



MINISTERO DELL'AMBIENTE  
E DELLA TUTELA DEL TERRITORIO E DEL MARE



Improving knowledge for adaptation to climate change

# **Climate change adaptation and**

# **Flood Risk Management**

*Experience of the Nile Basin Initiative*

## **Sowed WAMALA Nile Basin Initiative**

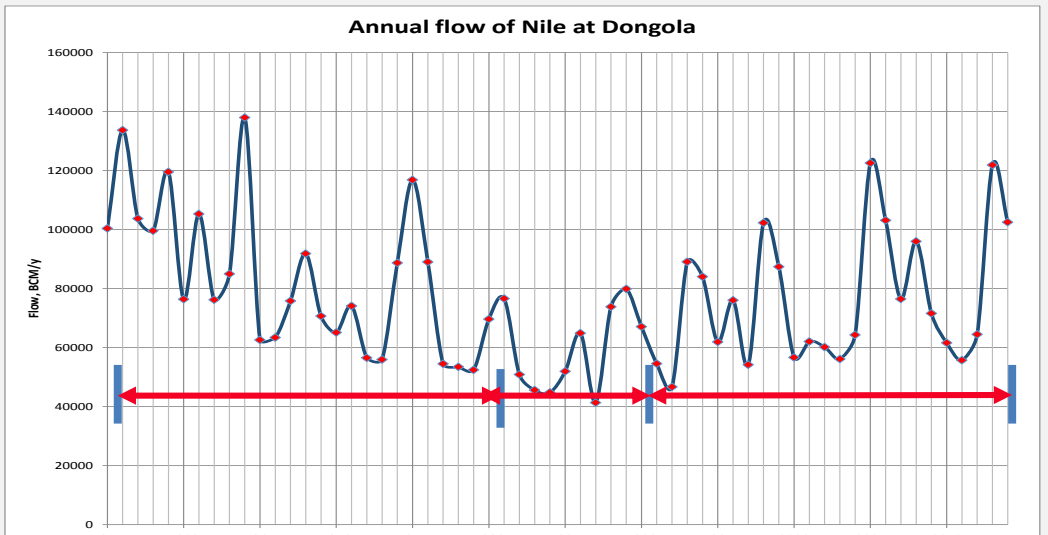
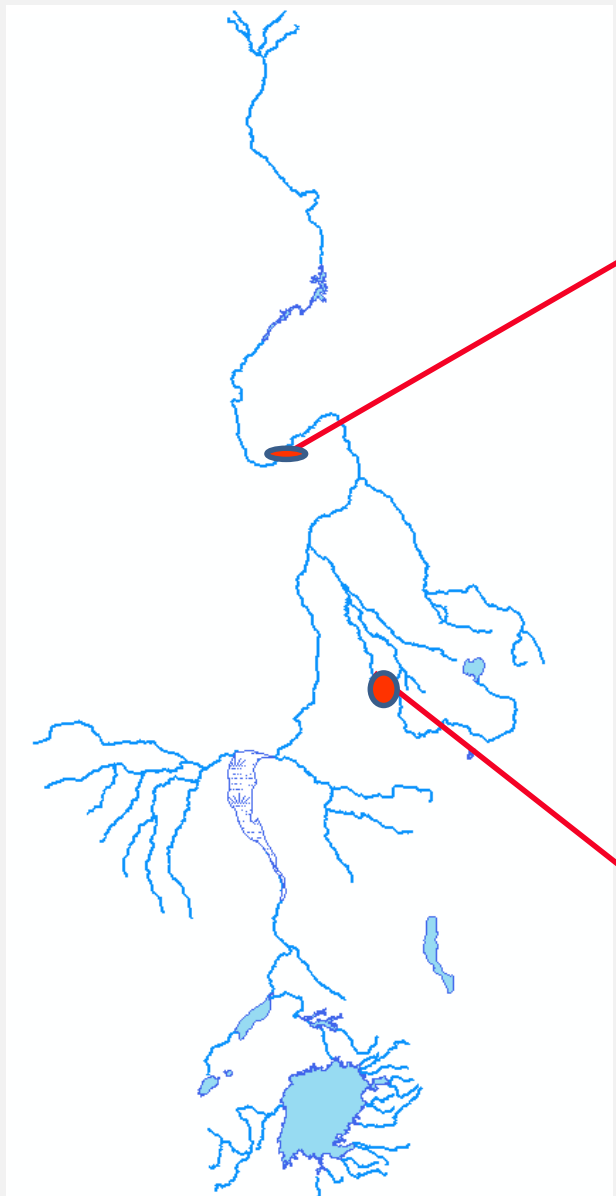
Water and Climate Conference  
Meeting of the Great Rivers of the World  
Rome, 23-25 October 2017

## Key elements

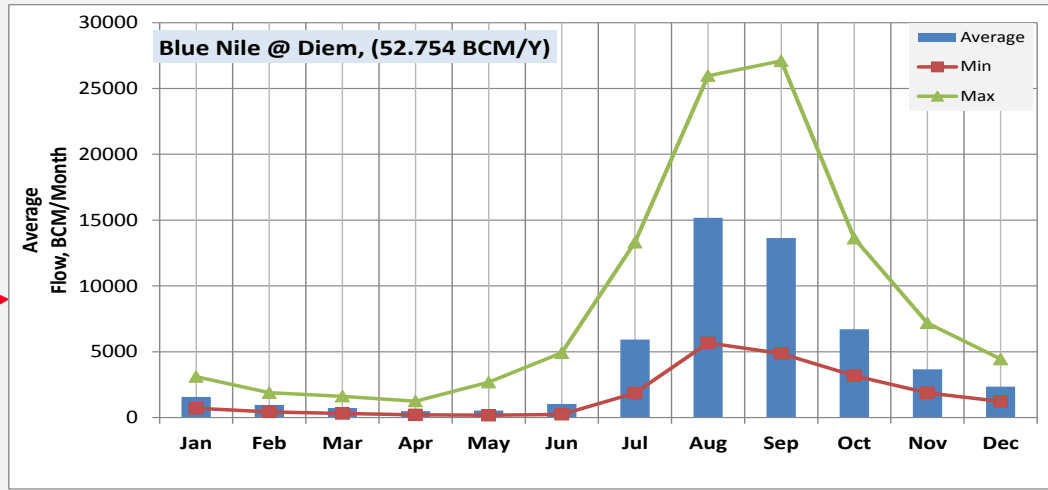
- Cooperation among key stakeholders in the Nile Basin to tackle climate change issues
- Climate Change addressed at policy level – Nile Basin Sustainability Framework and basin wide monitoring of climate change
- Strengthening of planning tools (Nile Basin Decision Support System) and generation of knowledge products on Climate Change

# the Nile Basin...

## High seasonal and inter-annual river flow variability

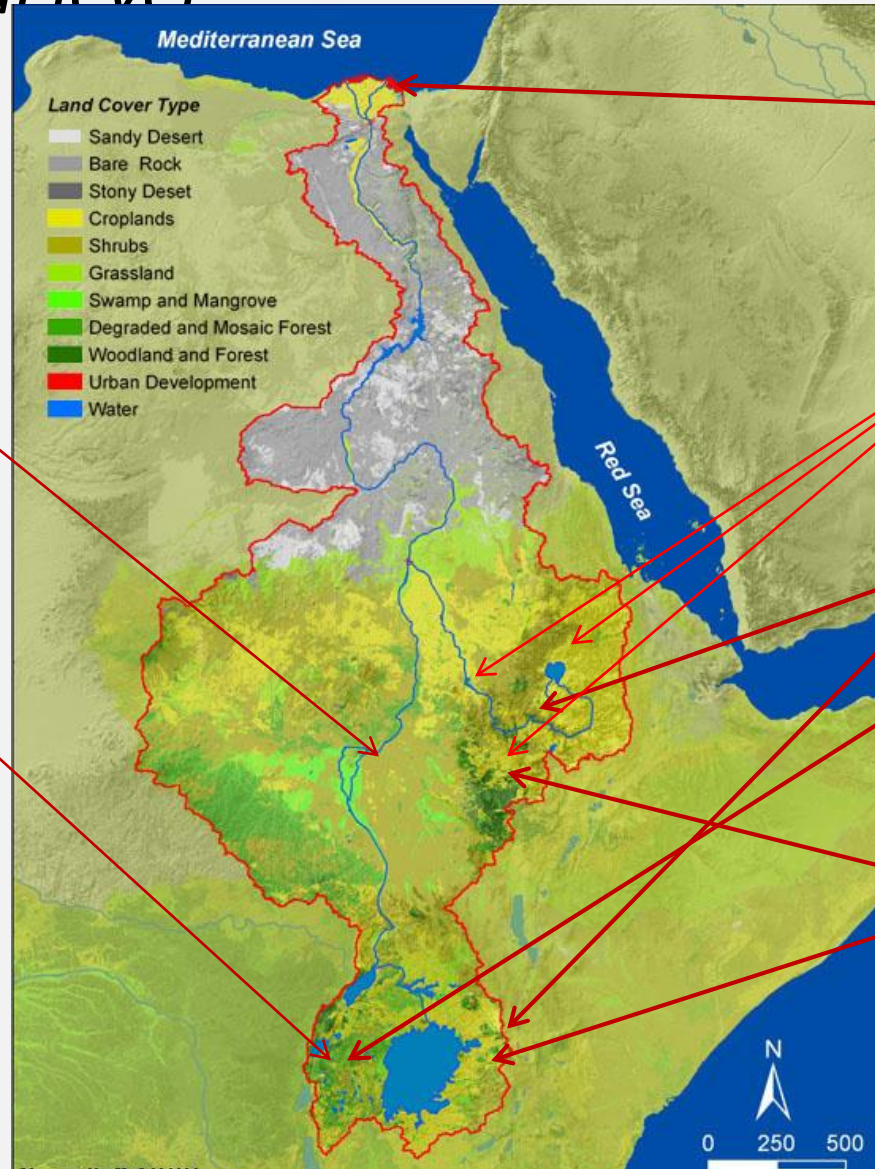


Flow for 1987 was 54 % of 1955 – 2014 average



# Climate Change and the Nile Basin

## *Issues at regional level*



sea level change

Flood risk

Soil erosion, stream loading

Land use change and conversions

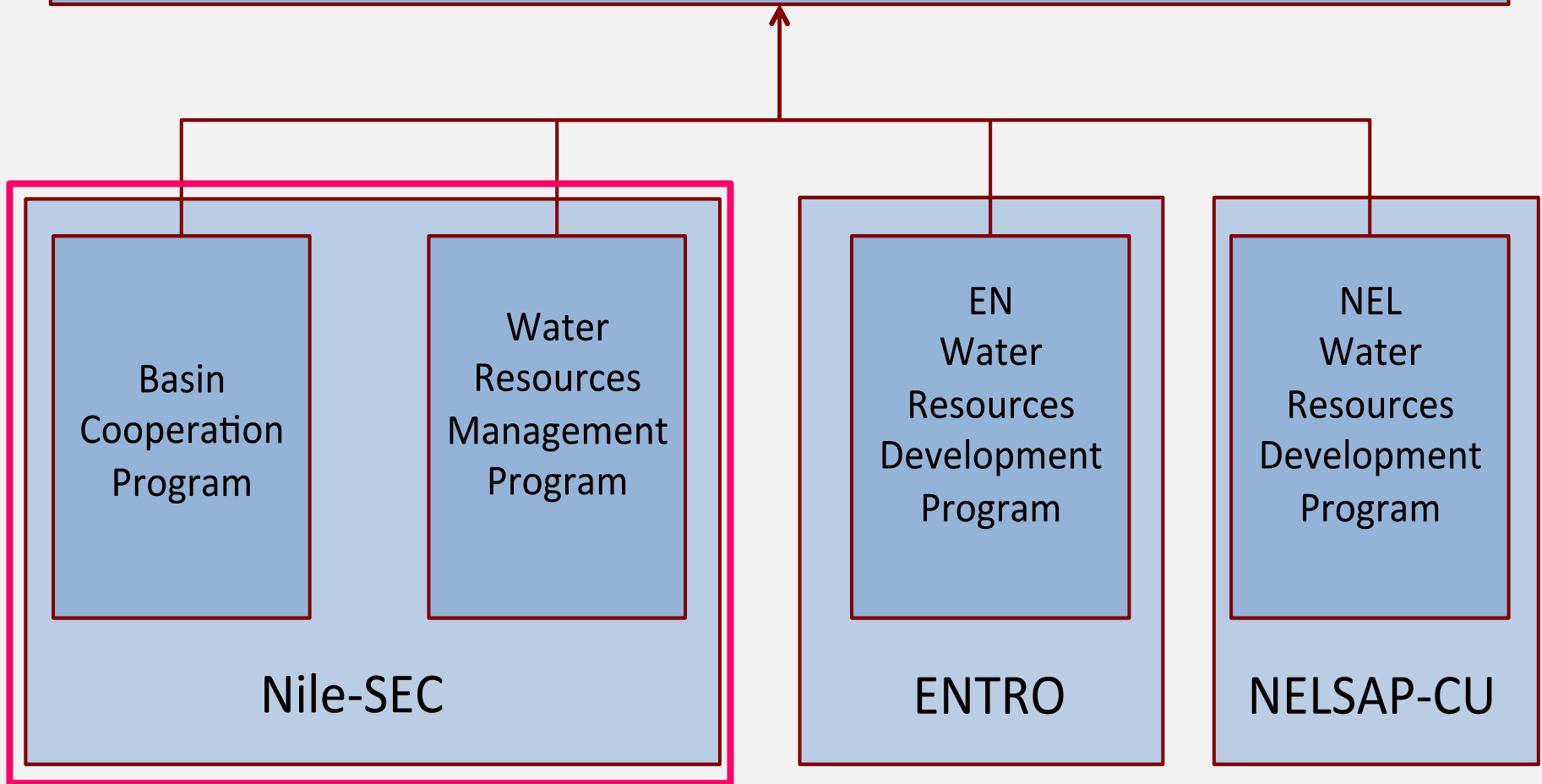
Water retention, high evaporation

Glacier dynamics

**Overall issues**  
*water scarcity;*  
*General land degradation*

# NBI Program Structure

Sustainable socio-economic development in the Nile Basin through the equitable utilization of, and benefit from, the common Nile water Resources



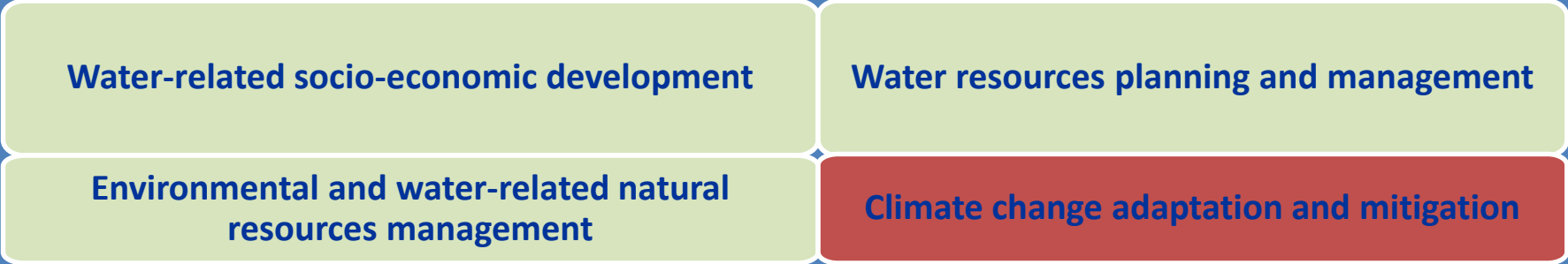
# Nile Basin Initiative response to climate change

- Setting up an overarching policy guide for addressing climate change  
→ *the Nile Basin Sustainability Framework*
- A climate change strategy
- Contributing to *climate change knowledge base and decision making tools*,
- Strengthening hydro-meteorological *monitoring*
- Addressing climate change *risks and uncertainties in investment projects (guidelines)*
- Supporting countries in flood early warning and preparedness
- Capacity building (training) on climate change modeling; climate finance

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*

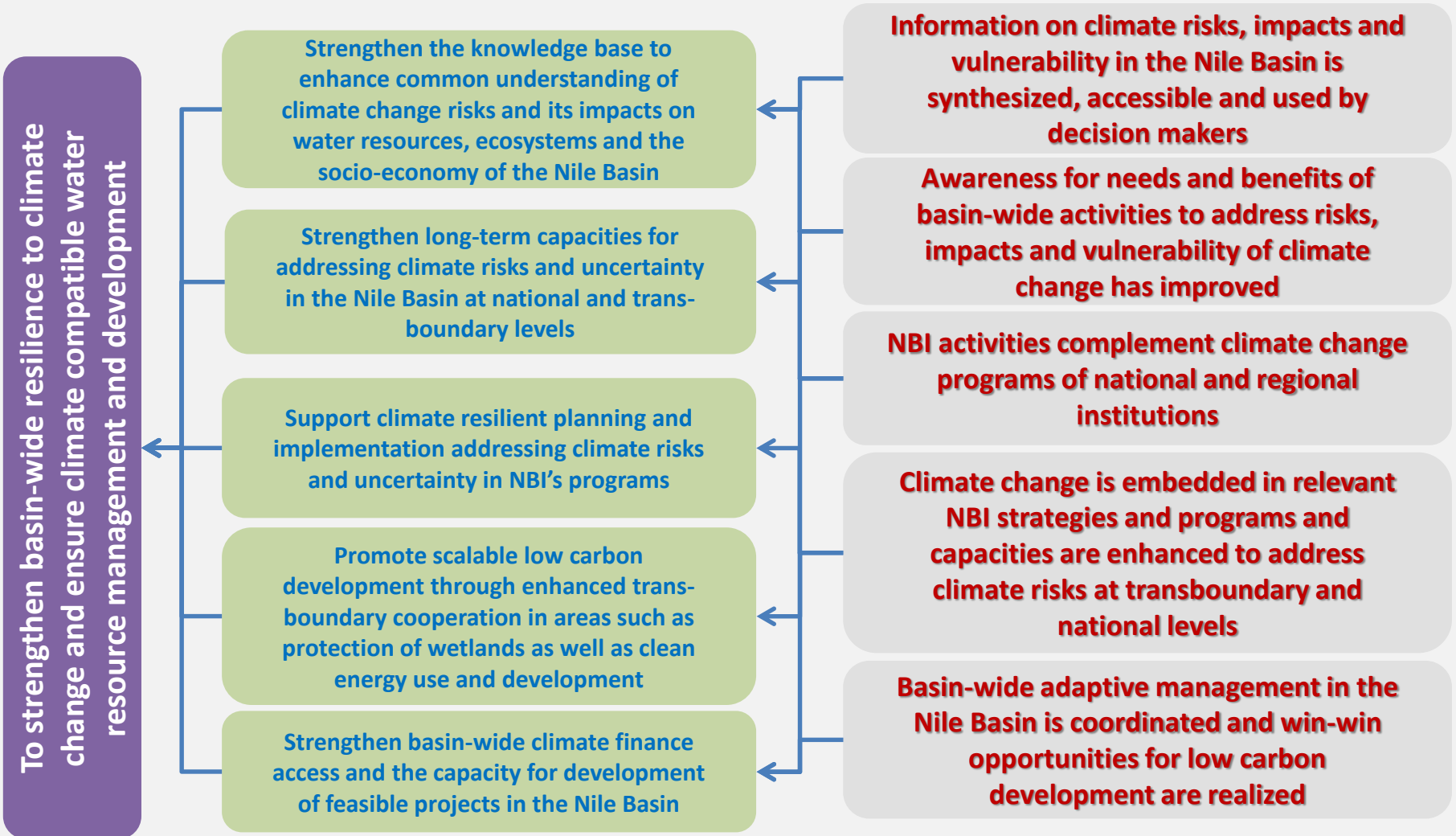
## The Nile Basin Sustainability Framework (NBSF)

**Key Strategic Directions :**



Climate change	
Goal for 10 year strategy (2017-27)	5 Year Strategic Objectives (2017-22)
Improve basin resilience to climate change impacts	<i>Strengthen NBI's climate service and build member country capacity for climate proofing water resources plans and investments at national and regional levels.</i>

# The NBI Climate Change Strategy



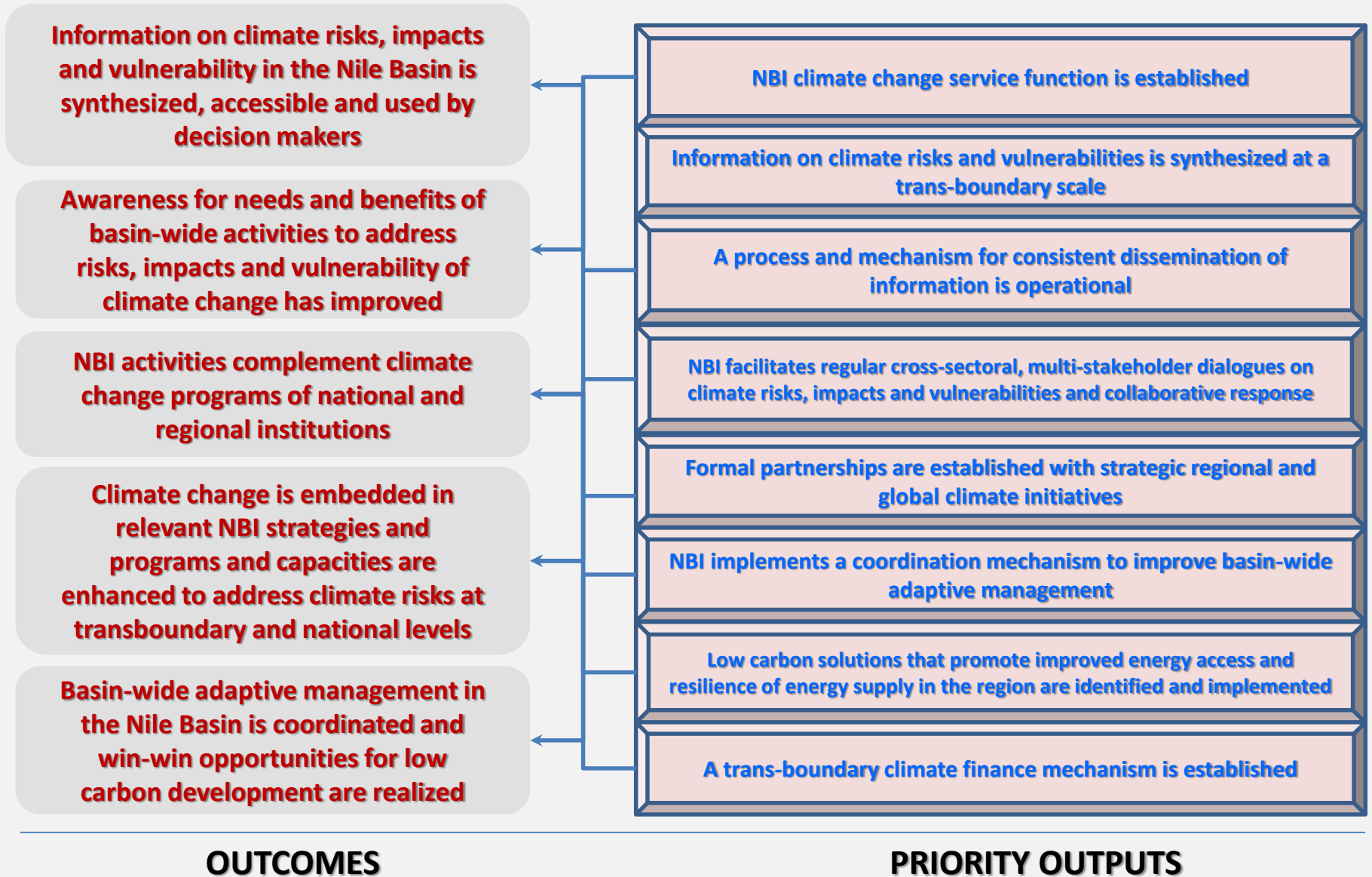
OVERALL GOAL

STRATEGIC OBJECTIVES

OUTCOMES



# The NBI Climate Change Strategy



# NBI CC related activities (2017-2020)

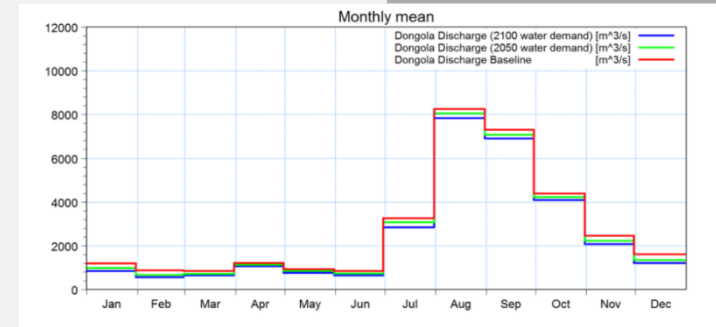
## Activities Completed

Adapting to climate change induced water stress in the Nile River Basin (2013) –NBI-UNEP

CMIP5 – Climate Model outputs used for Strategic analysis

## Planned/ongoing

- **Operationalize the Nile Basin climate change service function (WB)**
- **Stakeholder involvement and capacity strengthening**
- **Develop and operationalize short term to seasonal river flow forecast system**
- **Stakeholder forums**
- **Dam safety and dam cascade operation (ENTRO and NELSAP-CU)**
- **Flood forecasting and early warning (ENTRO)**
- **Strategic water resources analysis using the NBDSS**
- **Investment planning** (regional investment programs of NBI); ENTRO and NELSAP-CU
- NELSAP: **infrastructure projects on flood and drought management**; flood analysis (flood frequency analysis, damages curves, etc) factoring in climate change
- NELSAP: **reservoir management**; capacity building of countries
- EU: strategic nexus on watershed management – biodiversity and climate change
- Food security and climate change; climate smart land and water management
- ENTRO: Irrigation efficiency assessment; assessment of conjunctive use of groundwater and surface water



# NBI's Approaches for Addressing Climate Change



## *Building the knowledgebase*

- NBI issued 1<sup>st</sup> 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 (bi-annual event);  
*The theme for 3<sup>rd</sup> 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 (1 Chapter on climate change)
- The Nile Basin Regional Hydromet System (design completed)
- 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, ..)

# 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
- The 10 year NBI strategy – (Improve basin resilience to climate change impacts addressed in the strategy)

Thank you