Namibia’s National Priorities for Further Implementing Adaptation to Climate Change

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The Namibian Coast

A coastline of 1572km stretching from Kunene River to the Orange River;

78% of the coast is sandy, 18% rocky and 4% mixed

Flanked by the cold upwelled waters of SE Atlantic’s Benguela Current Large Marine Ecosystem (BCLME) and the Namibi Desert.

Has 5 major towns Henties Bay, Swakopmund, Walvis Bay, Luderitz and Oranjemund
Vulnerability of Namibia to climate change

• Namibia’s climate is highly variable so climate change will worsen this variability and hence amplify adverse impacts of climate change.
• The economy of Namibia is highly dependent on its endowment of natural resources, diverse rangelands, arable land, mineral deposits, ecosystems and biodiversity.
• Adverse impacts of climate change predicted for Namibia pose a great threat to her economy and sustainable development.
• This in turn will affect attainment of National Development plans, Vision 2030, and the UN Millennium Development Goals.
• Socio-economic factors including population growth (will increase demand for natural resources), high levels of poverty, lack of income and lack of employment opportunities greatly worsen the vulnerability of households to impacts of climate change.
Coastal climate baseline

- Wind
- Fog and mist
- Precipitation and Rain
- Temperature and sunshine
Annual rainfall - Namibia against Africa

A: Effect of a 10% drop in rainfall on perennial drainage density

C: Predicted change - End of 21st century

- Red: Drop by 10-20%
- Yellow: Drop by up to 10%
- Green: Increase by up to 10%
- Light Green: Increase by 10-20%
Annual rainfall - Coast against Country

Variability is not well understood and therefore unpredictable
Projected climate change

- Sea level rise
- Coastal erosion; saltwater intrusion; rising water tables/impeded drainage; wetland loss (and change).

- Marine environment
- Oceanographic conditions changes in the BCLME, Ocean acidification, Hypoxic water, stratification -causing fish stocks to decline, shift grounds,
Kwa Zulu Natal March 2007
Low oxygen water - Lobster walk out

Sulphur eruptions – fish mortality
Global composite images of suspended particulate inorganic carbon obtained from the MODIS satellite using a two-band calcite algorithm. (after Balch et al., 2007).
September 2006

AVHRR Sea Surface Temperature

Degrees Celsius
Anthropogenic Induced Ocean Acidification and impacts on South Africa’s continental shelf ecosystems

Maps of surface water aragonite saturation state for pre-industrial, present, 2050 and 2100 (after Farby et al., 2008).
(Benguela Niño Death Scenario)  

(Benguela Niña re-animation Scenario)
Projected climate change

• **Storm intensity**
  – Increased extreme water levels and wave heights;
  – increased episodic erosion, storm damage
  – risk of flooding and defence failure.

• **Wave climate**
  • Altered wave conditions, including swell; altered patterns of erosion and accretion; re-orientation of beaches.
Projected climate change

- Storm frequency
- Altered surges and storm waves and hence risk of storm damage and flooding.

Run-off

- Altered flood risk in coastal lowlands; altered water quality/salinity; altered fluvial sediment supply;
Projected impacts

- Inundation
- Run-off
- Storm damage
- Coastal erosion
- Saltwater intrusion
- Wetland loss (and change)
- Rising water tables/impeded drainage
- Depleted fish stock
Vulnerable sectors

• Health and well-being
• People’s lives and their livelihoods
• Energy
• Water and sanitation
• Transport and infrastructures
• Employment
• Tourism
• THE FISHERY and FISHING INDUSTRY (a main reason for settlement alongside mining)
Adaptation measures

Namibia has a vision towards adaptation to climate change; THAT:

• Namibia has significantly lowered the vulnerability of its population and sectors to predicted climate change impacts, through the adoption and successful implementation of appropriate and effective climate change adaptation and mitigation measures in line with Namibia’s national development goals and Vision 2030.
Gaps and constraints

- **Knowledge** of options to reduce climate risks or means to implement adaptation measures are lacking.
- **Cost of adaptation is seen to exceed** the expected benefits because both have not been quantified.
- **Uncertainty surrounding the expected impacts** and when they will occur seems to make it difficult to decisively implement adaptation measures in a specific time frame.
- **Irreversible consequences of some adaptation** measures may delay choices until some of the uncertainty is resolved.
- **Incentives could be distorted** in ways that may either discourage choices and reduce risks or encourage riskier choices.
- **Inaction or an action of other stakeholders** can be an obstacle to adaptation, and this can be a critical and important issue in open access resource situations.
- The frequent beliefs by people that **reducing their own risk is the responsibility of others**, particularly the Government or authority could lead to vulnerability.
- Adaptation may also not be achieved because **proposed measures are not technically feasible, not socially accepted, their effectiveness has not been demonstrated, they are not economically viable, when institutional capacity or human skills are lacking, when measures are not compatible with existing policies and when transboundary issues are involved.**
- **Insufficient awareness** due to information limited to specialists and limited or no access to research by stakeholders.
- **Technology stigmatation** together with different local and national priorities could cause socio-cultural barriers, thus an obstacle to adaptation measures.
Priorities

• Sustainable access to water
• Food security and sustainable resource base
• Human health and wellbeing
• Infrastructure
• Sustainable energy and low carbon development
• Education, training and capacity building, training and institutional strengthening
• Research and information needs
• Public awareness, participation and access to information
• Disaster reduction and risk management
• Financial resource allocation, mobilisation and management
• International cooperation and networking
• Technology development and transfer
• Policy and legislative development
• Gender issues and child welfare with respect to climate change

• Prioritising in a complex system like Namibia could also increase vulnerability, but we need to act.
Possible Projects

• Oceanography monitoring lines (continuation under threat) – *reduce uncertainty*
• Wave riders and tide gauges (installation along the coast or BCLME region) – *reduce uncertainty, early warning system*
• Ocean Acidification Monitoring and Research Network – *reduce uncertainty, early warning system & monitoring*
• A Coastal Climate Change Unit - *One stone for many birds-scenario oriented preparedness*
BENEFIT – Monitoring lines

Parameters:
- Temperature
- Oxygen
- Salinity
- Nutrients
- Chlorophyll a
- Phytoplankton
- Zooplankton
- Ichthyoplankton

Every 3 month:
- Temperature
- Oxygen
- Salinity
- Nutrients
- Chlorophyll a
- Phytoplankton
- Zooplankton
- Ichthyoplankton

Every 2 month:
- Temperature
- Oxygen
- Salinity
- Nutrients
- Chlorophyll a
- Phytoplankton
- Zooplankton
- Ichthyoplankton

4 X per year:
- Temperature
- Oxygen
- Salinity
- Nutrients
- Chlorophyll a
- Phytoplankton
- Zooplankton
- Ichthyoplankton

1 X per month:
- Temperature
- Oxygen
- Salinity
- Nutrients
- Chlorophyll a
- Phytoplankton
- Zooplankton
- Ichthyoplankton

2 X per month:
- Temperature
- Oxygen
- Salinity
- Nutrients
- Chlorophyll a
- Phytoplankton
- Zooplankton
- Ichthyoplankton

R/V Tômbwa
R/V Dr. F. Nansen
R/V Welwithchia
R/V !Anichab
FRS Africana
R/V Algoa Sky boat

Luanda
Lobito
Namibe
Palgrave Point
Walvis Bay
Lüderitz
ST Helena Bay
SARP
Suggestion

• We will be less vulnerable and more adaptive if we are more certain than we are now.

• Improve our predictive abilities – add more resolution to our monitoring and evaluation systems
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NAMIBIA- Where the Desert meets the Ocean

THANK YOU!

KARAS region coast