

Coastal Adaptation to Climate Change in The Gambia

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UN Nippon Fellow 2013/2014
The Gambia



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- What Causes Climate Change?
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Map of the Gambia



National Circumstances

Climate

- Rainfall: 850 mm/yr (May – November),
Temperature: 27.5°C,
Humidity: 68% (coast), 41% (inland)
- Population
1.3 million, 62%(rural), 38%(urban), 60% below
25 years
- **Climate sensitivity**
Major economic sectors (**agriculture**, tourism,
forestry, water resources)
**Rain-fed agriculture employs 80% of labour
force and accounts for 25%GDP**



What is Climate Change?

- Climate
 - Essentially the average meteorological conditions in a certain area over a given period, usually long term
 - This includes conditions of temperature, precipitation and other weather definitions
- Climate change:
 - CC is therefore changing temperature, precipitation and or general weather patterns over the long term



Definition of Key Words

- Vulnerability- Timmerman(1981) define vulnerability as the degree to which a system reacts adversely to the occurrence of a hazardous event.
- Adaptation(IPCC)- Refers to adjustment in natural systems or in human activities, in response to actual or predicted climate change impacts.
- Hazard (Wikipedia)- Situation that poses a level of threat to life, health, property or environment.



What causes climate change?

- There are both natural and human causes
- But more blame put on the following human causes
 - Burning of fossil fuels
 - Clearance of vegetation
 - Bush fires



Climate Change Projection- Gambia

- Over the past forty years the country has experienced a decline in mean total annual rainfall (Republic of The Gambia 2010).
- Since the mid 1960s, changes in climate observed in The Gambia have been characterized by erratic rainfall patterns; unseasonal rains and torrential rainfall, storms, Intra-seasonal drought, cold spells and

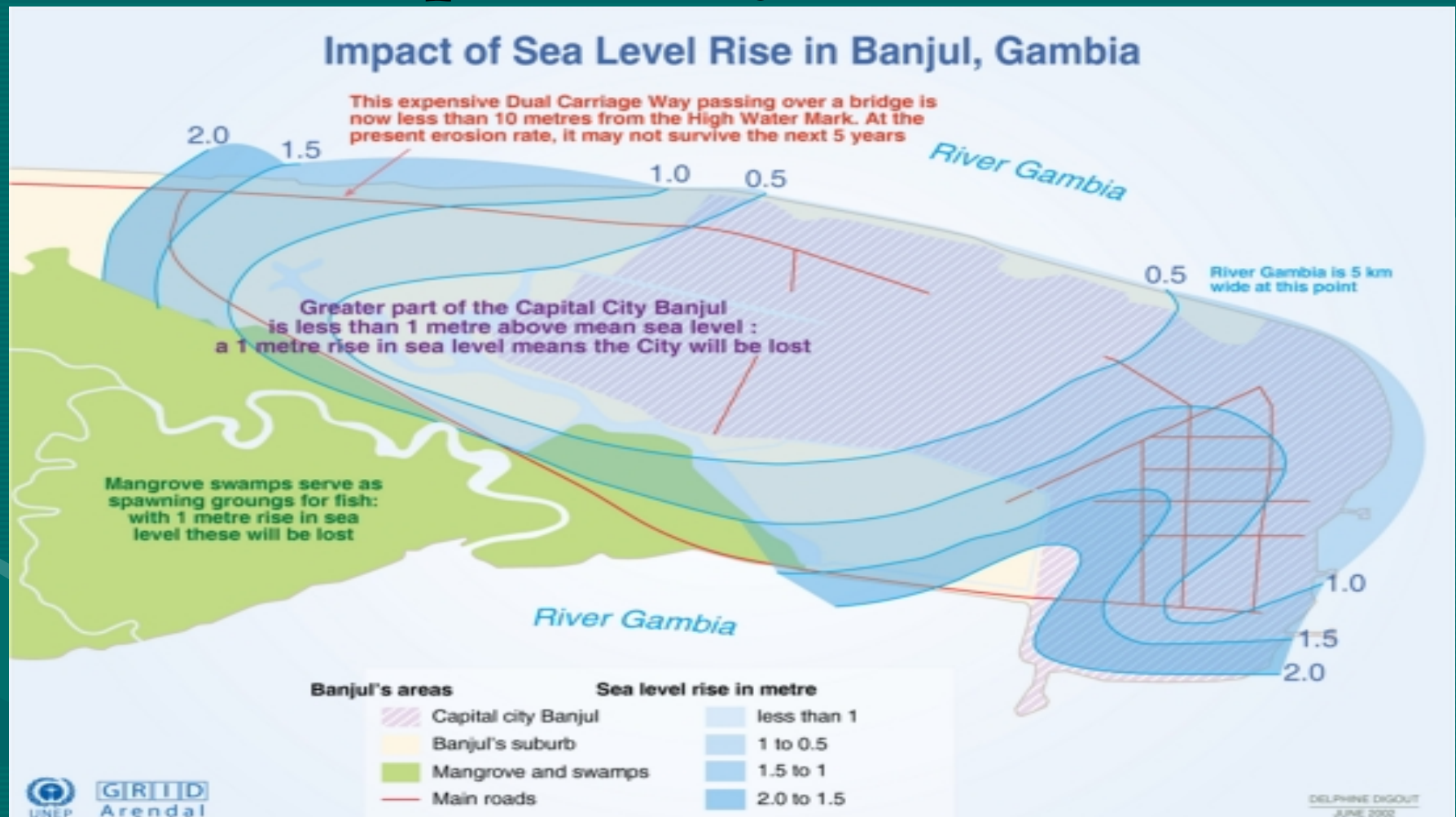


CC projection-Gambia... Cont

- Different scenarios used to assess the vulnerability of the coastal zone of The Gambia to sea level rise.
- They predicted that a 1 meter sea level rise in The Gambia will lead to inundation of about 92 km² of the coastal zone. It has been estimated that about 50% (47km²) of the land loss to inundation will come from the sheltered coast (Government of The Gambia 2007)



Capital City- Banjul



Sources: Coastal Zone of the Gambia and the Abidjan region in Cote d'Ivoire: Sea Level Rise Vulnerability, Response Strategies, and Adaptation Options, National Assessment Results of Climate Change: Impacts and Responses, Jallow, B.P., S. Toure, M.M.K. Barrow, and A.A. Mathieu, Mimura, N., Oldendorf Luhe, Inter-Research, Germany, 1999.

Expected impacts of climate change

- Main effect is heating of the atmosphere
- Manifestations of CC are two-fold
 - Change in average climate around the world – so-called slow onset changes; examples include:
 - Sea level rise
 - Change in rainfall pattern
 - More rainfall and flooding during the rains
 - Increase in incidence of hot days



Expected impacts of climate change continue

- Change in occurrence of extreme events; examples include:
 - Increase in intensity of rainfall
 - Flash floods
 - Likely increase in frequency of extreme temperatures
 - Increase in intensity of tropical cyclones

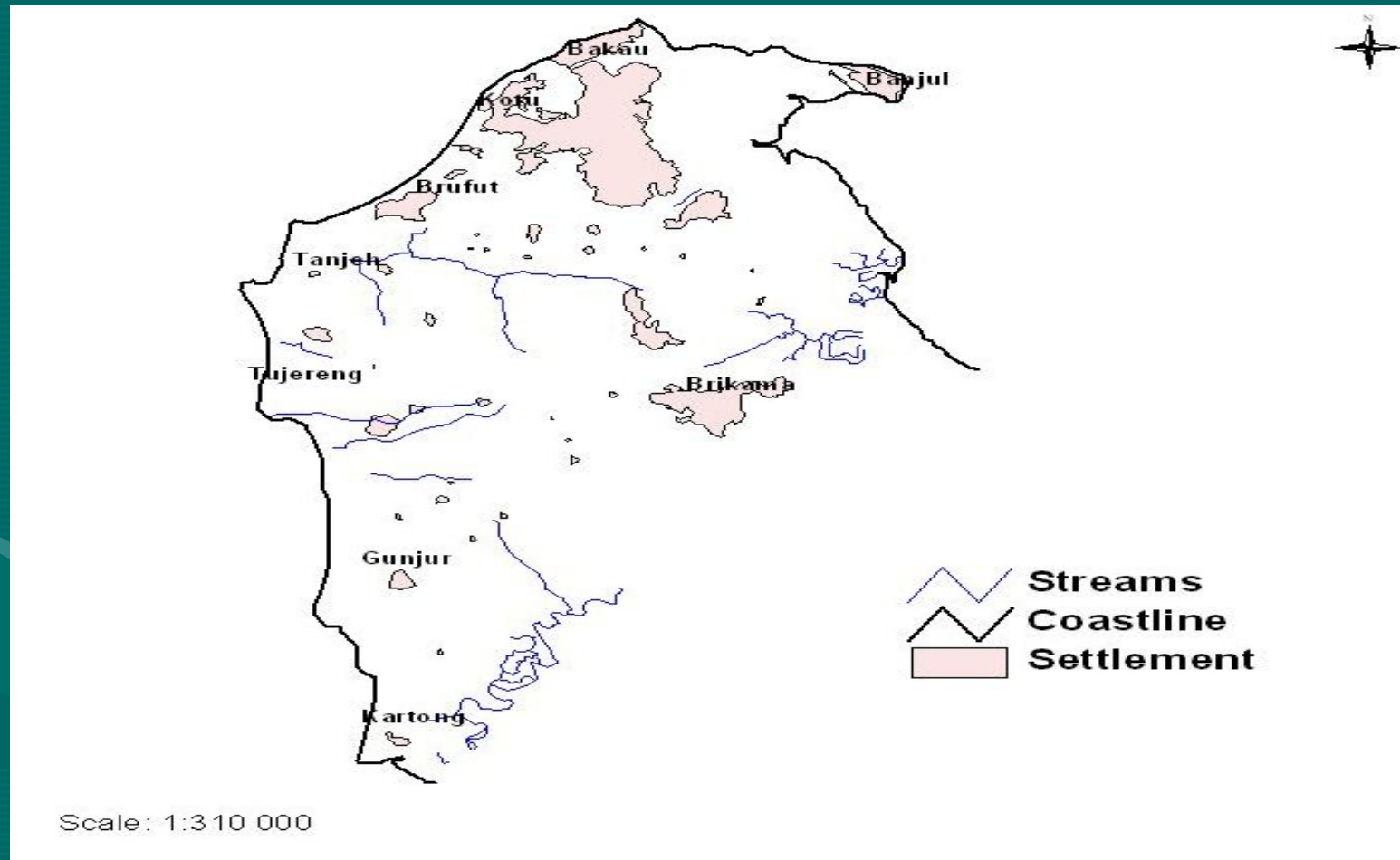


Potential impacts & Hazards of CC on Coastal Systems

- Manifestation of climate change in coastal areas include:
 - Sea level rise
 - Increase in sea surface and air temperatures
 - Climatic variability e.g. rainfall intensity
- Potential impacts of manifestations include
 - Submerged beaches
 - Flooding
 - Damage to mangroves and other coastal ecosystems
 - Fish contamination
 - Salt intrusion into mangroves & estuaries
 - Infrastructure damage



CC & The Gambia's Coastal Zone



CC & The Gambia's Coastal Zone

- Coastal zone generally low lying & open
- Heavy presence of mangroves
- Studies have indicated high vulnerability to climate change



Potential Impacts of CC on Gambia's Coastal Zone

- Damage to fisheries infrastructure and related activities
- Inundation of coastal lands, beaches and mangroves
- Mangrove migration inland
- Reduced fish catches
- Loss of freshwater resources
- Damage to tourism
- Heavy infrastructure loss



Examples of impact of CC Cont

- Flooding



Examples of CC impacts Cont



Coastal Erosion



Examples of CC impacts Cont



Strategies for CC adaptation and Implementation

- Due to potentially high vulnerability of coastal areas to CC, the following strategies
- Possible measures include
 - Increased education and awareness campaign on the impacts and consequences of CC in Coastal and Marine
 - Mangrove replenishment
 - Sand dune stabilisation
 - Alternative energy for fishery-related activities that heavy depend on fuel wood
 - Alternative engagements such as beekeeping and ecotourism
 - Community forestry
 - Riparian vegetation belt



E.g. of Coastal Protection measures



E.g. of Coastal Protection



E.g. of Coastal Protection

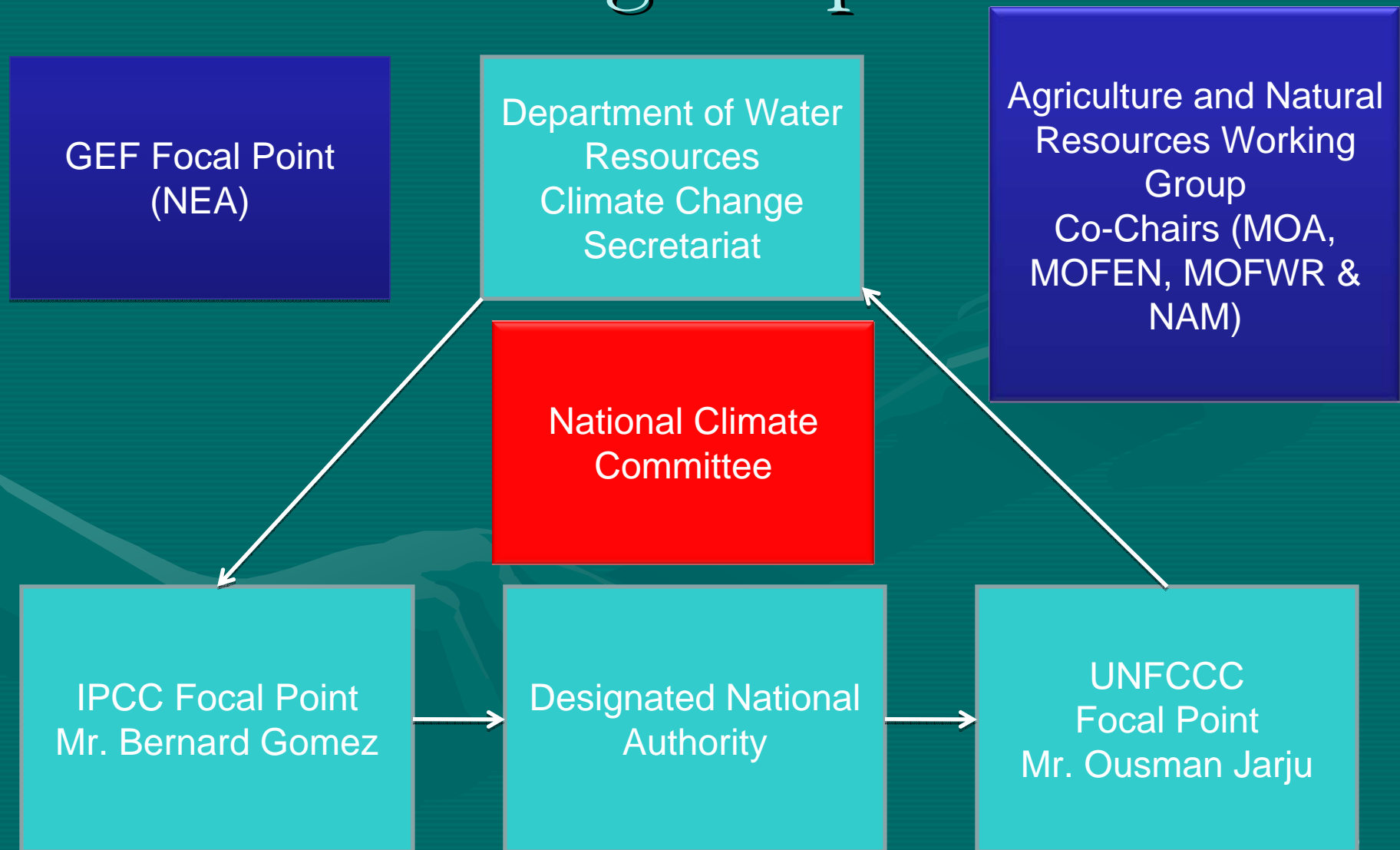


Priorities


- Beach nourishment and stabilization.
- Establish/rehabilitation of protected wetland areas.
- Livelihood diversification of the vulnerable communities.
- Education and communication on climate change issues.



Organizational Structure for Climate Change Implementation



Conclusions

- Continued emission of greenhouse gases will lead to further Climate Change.
- Climate Change and Sea Level Rise(SLR) pose risks to coastal communities around the world, but societal understanding of the distributional equity implication of SLR impacts and adaptation actions remains limited.
- Climate Change is real, and we will continue to face the impacts in the future... so our choice is to adapt, retreat or accommodate. 

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