Managing shared climate change risks in a transboundary river basin,

*The Nile Basin Initiative experience,*

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Rainfall distribution

- Substantial variation in rainfall distribution in the basin
- Upstream parts of the basin receive annual average rainfall that ranges from 1500 – 2000 mm; in some locations > 2000 mm
- Downstream parts of the basin have very little rainfall
- Rainfall in upstream parts is varies from season to season and from year to year
- Economies of most upstream countries are highly dependent on rainfall (rain-fed agriculture) → highly exposed climate to drought and floods

The Nile Basin:

- Basin Area: 3.2 Mill km²; 11 countries
- Ca 250 Million people live in the basin; Ca 480 Million people in all riparian countries

Kenya: variability and growth

Ethiopia: Rainfall Variability and Growth in Gross Domestic Product (GDP)
The Nile Basin Initiative

- A joint institution of the 10 Nile Basin States
- Launched on 22 February 1999
- Directed by Nile Council of Ministers (Nile-COM)
The Nile Basin Initiative (NBI)

Key mandates:

- **Facilitate basin cooperation**: Provide the platform for cooperation among the Nile riparian states and secretarial support to the Nile Council of Ministers (Nile-COM)

- **Water Resources management**: Ensure efficient and sustainable management and optimal use of the Nile water resources (*policies, water resources analysis, data sharing, basin monitoring...*)

- **Water Resources Development (infrastructure)**: Prepare and coordinate implementation of multi-sectoral, multi-country investment projects in water and related resources (*for energy, food, water supply, ...*)

NBI Shared Vision

*Sustainable socio-economic development through the equitable utilization and, benefit from, the common Nile Basin water resources*

Key Sectors NBI deals with

- Energy (Hydropower, power trade)
- Agriculture (irrigation, fisheries)
- Environment (Wetlands, watersheds)
Planned growth in dams and hp plants capacities

2014: 5600 MW

2050: ca 26300 MW

Baseline Installed capacity of hp plants, (MW)

Projected installed capacities of hp plants, 2050; MW

Growth in Cumulative Storage Capacities of Dams (BCM)

2015 ( < 200 BCM) 2050 (> 400 BCM)
Growth in water infrastructure

Preliminary estimate of increase in irrigated areas

2014 (5.4 M ha)

2050 (8.7 M ha)
Scenarios of sub-basin runoff under climate change

Wide difference in how the future runoff evolves under climate change
- High uncertainty for Tekezze-Atbara, Bahr el Jebel,
- Potentially more runoff for Tekezze-Atbara, Bahr el Jebel,
- Relatively less uncertainty on projection of runoff
Under dry future climate scenarios, meeting all irrigation water demands could be a serious challenge to the basin countries.
Key messages

• The Nile Basin **is and will remain** the major source of water for 250 million of basin population, expected to grow to nearly 500 million by 2050.

• It becomes evident that, upon aggregation of all national plans, **demand for water will grow substantially, outstripping supply**.

• Climate change will exacerbate the water scarcity (**a number of projections show likely very low of irrigation water demand satisfaction rate**)

• **Irrigated area** is expected **to increase** from the current 5.4 Million ha to about 8.7 Million by ca. 2050;

• Total basin dam **storage capacity** is expected **to rise** from the current 200 BCM to > 400 BCM; hydropower capacity to increase from 5600 MW to > 26,000 MW.

• Hence, NB countries are planning **WR investments** are planned to meet the growing demand for food, energy and water supply
Nile Basin Initiative response to climate change challenges

- Setting up an overarching policy guide for addressing climate change leveraging transboundary cooperation → *the Nile Basin Sustainability Framework*
- Contributing to *climate change knowledge base and decision making tools*,
- Setting the agenda for climate change adaptation at transboundary level → *the NBI Climate Change Strategy*
- Capacity development of member states: modeling; climate finance
- Addressing climate change *risks and uncertainties in investment planning*
- *Carrying out impacts assessment and generation of options for addressing water scarcity*
- Actively facilitating integration of climate change research into relevant policy planning contexts at regional and national scale (*collaboration with partner institutions*)
NBI response to climate change challenges

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<tr>
<th>Transboundary policies</th>
<th>Institutions</th>
<th>Information</th>
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<tr>
<td>• The NB Sustainability Framework (NBSF)</td>
<td>• Provide platform for TB cooperation</td>
<td>• Joint Analytic tools (NB DSS)</td>
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<td>• Climate Change Strategy</td>
<td>• Training and capacity building</td>
<td>• Water demand &amp; supply projection</td>
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<td>• Sub-basin level guidelines for investment projects</td>
<td>• Data and Information exchange</td>
<td>• Regional knowledgebase</td>
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<td>• Wetland Strategy</td>
<td>• Partnership building (IWMI, GWP, UNEP, LVBC)</td>
<td>• Basin monitoring: Evapotranspiration, enhancing basins monitoring infrastructure)</td>
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<td>• Environmental and Social Policy and guidelines</td>
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<td>• State of the Basin Report (every 5 years)</td>
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<td>• The NBI Environmental Flow Management Strategy</td>
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<td>• Flood forecasting and warning communication</td>
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<td>• Dam safety framework</td>
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<th>Infrastructure</th>
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<tr>
<td>• Joint, multi-sector investment planning (sub-basin level): hydropower, irrigation, watershed management</td>
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<tr>
<td>• Climate proofing guides - investments</td>
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<td>• Capacity building (in climate finance)</td>
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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 10 year strategy is under preparation that integrates adaptation to climate change as one of the strategic directions
  – Basin monitoring
  – Modeling and scenario analysis for climate –resilient water resources management
  – Knowledge management
  – Investment planning in water resources