Climate change adaptation and Flood Risk Management in Transboundary Basins

Experience of the Nile Basin Initiative

By

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The Nile Basin Initiative

**Shared Vision:** To achieve sustainable socio-economic development through equitable utilization of, and benefit from, the common Nile Basin Water resources.

**Burundi, DR Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, Uganda**
the Nile Basin... High seasonal and inter-annual river flow variability

Flow for 1987 was 54% of 1955 – 2014 average
Climate Change and the Nile Basin

Issues at regional level

- Sea level change
- Flood risk
- Soil erosion, stream loading
- Land use change and conversions

Water retention, high evaporation

Glacier dynamics

**Overall issues**
- Water scarcity;
- General land degradation
Nile Basin Initiative response to climate change

• Setting up an overarching policy guide for addressing climate change → *the Nile Basin Sustainability Framework*
• Contributing to *climate change knowledge base and decision making tools*, thus raising awareness on climate change among key target groups of stakeholders
• Coordinating *Basin-wide monitoring* of climate change
• Addressing climate change *risks and uncertainties in investment projects*
• Supporting countries in flood early warning and preparedness
• Actively facilitating integration of climate change research into relevant policy planning contexts at regional and national scale (*collaboration with partner institutions*).
The Nile Basin Sustainability Framework: the overarching guide on set of policies and strategies that shall guide NBI’s activities; *endorsed by NBI Governance in 2011*
The NBI Climate Change Strategy

OVERALL GOAL

Strengthen basin-wide climate finance access and the capacity for development of feasible projects in the Nile Basin

STRATEGIC OBJECTIVES

Strengthen the knowledge base to enhance common understanding of climate change risks and its impacts on water resources, ecosystems and the socio-economy of the Nile Basin

Strengthen long-term capacities for addressing climate risks and uncertainty in the Nile Basin at national and transboundary levels

Support climate resilient planning and implementation addressing climate risks and uncertainty in NBI’s programs

Promote scalable low carbon development through enhanced transboundary cooperation in areas such as protection of wetlands as well as clean energy use and development

Strengthen basin-wide climate finance access and the capacity for development of feasible projects in the Nile Basin

OUTCOMES

Information on climate risks, impacts and vulnerability in the Nile Basin is synthesized, accessible and used by decision makers

Awareness for needs and benefits of basin-wide activities to address risks, impacts and vulnerability of climate change has improved

NBI activities complement climate change programs of national and regional institutions

Climate change is embedded in relevant NBI strategies and programs and capacities are enhanced to address climate risks at transboundary and national levels

Basin-wide adaptive management in the Nile Basin is coordinated and win-win opportunities for low carbon development are realized
The NBI Climate Change Strategy

**Outcomes**

- Information on climate risks, impacts and vulnerability in the Nile Basin is synthesized, accessible and used by decision makers.
- Awareness for needs and benefits of basin-wide activities to address risks, impacts and vulnerability of climate change has improved.
- NBI activities complement climate change programs of national and regional institutions.
- Climate change is embedded in relevant NBI strategies and programs and capacities are enhanced to address climate risks at transboundary and national levels.
- Basin-wide adaptive management in the Nile Basin is coordinated and win-win opportunities for low carbon development are realized.

**Priority Outputs**

- NBI climate change service function is established.
- Information on climate risks and vulnerabilities is synthesized at a trans-boundary scale.
- A process and mechanism for consistent dissemination of information is operational.
- NBI facilitates regular cross-sectoral, multi-stakeholder dialogues on climate risks, impacts and vulnerabilities and collaborative response.
- Formal partnerships are established with strategic regional and global climate initiatives.
- NBI implements a coordination mechanism to improve basin-wide adaptive management.
- Low carbon solutions that promote improved energy access and resilience of energy supply in the region are identified and implemented.
- A trans-boundary climate finance mechanism is established.
NBI’s Approaches for Addressing Climate Change

Building the knowledgebase

- NBI issued 1st River Nile State of the Basin Report

- **NBI has strengthening its planning tools**: Nile Basin Decision Support System (NB DSS)

- Supporting science-policy dialogue: the Nile Basin Development Forum (by-annual event);
  
  The theme for 3rd Forum (2011): *Climate Change and its Implications for Sustainable Development and Cooperation in the Nile Basin – Threats and Opportunities to Nile Basin Cooperation*

- The Nile Basin Water Resources Atlas (currently under development)
- The Nile Basin Regional Hydromet System (design completed)
- Water Resources balance (Supply Vs Demand)
- E-Flow study to determine the reserve water for environmental concern and basic human needs.
NBI’s Approaches for Addressing CC
Building analytic capacity

The Nile Basin Decision Support System is a comprehensive analytical framework that integrates:

- Information management system (database, GIS, data processing tools, ..)
- Water Resources Modeling system
- Analytic tools (optimization, benefit-cost analysis, multi-criteria analysis, ..)
Mainstreaming CC in water investment programs

• One of the pillars of NBI’s Strategic Action Programs is the subsidiary actions programs in the two sub-basins
• The SAPs have supported the identification, preparation and implementation of investment projects
• Guidelines developed for mainstreaming CC in water resources investment planning
• The projects
  – Hydropower generation with multipurpose dams
  – Promoting integration of regional power grids and power trade to overcome local shortages
  – Livelihood centered watershed management in the Eastern Nile
  – Agriculture - irrigation
  – Fisheries management
Strengthening Flood Preparedness - Eastern Nile

**Goal:** Reduce human suffering caused by frequent flooding while preserving the environmental benefits of floods

**Specific objectives:**
- Establish regional institutional & strengthen existing capacities of the EN countries in flood forecasting, mitigation and management,
- Promote regional cooperation & enhance the readiness of the EN countries to subsequent implementation of Phase II FPEW projects
- Develop and implement flood forecasting and early warning system; *Pilot forecast areas are Lake Tana, Gambella, BAS, Blue and Main Nile and Wadi Al Arish areas*
Strengthening Flood Preparedness - Eastern Nile:

Weekly flood bulletins issued during flood season

Delineation of flood prone areas and setting flood marks (GYR colors)

Communities Training
Watershed Management in the EN

- Farmers start using cut-and-carry system to feed their animals
- Some farmers increase their income from the sales of hay
Area 3: To provide an improved water supply and sanitation to the entire population of the NEL region
Enhancing system efficiency and demand management for water supply systems (under plan; 1st stage: Kigali, Kericho, Arusha)
  – Reduction of Non revenue Water Collection
  – Includes investments in demand management and infrastructure
  – Initial Phase in Kenya, Rwanda and Tanzania. To be later rolled out to Uganda, DRC and South Sudan

Area 4: Investments in Fisheries and water resources Management

- **Lakes Edward and Albert Water Resources Development Project** (FY14), US$ 67 million.
- **Project focus**: policy reforms, regional institutional development, fisheries and watershed management and improved lake navigation.
- Financed by AfDB and World bank (under Great Lakes Rural Development Program)
Title: *adapting to climate change induced water stress in the Nile River Basin (Completed 2013)*

Goal: to **build the resilience of ecosystems and economies** that are most vulnerable to climate change induced water stress in the Nile Basin countries through building key **adaptive capacity** and **piloting** adaptation in “Hot spots” with **technical, policy and financial interventions.**
Summary

• NBI has been following a mix of approaches to address risk of climate change:
  – Policy framework – the NBI Climate Change Strategy
  – Building the knowledgebase
  – Enhancing basin monitoring
  – Establishing its modeling framework (Nile Basin DSS)
  – Partnership with other actors (UNEP, University of Bergen)

• A new 5 year program (the *Nile Basin Climate Resilient Growth Program*); first project (NCoRe) launched in March 2013
  – Basin monitoring
  – Modeling and scenario analysis for climate–resilient water resources management
  – Knowledge management
  – Investment planning in water resources