports





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# ARRANGEMENT FOR FUTURE COOPERATION

- MEMBER COUNTRIES COMMITMENT TO SAP IMPLEMENTATION;
- ESTABLISHMENT OF A PERMANENT GCC;
- SUSTAINABLE FUNDING;
- COOPERATION & COLLABORATION with pertinent institutions, NGOs, private sector, etc.





# GCLME recap

## External Supportive Elements:

- UNCLOS;
- ABIDJAN CONVENTION

## Predecessor Project:

- GULF of GUINEA PROJECT;

## Project Achievements:

- TDA ✓
- SAP ✓
- ABUJA DECLARATION => IGCC ✓
- NAPs
- Guinea Current Commission established





# Summary

GCLME very productive and highly variable

- Impact of climate change
  - Gradual warming SST (esp. upwelling)
  - Zooplankton peaks during upwelling
  - Long term decline in biomass
  - 41% variance in zooplk biomass due to SST
- Possible implications or consequences
  - Main copepod (*C. carinatus*) will be affected
  - Possible shift in zooplk community structure
  - Food for *Sardinella* larvae compromised

# Conclusions

- Fishing activities in an IW context needs to be more collaborative but national interests (e.g. the competitive nature of the catching and trading environment) cannot be ignored..
- The role of UN (individual LME projects and the African caucus and the fisheries platform) and RFMOs (UNCLOS, UNFSA), will be crucial in promoting collaboration and co-operation.
- Social policies e.g. those that protect the welfare of artisanal fishermen sector and improve food security, should promote a level playing field and ensure access to nutritious high quality food. This should be reflected in PRSP and other poverty alleviation measures at a national level.
- Under the climate change senario, greater data sharing and policy harmonisation is needed. Information and data sharing will be critical to effectively manage stocks.

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Artisanal fishermen are more vulnerable to increased storminess and seasonal changes in fish abundances or distribution patterns especially if the shoals move further offshore. Changes in the duration and timing of the rainy seasons could affect their ability to put to sea. Special measures will be needed within national planning policies to give them greater support.







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For more information go to:

[www.gclme.org](http://www.gclme.org)





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## GCLME Project

merci!

obrigado!



gracias!

thank you!

