Coastal Adaptation to Climate Change in The Gambia

By Famara Drammeh,
UN Nippon Fellow 2013/2014
The Gambia
Content

• What is Climate Change (CC)?
• What Causes Climate Change?
• Expected Impacts of Climate Change
• Climate change & Potential Impacts on Coastal Ecosystems
• Climate Change & The Gambia’s Coastal Zone
• Strategies for adaptation and implementation.
• Conclusions
• References
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
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% (47 km²) of the land loss to inundation will come from the sheltered coast (Government of The Gambia 2007).
Impact of Sea Level Rise in Banjul, Gambia

Greater part of the Capital City Banjul is less than 1 metre above mean sea level: a 1 metre rise in sea level means the City will be lost.

Mangrove swamps serve as spawning grounds for fish: with 1 metre rise in sea level these will be lost.

Banjul’s areas
- Capital city Banjul
- Banjul’s suburb
- Mangrove and swamps
- Main roads

Sea level rise in metre
- less than 1
- 1 to 0.5
- 1.5 to 1
- 2.0 to 1.5

Sources: Coastal Zone of the Gambia and th Abidjan region in Cote d’Ivoire: Sea Level Rise Vulnerability, Response Strategies, and Adaptation Option, 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 heavily 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

**GEF Focal Point (NEA)**

**Department of Water Resources Climate Change Secretariat**

**National Climate Committee**

**IPCC Focal Point Mr. Bernard Gomez**

**Designated National Authority**

**UNFCCC Focal Point Mr. Ousman Jarju**

**Agriculture and Natural Resources Working Group Co-Chairs (MOA, MOFEN, MOFWR & NAM)**
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.
References


- *Artisanal Fisheries Development Project- Training Manual*

- Tompkins et al., (2005). *Surviving Climate Change in Small Islands – A guidebook*. Tyndall Centre for Climate Change Research, University of East Anglia.


Thanks a lot for your kind attention.