NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

25 YEARS ANNIVERSARY

NILE COOPERATION
25 YEARS OF BENEFITS

Burundi DR Congo Egypt Ethiopia Kenya Rwanda South Sudan Sudan Tanzania Uganda

DISCLAIMER

The views expressed in this publication are not necessarily those of NBI's Member States or its development partners.

Trademark names and symbols are used editorially, and there is no intention of infringing on trademark or copyright laws. While every care has been exercised in compiling and publishing the information and data contained in this document, the NBI regrets any errors or omissions that may have been unwittingly made in this publication.

The NBI is not an authority on International Administrative Boundaries. All country boundaries used in this publication are based on FAO Global Administrative Unit Layers (GAUL).

ISBN 978-9970-444-05-2

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

CFA	Agreement on the Nile River Basin Cooperative Framework (Cooperative Framework Agreement)
CRA	Cooperative Regional Assessment
DR Congo	Democratic Republic of Congo
EAC	East African Community
ENCOM	Eastern Nile Council of Water Ministers
ENIDS	Eastern Nile Irrigation and Drainage Studies
ENMSIO	Eastern Nile Multi-Sector Investment Opportunity Analyses
ENPT	Eastern Nile Power Trade
ENSAP	Eastern Nile Subsidiary Action Programme
ENTRO	Eastern Nile Technical Regional Office
ENWM	Eastern Nile Watershed Management
EUWAP	Efficient Use of Water for Agricultural Productivity
FAO	Food and Agriculture Organization of the United Nations
FPEW	Flood Protection and Early Warning
GCM	Global Circulation Models
GDP	Gross Domestic Product
GIS	Geographical Information Systems
Ha	Hectares
ICOLD	International Commission on Large Dams
IDEN	Integrated Development of Eastern Nile
IGAD	Inter-Governmental Agency on Development
IWRM	Integrated Water Resources Management
IWSM	Integrated Watershed Management
JMP	Joint Multipurpose Project
Km	Kilometre
Kv	Kilovolts
LADP	Local Area Development Project
LEAF	Lake Edward and Albert Fisheries
LVBC	Lake Victoria Basin Commission
MSIOA	Multi-Sector Investment Opportunity Analyses
MW	Megawatt
NB DSS	Nile Basin Decision Support System
NBDF	Nile Basin Development Forum
NBI	Nile Basin Initiative
NBSF	Nile Basin Sustainable Framework
NCCR	Nile Cooperation for Climate Resilience
NDC	Nationally Determined Contributions
NELCOM	Nile Equatorial Council of Water Ministers
NELMSIOA	Nile Equatorial Lakes Multi-Sector Investment Opportunity Analyses
NELSAP	Nile Equatorial Lakes Subsidiary Action Programme
NELSAP-CU	Nile Equatorial Lakes Subsidiary Action Programme Coordination Unit
Nile-COM	Nile Council of Ministers
NRBIP	Nile River Basin Investment Programme
NRBMP	Nile River Basin Management Plan
Nile-SEC	Nile Basin Initiative Secretariat
Nile-TAC	Nile Technical Advisory Committee
NTEAP	Nile Transboundary Environment Action Project
OHTL	Overhead Transmission Line
NRBC	Nile River Basin Commission
SAP	Subsidiary Action Programme
SOB	State of the River Nile Basin
SSEA	Strategic Social and Environmental Assessment
SSEC	South Sudan Electricity Company
SVP	Shared Vision Programme
TECCONILE	Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Basin
TEEB	The Economic Evaluation of Diversity
USD	United States Dollar

MESSAGE FROM THE CHAIR

Dear Reader,

On 22nd February 1999, the Nile Basin Initiative (NBI) was established by the Council of Ministers responsible for Water Affairs in the Nile Basin countries, pending the finalization of a legal framework, the Agreement on the Nile River Basin Cooperative Framework (CFA), which would pave the way for the establishment of the permanent Nile River Basin Commission (NRBC).

The visionary establishment of the Nile Basin Initiative (NBI) in 1999 and its subsequent achievements have exceeded the wildest dreams our founders had at that time.

Among the earlier achievements is the establishment of a culture characterized by confidence, dialogue, and trust among the Member States, even when facing the complexities and challenges of transboundary Nile cooperation.

This progressive collaboration has led to the successful planning of 84 investment projects of transboundary significance, focusing on water, energy, climate change adaptation, environmental sustainability, food security and transboundary governance.

Furthermore, we have diligently worked towards building a common information system and creating shared analytical decision support tools, critical strategies, and policies. These resources serve as invaluable guides for trust building and promoting cooperative and sustainable utilization and management of the shared water resources in the Nile Basin. I strongly encourage you to explore these accomplishments further in the chapters that follow.

The secret to our success lies in the steadfast commitment and enthusiasm of the Member States, who have worked tirelessly to transform the lives of people residing in the Basin. Our accomplishments are also due to our dedicated staff, past and present, as well as our trusted and supportive development partners and international agencies.

I would like to extend my personal gratitude to everyone who has been part of this extraordinary journey and contributed to the fruitful outcomes we are witnessing today.

As NBI makes 25 years of existence in 2024, I look forward to a new chapter in the history of Nile cooperation following the CFAs' entry into force on 13th October 2024. I am filled with optimism, anticipating a deepening spirit of cooperation under the NRBC. This will lead to transformative and lasting developments on the Nile, ensuring its equitable and sustainable use for generations to come.

Let us approach this new era of Nile cooperation with renewed enthusiasm and resolute determination to create an even more remarkable narrative for the next 25 years. I sincerely hope that you share my excitement for the future of Nile cooperation and the benefits it promises for countless people today and for generations to come.

Together, let us continue to shape the future of the Nile Basin region, united in our Shared Vision Objective.

Hon. Sam Cheptoris (MP)
Chairperson, Nile Council of Ministers since October 2023.
Minister of Water and Environment in Uganda

MESSAGE FROM THE EXECUTIVE DIRECTOR

Dear Reader,

On 22nd February 2024, the Nile Basin Initiative (NBI) celebrated its silver jubilee. This milestone marks the halfway point towards the golden jubilee, and it is truly incredible to reflect on the outstanding achievements we have attained.

This publication serves as an updated edition, building upon the 2020 version, with the purpose of showcasing the accomplishments realised under NBI and emphasising their inherent benefits. Additionally, it aims to nurture a greater understanding and appreciation of the importance of enhanced cooperation among the Member States.

The time elapsed since the previous publication has been marked by notable achievements, despite the challenges posed by the global COVID-19 pandemic, which brought unprecedented disruptions and necessitated drastic changes in work methodologies worldwide. The pandemic on the other hand accelerated positive digital transformation, and the NBI promptly embraced these changes. Notably, we successfully organised the 15th Nile Day regional celebration, followed by the 6th Nile Basin Development Forum in 2021, a high-level science-policy dialogue conducted virtually. This innovative approach attracted numerous stakeholders, more than ever before, from diverse regions both within and beyond the Nile Basin, yielding fruitful outcomes.

With the NBI making 25 years of existence, we joyously celebrate its enduring legacy, the monumental journey of Nile cooperation, the tangible benefits experienced by our esteemed Member States and their citizens, and the exciting prospects that lie ahead.

I would like to express my deepest gratitude to all those who have played integral roles in this inspiring 25-year journey. My heartfelt appreciation extends to the visionary founding members, the esteemed members of the Nile Council of Ministers, the invaluable Nile Technical Advisory Committee, the dedicated staff members, our esteemed Development Partners and the Nile Basin Discourse, which connects NBI to the grassroots.

I am incredibly excited about the forthcoming 25 years of Nile Cooperation. I truly believe that the most remarkable days of Nile cooperation are yet to unfold. Let us strengthen our strategic partnerships and persist in our collaborative efforts, striving for an even more expansive, improved, and radiant future - one that benefits us all collectively. Together, we can pave the way for a brighter tomorrow.

Dr. Florence Grace Adongo

« The Nile Council of (water affairs) Ministers – the COM – is the highest governing body and supreme policy and decision-making organ of NBI. The Technical Advisory Committee (TAC), on the other hand, comprises technical representatives from the Member States. It offers technical support and advice to the COM on matters related to the transboundary management and development of the Nile waters. With support from NBI's Secretariat, these two Governing bodies steer NBI, providing strategic direction while performing oversight, insight and foresight roles on behalf of their Member States. The strong leadership, dedication and commitment of NBI's Governance helped to keep NBI on course for 25 years. »

Photo: NBI

Members of the Nile Council of Ministers (centre three) with other Member State representatives at the February 2025 NBI Governance meetings in Addis Ababa, Ethiopia. Left to right are representatives of the DR Congo, Burundi, Rwanda, Ethiopia, South Sudan, Egypt, Uganda, Tanzania and Kenya

BASIC INFORMATION ABOUT THE NILE BASIN

LONGEST RIVER

Derived from Neilos, the Greek name for the river god of Egypt, the Nile is the longest river in the world.

TOTAL RIVER LENGTH

6,695 km

NAVIGABLE LENGTH

4,149 km

BASIN AREA

3,176,541 km^2

RIPARIAN COUNTRIES

Burundi, DR Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, Uganda

POPULATION Total population of Nile Basin countries: 556 million (2020) Population within Basin: 291 million (2020)

MAJOR DAMS Nalubale (formerly Owen Falls), Jebel Aulia, Roseires,Sennar, Khasm el Girba, Merowe, Aswan High, Grand-Ethiopian-Renaissance-Dam

THE NILE RIVER HAS TWO MAJOR TRIBUTARIES

White Nile – Traditionally considered the primary source of the Nile. It originates from Lake Victoria, which lies at the border of Uganda, Tanzania, and Kenya. This is often cited as the "source of the Nile" in many references, especially in historical and geographical contexts.

Blue Nile – Originates from Lake Tana in the Ethiopian highlands. The highlands contribute 80–86 percent of the water volume and silt to the Nile during the rainy season.

MAJOR CITIES IN BASIN

Addis Ababa (partly inside Basin), Aswan, Cairo, Jinja, Juba, Kigali, Kampala, Khartoum, Kisumu, Luxor, Mwanza, Wad Medani

LAND USE

Bare areas (31%); shrublands (29%); cultivated land (23%) forest (7%); grassland (6%)

WATER USE Main consumptive water-use sector is agriculture by more than 80%

EXECUTIVE SUMMARY

For generations, the Nile River has been the lifeblood of millions across its vast Basin, sustaining communities, ecosystems, and economies. Yet, the challenges of managing this shared resource have grown increasingly complex across borders, sectors, and generations. Recognizing that no single country can address these challenges alone, ten countries came together in 1999 to form the Nile Basin Initiative (NBI), a bold and unprecedented partnership built on trust, collaboration, and a shared vision for sustainable development. This publication tells the story of 25 years of unwavering commitment and collective action, revealing how cooperation has transformed challenges into opportunities, unlocking lasting benefits for people, nature, and peace across the Basin. Join us as we explore NBI's journey, achievements, and future promise of Nile cooperation.

This publication celebrates 25 years of commitment, partnership, and progress under the NBI umbrella. Despite global challenges such as the COVID-19 pandemic and intensifying impacts of climate change, Nile Basin countries have achieved significant, cumulative benefits from their cooperation.

Chapter 1 highlights basin-wide achievements that reflect the strength of collective action. As the first and only basin-wide institution owned, governed, and mandated by the Member States themselves, NBI continues to be the foundation for transboundary dialogue, joint planning, and sustainable management of the Nile's shared water resources.

By establishing a cooperative governance framework, NBI has fostered trust, mutual confidence, and deeper understanding among Member States. This foundation has enabled win-win development outcomes, advancing regional peace, stability, and security, benefits that grow cumulatively as cooperation deepens.

NBI's projects and programmes have delivered tangible results that demonstrate this cumulative impact. For example, completed and ongoing projects have already improved access to safely managed drinking water for 50,000 people, installed **86 MW of installed capacity**, constructed over **5,400 km of new power transmission lines**, equipped **8,630 hectares for agricultural irrigation**, and created more than **5,200 new jobs**. These initiatives have also contributed to environmental conservation, managing over **41,500 hectares of protected areas** and sustaining nearly **300,000 hectares** of land under **sustainable management practices**.

Photo: NBI

The Regional Rusumo Falls Hydroelectric Project, owned by Burundi, Rwanda and Tanzania, is a flagship project of NBI's

Looking ahead, projects at the identification and feasibility stages promise even greater transformational impacts. They could provide safely managed drinking water to over **2.3 million people**, expand installed hydropower capacity to more than **6,300 MW,** and add approximately **9,100 km of power transmission lines.** Agricultural irrigation could be extended to over 721,000 hectares, while conservation efforts would enhance management of more than 17 million hectares of protected areas. Multipurpose water storage capacity is set to increase dramatically to over **52,700 million cubic meters**, supporting climate resilience and sustainable water management across the Basin. Importantly, nearly **24 million people stand to benefit** directly from these planned investments,

creating thousands of new jobs and expanding economic opportunities. NBI has developed and maintained a shared data and knowledge infrastructure, anchored in the Integrated Knowledge Portal, which provides accessible, reliable information to policymakers and planners across the Basin. Tools such as the Nile Basin Decision Support System and the Regional Hydrological Monitoring System empower evidence-based decision-making, strengthening basin-wide coordination.

Capacity building and institutional strengthening have been a priority, equipping countries to address the complexities of transboundary water governance. Flagship initiatives such as the Strategic Water Resources Analysis, Nile River Basin Management Plan, and State of the River Nile Basin reporting have addressed critical basin-wide issues, creating a shared foundation for sustainable development.

The 2022 Nile River Basin Management Plan, endorsed by all Member States, provides a comprehensive, integrated framework for coordinated water resources planning at national, sub-regional, and regional levels, embodying decades of accumulated cooperation and consensus.

The Nile River Basin Investment Programme (NR-BIP) acts as a catalyst, mobilizing resources for transformative, climate-resilient projects that promote socio-economic development and environmental restoration. By coordinating project identification, prioritization, and resource mobilization, NR-BIP exemplifies how cooperation multiplies impact across sectors and countries.

NBI's Subsidiary Action Programmes, NELSAP and ENSAP, have delivered concrete investments in water, energy, food security, environmental sustainability, and climate resilience

NBI's groundwater project supports water security, environmental sustainability, and climate action in the Nile Basin

in their sub-regions, demonstrating how collaboration generates tangible, localized benefits that build upon one another over time.

Annual regional Nile Day celebrations and the triennial Nile Basin Development Forum – held 19 and seven times respectively in the past – offer vital platforms for ongoing dialogue, shared learning, and strengthening the collective identity of the Basin's peoples and governments.

Chapter 2 presents detailed country-level benefits, highlighting how cooperation has translated into real improvements in water resource management and socio-economic development for millions across the Basin.

With improved data and shared understanding from initiatives like SWRA, Basin countries are better equipped than ever to engage in joint planning, set basin-wide priorities, and implement collective risk management and adaptation measures. Cooperative management of shared water resources is now the norm, creating a platform for expanded sustainable development opportunities across sectors.

Chapter 3 illustrates NBI's vision for the next 25 years. The organisation aspires to mature into a dynamic, inclusive, and technology-driven framework that safeguards the river's health, ensures sustainable development, and fosters peaceful coexistence among riparian states.

NBI's 10-year Strategy (2017–2027), aligned with the Shared Vision Objective, outlines six strategic goals: water security, energy security, food security, environmental sustainability, climate change adaptation, and transboundary water governance..

It is important to note that the Shared Vision Objective can be effectively pursued through the establishment of a permanent river basin organisation – the Nile River Basin Commission. The latter will foster a stable and predictable operating environment, ensuring active participation of all Nile Basin countries.

INTRODUCTION

The Nile is a unique, iconic river. At 6,695 km, it is the longest river in the world (Guiness Book of Records). It is also one of a few major rivers flowing south-north. The river traverses different landscapes and climates including the largest desert of the world (the Sahara), the largest wetland in Africa (the Sudd), as well as many lakes in the 11 countries (Burundi, the Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda) that share the Basin.

For all the Nile Basin countries, the river is of strategic importance for the socio-economic wellbeing of their population as well as the sustenance of natural ecosystems. It is, therefore, a source of life not only for humans but for entire ecosystems of fauna and flora.

The Nile Basin faces significant challenges in sustainably managing its shared water resources due to a combination of factors. These include the large number of countries within the basin, the uneven distribution of water resources among them, rapid population growth, urbanization, and the intricate hydrology of the Nile system. Additionally, the impacts of climate change further complicate efforts to determine how and where benefits can be generated and equitably shared across the region.

With a potential market of over one billion people on the continent, the Nile River offers immense opportunities for hydropower generation, power trade, increased agricultural productivity through irrigation, as well as economic integration.

Recognising these challenges and opportunities, as well as their complex interdependencies, the Nile Basin countries decided to create the Nile Basin Initiative (NBI) on 22nd February 1999. The umbrella body welcomed South Sudan on 5th July 2012 after the country seceded from Sudan. Eritrea

Photo: NBI

Murchison Falls on River Nile in Uganda

Photo: NBI

Top, some of NBI's founding fathers. Above left, the then host Nile COM minister, Henry Muganwa Kajura, inaugurates the NBI Secretariat (September 1999) in Entebbe. Above right, one of the first Nile Technical Advisory Committee (TAC) meetings

participates in the NBI as an observer. With the emergence of NBI, the Nile Basin countries, for the first time, agreed to a Shared Vision Objective: to achieve sustainable socio-economic development through equitable utilisation of, and benefit from, the common Nile Basin water resources.

To translate the Shared Vision Objective into action, the Member States developed a Strategic Action Programme with two complementary facets. The Programme aimed to create i) an enabling environment for cooperative action through building trust, confidence, and skills, and ii) Subsidiary Action Programmes (SAPs) to plan and implement joint investments on the ground in the Nile Equatorial Lakes and in the Eastern Nile regions, respectively. The former would implement the Nile Equatorial Lakes Subsidiary Action Programme (NELSAP) and the latter, the Eastern Nile Subsidiary Action Programme (ENSAP).

The NBI maintains a Secretariat, based in Entebbe-Uganda. The Secretariat serves as the executive arm of NBI, routinely preparing, coordinating and implementing basin-wide programmes and projects. The Eastern Nile Technical Regional Office (ENTRO) based in Addis Ababa, Ethiopia, facilitates physical cooperative investments for the ENSAP. The Nile Equatorial Lakes Subsidiary Action Programme Coordination Unit (NELSAP-CU) based in Kigali, Rwanda, performs the same function for NELSAP.

NBI's presence in each Member State is maintained through the National NBI Office, headed by a Nile Technical Advisory Committee (Nile-TAC) member supported by a National NBI Desk Officer.

The year 2024 marked 25 years since NBI was established. This milestone follows prior efforts to bring all the Nile Basin countries together, namely the HydroMet from 1967 to 1993, Undugu in 1983, and TECCONILE from 1993 to 1999.

The unique forum provided by NBI has facilitated trust and confidence while creating an enabling environment for countries to work together on mutually beneficial investment projects with tangible benefits for the Basin's populations, as presented in this publication.

NBI CORE FUNCTIONS
NBI's activities are organised along three core functions

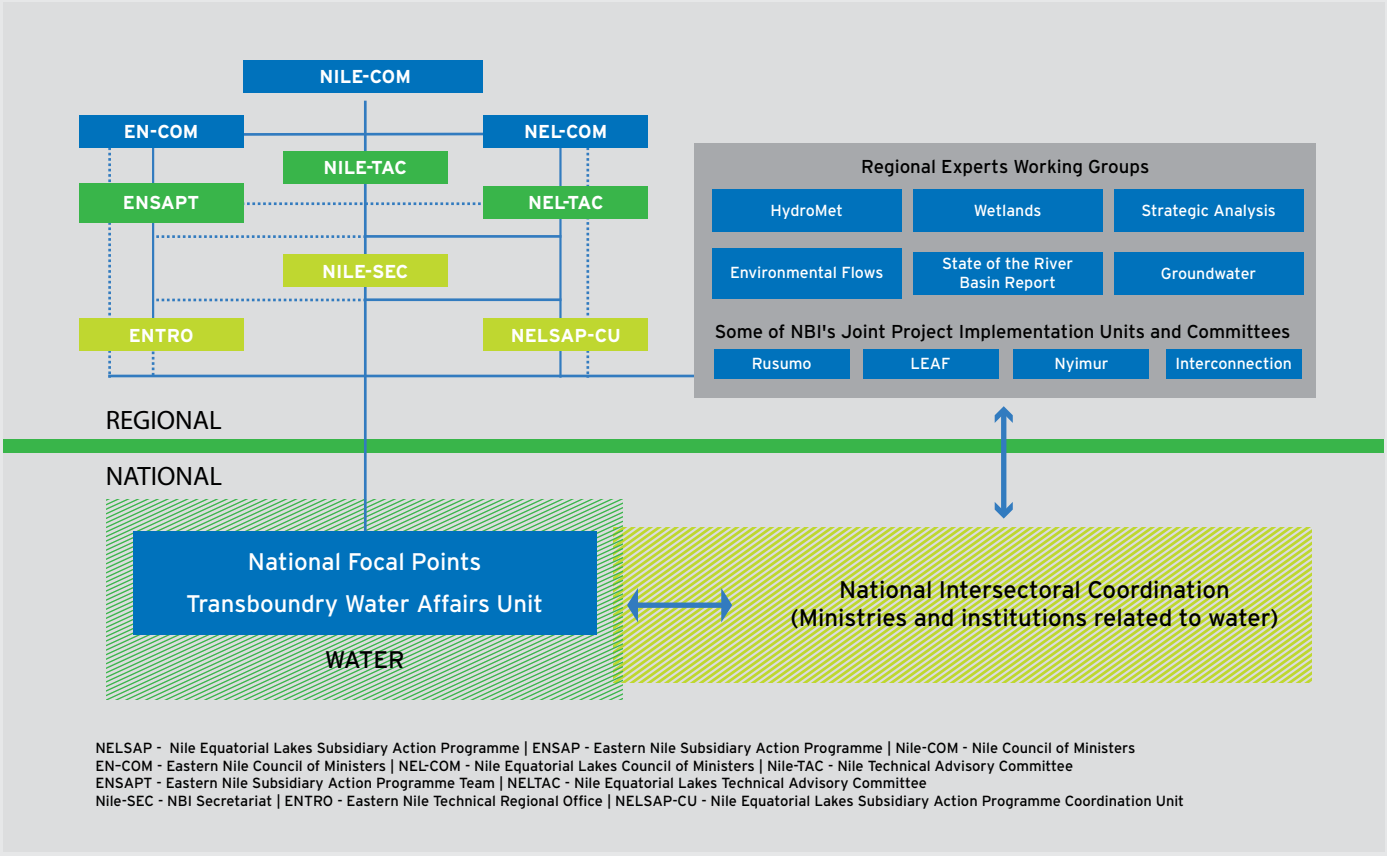
FACILITATING BASIN COOPERATION
This function provides a common platform for countries to engage, consult and deliberate with each other and other Nile stakeholders on a regular basis. It aims to build broad political and civic support for transboundary water cooperation in the Basin.

WATER RESOURCES MANAGEMENT
This function provides critical services in building basin-wide technical competencies and capabilities while supporting science. NBI also invests in knowledge-based decision making to facilitate joint planning, monitoring, protecting and sustaining the Nile's water resources.

WATER RESOURCES DEVELOPMENT
This function focuses on identifying and preparing cooperative water resources investments that demonstrate to the Basin population the benefits of cooperation.

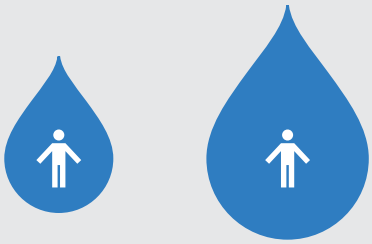
The Nile Basin Initiative (Nile-SEC, ENTRO and NELSAP-CU) is executing the above core functions through a 10-year Strategy (2017 – 2027) that aligns to national, regional, continental, and international priorities. The Strategy is implemented in two successive five-year plans, and focuses on six basin-wide priorities, namely: water security, energy security, food security, environmental sustainability, climate change adaptation, and transboundary water governance.

NBI STRUCTURE



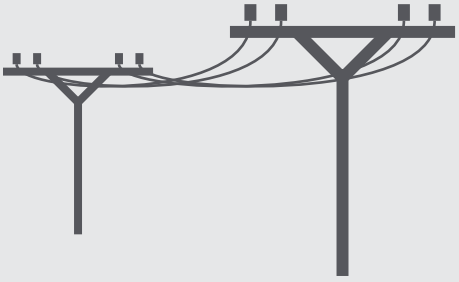
NELSAP - Nile Equatorial Lakes Subsidiary Action Programme | ENSAP - Eastern Nile Subsidiary Action Programme | Nile-COM - Nile Council of Ministers
EN-COM - Eastern Nile Council of Ministers | NEL-COM - Nile Equatorial Lakes Council of Ministers | Nile-TAC - Nile Technical Advisory Committee
ENSAPT - Eastern Nile Subsidiary Action Programme Team | NELTAC - Nile Equatorial Lakes Technical Advisory Committee
Nile-SEC - NBI Secretariat | ENTRO - Eastern Nile Technical Regional Office | NELSAP-CU - Nile Equatorial Lakes Subsidiary Action Programme Coordination Unit

NBI'S PRIORITIES 2017-2027



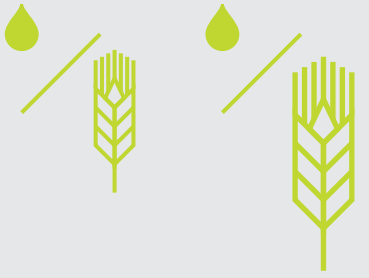
Today Tomorrow

1. WATER SECURITY
MEETING RISING WATER DEMANDS
The water availability per capita is in decline. Nile Basin countries need to explore new water sources, reuse water and use less water more efficiently.



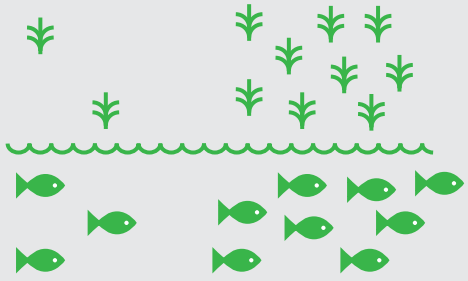
Today Tomorrow

2. ENERGY SECURITY
UNLOCKING AND OPTIMISING HYDROPOWER POTENTIAL
The demand for energy is increasing. Countries need to harness the Nile Basin's hydropower potential and interconnect grids to enable regional power transmission and trade.



Today Tomorrow

3. FOOD SECURITY
INCREASING AGRICULTURAL PRODUCTIVITY
Per capita water availability is in decline. Nile Basin countries must explore new water sources, resuse water and use less water more effeciently .

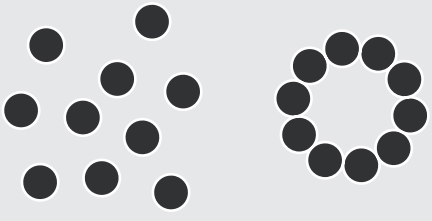


Today Tomorrow

4. ENVIRONMENT
RESTORING DEGRADED ECOSYSTEMS
Life-sustaining environmental services are under threat. Countries must preserve wetlands, lakes and riverine ecosystems, and sustainably manage critical water source catchments.

Today Tomorrow

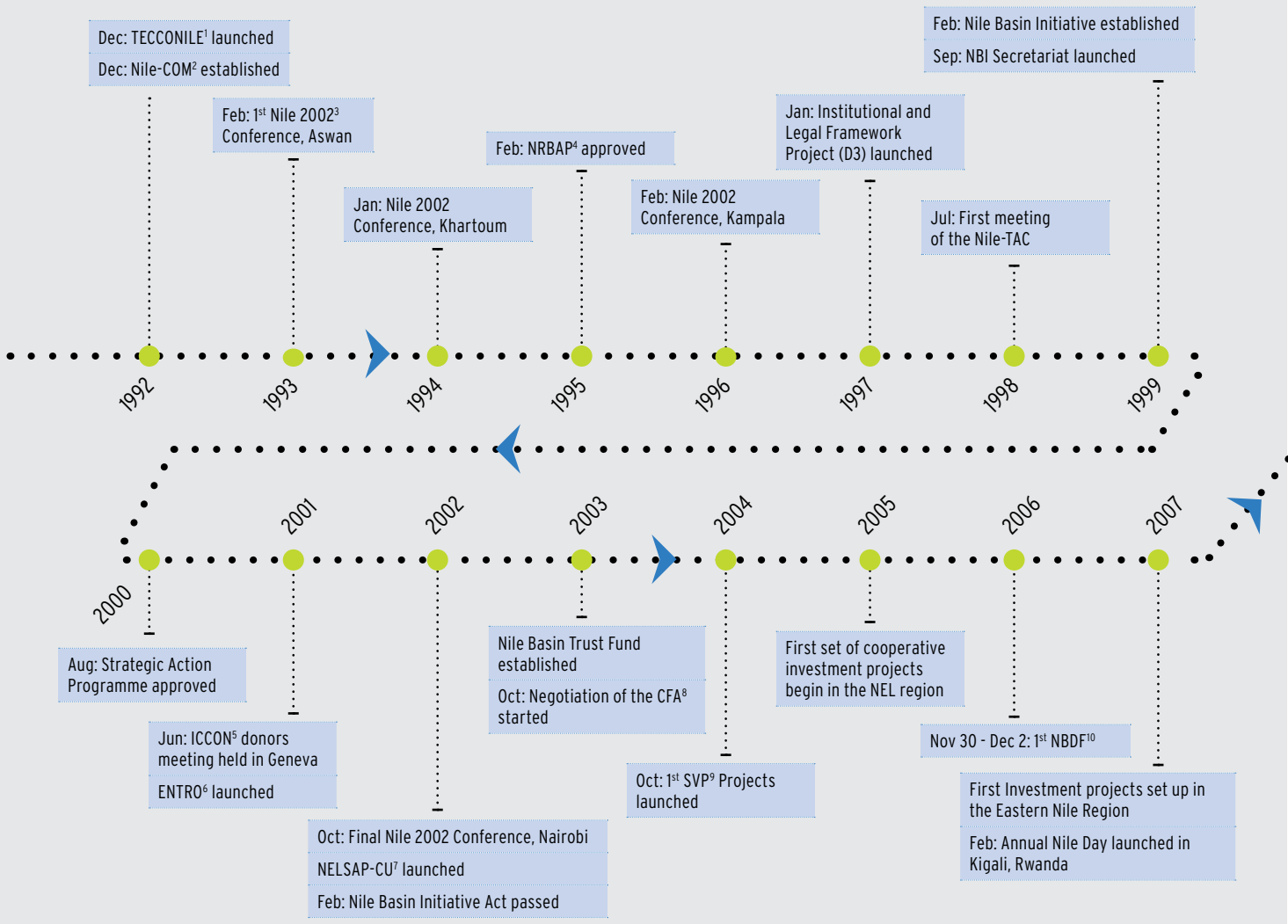
5. CLIMATE CHANGE
IMPLEMENTING EFFECTIVE ADAPTATION MEASURES
Climate change manifests itself primarily through its impact on water resources, particularly floods and droughts. Countries must work together on transboundary c limate resilient interventions.



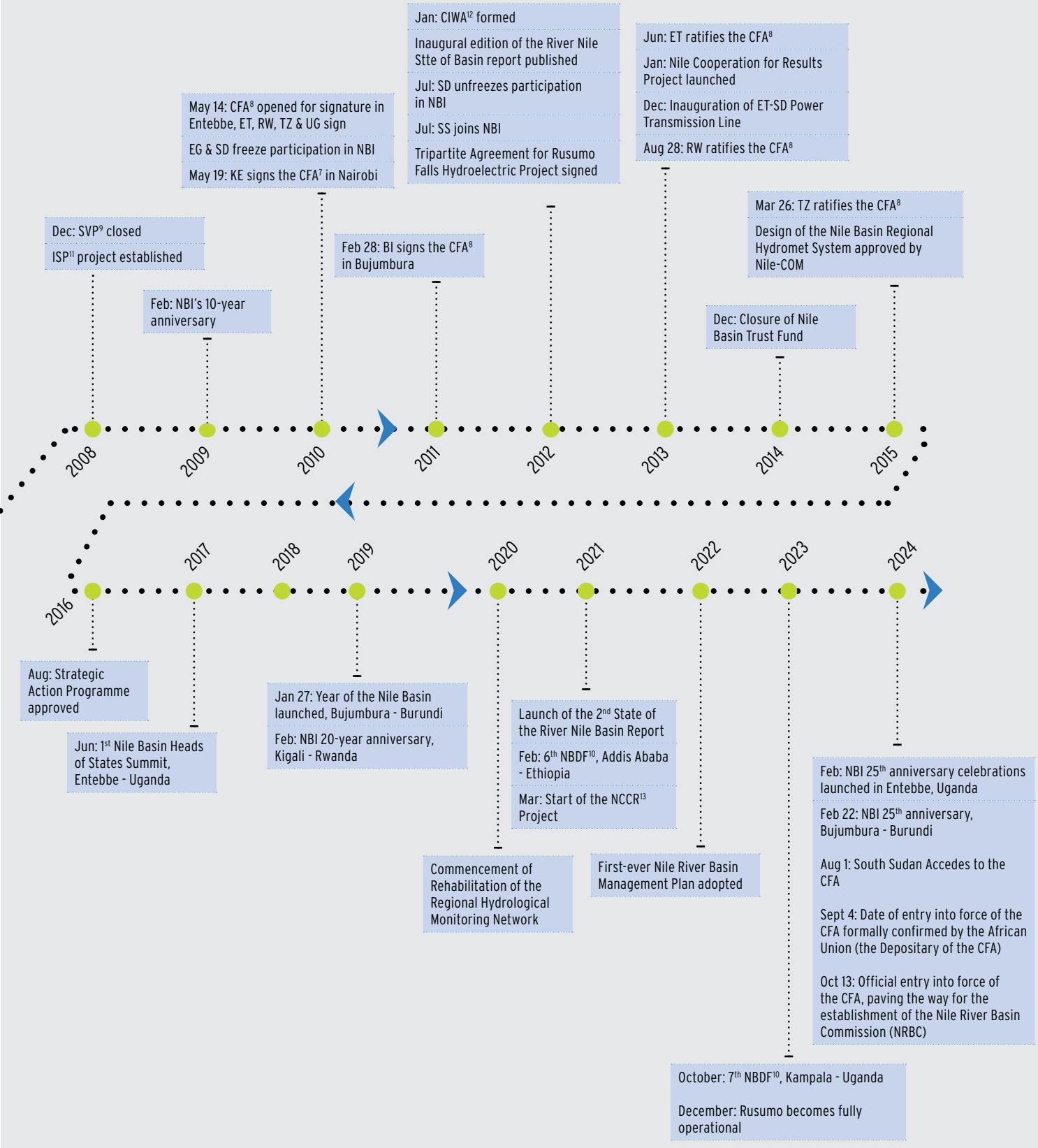
Today Tomorrow

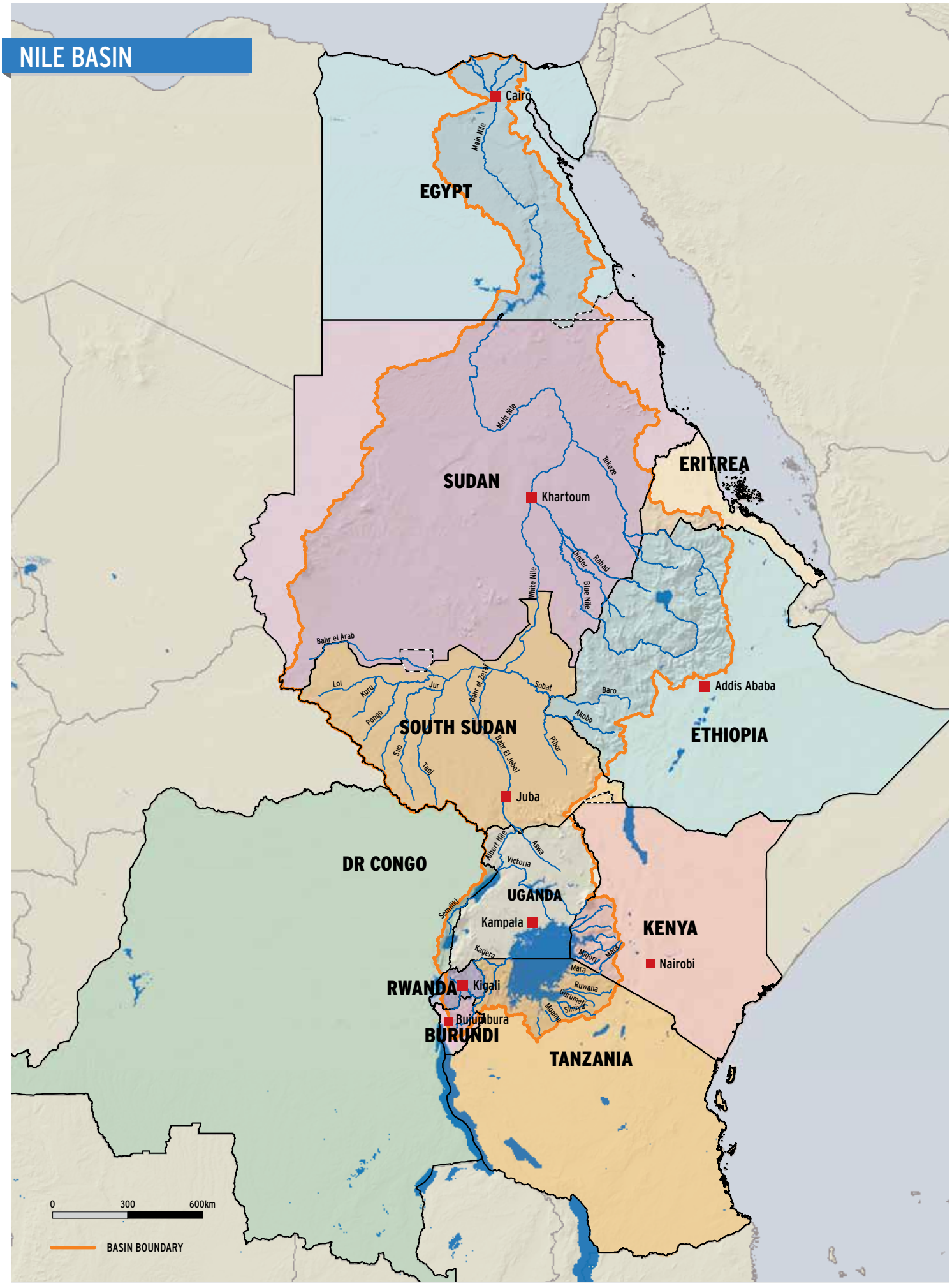
6. GOVERNANCE
PLANNING AND TAKING ACTION TOGETHER
Transboundary challenges require transboundary solutions. Nile Basin countries need to work together, strengthen water governance and build consensus on the regional level.

NILE COOPERATION MILESTONES



[1]Technical Co-operation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin
[2]Nile Council of Ministers
[3]Nile 2002 were a series of conferences on Nile between 1993 and 2002
[4]Nile River Basin Action Plan
[5]International Consortium for Cooperation on the Nile
[6]Eastern Nile Technical Regional Office
[7]Nile Equatorial Lakes Subsidiary Action Program Coordination Unit
[8]Negotiation of the Cooperative Framework Agreement
[9]Shared Vision Program Project
[10]Nile Basin Development Forum
[11]Institutional Strengthening Project
[12]Cooperation in International Waters in Africa
[13]Nile Cooperation for Climate Resilience
ET Ethiopia / RW Rwanda / TZ Tanzania / UG Uganda / EG Egypt /
SD Sudan / KE Kenya / BI Burundi / SS South Sudan / ER Eritrea


2008
Dec: SVP[9] closed
ISP[11] project established
2009
Feb: NBI's 10-year anniversary
2010
May 14: CFA[8] opened for signature in Entebbe, ET, RW, TZ & UG sign
EG & SD freeze participation in NBI
May 19: KE signs the CFA[7] in Nairobi
2011
Feb 28: BI signs the CFA[8] in Bujumbura
2012
Jan: CIWA[12] formed
Inaugural edition of the River Nile Stte of Basin report published
Jul: SD unfreezes participation in NBI
Jul: SS joins NBI
Tripartite Agreement for Rusumo Falls Hydroelectric Project signed
2013
Jun: ET ratifies the CFA[8]
Jan: Nile Cooperation for Results Project launched
Dec: Inauguration of ET-SD Power Transmission Line
Aug 28: RW ratifies the CFA[8]
2014
Dec: Closure of Nile Basin Trust Fund
2015
Mar 26: TZ ratifies the CFA[8]
Design of the Nile Basin Regional Hydromet System approved by Nile-COM
2016
Aug: Strategic Action Programme approved
2017
Jun: 1st Nile Basin Heads of States Summit, Entebbe - Uganda
2018
2019
Jan 27: Year of the Nile Basin launched, Bujumbura - Burundi
Feb: NBI 20-year anniversary, Kigali - Rwanda
2020
Commencement of Rehabilitation of the Regional Hydrological Monitoring Network
2021
Launch of the 2nd State of the River Nile Basin Report
Feb: 6th NBDF[10], Addis Ababa - Ethiopia
Mar: Start of the NCCR[13] Project
2022
First-ever Nile River Basin Management Plan adopted
2023
October: 7th NBDF[10], Kampala - Uganda
December: Rusumo becomes fully operational
2024
Feb: NBI 25th anniversary celebrations launched in Entebbe, Uganda
Feb 22: NBI 25th anniversary, Bujumbura - Burundi
Aug 1: South Sudan Accedes to the CFA
Sept 4: Date of entry into force of the CFA formally confirmed by the African Union (the Depositary of the CFA)
Oct 13: Official entry into force of the CFA, paving the way for the establishment of the Nile River Basin Commission (NRBC)


NILE BASIN
Cairo
Main Nile
EGYPT
SUDAN
Khartoum
Main Nile
Tekeze
ERITREA
Rahad
Dinder
White Nile
Blue Nile
Bahr el Arab
Lol
Kuru
Jur
Pongo
Bahr el Zeraf
Sobat
Baro
Akobo
Addis Ababa
SOUTH SUDAN
Sue
Tanil
Bahr El Jabel
Pibor
ETHIOPIA
Juba
DR CONGO
Albert Nile
Victoria
Aswa
UGANDA
Semliki
Kampala
KENYA
Kagera
Migori
Mara
Nairobi
Mara
Ruwana
Gurumeti
Simiyu
RWANDA
Kigali
Mbarre
Bujumbura
BURUNDI
TANZANIA
0
300
600km
BASIN BOUNDARY
NBI Earth Observation Unit

CHAPTER 1: BASIN-WIDE BENEFITS FOR ALL

Twenty-five years of Nile cooperation have delivered results from which all riparian countries will continue to derive lasting benefits. These results are foundational in nature. At its core, Nile cooperation centres on the governance of a shared natural resource. This requires sustained collective action to ensure the optimal utilisation of the Nile's water and related resources for the benefit of all, while avoiding a "tragedy of the commons", namely the irreversible degradation of these vital, shared resources. This chapter presents a summary of the basin-wide benefits that have so far emerged from this cooperation.

A COMMON PLATFORM FOR INSTITUTIONALISED COOPERATION

Photo: NBI

H.E. Maj (Rtd) Jessica Alupo, Vice President of the Republic of Uganda (centre) joins Hon. Cheptoris (MP), Chair, Nile-COM (to her right), Heads of Missions from Nile Basin riparian countries in Uganda, and the Executive Director of NBI then (3rd from left) at the 7th Nile Basin Development Forum (NBDF). See more on NBDF on page 19

A FIRST INCLUSIVE PLATFORM

Before NBI was established, the riparian countries lacked an inclusive platform for consultation, let alone a mechanism for joint management and development of shared water resources. For the first time in the Basin's history, NBI has brought the Nile riparian states together on a consistent basis for 25 years.

This platform has fostered a culture of dialogue, joint decision-making, and coordinated action in managing the Nile Basin's shared water resources. Since its inception, NBI has engaged over 102,000 stakeholders through a range of regional and national fora.

The Nile Council of Ministers, NBI's highest governing and policy-making body, has convened 32 consecutive annual meetings since 1999. Sub-basin governance structures have functioned with similar consistency. The Eastern Nile Council of Ministers, overseeing the Eastern Nile Subsidiary Action Programme, has held 32 meetings, while the Nile Equatorial Lakes Council of Ministers, overseeing the Nile Equatorial Lakes Subsidiary Action Programme, has convened 27 times. To engage other stakeholders of the Nile, commensurate fora and platforms were established such as the triennial Nile Basin Development Forum (NBDF) and the annual regional and national Nile Day events.

Kenya hosted the 27th Nile COM meeting in 2019 at which the then Deputy President, now H.E. President Dr William Ruto, launched NBI's Regional Hydrological Monitoring System

Sudan hosted the 8th Nile COM meeting in 2001 in Khartoum. Right, Egypt hosted the 9th in Cairo

STRATEGIC ENGAGEMENTS HAVE GENERATED WIN-WIN RESULTS

Consistent engagement with stakeholders has generated widespread support for the cooperation agenda, both within and outside the Basin. This broad-based support has enabled national leaders to take bold, forward-looking decisions that deliver sustainable, win-win outcomes. NBI has particularly prioritised local community involvement in identifying, planning, and implementing joint investment projects.

The Nile COM chair, Hon Sam Cheptoris (centre) undertook international engagements, such as this one in Bonn, Germany, to rally strategic partners for Nile cooperation

« Sir James: "If ever there was a consultative group that deserves support, it has to be this one because it has all the elements. It does not just deal with the issue of water; this is an issue of people, an issue of poverty. This is an issue of peace. I commit to you today the continued support of the World Bank. We will be there for you throughout this programme. Through the 10th, 11th, and 12th Presidents of the World Bank." »

Sir James Wolfenson KBE, the then 9th President of the World Bank Group (deceased) participated in the launch of the International Consortium for Cooperation on the Nile on June 26, 2001 in Geneva, Switzerland

Former German Federal Minister for Foreign Affairs Frank-Walter Steinmeier during an event in Kampala, Uganda in 2015

In 2019 in Kigali, Rwanda hosted a Strategic Dialogue. The World Bank Group and other partners participated in the event and subsequent ones. Hosted by NBI Member States on a rotational basis, Strategic and Policy Dialogues facilitate discussions between NBI's Governance and its development partners to promote Nile cooperation, optimal water management and socio-economic investments basin-wide

ANNUAL REGIONAL NILE DAY EVENTS PROMOTE AWARENESS AND COOPERATION

Photo: NBI

Nile Day drew young people – who are the future of the Nile Basin – both in 2018 in Addis Ababa, Ethiopia (above left) and Bujumbura, Burundi in 2024

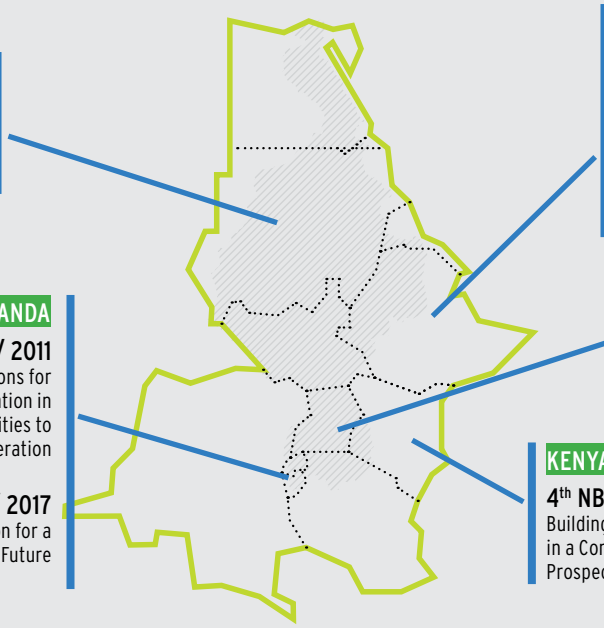
Each year, the Nile Basin Initiative marks Nile Day to celebrate the historic signing of the NBI Agreement on 22 February 1999. The commemoration serves as a unifying occasion for the eleven riparian countries to reflect on the importance of the River Nile as a shared resource and to reaffirm their collective commitment to cooperation. Nile Day has grown into a regional tradition that brings together government representatives, civil society, academia, the private sector, media, and the wider public.

Through cultural expression, dialogue, and knowledge sharing, the day raises awareness of the opportunities and challenges linked to the sustainable management of the Nile. For NBI, it provides a powerful platform to showcase achievements, highlight the value of regional cooperation, and strengthen partnerships with stakeholders at national and regional levels. It also reinforces NBI's visibility and credibility as the convening body for cooperative action on the Nile, while inspiring public support for its work across the Basin.

THE NILE BASIN DEVELOPMENT FORUM (NBDF)

To broaden stakeholder engagement beyond the governments of the Nile Basin, NBI has established platforms such as the triennial Nile Basin Development Forum (NBDF) and the annual regional and national Nile Day events.

The NBDF is a regional platform that promotes the growth of knowledge communities, encourages the exchange of experiences, and strengthens collective understanding of Nile Basin issues and challenges. It brings together researchers, academics, policymakers, water managers, environmentalists, activists, and interest groups from within the Basin and beyond, creating space for dialogue and collaboration on shared priorities.



SUDAN

2nd NBDF / 2008
Environment and Water Resources Management for Peace and Cooperation in the Nile Basin

ETHIOPIA

1st NBDF / 2006
The Role of the River Nile in Poverty Reduction and Economic Development

6th NBDF / 2021
Rethinking Regional Investments in the Nile Basin: Water | Energy | Food | Environment| Climate Change| Governance

RWANDA

3rd NBDF / 2011
Climate Change and its Implications for Sustainable Development and Cooperation in the Nile Basin – Threats and Opportunities to Nile Basin Cooperation

5th NBDF / 2017
Investing in Nile Basin Cooperation for a Water Secure Future

UGANDA

7th NBDF / 2023
Deepening Nile Cooperation: Accelerating the Achievements of SDGs in a Changing Climate

KENYA

4th NBDF / 2014
Building Sustainable Transboundary Cooperation in a Complex River Basin: Challenges, Lessons and Prospects

TRAINING COURSES AND PEER TO PEER LEARNING BUILD CAPACITY

Over the years, the NBI has invested heavily in capacity development. By June 2024, more than 42,000 professionals and stakeholders had been trained through both in-person and online programmes. These training initiatives have spanned a broad range of disciplines, including: water resources management, climate change modelling, decision support systems, geographic information systems (GIS), hydrometry and hydro-informatics, integrated water resources management (IWRM), integrated watershed management (IWSM), groundwater and water quality, basin database management, project planning and management, strategic social and environmental assessment (SSEA), international water law, hydro-diplomacy, and conflict resolution

Exchange visits with other river basin organisations have further supported learning and regional exposure.

In July 2024, NBI arranged this experiential tour for Permanent/Principal Secretaries/Under Secretaries from the Ministries of Water, Finance, and Foreign Affairs across the Nile Basin to the Zambezi Watercourse Commission. In addition, the group visited the Kariba Dam in Zambia/Zimbabwe, managed by the Zambezi River Authority

A TRADITION OF MEDIA TRAININGS FOR NILE COOPERATION

NBI engages the media across the Nile Basin to raise awareness and deepen understanding of regional issues, while fostering constructive dialogue among Member States. Recognising the media's influence in shaping public perception, the Initiative periodically trains journalists and editors to strengthen their capacity for accurate, fact-based reporting. These targeted programmes equip media professionals to capture both the complexity and the significance of Nile cooperation, helping to counter misinformation and promote balanced coverage. By supporting more informed reporting, NBI not only enhances public awareness but also creates a more enabling environment for its Member States to pursue cooperative action with confidence and legitimacy on behalf of their citizens.

In 2024, in Juba, South Sudan, these journalists benefited from an NBI-sponsored media straining supported by the Government of South Sudan. This training generated considerable media awareness and reporting on the Nile Basin

Left: When Tanzania hosted the 23rd Nile COM meeting in Dodoma, these journalists from (left to right) Burundi, Tanzania, Egypt and Uganda, won Nile Media Awards, 2015. NBI organised these awards in collaboration with the Government of Tanzania, the Nile Basin Discourse, the Global Water Partnership-East Africa, GIZ and Deustche Welle

TRUST AND TRANSBOUNDARY COOPERATION INFLUENCE ACTIONS

Today, thanks to NBI, the transboundary perspective increasingly shapes national planning. Member States now recognise their interconnectedness, the upstream–downstream dynamics, and the mutual dependence of riparian communities. They acknowledge common threats such as climate change, land degradation, and biodiversity loss and share a growing commitment to protect the Nile as a single, integrated hydrologic system.

This shared understanding has catalysed a shift in attitudes and practices. Policy-makers and water professionals now demonstrate greater commitment to dialogue, negotiation, collaboration, and joint action. Member States increasingly appreciate each other's interests, irrespective of their position along the Nile.

From an institutional perspective, countries have used the NBI as a trusted platform to manage differences and uphold cooperation. A notable example is Sudan's unconditional return to the NBI in 2012, following a two-year freeze in participation due to disagreements over the CFA.

More recently, South Sudan's accession to the CFA on 1 August 2024, and the CFA's entry into force on 13 October 2024, marked a turning point. These developments triggered the process to fully establish the Nile River Basin Commission.

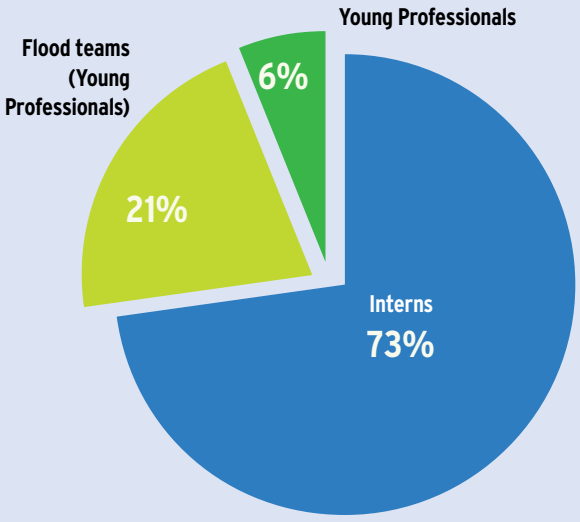
Beyond the socio-economic and environmental benefits, Nile cooperation has delivered regional public goods – peace, stability, and integration. Through NBI, Member States have laid a robust technical, institutional, and governance foundation for the future of cooperative management of the Nile River.

INTERNSHIP AND YOUNG PROFESSIONALS PROGRAMME

Another impactful specialised platform is NBI's Internship and Young Professionals Programme. Under ENTRO since 2011, the programme has trained 229 young water resources professionals from Egypt, Ethiopia, South Sudan, and Sudan through 25 internship cycles. Some 24 percent of the trainees were women.

The programme aims to strengthen participants' technical capacities in key thematic areas of transboundary water management and cooperation – such as flood forecasting and management – while fostering greater ownership of Nile cooperation and cultivating the region's future water sector leaders.

The Internship and Young Professionals Programme has also been implemented at NELSAP-CU and the NBI Secretariat, which in 2024 hosted an all-female cohort, reflecting NBI's commitment to gender inclusion.



Interns and young professionals learning at NBI Secretariat and graduating at ENTRO

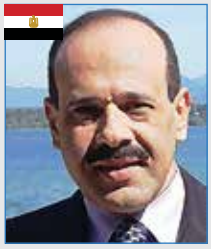
NBI EXECUTIVE DIRECTORS SINCE ESTABLISHMENT IN 1999

Mr Meraji Msuya
Tanzania | 1999 - 2004

Eng Patrick Kahangire
Uganda | 2004 – 2006

Mr Audace Ndayizeye
Burundi | 2006 – 2008

Ms Henriette Ndombe (Deceased)
DR Congo | 2008 – 2010



Dr Wael Khairy
Egypt | 2010 – 2012

Eng Teferra Beyene
Ethiopia | 2012 – 2014

Dr John Rao Nyaoro
Kenya | 2014 – 2016

Eng Innocent Ntabana
Rwanda | 2016 – 2019

Prof Seifeldin Hamad Abdalla
Sudan | 2019 - 2021

Eng. Sylvester A Matemu
Tanzania | 2021 – 2023

Dr. Florence Grace Adongo
Uganda | 2013 to date

PROGRESS IN FINANCING

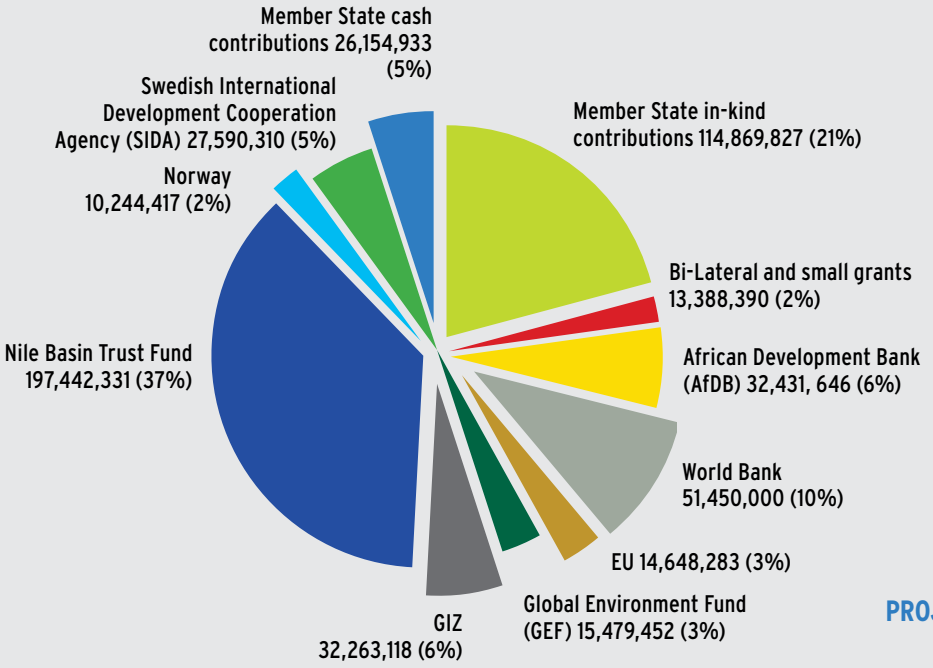
The funding received by NBI since its inception on 22 February 1999 has been used to maximize benefits to Member States. This has been through support to NBI's activities ranging from policy development, knowledge generation and capacity development, data sharing, programme and operational support costs, as well as communication of results. NBI has received funding from various sources that include:

i) Contributions from Member States
ii) Development Partner Support
iii) Service fees and overhead recovery.

NBI remains grateful for this significant support from Member States and Development Partners. Currently NBI is undertaking the second phase of the NBI 10-year strategy covering the period 2023-2027. With a projected amount of USD$ 335.8m, allocation amongst the three NBI centres is as indicated in smaller pie chart on page 23.

By November 2024, a total of US$ 125.5m representing 37% of the total budget of US$ 335.8m had been pledged and committed towards financing of the above second phase of the ten-year NBI Strategy. This pledge comprised of US$ 21.8m and US$ 103.7m commitments from contributions by Member States and Financing/Grant agreements in support by NBI Development partners respectively. This compares favourably with the amount NBI received totaling US$ 7.8m from Country contributions and US$ 85.3m from Development

TOTAL FINANCING OF NBI AS AT DECEMBER 31, 2024 (US$)



Partners in support of the first phase of the strategic plan covering the period 2017 to 2022.

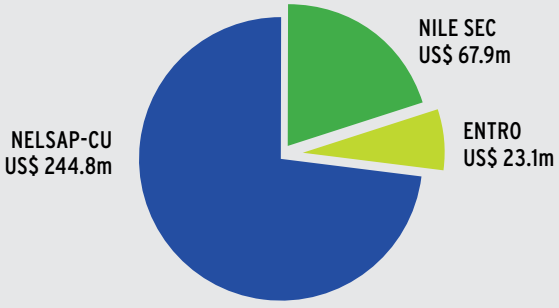
Challenges

Several financing challenges have been experienced that limit full deployment of benefits to the countries. These include:

i) Delayed Country contributions, affecting full implementation of annual work plan and budget targets.

ii) Declining Development Partner support

PROJECTED 5 YEARS BUDGET 2022 - 2027



THE CURRENT DEVELOPMENT PARTNER SUPPORT UNDER THE SECOND PHASE OF THE CURRENT 10 YEAR STRATEGY								
DEVELOPMENT PARTNER/ PROJECT	GRANT AMOUNT	GRANT PERIOD	NILE SEC	ENTRO	NELSAP	DISBURSED	BALANCES	% DISBURSED
GEF-UNDP-(Ground Water)	USD 5.3 m	2020-2025	5.3m			3.1 m	2.2 m	58%
World Bank/CIWA-(NCCR Project)	USD 28.5 m	2021-2025	9.5m	9.5m	9.5m	26.5 m	2 m	93%
World Bank-IDA-(Regional Climate Resilience Program-RCRP)	USD 4.0 m	2024-2027		2.25m	1.75m	1.55 m	2.45m	39%
BMZ/GIZ- (Transboundary water cooperation project)	USD 3.64 m	2022-2025	3.36 m	0.29m		2.29 m	1.35	63%
AfDB/NEPAD-UGANDA-DRC (220KV) Power Interconnection Project.	USD 0.93 m	2020-2024			0.93m	0.74 m	0.19m	79%
Ruvyironza Multipurpose Water development project (PRODERER).	USD 2.0 m	2024-2026			2.0 m		2.0m	100%
Stakeholder Dialogues for Transboundary Peatland Management in the Akagera Basin	USD 0.12 m	2023-2025			0.12m	0.12m	0	100%
Uganda South Sudan power interconnection	USD 1.99 m	2025-2030			1.99m	0.28m	1.71m	15%
Totals in USD	**USD 46.48 m**		**18.16 m**	**12.04m**	**16.29m**	**34.58m**	**11.9m**	**74%**

Generating and Sharing Knowledge

Twenty-five years of Nile Basin cooperation have laid a foundation for effective cooperative water resources planning and management at Basin and sub-basin scales. Riparian countries have sustained their efforts to put in place a cooperative water resources planning and management regime and there is a broad understanding and appreciation of the potential, threats and limitations of the River Nile system. The NBI has established itself as a knowledge hub, recognising that generating and sharing information and knowledge is key for sustainable transboundary management of the common Nile Basin water resources. NBI's goal is to ensure the sustainability of the River Nile and associated ecosystem functions, as well as environmental services while guiding judicious, regionally optimised management and utilisation. To achieve this goal, NBI has: (a) generated or otherwise provided hydro-meteorological data and information; (b) built the requisite central data, information and knowledge base and availed these in accessible formats to Member States through the NBI website; and (c) organised and guided studies towards establishing on the ground a system for real-time collection and sharing of hydrological data by and among Member States. To facilitate the smooth flow of data and information among countries, NBI formulated the Interim Data and Information Exchange Protocols. This, while awaiting the entry into force of the CFA.

In a bid to enable effective Basin planning and management, a state-of-the-art tool, the Nile Basin Decision Support System (NB- DSS) was developed and availed to the countries, along with training and capacity building for water resource planners. A flagship product of NBI, the NB-DSS has proven invaluable in undertaking critical water resources planning work such as modeling, generation of scenarios, and options analyses. NBI has developed a tool for facilitating information services, the Basin Data and Analytic Services (NB-DAS).

Photo: NBI

This tool has greatly enhanced data and information services provided to Member States to improve the management of water resources and strengthen the knowledge base for optimal water resource utilisation.

Several studies have been conducted towards identifying strategic options necessary to inform the Basin's planning priorities. The earliest of these studies were the Cooperative Regional Assessments (CRAs) in power trade, watershed management, irrigation and drainage, flood and early warning systems, and the Eastern Nile planning model of the Integrated Development of Eastern Nile (IDEN). Others were the Joint Multipurpose and the Baro-Akobo-Multipurpose Study Programmes, as well as Multi Sectoral Investment Opportunities Analysis in the Eastern Nile. This is in addition to catchment studies of Sio-Malaba-Malakisi, Mara and Kagera and Multi-Sectoral Investment Opportunities Analysis (MSIOA) in Nile Equatorial Lakes (NEL). Other watershed management studies in the NEL included the Kyoga Basin, Aswa, Lakes Edward and Albert, and Semliki river. These studies were instrumental in the earliest no-borders sub-basin level assessment of the resource base, and have resulted in multiple transboundary investments in water resources. The studies produced jointly validated data and information to support evidence-based decision-making. They pioneered norms of collaboration among Nile Basin countries' water resource professionals and decision-makers on transboundary project planning and implementation.

Basin-wide and sub-basin studies

The Nile Basin Initiative has conducted strategically oriented studies that have significantly improved the current understanding of the major risks and threats the Basin is facing and is likely to face in the future. As such, using compelling data-driven evidence, the studies have strengthened advocacy for the need for basin-wide cooperation. The regular State of the River Nile Basin Report (SoB) helps to flag key issues for the attention of decision-makers, while the Nile Basin Water Resources Atlas describes the Basin in a format that is accessible both for decision-makers and the public.

STUDIES
The following studies were completed and are accessible from the NBI website - https://www.nilebasin.org

NAME OF STUDY	OBJECTIVES
Strategic Water Resources Analysis	A first study established a baseline on water availability, water demand and actual water use for various sectors in the Nile Basin; compiled the countries' water resources development plans up to the year 2050; and developed projections of water availability and water demands. All study results show that the Nile Basin is likely to face severe water stress and a risk of substantial deficit in water supply.
Transboundary Water Policy	A Strategy for developing transboundary water policies guiding integration of transboundary dimensions in national policies and plans.
Environmental flow assessment	The objective of the study was to assess the Environmental flow (e-flow) requirements needed to sustain critical ecosystems at varying degrees of functioning and integrity in selected critical stretches of the Nile. These studies informed decision making towards preserving critical ecosystem functions.
Wetlands Studies	These studies were aimed at assessing the functioning of Nile Basin wetlands, their economic and environmental services, and the desired level of conservation.
Climate change studies	The studies were aimed at preparing climate change projections datasets for impact studies for the Nile Basin under climate change scenarios and determination of modalities of preparedness, including downscaling of Global Circulation Models (GCMs) to the Nile Basin, bias correction for the Regional Climate Models and Global Circulation Models under different scenarios and ranking the GCMs based on their performance over each large sub-basin. The scenarios were aimed at assessing projected hydrological flows over the Nile Basin by using different bias corrected Regional Climate Models scenarios.
Climate Services for Infrastructure (CSI)	The study aimed at incorporating climate change proofing through the entire investment stream. NBI has created a climate-proofing hub that integrates an interactive manual for climate proofing, with access to an international practitioners' network, access to a newly established climate scenario database to be used for carrying out climate risk assessments, as well as an e-learning course.
Dam safety and cascade coordination studies	The overarching objective of the dam safety Programme under the Nile Cooperation for Climate Resilience project was to increase institutionalization and coordination of dam safety management in the Nile Basin. The desired long-term outcome was to enhance the institutional capacity of Nile Basin governments and their respective DSUs to better manage dam safety risks, adopt good practices, and encourage equivalence in dam safety management frameworks throughout the basin. The specific objective was to carry out a capacity needs assessment and develop a comprehensive capacity-building plan for the Nile Basin training Centre. The Programme mainly focused on developing skills and technical competencies of policymakers, dam owners, operators, regulators, technicians, etc., and ensuring safe design, construction, operation, and safety management of dams.

NAME OF STUDY	OBJECTIVES
Nile Basin Planning Tools	The main Nile Basin Initiative planning tools are the NB DSS and the Eastern Nile Planning Model. The tools provide a shared knowledge base supporting analytical capacity and stakeholder interaction for cooperative decision-making in the Nile River Basin. They comprise a common computer-based platform for communication, information management, and analysis of water resources. In addition, they provide frameworks for sharing knowledge, understanding river system behavior, evaluating alternative development and management strategies, and supporting informed decision making.
Power Trade Projects	The long-term goal of this project was to improve access to reliable and low-cost power in the Nile Basin in an environmentally sustainable manner. The specific development objective of this study was to establish the institutional means to coordinate the development of regional power markets among the Nile Basin countries. The establishment of the market aimed at creating positive effects on systems reliability and economies of scale in planning, construction, and operation of the generation and transmission facilities in the region. Furthermore, the market aimed to contribute to the competitiveness of the Nile Basin economies by directly and indirectly creating new jobs and economic opportunities thus providing significant impetus towards achieving the regional aims of economic growth, prosperity and stability.
Watershed Management	The overall objective was to establish a sustainable cooperative framework for the joint management of the water resources of the sub-basins to prepare for sustainable development investments to improve the living conditions of the people while protecting the environment. The studies were aimed at the following medium and long-term objectives: i) improved water resources development through the development of multipurpose storage reservoirs for Irrigation, water supplies, and Small HEP, ii) improved River Basin Management through Integrated Watershed Management Projects (Environmental Integrity/Alternative Livelihoods).
Flood Preparedness and Early Warning Project (FPEW)	The development objective was to reduce human suffering and damages, as well as capture the benefits of excess flood waters resulting from flooding in the Eastern Nile. The specific objective was to establish a regional institutional basis and strengthen the existing capacities of the countries in flood forecasting; mitigation and management, promoting regional cooperation, and enhancing the EN countries' readiness for subsequent implementation of the FPEW project.
Joint Multipurpose Project (JMP)	The objective was to assist the three Eastern Nile countries in the identification of the Eastern Nile First Joint Multipurpose Programme Identification Project investment package, through a series of studies and consultative activities that take into account economic, social, and environmental sustainability issues in an integrated manner. Specifically, the study included i) information and knowledge base enhancement, ii) identification studies, iii) regional consultation and information sharing, iv) project management and capacity-building, and v) development of a roadmap for the preparation of the Joint Multipurpose Programme investment projects.
Multi-Sector Investment Opportunity Analysis (MSIOA)	The overall objective of the MSIOA was to develop regional water investment strategies to support socio-economic development, poverty reduction, and the reversal of environmental degradation. The specific objectives of the assignment were: (i) to identify potential regional investment options, taking into account their economic, social, and environmental implications as well as cumulative impacts; (ii) to investigate the alignment of potential regional investment options with national-level priorities and plans, (iii) to prioritize and sequence potential investments, also in light of existing and planned interventions, and (iv) to contribute to the regional knowledge base. Two studies were done, one for NELSAP and the other for ENSAP.

Photo: NBI

The first Nile Basin Heads of State and Government Summit (2017) hosted by H.E. Y. K. Museveni, President of Uganda. It was attended by H.E. Abd el-Fattah el-Sisi, President of Egypt (to his right) and H.E. Hailemariam Desalegn Prime Minister of Ethiopia (to his left), as well as other high-level officials from riparian States

Nile Basin countries have also led the formulation of actionable policies, derived from an overarching framework, the Nile Basin Sustainability Framework (NBSF). These policies are expected to guide action toward synergistically improving Basin resilience and sustainability. Even though national uptake of these policies and policy harmonisation is work in progress, these are nevertheless the right steps to establish standardised Nile Basin norms of planning and resource management, eventually cascading to national levels.

A strategic water resources assessment that looks at the expected imbalance between water supply and demand in the medium to long term (up to 2050) has been undertaken. Strategic Water Resources Analysis (SWRA) is aimed at sustainably developing water resources infrastructure and management options for meeting the growing water demand in the Nile Basin and reducing the mounting stress on the river system while minimising tensions related to water allocation among the riparian countries.

The aim of the Nile River Basin Management Plan (NRBMP) is to support cooperative water resources management and development. It sets fourteen strategic development targets that form the basis for monitoring and evaluating progress towards achieving the Shared Vision Objective.

Both in the Eastern Nile and Nile Equatorial Lakes sub-basins, extensive novel catchment/watershed management approaches have been introduced. These piloted important technical innovations and management approaches that redefined watershed restoration as a livelihood and poverty alleviation function. In the Eastern Nile, upstream Strategic Social and Environmental Assessments were undertaken. These enabled the identification of potential impacts and threats, thus helping to redefine and resize planned water resource investments to accommodate environmental goals of protecting and preserving environmental resources.

It is worth noting that the processes of producing knowledge products (tools, policies, strategies, guidelines, studies) that guide and inform the cooperative management and development of the common Nile Basin water resources at the Basin scale are as important as the products themselves. These processes involve regular consultations, as well as working group meetings and collaboration among the relevant water resources professionals and decision makers. It is during these procedures that invaluable knowledge exchange and common understanding of salient Basin issues are arrived at, and consensus built about the way forward. This has benefited all countries in the Basin.

NRBMP DEVELOPMENT TARGETS AND INDICATORS

Regional & Global Development Programmes } SUSTAINABLE DEVELOPMENT GOALS { *National Development Programmes*

Better Lives for All

Shared Vision Objective

"To achieve sustainable socio-economic development through equitable utilisation of, and benefit from, the common Nile Basin water resources"

Nile Basin Sustainable Development Targets (NBSDT)

WATER SECURITY

1. for the people
2. for agriculture and livestock
3. for hydropower
4. for other economic activities
5. Resilience to water related disasters

ENERGY SECURITY

6. Sustainable hydro power generation
7. Regional integration of power systems

FOOD SECURITY

8. Water efficient food production
9. Regional food security
10. Enhanced transportation of traded goods along the Nile north-South corridor

ENVIRONMENT SUSTAINABILITY

11. Improved integrity of water-related ecosystems
12. Enhanced catchment ecoservices

CLIMATE CHANGE ADAPTATION

13. Mainstreaming of climate change adaptation and mitigation

TRANSBOUNDARY WATER GOVERNANCE

14. Enhanced transboundary coorporation on water

14 THE NILE AGENDA
Nile Basin sustainable development TARGETS

Ongoing Projects

Photo: NBI

NBI water quality experts visit the national water and sanitation laboratory in Khartoum during an assessment under the NCCR project

The Nile Cooperation for Climate Resilience project (Cooperation in International Waters in Africa (CIWA)/World Bank, 2021-2025)
The objective of this project is to improve mechanisms for cooperation on water resources management and development in the Nile Basin. The project focuses on three technical thematic areas where NBI Member States are actively cooperating: water quality, dam safety, and flood and drought risk mitigation, and advancing two cross-cutting thematic areas: the platform for cooperation and innovative information services. The three technical thematic areas contribute to improved tools for water quality investment planning, increased institutionalization of dam safety considerations, and enhanced services available for flood and drought risk mitigation.

The Flood and Drought Risk Mitigation thematic area supports the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The project supports national meteorological and hydrological services in the Member States through the development of reliable and effective flash flood early warnings for the Nile Basin. It will increase local expertise and regional cooperation in flash flood management while improving disaster management.

The water quality thematic area aims to improve regional cooperation on water quality management through (a) policy and institutional harmonization, (b) data and information sharing, and (c) cooperative investment planning and prioritization. Activities under this thematic area also contribute to informing and prioritizing water quality investments in the two sub-basins, thereby support the mobilization of regionally relevant investments. The water quality investment planning and prioritization supports the countries to cooperatively address the ever-

increasing, water quality and pollution control challenges in the Basin and comprises three activities namely; (i) enhancing availability and use of water quality data; (ii) multi-criteria analysis for investments planning; and (iii) harmonization of policies and strategic planning for water management systems.

The dam safety study will support the NBI to increase the institutionalization and coordination of dam safety management in the Nile Basin. This will ensure the safe operation of future and existing dam infrastructure, which is paramount to realizing their intended benefits over the long term while safeguarding the communities that depend on the Nile for their livelihoods.

Groundwater Management Project (Global Environment Fund/UNDP, 2020-2026)

The Groundwater Management Project is aimed at "Enhancing Conjunctive Management of Surface and Groundwater Resources in three selected transboundary aquifers namely (i) the Kagera aquifer shared between Burundi, Rwanda, Tanzania and Uganda, (ii) the Mount Elgon aquifer shared between Kenya and Uganda, and (iii) the Gedaref-Adigrat aquifer shared between Ethiopia and Sudan. The project is funded by the Global Environment Facility (GEF), through UNDP. Among the key deliverables is a shared knowledge base (SADA); Geodatabase, action plans and pilot schemes in the three aquifers.

The project fosters a mutual understanding of the groundwater flow regime and recharge mechanisms, policies, management systems, community engagement and sustainable development plans for effective utilisation and protection from over abstraction, depletion and pollution. Its work complements the national achievements and reporting on water-related Sustainable Development Goals. This is in addition to supporting environmental protection while enhancing socio-economic development of the Basin's population.

Transboundary Water Cooperation Project (BMZ/GIZ, 2001-2025)

This project focuses on enhancing the capacities of persons involved in transboundary cooperation, strengthening the organisational and technical capacities of NBI. Areas of support include the policy framework to facilitate the cooperation, climate services, wetlands management, marine plastics, and cross-cutting areas such as communication and hydro-diplomacy. The project supports the following priority areas for transboundary cooperation in the Nile Basin:

a) operating the regional hydrological monitoring system and effectively exchanging data for water resources management.
b) coordinating the operation and ensuring the safety of cascade dams in both the Eastern Nile and the Lake Victoria Nile Rivers.
c) conducting strategic water resources assessments (SWRA) for a common understanding of the Basin's development potential and challenges related to water resources management.
d) developing a regional Nile Basin Investment Programme (BIP) to support the implementation of the Nile River Basin Management Plan and coordination of regional actors in Basin development.

Regional Climate Resilience Programme for Eastern and Southern Africa (World Bank, 2023-2028)

The objective of the Regional Climate Resilience Programme for Eastern and Southern Africa Project is to improve the management of water-related climate impacts in Eastern and Southern Africa, and, in case of an eligible crisis or emergency, to respond promptly and effectively to it. The project has five components: (i) risk management and climate financing. This component includes two subcomponents: climate and disaster risk management, and climate financing. (ii) infrastructure investments and sustainable asset management for climate resilience, which includes three subcomponents: enhancing institutional capacity for long-term climate risk management, closing the climate resilient infrastructure gap, and sustainable asset management. (iii) adaptive climate services for resilient communities. This includes two subcomponents: empowering communities to manage climate risk and mainstreaming climate resilience in social protection programmes. (iv) project management, and (v) contingent emergency response. The project is financed by the World Bank/IDA and it is being implemented by ENTRO and NELSAP-CU.

Nile Basin Centre of Excellence (CoE)

NBI has grown into a thought leader in transboundary water resources management and development. In recognition of this, the countries have found it fit to establish a Centre of Excellence. The latter will facilitate research and knowledge generation in pertinent areas to address challenges in the Basin.

The Government of Uganda allocated approximately 4.5 hectares of land for the construction of the Nile Basin Centre of Excellence, which will be located adjacent to the Water Resources Institute of the Ministry of Water and Environment in Entebbe.

HYDROLOGICAL DATA AND INFORMATION SHARING AS A BACKBONE FOR NILE BASIN COOPERATION

The Nile Basin Regional Hydrological System – comprising 43 monitoring stations and a central data management platform – supports national planning and evidence-based decision-making across the region. The system enables experts in Burundi, DR Congo, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, and Uganda to exchange reliable data and knowledge for more effective monitoring and management of the Nile's water resources.

This shared knowledge strengthens flood preparedness, supports coordinated operation of water storage dams, enhances navigation, and improves climate change adaptation. While each country operates its own network of stations, NBI continues to encourage Member States to share data, engage in peer-to-peer learning, and build trust through established cooperation protocols.

Photo: NBI

ENVIRONMENTAL RESOURCE ARGUMENTS FOR NILE BASIN COOPERATION

One of the most compelling arguments in support of Nile cooperation is the imperative to implement cooperative governance that ensures common pool resource security. Sustaining the water ecosystems and environmental services of the Nile Basin by protecting them from over-utilisation or adverse impacts of development cannot be accomplished by any single riparian country alone. The Nile Basin is home to the last remaining biodiversity assets of global significance such as the Nile lechwe, Nile crocodile, and hippos. The largest mammalian migration routes of the world are in the Nile Basin and are fed by tributaries of the Nile, both in the Eastern Nile and Nile Equatorial Lakes regions.

The Nile Basin also hosts one of the largest wetlands of the world, the Sudd Wetlands, an important habitat for migratory and endemic birds. The Basin is also home to the second largest freshwater lake in the world, Lake Victoria. The Basin's upper catchments, both in the Nile Equatorial Lakes and Eastern Nile sub-basins, are home to threatened endemic plant and animal species (e.g. the mountain gorillas of the Ruvuma Mountains in the Nile Equatorial Lakes and the Walia Ibex in Eastern Nile). In addition to hosting biodiversity, these habitats provide critical ecosystem functions (e.g. green infrastructure), as well as environmental services on which the livelihoods of local populations are dependent.

Ensuring the sustainability of these Nile water-dependent environmental resources has been one of the main objectives of Nile cooperation. Towards this end, the NBI dedicated one of its Shared Vision Programme (SVP) projects – the Nile Transboundary Environmental Action Project (NTEAP) – to extensive inventorying of and awareness creation about these environmental assets.

NTEAP's work was further advanced by the Nile Basin wetlands study - "Biodiversity Conservation and Sustainable Utilisation of Ecosystem Services of Wetlands of Transboundary Relevance in the Nile Basin". The study generated baseline information on wetlands and other water-related ecosystems to facilitate collective decision-making, planning and action under evidence-based collaborative integrated water resources management.

Following the successful completion of this study, NBI developed a new Wetland Management Strategy (2021), whose goal is to further foster the sustainable management and utilisation of the Basin's wetlands.

PROMOTING DAM SAFETY IN THE EASTERN NILE

Eastern Nile sub-basin hosts the highest number of a cascade of large dams within the Nile Basin. It is no wonder that dam safety is a priority area for ENTRO, which has developed the Eastern Nile Dam Safety Guidelines (for small and large dams). Of these, the Eastern Nile Dam Safety Reference Guideline, which was recognised by the International Commission on Large Dams (ICOLD), is a reference source for more than 30 countries worldwide. Inspired by a model for cascade dams developed in the Eastern Nile, NBI is developing one to manage the cascade of dams in the Nile Equatorial Lakes (Uganda and South Sudan) to achieve a comprehensive coverage of the Nile Basin.

ENTRO has also conducted training activities in dam safety (canvassing planning, design construction and operation phases). Participants included dam operators, dam owners, regulators, and contractors and were drawn from within and outside of the Nile Basin. Others were academicians, journalists, Members of Parliament, and civil society.

In addition, ENTRO developed a road map to establish coordinated reservoir operation mechanisms for Eastern Nile countries, aimed at enhancing the efficient use of water. This initiative focuses on four key pillars: (i) harmonising reservoir operation procedures, (ii) assessing benefit-sharing options, (iii) implementing basin-wide forecasts, and (iv) enhancing dam safety regulations.

These efforts culminated in the establishment of national dam safety units in Burundi, DR Congo and South Sudan and the strengthening of existing units in Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda.

CLIMATE CHANGE ARGUMENTS FOR NILE BASIN COOPERATION

Photo: NBI/Agencies

Climate change poses a significant threat to the Nile Basin, with rising temperatures projected to increase evapotranspiration and agricultural water demand. While rainfall projections remain uncertain, extreme events – such as floods and droughts – are expected to occur more frequently, with greater intensity and longer duration. These transboundary climate risks demand a coordinated regional response.

Cooperation among Nile Basin countries is essential due to their shared vulnerabilities and interdependence. Upstream climate impacts directly affect downstream countries, making unilateral adaptation efforts inadequate. Joint planning enables countries to optimize limited resources, develop shared infrastructure, and implement more efficient, climate-resilient solutions.

A basin-wide approach also improves climate data sharing, early warning systems, and joint research. Better access to accurate climate and hydrological information is critical for forecasting, risk management, and informed decision-making. Collaborative innovation can lead to sustainable agricultural practices, drought-resistant crops, and improved irrigation efficiency.

Furthermore, regional cooperation enhances access to international climate finance, as donors prefer funding transboundary initiatives with wide-reaching impacts. Institutions like the Nile Basin Initiative can serve as platforms for implementing large-scale adaptation and mitigation projects.

Climate cooperation also supports peace and stability. Shared action reduces the risk of water-related conflict, fosters trust, and builds institutional capacity. Coordinated strategies are key to ensuring food and energy security, particularly through resilient agriculture and investment in renewable energy sources like hydropower and solar.

Protecting ecosystems that cross borders – such as wetlands and forests – requires joint stewardship among riparian countries. These ecosystems are vital for climate regulation, biodiversity, and supporting livelihoods.

In summary, cooperation on climate change in the Nile Basin is not only a necessity but also a strategic opportunity to build resilience, promote sustainable development, and strengthen regional integration in the face of shared climate challenges.

Photo: NBI

Permanent/Principal Secretaries/Under Secretaries from the Ministries of Water, Finance, and Foreign Affairs across the Nile Basin visiting the Regional Rusumo Falls Hydroelectric Project

Investing in Water, Food and Energy Security

Basin-wide water resources data, information, studies, analyses and policies (knowledge base) are informing the preparation of forward-looking cooperative investment projects at Basin and sub-Basin levels. Meanwhile NBI polices and strategies adopted by Member States have reduced environmental, political, social and reputational risks associated with these investment projects.

This has in turn contributed to their economic and financial viability. The reduction of these risks has also made it possible for Member States to attract funding, not only from international partners but also from national budgets.

In addition to being the "custodian" of the Nile, NBI's existence is justified by its commitment to bring about tangible contributions aimed at poverty alleviation and improvement of the living standards of the Basin's inhabitants. Six of the 10 Member States are among the least developed in the world by key measures, including the Human Development Index (HDI). In other words, ensuring the water, food, and energy security on a sustainable basis is a primary focus of NBI's.

Irrigated agriculture uses approximately 80% of the River Nile waters, making it the highest consumer of the resource. In all Nile Basin countries except Egypt, food production is almost entirely dependent on rain-fed agriculture. This makes production increasingly vulnerable to climate variability and erratic rainfall patterns. In most of the less developed countries, the overall health of the economies is tied to rainfall.

Access to potable water and to electricity is very uneven and far below world standards in all Nile Basin countries, except Egypt. There is escalating demand for Nile waters – driven by a growing population that doubles almost every 25 years and rapid economic growth rates. Nile Basin countries are under increasing pressure to deliver, yet the waters of the Nile are finite. This is notwithstanding the fact that the Nile is a water-scarce river, compared to the other major rivers of the world.

The Subsidiary Action Programmes (ENSAP and NELSAP) were established to promote more

collaborative and cooperative water resources development or investment. Cooperation was envisaged to yield more rational and optimal use of the Nile waters by increasing efficiency and reducing waste. The process of collaboration and preparation of joint investment has been valued as much as the investments themselves. It is during such inter-riparian collaboration grounded in appreciation and understanding of each other's needs that priorities are determined and agreed upon. Such joint preparation of investments provides opportunities to (i) quantify the costs and benefits of alternative investment options and trade-offs; (ii) put in place common procedures for validating data thus reducing the resistance to sharing data; and (iii) work towards establishing standards and parameters for joint investment planning.

Member States have worked together to negotiate, agree, prepare, and in some cases, implement investment projects with shared regional benefits and the potential to ultimately benefit millions of inhabitants. The investment projects, which are more than 84, are worth more than USD 6.5 billion. The sectors covered include hydropower development, power transmission interconnection and trade, irrigation and drainage, lake/lake environment management, integrated sub-basin/catchment/watershed management, and fisheries. Others are flood protection and early warning, multi-sector investment opportunity studies, and inland waterway transport.

In the Eastern Nile, several projects have been jointly prepared by Egypt, Ethiopia, and Sudan under the Integrated Development of Eastern Nile (IDEN) and implemented on the ground. These include the Eastern Nile Watershed Management Project, Eastern Nile Irrigation Project, Ethiopia-Sudan Power Transmission and Power Trade Project, Flood Protection and Early Warning Project, as well Eastern Nile Planning Model Project.

These relatively short-term, fast-track, small-scale projects focused on meeting the immediate priority needs of individual countries and as such were not derived from jointly conducted upstream, strategic regional optimisation studies. The projects were complemented by larger studies, commonly referred to as the Cooperative Regional Assessments (CRAs),

THE NILE RIVER BASIN INVESTMENT PROGRAMME: A COLLABORATIVE APPROACH TO BASIN-WIDE INVESTMENTS

Key objectives of the Programme:

- To attain a state of water security in the Nile Basin countries, characterised by reliable availability of an acceptable quantity and quality of water for health, livelihoods, and economic production.
- To improve energy security through increased production of hydropower and other renewable energy sources and increased power trade in the Nile region.
- To improve food security through increased food crop production from rainfed and irrigated farming systems and regional trade in food products.
- To protect and conserve the watersheds as well as terrestrial and aquatic ecosystems of the Nile Basin and promote their sustainable utilisation for poverty reduction and socio-economic development by Basin communities.
- To strengthen the resilience of Basin communities to the impacts of global climate change and manage risks arising from water-related natural disasters.

Photo: NBI

Meeting the domestic water needs of basin communities through conjunctive use of surface and groundwater

REGIONAL OPTIMISATION AND STRATEGIC SOCIAL AND ENVIRONMENTAL ASSESSMENT (SSEA) AS BEST INVESTMENT PLANNING PRACTICES

Having built the initial trust through collaborative investment preparations and cooperative regional assessment studies, the Eastern Nile countries (Egypt, Ethiopia, and Sudan) envisaged moving from single-sector, single-country, single-purpose, and simpler projects to more ambitious multi-country, multi-purpose, multi-sector, and complex transformational cooperative investments under the Joint Multipurpose Project (JMP). This, however, did not materialise as the JMP was affected by the post – CFA signature freeze.

All the same, the experience yielded an invaluable understanding of what it takes to plan large-scale cooperative water resources investments in a water-scarce sub-basin such as the Nile, the requisite technical, financing and institutional modalities, and in general, the political economy of such initiatives.

One of the offshoots of the JMP was the Strategic Social and Environmental Assessment (SSEA), which identified nine potential major sub-basin-wide environmental and social risks that can be triggered by large-scale water infrastructural development. A case in point is dam safety and coordinated operation of cascade dams – a line of work that has been pursued by ENTRO since then. These results are, in one way or the other, benefiting all three countries, not least their professionals, who built a significant collection of knowledge and experience by collaborating in the design and management of the studies over an extended period through numerous review and validation workshops.

conducted for power trade, irrigation, and watershed management. The CRA studies yielded invaluable insights into the resource base for the first time ever from a regional, no-borders perspective. These CRAs also quantified the costs and benefits of cooperative management and development.

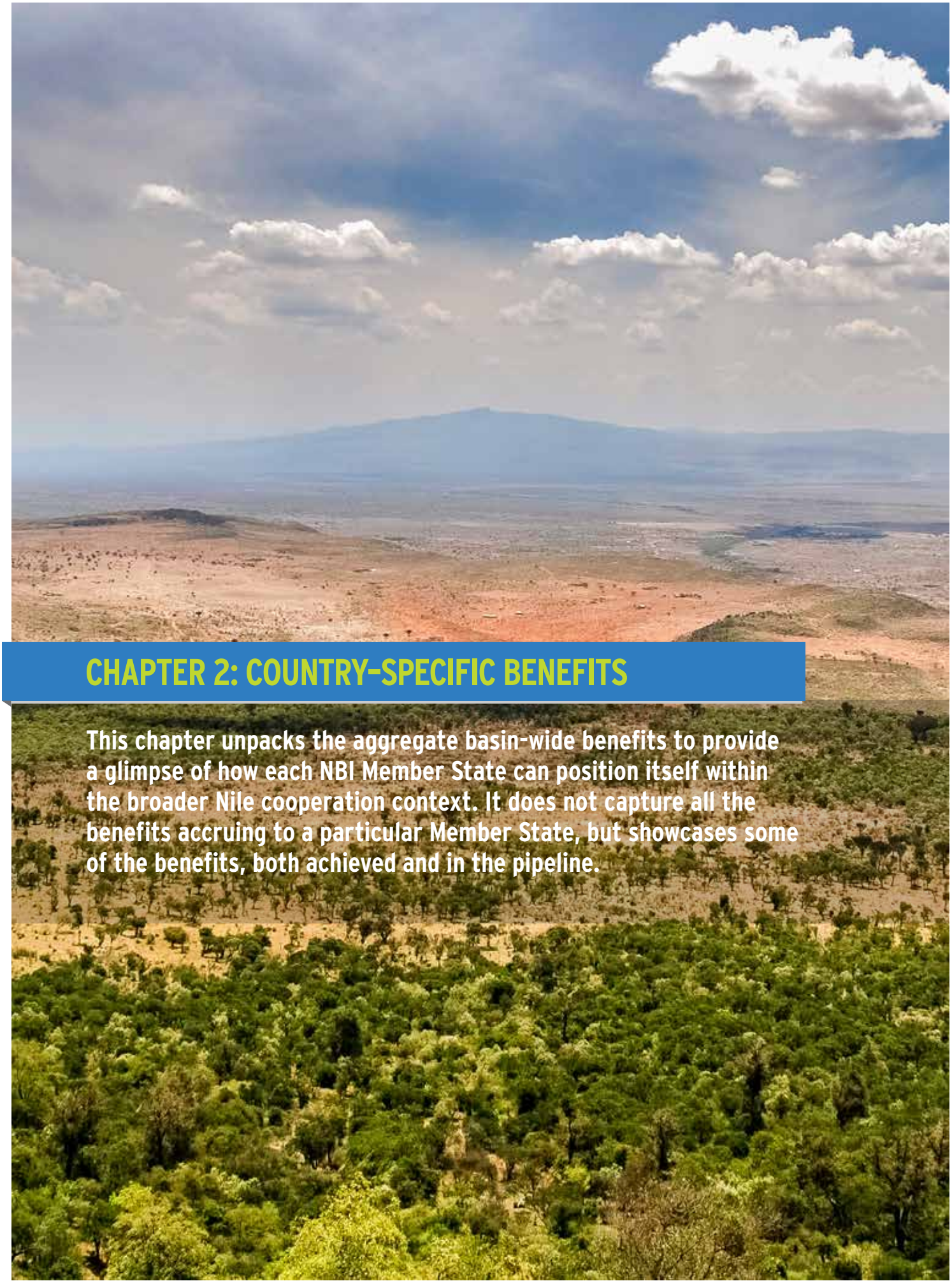
Furthermore, both in the Eastern Nile and Nile Equatorial Lakes sub-basins, Multi-Sector Investment Opportunity Analyses (MSIOA) have been undertaken (EN-MSIOA – 2018 and NEL-MSIOA - 2017). These analyses were conducted based on complex regional optimisation exercises. Each country's planned water resources investments in a sub-Basin - hydropower, irrigation, and other uses - were pooled together and subjected to multi-criteria analyses and hydro-economic modeling to identify the most viable options and trade-offs. It is envisaged that several cooperative investment projects will be drawn from these Multi-Sector Investment Opportunity Analyses.

Another, more recent flagship of sub-Basin investment cooperation is the 80 MW Regional Rusumo Falls Hydroelectric Project, jointly owned and financed by Burundi, Rwanda, and Tanzania. This investment project, which had been on the drawing board since the 1970s, covers the full spectrum of sub-basin cooperation from joint planning, financing, and management to benefits sharing.

Other projects implemented in the Nile Equatorial Lakes region include the Lakes Edward and Albert Fisheries Project (LEAF) between DR Congo and Uganda. Upcoming projects, on the other hand, include the power interconnection of the electric grids of Burundi, DR Congo, Kenya, Rwanda, and Uganda; The Kenya-Tanzania-Zambia (ZTK) power interconnection, interconnection of the Uganda and South Sudan power grids, the multipurpose Angololo Water Resources Development project between Kenya and Uganda and the Nyimur/Limur Multipurpose Water Resources Development project between South Sudan and Uganda.

The Nile Basin is extremely varied in topography, temperature, rainfall, and ecosystem/eco-region terms. It encompasses eco-regions ranging from temperate/cold mountain forests to the Sahara Desert and the Nile Delta. Planning cooperative investments in such a highly varied eco-scape, landscape and water-scape, not to speak of political set-ups, cultures, and histories, is possible only on the basis of sub-basin organisation. Therein lies the value of NBI's Subsidiary Action Programmes arrangement (See more under Annex 1).

The experience of cooperative, multi-country investment planning, which has been piloted, promises benefits, thanks to Nile cooperation facilitated by NBI. However, more scaling up of regionally optimised investments, such as those identified by the Multi-Sector Investment Opportunity Analyses, remains to be undertaken.



CHAPTER 2: COUNTRY-SPECIFIC BENEFITS

This chapter unpacks the aggregate basin-wide benefits to provide a glimpse of how each NBI Member State can position itself within the broader Nile cooperation context. It does not capture all the benefits accruing to a particular Member State, but showcases some of the benefits, both achieved and in the pipeline.

BURUNDI

Burundi is a landlocked country positioned at the southernmost tip of the Nile. As the ultimate upstream country, Burundi has the farthest headwaters of the Nile, the Ruvyironza River, which flows into Lake Victoria through the Ruvubu and Kagera Rivers. Only 0.5% of the total Nile Basin area is in Burundi.

Background

Burundi has been part of the efforts towards Nile cooperation since 1967, when the HydroMet project was established to conduct joint hydro-meteorological surveys on the Nile in the wake of flooding. The country joined Undugu (meaning 'brotherhood' in Kiswahili), which was established in 1983 to consider regional economic development.

Burundi did not join the next attempt, the Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Basin (TECCONILE), which operated from 1993 to 1999, whose objective, among others, was to promote the development, conservation and use of the Nile Basin water resources in an integrated and sustainable manner, through basin-wide cooperation for the benefit of all.

Burundi and the Nile Basin Initiative - Highlights
Founding member of NBI on 22nd February 1999
Total country contribution to NBI, from 2000-June 2020: USD 10,320,840 (USD 1,495,135 in-cash; equivalent USD 9,477,679 in-kind)
Hosted the Regional Nile Day event of 2009 and of 2024 Jubilee celebrations in Bujumbura
Hosted the Regional Agricultural Trade and Productivity Project Management Unit (April 2008-April 2012)
Hosted the launch of the Year of the Nile Basin in January 2019 in Bujumbura and Rutovu
Signed the CFA on 28th February 2011; ratified it on 25th September 2023
Hosted Regional Nile Day and the 25th anniversary of NBI in February 2024 in Bujumbura

Benefits from Nile Cooperation

Investments for improved livelihoods

Burundi is participating in the joint implementation of 12 investment projects of transboundary significance prepared by the NBI. The projects are at various stages of development and operation. Upon completion, these projects will contribute to water, energy, food security, and environmental sustainability in the country, as well as to national and regional development and integration.

The cases in point are the interconnection and power generation projects. These will increase Burundians' access to reliable and affordable energy because of cross-border power trade, reduced operational costs and improved

planning of energy infrastructure.

Projects such as the Akanyaru Multipurpose Water Resources, will irrigate an additional 7,705 ha while enabling communities to access clean and safe water supply for domestic use and livestock.

Investments in watersheds and wetlands are key to maintaining vital ecosystem goods and services such as water supply, unique biodiversity habitat, flood control, and drought buffering. This is in addition to contributing to livelihoods through tourism, fishing, and livestock keeping, among others. The restoration and conservation of these ecosystems is critical in integrated water resources management and in building climate change resilience in the Nile Basin.

Burundi is one of the three countries benefiting from the 80MW Regional Rusumo Falls Hydroelectric Project, receiving 27 MW from the project.

Furthermore, a 160 km overhead transmission line from the Rusumo project to the grid of Burundi has been successfully constructed, tested, and commissioned. This 220Kv transmission line runs from Rusumo to Muyinga and onwards to Gitega.

Photo: NBI

Tailoring students at Murore Vocational Training Centre, in Kirundo Province in Burundi

Through the Rusumo project, the country's power grid was successfully synchronised with that of Rwanda and Tanzania, enabling power trade among the three countries, beyond the Rusumo project.

As part of the extended benefits from the Rusumo project, the Local Area Development Project (LADP), constructed and equipped four vocational training centres, aimed at skilling the youth for formal and self-employment in rural communities.

Busoni Youth Center and Murore Vocational Training Centre in Kirundo Province, Ruzo Vocational Training Centre in Muyinga Province, and Mugano Youth Center in Giteranyi Province focus

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Regional Rusumo Falls Hydroelectric		
27 MW from the project **A USD 10 million Local Area Development Projects (LADPs) resulted in the following:** Muyinga Province (Giteranyi Commune) » Rehabilitation and extension of 30 km water system in Giteranyi Commune in Gihuzu, Mugano, Rubenga » Construction of Ruzo Vocation Training Center / Youth Center in Ruzo village » Construction of Bugoma Health Center » Construction of Giteranyi Commune Head Office **Kirundo Province (Busoni Commune)** » Rehabilitation and extension of 39 km water system in Busoni Commune in Bishisha, Kigeri, Rutabo with source points in Gacamihigo, Rurira. » Construction of Busoni Youth and Murore Vocation Training Centers **Giteranyi Province** » Construction of Rugando (Mugano) Health Center » Establishment of Water Conservation projects	Population of Burundi Population of Muyinga and Kirundo Province, specifically Giteranyi and Busoni Commune	Commissioned Phase 1 completed Phase 2 ongoing

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Integrated Management of Transboundary Water Resources of Lakes Cyohoha, Rweru and Akanyaru Marshland (2010 – 2012)		
Two operational hydrometeorological stations	The population of the sub-basin 21,000 farmers (irrigation component) 4,500 in fishing	Completed / Operational
Kagera River Basin Management		
» 5 automatic weather stations » 6 river gauge stations installed » 5 rain gauge stations » Butihinda Water Supply System » Implemented agro-forestry projects in Kabarore and Busoni Districts » Facilitated LVEMP II preparatory activities for Burundi » Supported Burundi in updating its national water policies » Designed reports for multi-purpose water infrastructure projects at Buyongwe	The population of the Kagera River Basin in Burundi Buyongwe irrigation-4,900 people	Completed
Burundi (Bujumbura) – DR Congo (Kamanyola) 220 kV Transmission Line Interconnection of Electric Grids of the Nile Equatorial Lakes Countries		
» 78 km overhead transmission lines strengthening the interconnections between NEL region countries » Construction of Bujumbura sub-station	Population of Burundi	Under implementation 20% complete
Burundi (Gitega) - Rwanda (Kigoma) 110 kV Transmission Line Interconnection of Electric Grids of the Nile Equatorial Lakes Countries		
» 143 km overhead transmission lines strengthening the interconnections between NEL region countries » Construction of power sub-stations in Gitega and Ngozi	Population of Burundi	Under Implementation
Burundi – Tanzania (Jiji – Murembwe – Kigoma): 220 KV Overhead Transmission Line Under the Interconnection of Electric Grids of the Nile Equatorial Lakes Countries		
» 180 km overhead transmission lines strengthening the interconnections between NEL region countries	Population of Burundi	Pipeline
Burundi (Border) - Rwanda (Kigoma) Interconnection of Electric Grids of the Nile Equatorial Lakes Countries		
» Strengthening the interconnections between NEL region countries	Population of Burundi	Under Implementation
Akanyaru Water Resources Development		
» Irrigation 12,474 ha in Burundi » Dam with 333 million cubic metres capacity » 14.5MW hydropower	Water for 600,000 people. 20,000 farmers through irrigation Power to population of Burundi	Prepared
Ruvyironza Water Resources Development		
» Irrigation of 14,674 ha in Burundi » Dam with 266 million cubic metres capacity » 22 MW hydropower	Food for 124,740 people Power to Population of Burundi	Under preparation through African Water Facility
Bugesera Integrated Water and Irrigation		
» Irrigation of 4,200 ha » Restoration of 765 ha of banks and lake shores » 5.5 million trees » 4 community hatcheries	42,000 farmers 50,000 fisher people 4,500 households	Identified.
Upper Ruvubu Multipurpose Water Resources Development		
» 8,000 ha irrigation development » 3.6 MW hydropower » Water supply	154,000 people receive water supply	Identified
Nyamuswaga Valley Irrigation and Water Supply Deployment in Ngozi District		
» 3,644 ha irrigation	Population of Nyamuswaga Valley	Identified
Ndurumu Valley Irrigation and Water Supply Deployment in Karuzi District		
» 4,900 ha irrigation, water supply and flood control	Population of Ndurumu Valley	Identified

«Under the Integrated Management of Transboundary Water Resources of Lakes Rweru, Cohoha and the Akanyaru marshland project, 12 water monitoring stations were established including bathymetric analysis of the two lakes.»

on skills such as masonry, building and construction works, welding, fabrication, and other metal works. Other skills are tailoring, culinary arts, cookery and bread baking, as well as computer repairs and maintenance.

Also, as part of the Local Area Development projects, Kirundo Province has benefited from the Bishisha Water project, which discharges 54,000 litres of water per day. The 39 km water supply system provides water to 27,000 people in Gasenyi, Kigeri, Rwibikara, and Bishisha, in Busoni commune. At the same time, Giteranyi Province has had two health centers constructed in Bugoma and Mugano respectively.

The table on the previous page summarises the investment projects in Burundi and the benefits derived from their successful implementation.

Water Resources Planning and Management

Benefits to Burundi include capacity building in Integrated Water Resources Management (IWRM), through exchange visits, workshops, appreciation seminars, short courses, post-graduate training and research and studies at regional and national levels. This has narrowed the water resources knowledge gap among countries, thus leveraging the capacity of Burundians to jointly manage and develop the common water resources more sustainably and with a transboundary orientation.

Burundi also benefits from an array of impartial and scientific knowledge products, policies, strategies, and guidelines as well as analyses and tools that support informed decision-making for joint optimal utilisation and sustainable management of the common Nile Basin water and related natural resources.

Among the tools, Burundi has used the Nile Basin Decision Support System (NB-DSS) to address specific national water resources issues and challenges, such as water resources development for hydropower in the Kagunuzi sub-basin and assessment of water resources management and development opportunities in the Ruvubu sub-basin. Furthermore, several national development needs are being studied using the NB-DSS, such as the assessment of water balance and sediment transportation in the north of Lake Tanganyika on River Ntahangwa catchment; undertaking a feasibility study of the development of new hydropower schemes in the upper part of River Ruvyironza (Nyamabuye site) under the framework of the SONGA project; and assessment of climate change impacts on Burundi's North Lakes ("Lac aux oiseaux").

The Shared Vision Programme (2003 - 2008) implemented earlier directly addressed the consequences of soil erosion resulting from traditional agriculture and the country's mountainous topography. This was through education and practical community-level micro-grant projects. A case in point is the Nile Transboundary Environment Action Project (NTEAP), implemented from October 2003 to December 2009. This project focused on addressing the

Photo: NBI

Bishisha Water Supply Project Burundi

major environmental threats faced by each of the NBI Member States. In Burundi, NTEAP funded a project to promote the use of efficient cooking stoves to combat deforestation for fuel. Another micro-grant project promoted modern integrated farming techniques to improve soil fertility.

Under the Integrated Management of Transboundary Water Resources project of Lakes Rweru, Cyohoha, and the Akanyaru marshland, 12 water monitoring stations were established including bathymetric analysis of the two lakes. In addition, 765 ha of riverbanks and lake shores were restored (265 ha around Lake Cyohaha, 200 ha around Lake Rweru, and 300 ha around Akanyaru). In addition, six community-based wetland management plans were developed and implemented; and 2,500,000 agro-forestry and fruit trees were planted in lakes and river catchment areas (0-100m), including 300,000 indigenous and bamboo trees.

Furthermore, 12 catchment management plans were prepared, a basin hydrological and water resources database established, and 1,400 wood-saving stoves and 310 biogas digesters distributed to households. Other benefits include potable water supply for at least 635,000 people, improved income from tourism and recreation, as well as watershed restoration.

Burundi has also benefited from the technical support provided by NBI to review its Water Policy, taking into consideration transboundary dimensions. This was followed by building the capacity of relevant staff in transboundary water policy and developing tools to support policy formulation and implementation.

Two hydrological monitoring stations, namely Ruvubu at Gitega and Ruvubu at Muyinga, have been established and upgraded respectively to state-of-the-art technology under the Nile Basin Regional Hydrological Monitoring System (see Annex 2 on page 85). The project also established the Nile Basin Regional Hydrological Monitoring System, the first of its kind in the region, laying the foundation for information exchange. The System forms a cornerstone for Nile cooperation, building trust for joint water resources management and planning in the Basin.

« Two hydrological monitoring stations, namely Ruvubu at Gitega and Ruvubu at Muyinga, have been established and upgraded respectively to state-of-the-art technology under the Nile Basin Regional Hydrological Monitoring System»

Furthermore, The Economics of Ecosystems and Biodiversity (TEEB) studies for Rweru-Bugesera Transboundary Wetlands (Burundi and Rwanda) generated knowledge on the value of wetlands ecosystem services which will enable the mainstreaming of wetlands ecosystems and associated biodiversity in sectoral planning.

Furthermore, information from a pioneering study on peatlands, which are habitats for high carbon sequestration and storage crucial for climate change mitigation of the Nile Basin region, will help Burundi in her efforts towards climate change mitigation and adaptation. The country can tap into this information and investment towards meeting its obligation under the Paris Agreement, the Nationally Determined Contributions (NDCs), and other multilateral environmental agreements.

The Flood and Drought Risk Mitigation project (2022-2025) supports the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The activity, which is part of the Nile Cooperation for Climate Resilience (NCCR) project, will support Burundi's meteorological and hydrological services by developing reliable and effective flash flood early warnings for the Nile Basin. It will increase local expertise and regional cooperation in flash flood management while improving disaster management.

Another activity under the NCCR, the Water Quality Multi-Criteria Analysis project, supports Burundi in identifying, discussing, and prioritising potential water quality investments that can contribute to addressing challenges such as pollution in the Basin water systems. This project contributes to Goal No. 1 (Water Security) of NBI's Strategy (2017-2027)

Another project under the NCCR, the Water Quality Multi-Criteria Analysis, supports Burundi in identifying, discussing, and prioritising potential water quality investments that can contribute to addressing challenges such as pollution in the Basin water systems. This project contributes to Goal No. 1 (Water Security) of NBI's strategy (2017-2027)

A common platform

Burundi, like the rest of the Member States, benefits from the platform that NBI provides to engage, consult and deliberate with other countries on how to collectively take care of and use the common Nile Basin water resources for win-win benefits. This is possible through the various fora such as regular governance meetings, project steering committees, regional expert working groups, annual Nile Day events, the triennial Nile Basin Development Forum, multi-sector national level consultations, as well as media training.

DEMOCRATIC REPUBLIC OF CONGO

While DR Congo is dominated by the Congo Basin, it also forms part of the Nile Basin to the east. The eastern region of the country feeds the waters of the River Nile through Lake Edward, the Semliki River and Lake Albert, which are shared with Uganda. Although only a small area lies within the Nile Basin, the river plays an important role in the country's ecology and economy. Approximately 0.8% of the total Nile Basin area is located in DR Congo.

Background

DR Congo first joined efforts towards Nile cooperation in 1983, under Undugu (meaning 'brotherhood' in Kiswahili) and was part of the next attempt, the Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Basin (TECCONILE), from 1993 to 1999. One of the objectives of TECCONILE was to promote the development, conservation, and use of the Nile Basin water resources in an integrated and sustainable manner, through Basin-wide cooperation for the benefit of all. TECCONILE identified 22 projects for technical assistance and capacity building as part of a Basin-wide action plan for the development and use of the Nile waters. DR Congo remain as an observer under the HydroMet project which had been established earlier in 1967 - 1993.

Benefits from Nile Basin Cooperation

Investments for improved livelihoods

NBI has facilitated the preparation of nine investment projects of transboundary significance in DR Congo. The projects are at various stages of development. Upon completion, the projects will contribute to DR Congo's water, energy, and food security, as well as environmental sustainability. This will ultimately make a tangible difference in the people's lives while contributing to national and regional development.

The interconnection and power generation projects will increase access to reliable and affordable energy owing to cross-border power trade, reduced operational costs, and improved planning of energy infrastructure.

The Lake Edward and Albert Fisheries (LEAF) project, jointly implemented

DR Congo and the Nile Basin Initiative - Highlights
Founding member of NBI on 22nd February 1999
Total country contribution to NBI, from 2000-June 2020: USD 6,572,465 (USD 596,973 in-cash; equivalent USD 6,092,480 in-kind)
Hosted the Regional Nile Day event of 2011 in Goma
Not signed the CFA yet

with Uganda, will contribute to poverty reduction and sustainable livelihoods for the local fishing communities.

The table below summarises the investment projects and the benefits derived from their successful implementation.

The benefits to DR Congo include two equipped mobile research vessels for water quality management in Ituri and North Kivu Provinces, and a water and fish research station in Kasenyi (Ituri Province). Other benefits are capacity building in Integrated Water Resources Management (IWRM) through exchange visits, workshops, appreciation seminars, short courses, post-graduate training as well as research and studies at regional and national levels. This is intended to close the water resources knowledge gap thus leveraging the capacity of DR Congo to jointly manage and develop shared water resources more sustainably and with a transboundary orientation.

The country also benefits from an array of scientific knowledge products, policies, strategies, and guidelines as well as analyses and tools. These support informed decision making for joint optimal utilisation and sustainable management of the common Nile Basin water and related natural resources.

Among the tools, DR Congo has applied the Nile Basin Decision Support System (NB DSS) to address specific national water resources issues and challenges, in three cases. These are (a) integrating

INVESTMENT PROJECT	BENEFICIARIES	STATUS
Integrated Fisheries and water Resources Management of Lakes Edward and Albert (LEAF) II		
» Harmonized fisheries policies » Cooperative framework for joint management of the lakes » Improved beach management Institutional framework for basin management » 2 surveillance boats delivered » A mobile laboratory delivered » Cooperative agreement for joint management signed » A water and fish research station in Kasenyi (Ituri Province) » 4 modern integrated fish landing sites with cold rooms and ice block » Making machines to enable the preservation of fish and transportation to » The market while still fresh for at least 12 hours	400,000 people (Shared) (Source: PPR)	Completed
» Surveillance of Lakes Edward and Albert by DR Congo and Uganda through the supply of equipped patrol boats, deployment and training	Population in the Edward and Albert Basin	Completed
» Fish handling and processing by construction of 9 fish landing sites on Lakes Edward and Albert	Population in the Edward and Albert Basin	9 fish landing sides constructed to completion
DR Congo Buhandanda- Goma - Rwanda (Gisenyi-Kibuye-Shango) – power interconnection		
» 293 km overhead transmission line (OHTL) at 110 kV	Citizens of DR Congo receive improved energy access and affordable cross-border energy, reduced tariffs	Completed and in operation for three years
» Construction of Goma sub-station	Citizens of DR Congo receive a reliable and cost-effective power supply particularly in Goma	Construction ongoing, 35% complete
DR Congo (Buhandahanda – Goma) - Rwanda (Gisenyi – Kibuye - Shango) Power Transmission Line		
» The transmission line is composed of the 95-km-long, 220 kV Goma – Bukavu line and Buhandahanda sub-station in the DR Congo; the completed 12 km 220 kV Goma-Gisenyi line (this is an extension of the original completed Goma-Gisenyi line) to ease the unmet electricity demand of 115 MW in North Kivu and South Kivu	Ease the unmet electricity demand of 115 MW in North Kivu and South Kivu	Construction ongoing
Burundi-DRC-Rwanda Interconnection		
» 200km overhead transmission line (OHTL)	Reliable and cost-effective power supply for the districts of Musanze, Nyabihu and Rubavu with 40,000 people, 2 tea factories (Nyabihu and Pfunda), schools and health centres	Construction ongoing

INVESTMENT PROJECT	BENEFICIARIES	STATUS
DR Congo (Kamanyola) – Burundi (Bunjumbura) Power Interconnection		
» 78.8 km overhead transmission line (OHTL) at 220 KV	Citizens of DR Congo and Burundi receive improved energy access and cheap cross-border energy, reduced tariffs	Construction ongoing, 20% completed
Uganda –DRC (Nkenda)–Beni–Butembo–Bunia)		
» 352.2 km overhead transmission line (OHTL) at 220 KV of which the DR Congo portion of the interconnector line will be 279.7 km	Reliable and cost-effective power supply for Northeastern DR Congo in the Beni, Bunia and Butembo regions of the A total of 838,000 inhabitants in the three towns of Beni (100,000), Bunia (366,000) and Butembo (218,000) will benefit from the Uganda (Nkenda)-DRC (Beni-Butembo-Bunia) 396 km high-voltage power transmission line and associated substations.	Full feasibility ongoing
Goma-Buhandahanda Power Interconnection within DR Congo		
» 95 km overhead transmission line (OHTL) at 220 kV within DR Congo and interconnects with Ruzizi III (Kamanyola-Buhandahanda line)	Reliable and cost-effective power supply for Northeastern DR Congo in the Beni, Bunia and Butembo regions At least 154,000 others will benefit from rural electrification	Ongoing, 20% completed
Kitoba-Lubango Water Resources Projects in Goma District, North Kivu Province		
» Irrigation of 5,664 ha in the Lubera territory of Goma District	Population of Lubera territory, Goma District	Identified
Semliki Hydropower Project in North-Eastern DR Congo; 72 MW shared with Uganda		
» 36 MW of electricity into the power grids of DR Congo and Uganda each	Population of DR Congo and Uganda	Identified
Mugomba Hydropower Project (100 MW)		
» 100 MW of electricity into the power grids of DR Congo	Reliable and cost-effective power supply particularly in North-Eastern DR Congo	Identified

hydrological and hydrodynamic models for improved understanding and predictability of water resources systems in the Congo River Basin; (b) physiographic and hydrodynamic constraints analysis for a deep sea port set up at the Congo River estuary; and (c) solving the issues of sediments transport in River Congo.

One new regional hydrological monitoring station was anticipated at Ishango ferry crossing under the Nile Basin Regional Hydrological Monitoring System (2019 – July 2021). However, due to insecurity, the station was not realized. The first of its kind in the region, the Hydrological Monitoring System lays the foundation for information exchange. The system forms a cornerstone for Nile cooperation, building trust for joint water resources management and planning in the Basin.

DR Congo was supported to develop the Semliki Transboundary Wetland Management Plan shared with Uganda. This will feed into a basin-wide process to better understand the role and value of wetlands for the river system and the people who depend on it.

In addition to The Economics of Ecosystems and Biodiversity (TEEB) Study for Semliki (DR Congo and Uganda), the Transboundary Wetland Management Plan generated knowledge on the value of wetlands ecosystem services and will enable mainstreaming of wetlands ecosystems and associated biodiversity in sectoral planning. On the other hand, information from a pioneering study on peatlands, which are habitats for high carbon sequestration and storage crucial for climate change mitigation of the Nile Basin region, will help DR Congo in her efforts towards climate change mitigation and adaptation. The country can tap into this information and investment towards meeting its obligation under the Paris Agreement, Nationally Determined Contributions (NDCs), and other multilateral environmental agreements.

The Flood and Drought Risk Mitigation project (2022-2025) supports the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The activity

Photo: NBI

NBI purchased water quality monitoring equipment such as this for nine NBI countries. The DR Congo is one of the nine countries

is part of the Nile Cooperation for Climate Resilience (NCCR) Project. It will support DR Congo's meteorological and hydrological services through the development of reliable and effective flash flood early warnings for the Nile Basin. It will increase local expertise and regional cooperation in flash flood management while improving disaster management.

Another project under the NCCR, the Water Quality Multi-Criteria Analysis project supports DR Congo to identify, discuss, and prioritise potential water quality investments to address the challenges facing the quality of the basin's water quality. This project contributes to Goal No. 1 (Water Security) of NBI's Strategy (2017-2027).

A common platform

Like the rest of the NBI Member States, DR Congo uses the platform that NBI provides to engage, consult, and deliberate with other Nile Basin countries on how to collectively take care of and use the common Nile Basin water resources for win-win benefits. This is possible through the various fora, which include regular governance meetings, project steering committees, regional expert working groups, annual Nile Day, the triennial Nile Basin Development Forum, multi-sector national-level consultations, and media training.

ETHIOPIA

Ethiopia is the source of the Blue Nile (Abbay) and by far the largest tributary, contributing 57% of the total flow of the River Nile. Flowing from Ethiopia's Lake Tana, the Blue Nile joins the White Nile at Khartoum in Sudan, together with the Baro-Akobo Sobat and the Tekeze-Seitit tributaries. The country's life is attached to the River Nile culturally, politically, and economically. 11.5% of the total Nile Basin area is located in Ethiopia. Approximately 86% of the flow of the River Nile is generated from the Ethiopian highlands.

Background

Ethiopia remained as an observer under the Hydromet, one of the early regional projects towards Nile Basin cooperation. Hydromet had been established in 1967 to conduct joint hydro-meteorological surveys on the Nile in response to a string of flooding disasters. The country was also an observer under Undugu (meaning 'brotherhood' in Kiswahili), which was established in 1983 to consider regional economic development.

Benefits from Nile Basin Cooperation

Investments for improved livelihoods

Fully commissioned at the end of 2013, the Ethiopia (Bahir Dar) - Sudan (Gadaref) power transmission interconnector (297 km transmission interconnection between Bahr Dar and Shehedi-Metema in Ethiopia) has enabled 300/MW of power trade between the two countries. Ethiopia earns USD 10-15 million in electricity sales revenue annually.

Ethiopia and the Nile Basin Initiative - Highlights
Founding Member of NBI on 22nd February 1999
Total country contribution to NBI from 2000-2020: USD 34,151,371 (USD 6,449,724 in cash; equivalent of USD 30,025,226 in-kind)
Hosts the Eastern Nile Technical Regional Office (ENTRO) headquarters of ENSAP in Addis Ababa (2002 to date)
Hosted the Water Resources Planning and Management Project under the Shared Vision Programme in Addis Ababa (February 2005 – December 2012)
Hosted the 1st Nile Basin Development Forum (NBDF) in 2006
Hosted three Regional Nile Day events (2018 in Addis Ababa, 2013 in Bahir Dar and in 2008 in Addis Ababa)
Signed the CFA on 14th May 2010; ratified it on 25th June 2013
Hosted the 6th Nile Basin Development Forum in 2021

Photo: NBI

Rehabilitated Watersheds: Tana-Beles Integrated Management Project, Ethiopia

Nearly 1.4 million households (in both Ethiopia and Sudan) have access to affordable, and reliable electricity. The predominantly hydro system in Ethiopia complements the power system in Sudan. The significant thermal generation has the potential to provide security in periods of low hydropower production.

Other key benefits for Ethiopia are the ability to better integrate reserve capacities, and in the process improve reliability of supply on the interconnected system while saving capital and operating costs. In addition, more reliable and secure supplies have secondary benefits through the lighting of schools and homes, better access to social services, and greater opportunities for business development. Small and medium-sized industries particularly flour mills, rural water supply installations, tanneries, and coffee processing plants are then better able to create employment and contribute to poverty alleviation.

Ethiopia participated in the landmark Eastern Nile Joint Multi-Purpose (JMP) study. The JMP identified the Abbay/Blue Nile sub-basin as most suitable for cooperation among Egypt, Ethiopia, and Sudan on joint large-scale multipurpose infrastructural development from which each country could derive benefits. Even though the JMP did not result in implementable projects as initially envisaged, the study yielded two useful working papers: Paper 1, Environmental and Social Perspectives on Blue Nile Multipurpose Development, and Paper 2, Strategic Options Assessment for Blue Nile Multipurpose Development.

Building on these studies, ENTRO has been advancing preparation for Eastern Nile Basin cooperation from which Ethiopia is benefitting. This pertains to studies on dam safety and coordinated operation of dam cascades in the Eastern Nile. These studies are critical for ensuring the safe and optimal operation of large dams (>15 meters height or >3 million cubic meters storage capacity) located across the Eastern Nile in the three countries.

Ethiopia is also poised to benefit from the completed Baro-Akobo-Sobat Multipurpose Study project, which identified short, medium and long-term projects including hydropower generation for implementation in Ethiopia and South Sudan. These are the Majang multipurpose project (Ethiopia) and the Akobo-Gambella floodplains transboundary development programme (Ethiopia and South Sudan).

The Eastern Nile Power Trade Studies proposed the Eastern Nile Regional Transmission Line, connecting the grids across Ethiopia, Sudan and Egypt. It has the potential to enable the country to generate up to USD 600 million per year from electricity exports. A feasibility study has been completed for the Ethiopia-Sudan 1,200 MW or 9,200 MWh/yr and Ethiopia-Egypt 2,000 MW or 7,700 MWh/yr interconnections.

As regards food security, Ethiopia developed 20,000 ha of irrigated land

INVESTMENT PROJECT	STATUS
Integrated Development of Eastern Nile (IDEN) Projects	
Eastern Nile Irrigation and Drainage Studies (ENIDs)	Feasibility study completed for Ethiopia and Sudan
Eastern Nile Watershed Management Project (ENWM)	Study completed and operational
Eastern Nile Power Trade Project (ENPT)	Study completed
Ethiopia-Sudan Interconnection - 297 km in Ethiopia	Operational
Baro Akobo Sobat Multipurpose Water Resource Development Study (BASMWRDS)	Study completed (3 short-term projects prepared; 9 medium- and long term projects identified for preparation)
Post-IDEN Investment projects	
Chemoga-Yeda Integrated Watershed Management	Project preparation completed
Fincha Integrated Watershed Management	Project preparation completed

INVESTMENT PROJECTS AT IDENTIFICATION STAGE
Energy Sharing Arrangements in the Eastern Nile Basin
Promoting Efficient Irrigated Agriculture
Watershed Management for Climate Resilience
Environmental and Social Assessments and Safeguards
Water Re-Use and Salinity Management
Water Quality and Sediment Management
Improved Groundwater Use, Monitoring and Management
Enhanced Climate Change Adaptation Capability
Coordination and Phasing of Win-Win ENB Development Packages
Ethiopia – South Sudan, Dedesa- Tepi – Juba: 700km, 400kV transmission line; connecting Ethiopia, South Sudan and Uganda
Ethiopia GERD – Sudan power interconnection: 580 km length; 16 in Ethiopia, 564km in Sudan

from the first-ever jointly agreed upon irrigation development (ENSAP) project (among Egypt, Ethiopia, and Sudan). Of this, 7,500 ha have already been developed and are operational benefitting 57,000 people. When implemented, another 92,000 people will eventually benefit from the 7,500ha Dinger Bereha irrigation scheme identified through ENSAP under the Eastern Nile Irrigation and Drainage project.

Another ENSAP activity, the Eastern Nile Watershed Management project, prepared the first jointly agreed upon Integrated Watershed Management intervention in the upper catchments of Lake Tana. Prepared from both bio-physical and livelihood improvement perspectives, and implemented on 85,000 ha, the project has resulted in improvements in soil and water conservation, agricultural practices, access to extension services, and increases in land productivity. The project established 35 farmer training centres with about 700 farmers trained in improved cereal cropping, fruit tree cultivation as well as vegetable gardening and marketing. The project also established 13 animal health posts and supplied 735 modern beehives as well as 163 pieces of bee-keeping equipment.

With the introduction of area closure and the end of free livestock grazing, degraded watersheds have been rehabilitated. The introduction of improved fodder has resulted in a significant increase in livestock productivity. The project has benefited 240,000 people. Furthermore, a total of 205,000 people in Chemoga and another 160,000 in Fincha are set to benefit from the 600,000 ha watershed management projects prepared under the Eastern Nile Watershed Management Programme.

A new round of investment projects identified under the Baro-Akobo-Sobat multi-purpose water resources development study will benefit small-scale farmers and pastoralists in the Baro-Akobo-Sobat sub-basin. The Study identified projects based on a Strategic Social and Environmental Assessment, which will balance the conservation of the relatively pristine environment of the sub-basin with the effort to address poverty and deprivation.

The Tana-Beles Integrated Water Resources Development Project in the Upper Blue Nile carried out several physical and biological soil and water conservation measures on 46,276 ha of cultivated land by employing a combination of technologies. In piloted areas, reduction in rainwater run-off has led to increases in groundwater recharge, river/stream bed-flow rates, as well as water flows and volumes over time in the system. Since 2009 when work started, 163 community

Photo: NBI

Tana-Beles Integrated Management Project, Ethiopia

watershed development plans have been implemented through a range of activities, namely: treatment of 821 ha of gully; rehabilitation of 16,000 ha of degraded hillside; and development of 4,000 ha of community woodlot forestry. In addition, 680 safe water points have been constructed, providing access to potable water for at least 75,000 people. In addition to these physical conservation measures, the following livelihood activities were implemented in the project area:

- Over 45.5 million seedlings were raised and planted, increasing the overall forest cover area by over 11,400 Ha.
- More than 160 community watersheds were protected from free grazing.
- Fourteen (14) small-scale irrigation schemes with 10.5km irrigation canal were developed, benefitting 3,300 households. About 673 new private hand-dug wells and 47 springs were constructed. These interventions resulted in higher yields of 28% for barley, 40% for wheat and 88% for potatoes.
- A total of 42,690 animals were fattened during the intervention, resulting in improved annual income for farmers who participated
- The following was achieved under the watershed project:
  - At least 80,000 students benefited from 18 primary schools, which were renovated while 91 others were upgraded.
  - Also renovated were 15 health posts, while 36 were upgraded. In addition, 23 veterinary clinics were constructed and furnished with the necessary facilities.
  - Sixty-seven kilometers of access roads and 140 kilometers internal access paths were constructed within the community watershed, in addition to 84-foot bridges, 70 fords and seven culverts established on small streams and gully crossings.

This integrated approach to watershed management has reduced the loss of topsoil. These advances are expected to bring about more benefits further downstream, such as better water quality and less silting of the Nile waters in Sudan and Egypt.

Water Resources Planning and Management

Phase 1 of the Eastern Nile Flood Preparedness and Early Warning Project established the National

Flood Forecasting Centre and has completed flood risk mapping for an area of about 1,750 km2. At least 50,000 people benefit directly and another 500,000 indirectly from these project interventions, including people from 107 flood-prone communities.

Phase II of the project focused on capacity development in flood risk management and national level technical and institutional strengthening, including through the provision of equipment and training, as well as covering new areas such as in the Tekeze-Seitit sub-basin. For more than seven years now, a 72-hour time lag flood bulletin has been issued to national centres and relevant authorities, during the three-month flood season forecasting and early warning, thus enhancing preparedness. An enhanced EN-FFEWS system was developed and is operational (https://entroffews-dev.westeurope.cloudapp.azure.com/).

Ethiopian experts have utilised the Nile Basin Decision Support System (NB DSS) applying it to tasks associated with operational flood forecasting in the Baro-Akobo-Sobat and Abbay/Upper Blue Nile sub-basins, in reservoir water allocation exercises in the Awash Basin, in watershed management and development in Shebelle and in simulation exercises on the Grand Ethiopian Renaissance Dam (GERD).

The Eastern Nile coordinated operation of dams cascade study is critical for the safe, efficient, and synergized water infrastructure management in Ethiopia and across Sudan and Egypt. Ethiopia will also benefit from implementing the dam safety guidelines and domesticating the wide range of NBI policies and guidelines, particularly those with transboundary implications. This is in addition to building the capacity of dam operators.

Furthermore, information from a pioneering study on peatlands, which are habitats for high carbon sequestration and storage crucial for climate change mitigation in the Nile Basin region, will help Ethiopia in her efforts towards climate change mitigation and adaptation. The country can tap into this information and investment towards meeting its obligation under the Paris Agreement, the Nationally Determined Contributions (NDCs), and other multilateral environmental agreements.

Ethiopia also benefits from the various scientific knowledge products, policies, strategies, and guidelines as well as analyses and tools that support informed decision-making for joint optimal utilization and sustainable management of the common water and related natural resources.

The Flood and Drought Risk Mitigation project (2022-2025) supports the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The activity, which is part of the Nile Cooperation for Climate Resilience (NCCR) Project will support Ethiopia's meteorological and hydrological services through the development of reliable and effective flash flood early warnings for the Nile Basin. It will increase local expertise and regional cooperation in flash flood management while improving disaster management.

Another project under the NCCR, the Water Quality Multi-Criteria Analysis, supports Ethiopia in identifying, discussing, and prioritising potential water quality investments that can contribute to addressing challenges such as pollution in the Basin water systems. This project contributes to Goal No. 1 (Water Security) of NBI's Strategy (2017-2027).

A common platform

Ethiopia supports and benefits from the platforms that NBI offers to Member States. These platforms comprise of both consultative, governance, project steering (stakeholder engagement), and technical training (skills capacity building) dimensions.
The first dimension consists of governance meetings, project steering/oversight and technical working group meetings, the triennial Nile Basin Development Forum, and the annual regional/national Nile Day commemorations.

The second dimension comprises the capacity building of nationals through scholarships, internships, negotiation training, project planning and management, Integrated Water Resources Management (IWRM), and Decision Support Systems (DSS). Others included expert working group consultations on ongoing studies (SOB, wetlands studies, cascade coordination, watershed management, SSEA/environmental and social safeguards, policies, and upstream investment studies such as MSIOAs), and knowledge-exchange study visits to other river basin organisations, and eLearning. The media was trained in reporting on transboundary water resources management and development.

At least 10,000 Ethiopians have participated in various stakeholder platforms provided by the NBI since its establishment. In terms of capacity building, more than 2,500 have benefitted from numerous training opportunities including dam operations, Integrated Water Resources Management (IWRM), e-flows, NB DSS, hydro diplomacy, small- and large-scale irrigation and advocacy.

NBI provides opportunities for interns and young professionals to enhance their skills in transboundary water resources management. The aim is to create a knowledge community among young professionals from the Eastern Nile Basin countries to support/facilitate the emergence of a shared understanding of the Nile resource base. Of the 216 interns and young professionals, 41% have been from Ethiopia.

KENYA

Kenya is an upstream country of the Nile Basin, which borders Lake Victoria in the country's west. Major rivers that contribute to the River Nile flow are the Nzoia, Yala, Nyando, Migori and Mara. All these rivers provide a substantial percentage of the inflow into Lake Victoria, which eventually flows out into Victoria Nile, contributing most of the flow of the White Nile further downstream. Approximately 1.8% of the total Nile Basin area is in Kenya.

Background

Kenya joined one of the early regional projects, the Hydro-meteorological survey of Equatorial Lakes (HydroMet) project, established in 1967 to conduct joint hydro-meteorological surveys on the Nile in the wake of flooding disasters earlier in the decade. Kenya participated as an observer under Undugu (meaning 'brotherhood' in Kiswahili), which was established in 1983 to consider regional economic development. The country was not part of the Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Basin (TECCONILE) that ran from 1993 to 1999.

Kenya and the Nile Basin Initiative - Highlights
Founding member of NBI on 22nd February 1999
Total country contribution to NBI, from 2000-June 2020: USD 10,104,888 (USD 2,897,017 in-cash; equivalent USD 7,969,191 in-kind)
Hosts Sio-Malaba-Malakisi River Basin Management Project office (2006 – to date)
Hosted Efficient Use of Water for Agricultural Productivity (EUWAP) Project Management Unit (July 2005 - June 2009)
Hosted the Regional Nile Day event of 2016 in Vihiga
Hosted the 4th Nile Basin Development Forum (NBDF) in 2015 in Nairobi
Signed the CFA on 19th May 2010; yet to accede to it.

Benefits from Nile Basin Cooperation

Investments for improved livelihoods

Twenty-three investment projects prepared under the NBI will, upon completion, contribute to Kenya's water, food and energy security and environmental sustainability. These projects will also create employment opportunities and drive national development.

Projects prepared are at different stages of implementation, with some completed. These include interconnection and power generation projects that will increase cross-border

power trade and Kenyans' access to clean, reliable, and affordable energy; and reduced operational costs, improved planning of energy infrastructure, and better regional integration.

Irrigation schemes and multi-purpose dams will reduce Kenya's overdependence on rain-fed agriculture and help build more robust food production systems. Kenyans will also gain access to clean and safe water supply for domestic use and livestock. Investments in watersheds and wetlands help maintain vital ecosystems while providing services to communities and economies.

The table below summarizes the investment projects and benefits derived from their successful implementation.

Water Resources Planning and Management

Kenya's benefits range from formal training in Integrated Water Resources Management (IWRM) to an array of basin-wide discourses aimed at closing the water resources knowledge gap. IWRM is addressed through exchange visits, workshops, appreciation seminars, short courses, post-graduate training, as well as research and studies at regional and national levels.

Other benefits are scientific knowledge products generated, a suite of policies, strategies, and guidelines, as well as analyses and tools that support informed decision-making for optimal joint utilization and sustainable management of the shared water and related natural resources.

Cases specific to Kenya include the use of the Nile Basin Decision Support System (NB DSS) in 14 studies. Among others, the tool has been applied in the Ewaso Ng'iro North multi-purpose dams assessment, the Nandi-Kano multi-purpose water transfer assessments, the Isiolo urban water demand and water supply assessment, and the Upper Tana Basin assessment of water resources. The NB DSS has also been used in considering hydropower from the Masinga, Kamburu, Gitaru, Kindaruma, and Kiambere dams, developing irrigation schemes (Mwea) and the water supply source for Nairobi City, as well as assessing pastoralism, wildlife, and environmental integrity for the Tana Delta ecosystem.

NBI further provided Kenya with technical support to review its water policy. The process included incorporating transboundary dimensions.

Kenya has also benefitted from the rehabilitation and installation of five hydro-meteorological stations in Mara

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Angurai Water Supply		
10,000 cubic litres composite filtration unit per hour of clean water	10,000 people in Angurai Division	Completed / Operational
Augmentation of Bomet Water Supply, Sewerage Disposal and Treatment		
» Two 25,000 m^3 composite filtration units (CFU) built for clean water supply	20,000 people in Bomet Municipality	Completed / Operational
Malaba Solid Waste Management Project		
» Hydraulic trailer for solid waste management and 100 litres waste dustbins	500,000 people	Completed / Operational
Sitabicha Suswo Irrigation		
» 2,120 km water transmission lines	2,000 people (400 families)	Completed / Operational
Interconnection of the electric grids of the NEL countries (Benefits to Kenya)		
» 256 km transmission line in Kenya (Lessos – Tororo-Bujagali) » Extension of Lessos sub-station (Kenya) » Line will facilitate the exchange of power; Kenya portion will be 128 km	Population of Kenya	Implementation ongoing
Kenya component of the Kenya – Tanzania interconnection		
» 510 km of overhead transmission lines Kenya (Isinya) -Tanzania (Arusha-Singida)		Implementation ongoing
Kocholia Dam / Amagoro-Amoni Irrigation Development and Watershed Management Project		
» Irrigation of 4,000 ha » Hydropower Potential 1.09MW	3,100 farmers	Implementation ongoing
Bunyunyu Multipurpose Water Resources Development		
» Water security 55,910 m3 per day » Irrigation of 3,000 ha, Hydropower 2.0MW	1,100,000 people	Feasibility, detailed design and partial implementation done
Sio-Sango Water Resource Multipurpose Project		
» Water supply and irrigation of 1,790 ha	20,000 people	Prepared

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Maira/Lower Sio Multi-Purpose Water		
» Dam capacity 6.2 million cubic metres » 2000 ha of irrigation area » Water supply Electricity 1.05 MW	12,000 people	Prepared
Bungoma and Cross-Border (Busia, Malaba, Lwakhakha) Pollution Control		
» Improved water supply	20,000	Prepared
Shared Angololo Irrigation and Watershed Management Project (total of 3,300 ha shared among 127,300 people)		
» Water supply Irrigation of 1,180 ha Hydropower 1.75 MW	63,650 people in Kenya	Prepared
Gogo Falls Multi-Purpose Water Resources Development		
» 155 million m3 water reservoir » 20 MW hydropower Irrigation of 30,000 ha and 86,400 M3 per day water supply	1.152 million people	Prepared
Amala-Norera Multi-Purpose Storage Reservoir		
» Water Supply, Irrigate 2,500 ha » Hydropower 1.0 MW	34,000 people	Prepared, Project Included in National Water Master plan 2030
Integrated Transmara and Maasai Mau Forest Management Programme		
» Water security	162,000 people	Prepared
Shared Soono Multi-Purpose Water Resources Development		
» Hydropower 1.9 MW » Water security	10,000 people	Prepared
Busia Cross-Border Pollution Control		
» Water supply » Solid waste management » Stormwater drainage	87,987 people	Prepared
Titsi Irrigation Development and Watershed		
» Irrigation of 1,345 ha Water security	3,100 people	Detailed design stage
Keben Multi-Purpose Water Resources Development		
» Water security » 2,000 m^3 per day of water » Irrigation of 2,000 ha » Hydropower 1.5 MW	45,000 people	Pre-feasibility done
Moi University Multi-Purpose Water Resources Development		
» Water security » 12,000 m^3 per day of water » Irrigation of 700 ha, Hydropower 1.8MW	60,000 people	Pre-feasibility done
Nandi Forest Multi-Purpose Water Resources Development		
» Water security » 43,000 m^3 per day of water » Irrigation of 7,000 ha » Hydropower 50 MW	372,123 people	Pre-feasibility completed
Mushangubo Multi-Purpose Water Resources Development		
» Water security » 43,000 m^3 per day of water » Irrigation of 4,000 ha Hydropower 42 MW	360,000 people	Pre-feasibility completed
Ol-Ngobor Multi-Purpose Water Resources Development		
» Water security » 36,000 m^3 per day of water » Irrigation of 21,800 ha Hydropower 10MW	750,000 people	Pre-feasibility completed

Photo: NBI

Kenya-Uganda Transmission Line

and Sio Malab Malakisi. In addition, six hydrological monitoring stations were upgraded to state-of-the-art technology under the Nile Basin Regional Hydrological Monitoring System (2019 – July 2021) (see Annex 2 on page 85). The project also established the Nile Basin Regional Hydrological Monitoring System, the first of its kind in the region, laying the foundation for information exchange. The System forms a cornerstone for Nile cooperation, building trust for joint water resources management and planning in the Basin.

Kenya was supported to develop the transboundary wetland management plan for the Sio-Siteko sub-basin shared with Uganda. This will feed into a basin-wide process to better understand the role and value of wetlands for the river system and the people who depend on it.

In addition, information from a pioneering study on peatlands, which are habitats for high carbon sequestration and storage crucial for climate change mitigation of the Nile Basin region, will help Kenya in her efforts towards climate change mitigation and adaptation. The country can tap into this information and investment towards meeting its obligation under the Paris Agreement, Nationally Determined Contributions (NDCs), and other multilateral environmental agreements.

The Flood and Drought Risk Mitigation project (2022-2025) supports the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The project will support Kenya's meteorological and hydrological services by developing reliable and effective flash flood early warnings for the Nile Basin. It will increase local expertise and

« Six hydrological monitoring stations were upgraded to state-of-the-art technology under the Nile Basin Regional Hydrological Monitoring System (2019 – July 2021). »

Photo: NBI

Angurai Water Supply, provided under the Sio-Malaba-Malakisi River Basin Management project in Kenya

regional cooperation in flash flood management, while improving overall disaster response.

Another initiative under the NCCR project is the Water Quality Multi-Criteria Analysis. This supports Kenya in identifying, discussing, and prioritising potential water quality investments that can contribute to addressing challenges such as pollution in the Basin water systems. This project contributes to Goal No. 1 (Water Security) of NBI's Strategy 2017-2027.

A common platform

Kenya uses the platform that NBI provides to engage, consult, and deliberate with its fellow Nile Basin countries on how to collectively take care of and use the common Nile Basin water resources to build a common ground for win-win benefits. This is possible through the various fora, which include regular governance meetings, project steering committees, regional expert working groups, annual Nile Day events, the Nile Basin Development Forum, multi-sector national-level consultations, and media training.

RWANDA

Rwanda is positioned in the far south-west of the Nile Basin. Within the Nile Basin section, rivers Nyabarongo and Akanyaru together with their many tributaries form the River Kagera that flows into Lake Victoria. Approximately 0.7% of the total Nile Basin area is in Rwanda.

Background

Rwanda was part of the Hydromet project established in 1967 to conduct joint hydro-meteorological surveys on the Nile in the wake of flooding disasters earlier in the decade. It later joined Undugu (meaning 'brotherhood' in Kiswahili), established in 1983 to consider regional economic development. The country participated in the next attempt, the Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Basin (TECCONILE), which ran from 1993 to 1999. One of its objectives was to promote the development, conservation and use of the Nile Basin water resources in an integrated and sustainable manner through basin-wide cooperation for the benefit of all. TECCONILE identified 22 projects for technical assistance and capacity building as part of a Basin-wide action plan for development and use of the Nile waters.

Benefits from Nile Basin cooperation

Investments for improved livelihoods

Some nine investment projects prepared by the NBI are at various stages of development and operation. Upon completion, the projects will contribute to Rwanda's water, energy and food security, as well as environmental sustainability. These projects will ultimately contribute to national and regional development and integration.

The interconnection and power generation projects completed in February 2024, such as the 80MW

Rwanda and the Nile Basin Initiative - Highlights
Founding Member of NBI on 22nd February 1999
Total country contribution to NBI, from 2000-June 2020: USD 32,229,469 (USD 1,654,397 in-cash; equivalent USD 30,385,082 in-kind)
Hosts NBI investment Programme office - the Nile Equatorial Lakes Subsidiary Action Programme Coordination Unit (NELSAP-CU): January 2001 – to date
Hosted the 3rd and 5th Nile Basin Development Forums in 2011 and 2017, respectively, in Kigali
Hosted NBI's 20th anniversary and Regional Nile Day event in February 2019 in Kigali
Hosted inaugural Regional Nile Day event in February 2007 in Kigali
Signed the CFA on 14th May 2010; ratified it on 21st May 2014

« The interconnections, as well as power generation projects completed in February 2024, increased Rwandans' access to reliable and affordable energy. This was as a result of cross-border power trade, reduced operational costs, and improved planning of energy infrastructure. »

Regional Rusumo Falls Hydro-electric project, increased Rwandans' access to reliable and affordable energy as a result of cross-border power trade, reduced operational costs and improved planning of energy infrastructure.

As part of the extended benefits from the Regional Rusumo Falls Hydro-electric project, the Local Area Development Project (LADP) constructed and equipped one vocational training center to skill the youth for formal and self-employment in rural communities. Kibungo Youth Center in Ngoma focuses on skills such as masonry, building and construction works, welding, fabrication, and other metal works. Others are tailoring and dressmaking, culinary arts, cookery and bread baking, ICT and computer repairs as well as maintenance among other skills.

In addition to the vocational training, more than 12,000 people of Ngoma district have benefitted from the Ngoma Water Supply Project as well as the modern Kigina Health Centre in Kirehe that is serving over 10,000 people. This too is part of the Local Area Development Projects.

Irrigated agriculture under multi-purpose projects such as the Bugesera Transboundary Integrated Water Resources Management Project will reduce the country's reliance on rain-fed agriculture and help build more robust food production systems. At the same time, some communities will gain access to clean and safe water for domestic use and livestock.

Investments in watersheds and wetlands are key to maintaining vital multiple ecosystem goods and services such as water supply, unique biodiversity habitat, flooding control, drought buffering, and diverse livelihood support such as tourism, fishing, and livestock farming. These make the restoration and conservation of watersheds and wetlands critical in overall Integrated

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Integrated Management of Transboundary Water Resources of Lakes Cyohoha, Rweru and Akanyaru Marshland Project (2010 – 2012)		
» Two hydro meteorological stations operational » Training of local actors	Population of the sub-basin 21,000 farmers	Completed / Operational
Kagera River Basin Management		
» 15 rainwater harvesting tanks for 15 schools in Nyagatare » Implemented agro-forestry projects in Kirehe, Nyamagabe and Gicumbi districts » Facilitated LVEMP II preparatory activities » Supported updating of national water policies » Supported formulation of terms of reference for preparing the National Water Resources Master Plan » Kagera Cooperative Framework Arrangements » Kagera Monograph and Information Database » Kagera Capacity Building Plan, Training and Study Tour Reports » Kagera Gender Mainstreaming Strategy and Gender Action Plan » Kagera Stakeholder Participation Plan » Kagera Basin Development Plan and Water Allocation Model	Population of the sub-basin	Completed
Bugesera Transboundary Integrated Water Resources Management		
» About 2,000 ha of irrigated land set up with hillside irrigation techniques and effective marshland management » More than 6,500 farmers with improved capacities on improved seeds, dairy cows and post-harvest infrastructure	Population of Akanyaru marshland, the Lakes Cyohoha and Rweru and watersheds shared by Rwanda and Burundi	Completed
Rwanda (Shango) – Uganda (Mbarara) Power Interconnection		
» 172 km 220 kV power transmission line	Population of Rwanda	Completed
The Rwanda (Gisenyi) - DR Congo (Goma) Power Interconnection		
» 12 km 220 kV line	Population of Rwanda	Completed

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Rwanda (Gisenyi – Kibuye - Shango) - DR Congo (Buhandahanda – Goma) - Power Transmission Line		
» The transmission line is composed of the 95-km-long, 220 kV Goma–Bukavu line, an extension of the completed 12 km Gisenyi-Goma OHTL	Population of Rwanda	Ongoing
Rwanda (Gisenyi) - DR Congo (Goma) Power Interconnection (200 km 220 kV overhead transmission line (OHTL)		
» The transmission line has contributed to increased power supply security in the region to the benefit of households, industry, and small- and medium-sized enterprises which have gained access to cheaper, more reliable and sustainable electricity contributed to the implementation of the regional power market and poverty reduction efforts	Population of Rwanda	Completed Successfully and operational since 2016
Rwanda (Shango) - Uganda (Mbarara) power interconnection through 172 km at 220 kV and synchronisation and Installations at Shango sub-station		
» Strengthening the interconnections between NEL countries » Promoting trade in energy and power » Rwanda received 16 million kWh of electricity in November and December 2023 through this line	Population of Rwanda	Lines and sub-stations completed in Feb 2020 syncronization completed in 2023 and has been commissioned into operation
Power sub-stations		
» Kigoma, Shango, Rubavu, Gisagara	Population of Rwanda	Ongoing
Rwanda (Kigoma) - Burundi (Gitega) Transmission Line - Interconnection of Electric Grids of the Nile Equatorial Lakes Countries Project		
» New 143 km 110 kV line » Strengthening the interconnections between NEL countries » Promoting trade in energy and power	Population of Rwanda	Design work ongoing
Akanyaru Multi-Purpose Water Resources Development		
» Expand irrigation by 3,969 ha in Rwanda » Generation of 14.5 MW hydropower » 333 million cubic metres of water for irrigation	» Provision of food for about 124,740 people » Supply of electricity to the population of Rwanda » Supply of water to 75, 535 people	Under resource mobilisation and prioritised as a pipeline project under the Africa Water Facility.
Akanyaru River Small Hydro Power		
» 25 MW hydropower	Supply of electricity to the population of Rwanda	Identified
Muvumba Multi-Purpose Water Resources Development		
» Expanded Irrigation of 12 Ha » 15 masonry water tanks in Nyagatare schools to harvest water from rooftops		Prepared by NELSAP-CU. The project is under construction by country.
Regional Rusumo Falls Hydroelectric Dam		
27 MW from the project. Between November and March 2024, Rwanda received 21 million KWh of energy from the project to its grid. A USD 10 million Local Area Development Project (LADP) enabled the construction of the modern Kigina Health Centre in Kirehe District and a water supply system in four villages in Ngoma District. Other benefits are » Job opportunities created for the youth » 30 km of feeder roads in Kirehe District rehabilitated » 28.7 kms of roads constructed in Ngoma District » 954 km feeder roads constructed in Kigabiro-Rurenge-Gatore	» Power to the population of Rwanda » Water supply to 12,000 people in Ngoma District » Water pipeline supplying 10,500 people in Gatonde-Gahima cells » 10,000 people in Kirehe District receiving quality Healthcare » Quality Roads for the populations of Ngoma District	Completed and operational
Nsongezi Hydropower Project between Rwanda, Tanzania and Uganda		
» Generation of 48 MW	Population of Rwanda	Feasibility

Photo: NBI

Shango power sub-station in Rwanda

Water Resources Management (IWRM) and climate change resilience building in the Nile Basin.

Water Resources Planning and Management

Benefits to Rwanda include capacity building in IWRM, intended to close the water resources knowledge gap among countries. This will leverage the capacity of Rwandans to jointly manage and develop shared water resources in a more sustainable manner and with a transboundary orientation. These issues are addressed through exchange visits, workshops, appreciation seminars, short courses, post-graduate training as well as research and studies at regional and national levels.

Rwanda also benefits from an array of scientific knowledge products, policies, strategies, and guidelines, as well as analyses and tools that support informed decision making for optimal joint utilization and sustainable management of the common water and related natural resources.

Furthermore, Rwanda has used the Nile Basin Decision Support System (NB DSS) to quantify the amount of water available for use within the Muvumba catchment, to allocate water to different uses (irrigation, hydropower, and domestic supply), to optimise production, and to evaluate the overall impact of development projects on downstream catchments. Other uses have been modelling of the Sebeya dam. Using the tool for flood control in the Sebeya River catchment greatly assisted the country in reservoir operation and flood plain control, in the identification of the location of the reservoir, in the assessment of the social, economic, and ecological impact of the reservoir on the surrounding environment and population, and in avoiding repeated damages due to flooding.

In addition, transboundary dimensions have been strengthened in the country's national water policy following technical assistance provided by NBI. Rwanda has also benefitted from the rehabilitation and installation of two hydro-meteorological stations in Lakes Cyohoha, Rweru, and Akanyaru.

Six hydrological monitoring stations were upgraded to state-of-the-art technology as part of the first-ever Nile Basin Regional Hydrological Monitoring System. Five were rehabilitated and

« Six hydrological monitoring stations were upgraded to state-of-the-art technology as part of the Nile Basin Regional Hydrological Monitoring System. »

Photo: NBI

Inside Ngoma Water Project Pumping Station in Rwanda

one was newly installed (see Annex 2 on page 85). The system significantly contributes to promoting joint efforts towards enhanced planning, management, and development of the common water and related natural resources efficiently and sustainably.

The Economics of Ecosystems and Biodiversity (TEEB) study for Rweru/Bugesera transboundary wetlands generated knowledge on the value of wetland ecosystem services and will enable mainstreaming wetland ecosystems and associated biodiversity in sectoral planning.

Information from a pioneering study on peatlands, which are habitats for high carbon sequestration and storage crucial for climate change mitigation of the Nile Basin region, will help Rwanda in her efforts towards climate change mitigation and adaptation. The country can tap into this information and investment towards meeting its obligation under the Paris Agreement, Nationally Determined Contributions (NDCs), and other multilateral environmental agreements.

The Flood and Drought Risk Mitigation project (2022-2025) supports the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The project will support Rwanda's meteorological and hydrological services through the development of reliable and effective flash flood early warnings for the Nile Basin. It will increase local expertise and regional cooperation in flash flood management while improving disaster management.

The Water Quality Multi-Criteria Analysis project also under the NCCR supports Rwanda in identifying, discussing, and prioritizing potential water quality investments that can contribute to addressing challenges such as pollution in the Basin water systems. This project contributes to Goal No. 1 (Water Security) of NBI's Strategy (2017-2027).

A common platform

Rwanda uses the platform that NBI provides to engage, consult, and deliberate with its fellow Nile Basin countries on how to collectively take care of and use the common Nile Basin water resources for win-win benefits. This is through the various fora and platforms, which include regular governance meetings, regional expert working groups, annual Nile Day events, the triennial Nile Basin Development Forum, project steering committees, and multi-sector national-level consultations.

SOUTH SUDAN

South Sudan is located almost wholly within the River Nile Basin. The White Nile, as well as the Sudd, one of the world's largest tropical wetlands, are the main features of the country. They both provide critical ecosystem services, perform environmental functions, and support agricultural livelihoods. About 18% of the total Nile Basin area is in South Sudan.

Benefits from Nile Basin Cooperation

Investments for improved livelihoods

South Sudan is a member of both ENSAP and NELSAP, and as such benefits from projects prepared and supported by both Subsidiary Action Programmes.

As of June 2024, South Sudan was implementing 22 investment projects of transboundary significance. The projects are at various stages of development. Upon completion, these projects will contribute to South Sudan's water, energy, and food security, as well as environmental sustainability, ultimately contributing to national and regional development.

The projects include interconnection and power generation, which will increase access to reliable and affordable energy through cross-border power trade, reduced operational costs, and improved energy infrastructure planning.

Possibilities for integrating South Sudan into the regional grid include the Kenya-Uganda 400 kV line, Rwanda-Uganda 220 kV line, Uganda-DR Congo 220 kV line, Tanzania-Kenya 400 kV line, Burundi-Rwanda 220 kV line, Rwanda-DR Congo 220 kV line, Ethiopia-Kenya 500 kV line and Tanzania–Zambia 400 kV line (connecting to the Southern Africa Power Pool). When developed, technical studies indicate a tariff of USD 0.08/KWh, which is attractive compared to the South Sudan Electricity Company's (SSEC) average tariff of USD 0.22/KWh.

The various irrigation schemes will reduce the country's reliance on rain-fed agriculture and help build more robust food production systems. At the same time, the beneficiary communities will gain access to clean and safe water for domestic use and livestock.

South Sudan and the Nile Basin Initiative - Highlights
Joined NBI on 5th July 2012
Total country contribution to NBI, from 2012-June 2020: USD 1,086,092 (USD 274,151 in-cash; equivalent USD 819,274 in-kind)
CFA – Acceded on 1st August 2024

Investments in watersheds and wetlands are key to maintaining vital ecosystem goods and services such as water supply, unique biodiversity habitat, flood control, drought buffering, and diverse livelihood support such as tourism, fishing, and livestock farming. These make the restoration and conservation of watersheds and wetlands critical in overall integrated water resources management (IWRM) and climate resilience in the Nile Basin.

The first-ever Strategic Social and Environmental Assessment (SSEA) of the Baro-Akobo-Sobat provided an upstream analysis of the relatively pristine and undeveloped sub-basin to inform any future water resource development within pre-determined environmental and social limits.

An integrated water resources development and management plan has been prepared for the sub-basin and based on several short, medium and long-term investment plans prepared in both South Sudan and Ethiopia. The table below summarises the investment projects and benefits derived from their successful implementation.

Water Resources Planning and Management

Benefits to South Sudan include capacity building in Integrated Water Resources Management (IWRM) intended to close the water resources knowledge gap among countries. This will leverage the capacity of South Sudanese to jointly manage and develop the common water resources in a more sustainable manner and with a transboundary orientation. This issue is addressed through exchange visits, workshops, appreciation seminars, short courses, post-graduate training as well as research and studies at regional and national levels.

The country also benefits from an array of scientific knowledge products, policies, strategies, and guidelines as well as analyses and tools that support informed decision-making for optimal joint utilization and sustainable management of the common water and related natural resources.

South Sudan has applied the Nile Basin Decision Support System (NB DSS) in five cases: (a) Water for Eastern Equatoria project - Kinneti River water balance modelling; (b) Bahr el-Ghazal basin water resources management; (c) Jur River Water Resources Development; (d) Bahr el-Jebel water resources development; and (e) Groundwater availability and conjunctive use assessment in the Eastern Nile.

The Eastern Nile Flood Preparedness and Early Warning Project Phase 1 established the National Flood Forecasting Centre and completed flood risk mapping over 1,750 km². Phase II of the project focused on capacity development in flood risk management and national-level technical and

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Limur-Nyimur		
» Irrigation scheme of 1,150 ha net in South Sudan » 800 kW hydropower plant in the control dam (C) to supply the South Sudan side	Population of South Sudan	Feasibility done
Nyimur Multipurpose Water Resources Development		
» Irrigate 6,000 ha in the Aswa Basin	Population of Aswa basin	Prepared
South Sudan Bedden 496 HPP in the South Sudan		
» 540 MW of Hydropower from the Bahr El Jebel/Nile River	Population of South Sudan	Prepared
Lakki 524 HPP in the South Sudan		
» 410 MW of Hydropower in the Bahr El Jebel/Nile River	Population of South Sudan	Prepared
Shukoli HPP in the South Sudan		
» 235 MW Bahr El Jebel/Nile River	Population of South Sudan	Prepared
South Sudan (Juba) - Uganda (Karuma) Power Transmission interconnection		
» 320 km of 400 kV overhead transmission line (OHTL)	Population of South Sudan	Prepared
Aweil Irrigation Development and Watershed Management		
» Irrigate 17,876 ha in Bahl el Ghazal region in the north-western part of South Sudan	Population of Bahl el Ghazal region	Identified
Jebel Lado Irrigation Development and Watershed Management		
» Irrigate 3,159 ha in the State of Central Equatoria	Population of State of Central Equatoria	Identified
Pagarau Irrigation Development and Watershed Management		
» Irrigate 13,832 ha in the Lakes state, in central South Sudan	Population of Lake State	Identified

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Integrated Fisheries Management of Jebel Awhia Dam Reservoir		
» Use the 629 km reservoir to enhance fisheries production in the two countries	Population of South Sudan and Sudan	Identified
Investment Programme for Sustainable Management & Utilization of the Sudd at a Transboundary level		
	Population of the Sudd Wetlands	Identified
Renk – Malakal transmission line in South Sudan		
» 220 kV of 320 km + 3 sub-stations	Population of South Sudan	Identified
South Sudan (Juba)- South Sudan (Bor) Power TL		
» 400 kV of 151 km segment of Juba - Malakal	Population of South Sudan	Identified
South Sudan (Juba)- South Sudan (Bor) Power TL		
» 400 kV of 366 km segment of Juba - Malakal (Single circuit)	Population of South Sudan	Identified
Malakal – Bentiu transmission line in South Sudan		
» 220 kV of 222 km	Population of South Sudan	Identified
Bedden HPP – Juba Power Transmission Line in South Sudan		
» 220 kV of 37 km transmission line	Population of South Sudan	Identified
Lakki HPP – Juba Power Transmission Line in South Sudan		
» 220 kV of 100 km	Population of South Sudan	Identified
Shukoli HPP - Collector substation TL		
» 220 kV of 80 km	Population of South Sudan	Identified
Ethiopia (Gambella) – South Sudan (Malakal) Power TL (Phase 1)		
» 230 kV of 357 km	Population of South Sudan	Identified
South Sudan (Bor) - Ethiopia (Tepi) Power transmission (Phase 2),		
» 400 kV of 441 km	Population of South Sudan	Identified
South Sudan (Torit–Kapoeta)- Kenya (Lokichogio)		
» 220 kV of 352km segment of South Sudan-Kenya	Population of South Sudan	Identified
South Sudan Juba – Torit Power transmission in South Sudan		
» 220 kV of 128 km » Irrigation scheme of 1,150 ha net in South Sudan » 800 kW hydropower plant in the control dam (C) to supply the South Sudan side	Population of South Sudan	Identified

institutional strengthening, including through the provision of equipment and training. A Flood Season bulletin is issued to the national centres and relevant authorities during the three-month flood season forecasting and early warning, enhancing preparedness. An enhanced EN-FFEWS system was developed and is operational (https://entroffews-dev.westeurope.cloudapp.azure.com/).

South Sudan has also benefitted from the technical support provided by NBI to review its water policy and include transboundary dimensions. This has been through dedicated capacity building, training of selected staff, and sharing of the compendium of good practices and policies in transboundary water resources policy.

Five regional hydrological stations were established and upgraded to state-of-the-art technology under the Nile Basin Regional Hydrological Monitoring System (2019 – July 2021) (see Annex 2 on page 85). The project also established the Nile Basin Regional Hydrological Monitoring System, the first of its kind in the region, laying the foundation for information exchange. The System forms a cornerstone for Nile cooperation, building trust for joint water resources management and planning in the Basin.

The Economics of Ecosystems and Biodiversity (TEEB) studies for the Sudd as well as Marchar transboundary wetlands generated knowledge on the value of wetland ecosystem services and will enable mainstreaming of wetland ecosystems and associated biodiversity in sectoral planning. These case studies feed into a basin-wide process to better understand the role and value of wetlands for the river system and the people who depend on it.

Information from a pioneering study on peatlands, which are habitats for high carbon sequestration and storage crucial for climate change mitigation of the Nile Basin region, will help South Sudan in her efforts towards climate change mitigation and adaptation. The

Photo: NBI

Lamin Barrow (L), Africa Development Bank's then Resident Representative to Ethiopia and Dr Yosif Ibrahim (R) former Officer-In-Charge at ENTRO, upon signing a USD 3.5 million grant agreement for Baro-Akobo-Sobat (BAS) Multi-purpose Water Resources Development Study Project in May 2013

country can tap into this information and investment towards meeting its obligation under the Paris Agreement, Nationally Determined Contributions (NDCs), and other multilateral environmental agreements.

The Flood and Drought Risk Mitigation project (2022-2025) supports the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The project will support South Sudan's meteorological and hydrological services by developing of reliable and effective flash flood early warnings for the Nile Basin. It will increase local expertise and regional cooperation in flash flood management while improving disaster management. On the other hand, the Water Quality Multi-Criteria Analysis project, also under the NCCR supports South Sudan in identifying, discussing, and prioritizing potential water quality investments that can contribute to addressing challenges such as pollution in the Basin water systems. This project contributes to Goal No. 1 (Water Security) of NBI's Strategy (2017-2027).

A common platform

Like the rest of the NBI Member States, South Sudan benefits from the platform that NBI provides to engage, consult and deliberate with its fellow Nile Basin countries on how to collectively take care of and use the common Nile Basin water resources for win-win benefits. This is possible through the various fora, which include regular governance meetings, project steering committees, regional expert working groups, annual Nile Day events, the triennial Nile Basin Development Forum, multi-sector national-level consultations, and capacity building.

A case in point of the latter is the internship programme implemented by ENTRO, aimed at improving young water resources professionals' technical capacities in multiple thematic areas, which have relevance for transboundary water management and cooperation. Since 2011 when the Programme started, 21% of the 216 interns have been from South Sudan.

SUDAN

Sudan in general is a flat plain that is predominantly desert (56%) in the north of Khartoum. The Nile, running through the country from south to north, more so its three main tributaries (the Blue and White Niles and Atbara River) has by and large shaped the settlement pattern and agricultural production of the country. The river provides about 77% of Sudan's fresh water. Khartoum, Sudan's capital city, is where the White Nile and the Blue Nile converge to form the main Nile. Approximately 45.6% of the total Nile Basin area is in Sudan.

Background

Sudan was part of all earlier efforts towards Nile cooperation, starting with one of the early regional projects, the HydroMet, which was established in 1967 to conduct joint hydro-meteorological surveys on the Nile in the wake of flooding disasters earlier in the decade.

Sudan and the Nile Basin Initiative - Highlights
Founding Member of NBI on 22nd February 1999
Total country contribution to NBI, from 2000-June 2020: is USD 9,821,629 (USD 3,715,585 in cash; equivalent of USD 6,444,474 in-kind)
Hosted the Nile Transboundary Environment Action Project (NTEAP) in Khartoum (October 2003 – December 2009)
Hosted Regional Nile Day events of 2015 and 2020 in Khartoum
Hosted the 2nd Nile Development Forum (NBDF) in Khartoum in 2008
Participated in all CFA negotiations; non-signatory because the decision to sign was taken by majority rather than agreed upon by consensus procedure, which was followed throughout the process.
Froze participation in NBI in 2010 due to CFA signing
Resumed participation in NBI unconditionally in 2012

The country then joined Undugu (meaning 'brotherhood' in Kiswahili), which was established in 1983 to consider regional economic development and was later part of the Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Basin (TECCONILE), which ran from 1993 to 1999. One of the objectives of TECCONILE was to promote the development, conservation, and use of the Nile Basin water resources in an integrated and sustainable manner through Basin-wide cooperation for the benefit of all. TECCONILE identified 22 projects for technical assistance and capacity building as part of a Basin-wide action plan for the development and use of the Nile waters.

Benefits from Nile Basin Cooperation

Investments for improved livelihoods

Fully commissioned at the end of 2013, the Ethiopia (Bahir Dar) - Sudan (Gadaref) Power Transmission Interconnector (157 km in Sudan) has enabled 300 MW of power trade between the two countries, enabling nearly 1.4 million households in both countries to access reliable electricity.

Apart from improved reliability of supply, Sudanese consumers have gained from lower tariffs of US$ 0.05 per kWh for imported electricity compared to USD 0.096 per kWh from thermal power generated domestically. Improvements in reliability and security of supply (due to the complementary nature of the power generation systems of the two countries) have enabled the lighting of schools and homes, better access to social services, and greater opportunities for business development.

Sudan fully supported and participated in the landmark Eastern Nile Joint Multi-Purpose (JMP) Study, which identified the Abbay/Blue Nile sub-basin as most suitable for joint large-scale transformational multi-purpose win-win sub-basin cooperation in infrastructure development among the three countries (Egypt, Ethiopia, and Sudan).

Even though the JMP did not result in implementable projects as initially envisaged, the study yielded two useful working papers: Paper 1 Environmental and Social Perspectives on Blue Nile Multipurpose Development, and Paper 2 Strategic Options Assessment for Blue Nile Multipurpose Development.

These studies have become the foundation for the ongoing Eastern Nile Dam Safety and Coordinated Operation of Dam Cascades studies, critical for ensuring the safe and optimal operation of over 30 large dams (>15 meters height or >3 million cubic meters storage capacity) located across stretches of the Eastern Nile in the three countries.

The Eastern Nile Power Trade Studies proposed the Eastern Nile Regional Transmission Line, connecting the grids across Ethiopia-Sudan (Rabak)-Egypt (Nage Hamadi). This line has the potential to enable further power trade that promises optimization of production, power trade, and cost reduction. The first phase of the line - 500 KVA from GERD to Roseries (120 km) - was studied by the Government of Sudan and is only awaiting financing for implementation.

Food security is another benefit of Nile cooperation for Sudan. Apart from enhanced shared understanding and commitment between Sudan and Ethiopia about the watershed problems

INVESTMENT PROJECT BENEFITS	STATUS
Integrated Development of Eastern Nile (IDEN) Projects	
Eastern Nile Irrigation and Drainage Studies (ENIDs)	Feasibility study completed for Ethiopia and Sudan
Eastern Nile Watershed Management Project (ENWM)	Study completed and operational
Eastern Nile Power Trade Project (ENPT)	Study completed
Ethiopia-Sudan Interconnection	Operational
Post-IDEN Investment projects	
Restoration of Kerib land along the Upper Atbara River	Project preparation completed
Water Harvesting in the Gash Delta, Kassala	Project preparation completed

INVESTMENT PROJECTS AT IDENTIFICATION STAGE
Energy Sharing Arrangements in the Eastern Nile Basin
Coordinated Operations of Water Infrastructure
Promoting Efficient Irrigated Agriculture
Watershed Management for Climate Resilience
Environmental and Social Assessments and Safeguards
Water Re-Use and Salinity Management
Water Quality and Sediment Management
Improved Groundwater Use, Monitoring and Management
Enhanced Climate Change Adaptation Capability
Coordination and Phasing of Win-Win ENB Development Packages
Ethiopia GERD – Sudan power interconnection: 580 km length; 16 in Ethiopia, 564km in Sudan
Integrated fisheries and water resources management between South Sudan and Sudan
Jebel Aulia Dam and Renk Malakal

affecting the two countries, the Eastern Nile Watershed Management (ENWSM) project enabled joint action. Projects were implemented in Dinder, Ingasena, Lower At-bara, and Lau benefitting 65,000 people. Prepared from both bio-physical and livelihood improvement perspectives, and implemented on 60,000 ha, the project resulted in the rehabilitation of 27,000 ha of degraded agricultural land. As a result, farm yields for dominant crops have shown significant improvement, with sorghum increasing from a baseline of 519 kg/ha to 1,249 kg/ha in Dinder and from 1,249 kg/ha to 3,391kg/ha in Atbara. Similarly, sesame yields increased from 202 kg/ha to 336 kg/ha in Dinder, and white bean yields from 887 kg/ha to 2,480 kg/ha in Lower Atbara. More than 300 km of livestock routes have been mapped, demarcated, and opened for pastoralists, thus reducing cattle transit conflicts. More than 5,010 ha of rangeland were reseeded with nutritious and soil rehabilitating varieties of fodder. Fodder production has been initiated in 24 villages. A new round of investment projects will benefit 185,000 people in Tilkuk and 120,000 in Atbara.

The Eastern Nile Irrigation and Drainage Studies project supports the development and expansion of irrigated agriculture while strengthening the productivity of existing small- and large-scale agriculture through improved agricultural water use. At least 50,000 people will benefit from 7,600 ha (plus 107,000 ha in other areas) under the Wad Meskin irrigation project.

The Nile Basin Initiative facilitated the restoration of watersheds in Sudan. It rehabilitated 27,000 ha of degraded agricultural land which resulted in significant improvement in yields. Sorghum yields increased from a baseline of 519 kg/ha to 1,249 kg/ha in Dinder and from 1,249 kg/ha to 3,391 kg/ha in Atbara. Similarly, sesame yields increased from 202 kg/ha to 336 kg/ha (73%) in Dinder and white bean yields from 887 kg/ha to 2,480 kg/ha (143%) in Lower Atbara. Over 300 km of livestock routes were mapped, demarcated and opened for pastoralists, reducing cattle transit conflicts. Over 5,000 ha of rangeland were reseeded with nutritious and soil-rehabilitating varieties of fodder in 24 villages.

Specific benefits for Sudan include the following:

- During implementation, approximately 10 to 15 tons of forest seeds were collected annually from natural woodlands using locally employed casual labour and staff from the Forest National Corporation (FNC) for seedling production..
- More than 200,000 seedlings produced annually by the communities are used during different reforestation activities.
- Almost 400 ha of community forests or woodlots were rehabilitated.
- Over 400ha of communal forest was rehabilitated and as a result sheet soil erosion was minimised.
- Over 12,000 ha of open rangeland rehabilitated.
- An area of 2,000 ha of communal village grazing land was established.
- A total of 43,718 ha has been put under improved sustainable land and water management systems: including agriculture (19,710 ha), rangeland (17,828 ha), and forestlands (6,180 ha).
- Over 18,000 households adopted improved crop and land husbandry. In addition, about 8110 ha were treated with different SWC techniques.
- The average sorghum yield for participating farmers in Dinder increased by 116% and by 146% in Atbara.
- An estimated 18,133 households adopted new agricultural practices. These include 15,468 for improved crop seeds and crop land husbandry, 2,080 for improved fruit tree seedlings, while 585 benefited from improved animal production practices.
- About 28 business groups with 483 members were organized, trained and engaged in beekeeping and honey production.

Water Resources Planning and Management

The Nile Basin Initiative facilitated knowledge-based transboundary water resources management in Sudan. The Eastern Nile Flood Preparedness and Early Warning (EN-FFEWS) Project established a National Flood Forecasting Centre and completed flood risk mapping of more than 1,750 km2. At least 50,000 people benefit directly and another 500,000 indirectly from these project interventions including people from 107 flood-prone communities.

NBI developed capacity in flood risk management at the national level, including technical and institutional strengthening by providing equipment and training. Effective 2017, flood bulletins have been issued to National centres as well as relevant authorities. The country's capacity in forecasting and early warning preparedness was enhanced. The EN-FFEWS is operational (https://nilebasin.org/content/en-flood-forecasting-and-early-warning-system).

NBI identified 13 hydrological monitoring stations for upgrading to state-of-the-art technology (see Annex 2 on page 85). However, due to the civil crisis in Sudan, only two stations were established. The Nile Basin Regional Hydrological Monitoring System lays the foundation for information generation and exchange. As such, it forms a cornerstone for Nile cooperation, building trust for joint water resources management and planning in the Basin.

Sudan benefits from scientific knowledge products, policies, strategies, guidelines, and frameworks as well

Photo: NBI

Ethiopia-Sudan power transmission interconnection

as analyses and tools. This supports informed decision-making for joint optimal utilisation and sustainable management of the common water and related natural resources. Cases in point specific to Sudan include the following:

The Nile Basin Decision Support System provides a planning framework for water resources, including water storage, hydropower planning, and water for irrigation and industries. Sundanese experts have been utilizing the Decision Support System on tasks associated with operational flood forecasting in Abbay/Upper Blue Nile sub-basins and watershed management.
Sudan directly benefits from eflow studies as some of the pilot sites are located in the country. River Dinder and the marker species of plants and animals as well as the level of ecosystem functioning desired were estimated. This is particularly useful for the management of the Dinder National Park.

Sudan will also benefit from implementing the dam safety guidelines and the recommendations from the Eastern Nile Coordinated Operation of Dam Cascade Study, which is critical for the safe, efficient and synergized management of water infrastructure in Sudan and Ethiopia and across Egypt.

The Flood and Drought Risk Mitigation interventions facilitate the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The project on flash floods supports Sudan's meteorological and hydrological services by developing of reliable and effective flash flood early warnings for the Nile Basin. The project strengthens the capacity of local expertise and regional cooperation in flash flood management while improving disaster management.

The water quality interventions support Sudan in identifying, discussing and prioritising potential investments that contribute to

Photo: NBI

The then Sudanese Foreign Affairs Minister, Hon Asma Mohamad Abdalla, launches an exhibition during the Nile Day regional celebration in 2020 in Khartoum

improving the Basin water systems.

A common platform

Sudan supports and benefits from the platform for Cooperation in various ways. These include the following: Governance meetings, project steering/oversight meetings and technical working group meetings, the triennial Nile Basin Development Forums, and the annual regional/ national Nile Day commemorations.

Sudan also benefits from the capacity building of its nationals through scholarships, internships, media training, negotiations training, project planning and management, integrated water resources management (IWRM), decision support systems (DSS), and expert working group consultations on studies. Some of the studies are the five-year Nile River State of the Basin (SoB) report, wetland studies, dam cascade coordination, watershed management, SSEA/ environmental and social safeguards and policies, and upstream investment studies such as MSIOA. NBI has also organized knowledge-exchange study visits to other river basin organisations. More than 10,600 Sudanese have been engaged through the various stakeholder platforms.

Regarding capacity building, 2,510 Sudanese have benefitted from short-term training opportunities in water resources planning and management. For example, in the Eastern Nile Subsidiary Action Programme, 286 Sudanese participated in 32 training Programmes between 2016 and 2019. In the same period, 182 Sudanese took part in 10 Flood Forum and Project Review workshops. Since the start of ENTRO's internship Programme in 2011, 63 of the 216 (29%) interns and young professionals recruited were Sudanese.

TANZANIA

The Nile Basin in Tanzania is part of the Lake Victoria sub-basin. The Nile Basin Initiative (NBI) was established in Dar es Salaam on 22 February 1999 by the Ministers responsible for water affairs. Approximately 3.8% of the total Nile Basin area lies within Tanzania.

Background

Tanzania joined the early efforts aimed at Nile Basin cooperation starting with the HydroMet project established in 1967 to conduct joint hydro-meteorological surveys on the Nile in the wake of flooding disasters earlier in the decade. The country did not participate in Undugu (meaning 'brotherhood' in Kiswahili), established in 1983 to consider regional cultural and socioeconomic development. Tanzania joined the Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Basin (TECCONILE) which ran from 1993 to 1999. One of the objectives of TECCONILE was to promote the development, conservation and use of the Nile Basin water resources in an integrated and sustainable manner through basin-wide cooperation for the benefit of all. TECCONILE identified 22 projects for technical assistance and capacity building as part of a basin-wide action plan for the development and use of the Nile waters.

Benefits from Nile Basin Cooperation

Investments for improved livelihoods

Twenty-five investment projects prepared under NBI will, upon completion, contribute to Tanzania's water, food and energy security, as well as environmental sustainability. At the same time, the projects will create employment opportunities to drive national development.

The projects prepared are at different stages of implementation,

Tanzania and the Nile Basin Initiative - Highlights
Founding member of NBI on 22nd February 1999
Hosted the inaugural Nile Council of Ministers meeting on 22nd February 1999 in Dar es Salaam
Total country contribution to NBI, from 2000-June 2020: USD 14,160,729 (USD 3,274,058 in-cash; equivalent USD 12,734,204 in-kind)
Hosted one SPV project the Regional Power Trade (Phases 1 and 2) from July 2004 to June 2011
Hosted NBI's 10th anniversary event in December 2009 and Regional Nile Day event of 2017 in Dar es Salaam
Signed the CFA on 14th May 2010; ratified it on 23th May 2016

Photo: NBI

Ngara Folk Development college in Ngara Tanzania

with some completed. They include interconnection and power generation initiatives, such as the completed (February 2024) 80MW Regional Rusumo Falls Hydro-electric Project. The Rusumo project will increase cross-border power trade and Tanzanians' access to reliable, affordable energy and reduced operational costs. The project will also improve the planning of energy infrastructure while fostering regional integration.

As part of the extended benefits from this project, the Local Area Development Project (LADP), constructed and equipped one vocational training center aimed at skilling the youth for formal and self-employment in rural communities. The Lamela Vocational Training Centre in Ngara focuses on skills such as masonry, building and construction works, welding, fabrication, and other metal works. Other courses are in tailoring and dressmaking, culinary arts, cookery and bread baking, as well as ICT and computer repairs and maintenance.

In addition to Lamela Vocational Training Center, more than 5,500 people in Ngara benefit from the Rusumo Water Supply Project, which produces over 220,000 cubic litres of water daily from the Kagera river.

The LAPD also constructed and

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Kagera and Mara River Basin Management		
» 24 HydroMet stations » 12 evaporation pans and automatic weather stations » 6 standard rain gauges » 6 lake water level recorder stations,	Population of the Kagera River basin	Completed / operational
Bisarwi Smallholder Irrigation Scheme		
» Constructed a 50,000m^3 capacity storage earth dam in Bisarwi village Tarime District, Mara river basin. » 500ha irrigation area	Population of Barsawi village	Completed / operational
Installation of Hydro-Meteorological Equipment		
» 4 automatic weather stations have been installed at Buhemba Agriculture Centre, » Mugumu, Kuruya and Nyabusara Primary Schools » 4 automatic water level recorders in Mara river at Kirumi bridge, Mara mine, » Nyansurura bridge, and Kogatende » 5 standard rain gauge tipping buckets installed	Population of the Mara River basin	Completed / operational
Iringa – Mbeya Power Transmission Line		
» 292.2 km 400kV overhead transmission line (OHTL)	Population of Tanzania	Under implementation

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Kenya (Isinya) –Tanzania (Singida) Transmission		
» 414 km of overhead transmission line (OHTL) » Sub-stations in Arusha and Singida in Tanzania	Population of Tanzania	Under implementation
Tanzania(Mbeya)-Zambia (Kabwe) Interconnection		
» 392 km of 400/330kV overhead transmission line (OHTL) to connect Zambia-Tanzania-power grids	Population of Tanzania	Under implementation
Regional Rusumo Falls Hydroelectric		
» 27 MW 80 MW hydropower project. Between November 2023 and of January 2024, Tanzania received 21 million KWh of electricity from the project. » This infusion of energy is important in stabilising the grid network of the North and Northeastern regions of the country. » Tanzania is part of the 220 kV 372km 'Rusumo network'. The Rusumo network is shared between Burundi, Rwanda, and Tanzania. The 94 km Overhead Transmission Lines (OHTLs) for run from Rusumo to Nyakanazi » From November 3rd, 2023 to January 31st, 2024 the lines transmitted 66 million KWh energy. This network allows the three countries to trade in power beyond the Rusumo project. » USD 10 million Local Area Development Project (LADP) enabled the construction, rehabilitation and equipping of eight health facilities, several schools as well as vocational training in Ngara District. This is in addition to the construction of the 30km Rusumo water supply system	Power to the population 8,000 people supplied with clean water	Completed and commissioned
Kagera River Basin Management Catchment		
» Of 11,681ha potential for irrigation in Tanzania	20,000 people	Prepared
Borenga Multipurpose Water Resources Development		
» 15.8 MCM dam capacity water supply to 30 villages » Irrigation of 8,340 ha » Generation of 2.85 MW of electricity	500,000 people in Nyamongo	Prepared
Mara Valley and Water Resources Multi-Purpose		
» Borenga Dam to irrigate 13,630 ha and supply water to 13 villages for irrigation, » 17 villages with water supply for domestic use	10,000 people will benefit from the Mara Valley site	Prepared
Ngono Water Resources Multi-Purpose		
» Irrigation of 6,340 ha covering 21 villages	20,000 people will benefit directly from the Ngono infrastructure	Prepared
Mugozi Multipurpose Water Resources Development		
» 3,000 ha irrigated » MW of power generated » Water supply	50,000 people) in Ngara District	Identified
Buligi Valley (Ikaki) Irrigation & Water Supply Deployment		
» 5,000 ha irrigated » Water supply	Population of Muleba District	Identified
Omwibale Multipurpose Water Supply		
» Water supply Irrigation of 500 ha pilot scheme » Livestock watering	5,000 people from Karagwe District	Identified
Nshanje irrigation		
» Irrigation of 1,600 ha » Water supply	Population of Muleba District	Identified
Muhongo valley irrigation		
» Irrigation of 1,500 ha » Water supply in Ngara District	Population of Ngara District	Identified
Kafunzo irrigation		
» Irrigation of 1,500 ha » Water supply	Population of Missenyi District	Identified

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Kishoju irrigation		
» Irrigation of 1,000 ha » Water supply	Population of Karagwe District	Identified
Mugango Multipurpose Storage Reservoir Development		
» Hydropower 1.2 MW » Irrigation of 1,000 ha in Upper Mara sub-basin on Nyangores River	Population of upper Mara	Identified
Nyakunguru Irrigation Development and Watershed Management		
» Irrigation of 625 ha in the Lower Mara sub-basin	Population of Lower Mara River	Identified
Mesaga Irrigation Development and Watershed Management		
» Irrigation of 450 ha in the Lower Mara sub-basin	Population of the Lower Mara Sub-basin	Identified
Biswari Irrigation Development and Watershed Management		
» Irrigation of 400 ha in the Lower Mara sub-basin	The population of the Lower Mara sub-basin	Identified
Bugwema Irrigation		
» 2,030 ha land for irrigation	To benefit 4,530 people	Identified
Nsongezi Hydropower Project between Rwanda, Tanzania, and Uganda. Uganda 48 MW shared		
» 16 MW for Tanzania	Population of Tanzania	Feasibility

Photo: NBI

Dr. Emil Ngosha, the anesthetic doctor in charge of the Neonatal Health Care Unit of the Rusumo Health Centre

rehabilitated three health centers namely Rusumo, Kyenda, and Lukole in Ngara, bringing quality health services closer to the people. The services include a surgery theatre, maternity ward, neonatal care centre with incubators for pre-term babies, pharmacy, laboratory, mortuary, administration block, and an outpatient department (OPD).

"Had this hospital (Lukole Health Centre) not been here with the required facilities, I feel my unborn baby and I would not have made it alive," said local resident Imani Ng'wale, who gave birth to a pre-term baby.

"Before NELSAP support, we could only take in about 700 outpatient visits per month, however by January 2024 we were handling about 1,300 outpatients. We began to offer surgery services in October 2023 and between October and January 2024, we have successfully done one hundred (100) surgeries. Further, we previously did not have a laboratory to do microbiology culture tests but now we have an equipped one, and through it we even offer kidney tests and blood transfusion services," said Dr. Fredrick Nyagusia, Medical Officer in charge of Lukole Health Centre. "In-patients increased from 55 per month in 2020 to 350 per month in 2024", he added.

Irrigation schemes and multi-purpose dams will reduce Tanzania's reliance on rain-fed agriculture and help build more robust food production systems. At the same time, Tanzanians will gain access to clean and safe water for domestic use and livestock.

Investments in watersheds and wetlands are key to maintaining vital ecosystem goods and services such as water supply, unique biodiversity habitat, flood control, drought buffering and livelihood support, such as tourism, fishing and livestock farming. These make the restoration and conservation of watersheds and wetlands critical in

Photo: NBI

Patients outside the theatre block at the Lukole Health Centre

integrated water resources management and climate resilience in the Nile Basin.

Water Resources Planning and Management

Benefits to Tanzania include capacity building in Integrated Water Resources Management (IWRM), which is intended to close the water resources knowledge gap among countries. This has leveraged the capacity of Tanzanians to jointly manage and develop the common water resources in a more sustainable manner and with a transboundary orientation. IWRM is addressed through exchange visits, workshops, appreciation seminars, short courses, post-graduate training, as well as research and studies at regional and national levels.

Tanzania also benefits from an array of scientific knowledge products, policies, strategies, and guidelines, as well as analyses and tools that support informed decision making for joint optimal utilization and sustainable management of the common water and related natural resources.

Among the tools, Tanzania has used the Nile Basin Decision Support System (NB DSS) to address specific national water resources issues and challenges. The NB DSS has been applied to three cases: (a) Assessment of water availability for competing users in the Ruvu sub-basin; (b) applying water allocation systems and Nile Basin Decision Support System to manage competing water users; and (c) Ngerengere sub-catchment.

Eight hydrological monitoring stations were upgraded to state-of-the-art technology under the Nile Basin Regional Hydrological Monitoring System (2019 – July 2021). Seven of these were rehabilitated while one was newly installed (see Annex 2 on page 85). NBI established the Nile Basin Regional Hydrological Monitoring System, the first of its kind in the region, laying the foundation for information exchange. The System forms a cornerstone for Nile cooperation, building trust for joint water resources management and planning in the Basin.

The country has been assisted in developing the Minziro transboundary wetland management plan between Tanzania and Uganda on River Kagera. This case study feeds into a basin-wide process to better understand the role and value of wetlands for the river system and the people who depend on it.

Furthermore, information from a pioneering study on peatlands, which are habitats for high carbon sequestration and storage crucial for climate change mitigation of the Nile Basin region will help Tanzania in her efforts towards climate change mitigation and adaptation. The country can tap into this information and investment towards meeting its obligation under the Paris Agreement and the Nationally Determined Contributions (NDCs), among other multilateral environmental agreements.

The Flood and Drought Risk Mitigation project (2022-2025) supports the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The project will support Tanzania's meteorological and hydrological services by developing reliable and effective flash flood early warnings for the Nile Basin. It will increase local expertise and regional cooperation in flash flood management while improving disaster management.

Also, under the NCCR project, the Water Quality Multi-Criteria Analysis supports Tanzania in identifying, discussing, and prioritizing potential water quality investments that can contribute to addressing challenges such as pollution in the Basin water systems. This project contributes to Goal No. 1 (Water Security) of NBI's Strategy (2017-2027).

A common platform

Tanzania, like the rest of the NBI Member States, uses the platform that NBI provides to engage, consult and deliberate with its fellow Nile Basin countries on how to collectively manage the common Nile Basin water resources for win-win benefits. This is possible through the various fora that include regular governance meetings, project steering committees, and regional expert working groups. Others are the annual Nile Day events, the triennial Nile Basin Development Forum, multi-sector national level consultations and media training.

UGANDA

Uganda has played a key role in the story of the River Nile ever since 1862, when the explorer John Hanning Speke found the spot at Ripon Falls where the river flows out of Lake Victoria, near the current day town of Jinja.

As the river meanders north and west from Lake Victoria, crashing through the magnificent Murchison Falls before turning north at Lake Albert, it serves multiple purposes. These include hydropower generation, transportation, fishing, agriculture and tourism. Approximately 7.7% of the total Nile Basin area lies within Uganda.

Background

Uganda was part of the HydroMet project, which was one of the early regional projects established in 1967 to conduct joint hydro-meteorological surveys on the Nile in the wake of flooding disasters earlier in the decade. In 1983, Uganda joined Undugu (meaning 'brotherhood' in Kiswahili), whose aim was to consider regional economic development.

Uganda was also a member of the Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Basin (TECCONILE), which ran from 1993 to 1999. One of the objectives of TECCONILE was to promote the development, conservation, and use of the Nile Basin water resources in an integrated and sustainable manner, through Basin-wide cooperation for the benefit of all. TECCONILE identified 22 projects for technical assistance and capacity building as part of a Basin-wide action plan for the development and use of the Nile waters.

Uganda and the Nile Basin Initiative – Highlights
Founding member of NBI on 22nd February 1999
Total country contribution to NBI, from 2000-June 2020: USD 14,382,165 (USD 3,377,966 in-cash; equivalent to USD 12,664,102 in-kind)
Hosts NBI headquarters, the Secretariat (1999 - to date)
Hosted two SPV projects - Confidence Building and Stakeholder Involvement (July 2004 - December 2009) and Social Economic Development and Benefit Sharing (June 2005 - June 2009)
Hosted the first Nile Basin Heads of State Summit in June 2017 in Entebbe
Hosted three Regional Nile Day events: 2010 (Kabale) 2012 (Jinja) and 2014 (Kampala)
Signed the CFA on 14th May 2010; ratified it on 15th August 2019
Hosted the 7th Nile Basin Development Forum, in October 2023, in Kampala - Uganda
Hosted the launch of the NBI 25th Anniversary Celebrations February 2024 in Entebbe

The country has hosted previous cooperation mechanisms on the Nile, namely the HydroMet (1967-1992) and TECCONILE (1992 – 1999).

Benefits from Nile Basin Cooperation

Investments for improved livelihoods

Twenty-six investment projects facilitated by NBI are at various stages of development. Upon completion, they will contribute to Uganda's water, energy, and food security, as well as environmental sustainability, ultimately contributing to national and regional development and integration.

The interconnection and power generation projects will increase Uganda's access to reliable and affordable energy as a result of cross-border power trade, reduced operational costs, and improved planning of energy infrastructure.

Irrigated agriculture under the various multi-purpose dams will lower Uganda's reliance on rain-fed agriculture and help build more robust food production systems. At the same time, Ugandans will gain access to a clean and safe water supply for domestic use and livestock.

«The interconnection and power generation projects will increase Uganda's access to reliable and affordable energy as a result of cross-border power trade, reduced operational costs, and improved planning of energy infrastructure.»

Investments in watersheds and wetlands are key to maintaining vital ecosystem goods and services such as water supply, unique biodiversity habitat, flood control, drought buffering, and support to diverse livelihoods support such as tourism, fishing, and livestock farming. These make the restoration and conservation of watersheds and wetlands critical in overall integrated water resources management and climate resilience building in the Nile Basin.

Water Resources Planning and Management

Besides the basin-wide benefits, specific gains for Uganda include capacity building for officials in Integrated Water Resources Management (IWRM) intended to close the water resources knowledge gap among countries, thus leveraging the capacity of Ugandans to jointly manage and develop the common water resources more sustainably and with a transboundary orientation. This issue is addressed through exchange visits, workshops, appreciation seminars, short courses, post-graduate training as well as research and studies at regional and national levels.

Uganda also benefits from the various scientific knowledge products, policies, strategies, and guidelines as well as analyses and tools that support informed decision-making for joint optimal utilization and sustainable management of the common water and

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Mella Water Supply and Sanitation		
» Water supply and sanitation	2,000 persons 4,500 livestock	Completed / operational
Busia Community Fish Ponds		
» Improved source by constructing seven community fish ponds		Completed
Lukhuna Gravity Fed Irrigation Demonstration Scheme in the Sio-Malaba-Malakisi basin (Manafwa)		
» Horticultural crop production through irrigation from a 12 km water transmission with intake structure and main lines; commissioned February 2015	500 people	Completed / operational
Rehabilitation of Hydro-Meteorological Network within the Sio-Malaba-Malakisi (SMM) Basin		
» 5 river gauging stations installed » 4 automatic weather stations installed » 19 rain gauges installed		Completed
Installation of Hydro-Meteorological Network within the Kagera River Basin		
» 5 automatic water level recorders installed » 4 automatic weather stations installed » 4 standard rain gauges installed	Population of Kagera River Basin in Uganda	Completed
Katuna Water Supply (Kabale)		
» Water supply and sanitation	10,000 people	Completed / operational

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Integrated Fisheries and Water Resources Management of Lakes Edward and Albert (LEAF) II		
» Harmonised fisheries policies » Cooperative framework for joint management of the lakes » Improved beach management Institutional framework for basin management » 4 surveillance boats delivered » A mobile laboratory delivered » Cooperative agreement for joint management signed » 5 modern integrated fish landing sites (Rukungiri, Dei, Rwenshama, Mahyoro, Kitabere, and Mbegu) were constructed on Lakes Edward and Albert.	400,000 persons (shared) (Source: PPR)	Completed
Uganda (Bujagali-Tororo) – Kenya (Lessos) 256 km (shared)		
» Power trade » Length 128 km for each country	Population of NBI countries	Implementation at 80%
Rwimi Irrigation Development and Watershed Management (Bunyangabu)		
» Irrigation of 4,000 ha		Prepared
Uganda (Masaka) - TZ (Mwanza) Power Transmission Interconnection		
» 640 km (shared) » Improved energy access » Cheap cross-border energy » Reduced tariffs	The population of Uganda on the electric grid	Prepared
Uganda (Nkenda - Beni) – DR Congo (Butembo – Bunia) Power Transmission Interconnection		
The transmission line, 220KV of 396 km of which 72.5 km is in Uganda. The interconnection and synchronization of the power Transmission Lines between Uganda and Rwanda was completed in June 2023 and the two countries began trading power in October 2023 through the 172 km 220kV Shango-Mbarara Interconnection. In November and December 2023, Uganda sold to Rwanda 16 million KWh of power earning about USD 1.5 million each month. The average registered power export to Rwanda is 27.1MW while the maximum exported is 37.6Mw.	Population of Uganda	Prepared
Kabuyanda Multipurpose Water Resources Development Project (Isingiro)		
» 5000 ha for irrigation » 0.16 MW of HEP of 7.8 million cubic metres reservoir	200,000	Under construction now through Government of Uganda
Nyimur/Limur Multi-Purpose Water Resources Development (4180 ha of irrigation; 1.2 MW)		
» Irrigation of 3,080 ha » Water supply	12,000 people	Prepared
Bigasha Multipurpose Water Resources Development		
» Irrigation of 500 ha » Water supply	118,000 people	» Prepared
Angololo Multi-Purpose Dam (capacity 44 MCM); 3,300 ha of irrigation; 1.75 MW of power (shared)		
» Irrigation of 2,120 ha » Employment » Agricultural production » 0.875 MW	63, 650 direct beneficiaries in Uganda	Completed
Preparation of Inland Waterway Sector on Lake Albert, Albert Nile, Bahr el Jebel River Basin, and Main Nile (Uganda-South Sudan-Sudan)		
» Waterway transport » Trade		Identified
Nsongezi HEP (Shared with Tanzania and Rwanda) 48 MW		
» 16 MW for Uganda	1,138,800 people in Uganda	Identified
Uganda (Olwiyo)-South Sudan (Juba) Power Transmission Interconnection		
» Improved energy access » Cross-border energy » Countries agreed on cooperation	320 km (shared)	Identified

INVESTMENT PROJECT BENEFITS	BENEFICIARIES	STATUS
Nyabanja Dam		
» Fish production US$ 8,330 per ha per yr » Water Surface Management 9,568 ha » Beekeeping US$ 15.35 per ha per Yr Dam with a capacity of 8.5 MCM	12,000 persons	Identified
Semliki Hydropower		
» 72 MW hydropower shared » Increased and reliable electric energy Increased energy trade » Increased access to electricity » Reduced electric energy cost » Reduced technical losses » Improved planning of energy infrastructure » Improved regional integration		Identified
Lirima Irrigation Development and Watershed (Manafwa)		
» Irrigation of 341 ha	5,154 people	Identified
Bukhabusi Irrigation Development and Watershed (Manafwa)		
» Irrigation of 480 ha	6,200 people	Identified
Nyamatunga Irrigation Development and Watershed (Tororo)		
» Dam of 2 MCM, » Irrigation of 412 ha	3,000 people	Identified
Busia Cross-Border Pollution Control		
» Pollution control » Stormwater drainage	37,842 people	Identified
Shared Lwakhakha, Lower Sio, Middle Malaba, and Middle Malakisi Sub-Catchment management plans		
» Farm production » Reduction in soil fertility loss » Increased incomes » Improved livelihoods	560,000 people	Identified
Shared Soono HEP 2 MW (Uganda and Kenya)		
» 1 MW to Uganda » Increased and reliable electric energy Increased energy trade » Increased access to electricity » Reduced electric energy costs » Reduced technical losses » Improved planning of energy infrastructure » Improved regional integration	Shared across Kenya and Uganda	Under pre-feasibility studies

related natural resources.

Among the tools, the Nile Basin Decision Support System (NB DSS) provided a framework for the management and development of the country's water and related resources by 2040.

In addition, the NB DSS has been applied to the following five cases: (a) development of catchment management plans for River Aswa and Albert Nile; (b) development and selection of alternative water supply sources for irrigation schemes; (c) development of the Katonga catchment management plan; (d) sustainable water use in the Edward-George basin - A case study of the Mubuku-Sebwe catchment; and (e) improved climate change resilience in Northern Uganda through water resource management, including for refugees and host communities.

Other country-specific benefits include technical support provided by the NBI to review Uganda's Water Policy to include transboundary dimensions. The support was through a review of the national water policies conducted as part of the Water Resources Planning and Management Project. This was followed by capacity development for relevant staff in transboundary water policy and on tools to support policy formulation and implementation. Basin-wide capabilities were enhanced, and convergence of the legal, regulatory, and policy frameworks of NBI countries on transboundary issues was realized.

Fifteen hydrological monitoring stations

have been integrated into the Nile Basin Regional Hydrological Monitoring System, the first of its kind in the Nile Basin. The System laid a foundation for information exchange. As such it forms a cornerstone for Nile cooperation, building trust for joint water resources management and planning in the Basin. Of the 15 stations, 14 were upgraded to state-of-the-art technology while one was newly installed (see Annex 2 on page 85).

Uganda and her neighbour Kenya have been supported in developing transboundary wetland management plans for the Sio-Siteko sub-basin. The Semliki transboundary wetland management plan was shared with DR Congo and the Minziro plan was shared with Tanzania. These will feed into a basin-wide process to better understand the role and value of wetlands for the river system and the people who depend on it.

In addition to The Economics of Ecosystems and Biodiversity (TEEB) studies for Sio-Siteko (Uganda and Kenya) as well as Semliki (Uganda and DR Congo) transboundary wetlands generated knowledge on the value of wetlands ecosystem services and will enable mainstreaming of wetland ecosystems and associated biodiversity in sectoral planning.

Furthermore, information from a pioneering study on peatlands, which are habitats for high carbon sequestration and storage crucial for climate change mitigation of the Nile Basin region, will help Uganda in her efforts towards climate change mitigation and adaptation. The country can tap into this information and investment towards meeting its obligation under the Paris Agreement, the Nationally Determined Contributions (NDCs), and other multilateral environmental agreements.

Photo: NBI

Hon. Cheptoris, the Nile-COM chair, launches the Albert Water Management Zonal Laboratory in Fort Portal, Uganda. The Laboratory was constructed through the LEAF project

The Flood and Drought Risk Mitigation project (2022-2025) supports the joint development of basin-wide flood and drought forecast models, information dissemination platforms, and capacity building for flood risk mitigation investment planning. The project will support Uganda's meteorological and hydrological services by developing of reliable and effective flash flood early warnings for the Nile Basin. It will increase local expertise and regional cooperation in flash flood management while improving disaster management.

The Water Quality Multi-Criteria Analysis under the NCCR project supports Uganda in identifying, discussing, and prioritizing potential water quality investments that can contribute to addressing challenges such as pollution in the Basin water systems. This project contributes to Goal No. 1 (Water Security) of NBI's Strategy (2017-2027).

A common platform

Uganda uses the platform that NBI provides to engage, consult, and deliberate with other Nile Basin countries on how to collectively take care of and use the common Nile Basin water resources for win-win benefits. This is possible through the various fora, which include regular governance meetings, project steering committees, regional expert working groups, the annual Nile Day events, the triennial Nile Basin Development Forum, multi-sector national level consultations, as well as media training.

CHAPTER 3

The Next 25 years: A shared vision for the River, for development, for peace

Over the next quarter century, Nile cooperation aspires to evolve into a robust, technology-driven, and inclusive framework that safeguards the river's health, supports sustainable development, and strengthens peaceful coexistence among riparian states.

STRONGER BASIN COOPERATION AND GOVERNANCE

A more capable and inclusive Nile Basin governance system will emerge, built on trust, confidence, and the shared recognition that cooperation is vital for the sustainability of the river's resources. Institutions will be equipped with the tools, policies, and enabling environments needed to manage shared waters effectively. Decision-making will be data-driven, transparent, and participatory, with greater engagement from women, youth and community based organisations. Strategic partnerships will be deepened to optimise the Basin's resources, supported by a Centre of Excellence

Photo: NBI/Agencies

for institutional service delivery. Transboundary governance will become the norm, driven by technological innovations and collaborative management approaches.

KNOWLEDGE-DRIVEN WATER RESOURCE MANAGEMENT

With growing infrastructure along the Nile, coordinated operations will reduce the impacts of floods and droughts, supported by advanced analytic tools such as the Decision Support System. The region will transition toward diversified, service-oriented economies, with improved resilience to climate change through strategic infrastructure investments. Trade in water, food, and livestock will expand both within and beyond the Nile Basin. Biodiversity hotspots, including endangered fauna and flora (plants and animals), will be safeguarded through targeted interventions. A basin-wide framework for coordinated water quality management will be operational, addressing pollution challenges at scale. Emerging technologies in artificial intelligence, earth observation, and advanced modelling, will enable more precise monitoring, assessment, and planning, complemented by cross-learning in best practices.

« With growing infrastructure along the Nile, coordinated operations will reduce the impacts of floods and droughts, supported by advanced analytic tools such as the Decision Support System. The region will transition toward diversified, service-oriented economies, with improved resilience to climate change through strategic infrastructure investments. »

INTEGRATED DEVELOPMENT FOR TANGIBLE BENEFITS

Nile cooperation will shift decisively from high-level planning to the accelerated delivery of transformative investment projects under the Nile Basin Management Plan and Nile Basin Investment Programme. These will generate tangible social, economic, and environmental benefits, from job creation and improved livelihoods to climate-resilient water infrastructure and equitable benefit-sharing across borders. Enhanced coordination among riparian states, development partners, and the private sector will unlock financing, ensure project readiness, and scale multi-country investments aligned with the SDGs, Agenda 2063 (the Africa we Want), and the Africa Water Vision.

A SHARED FUTURE

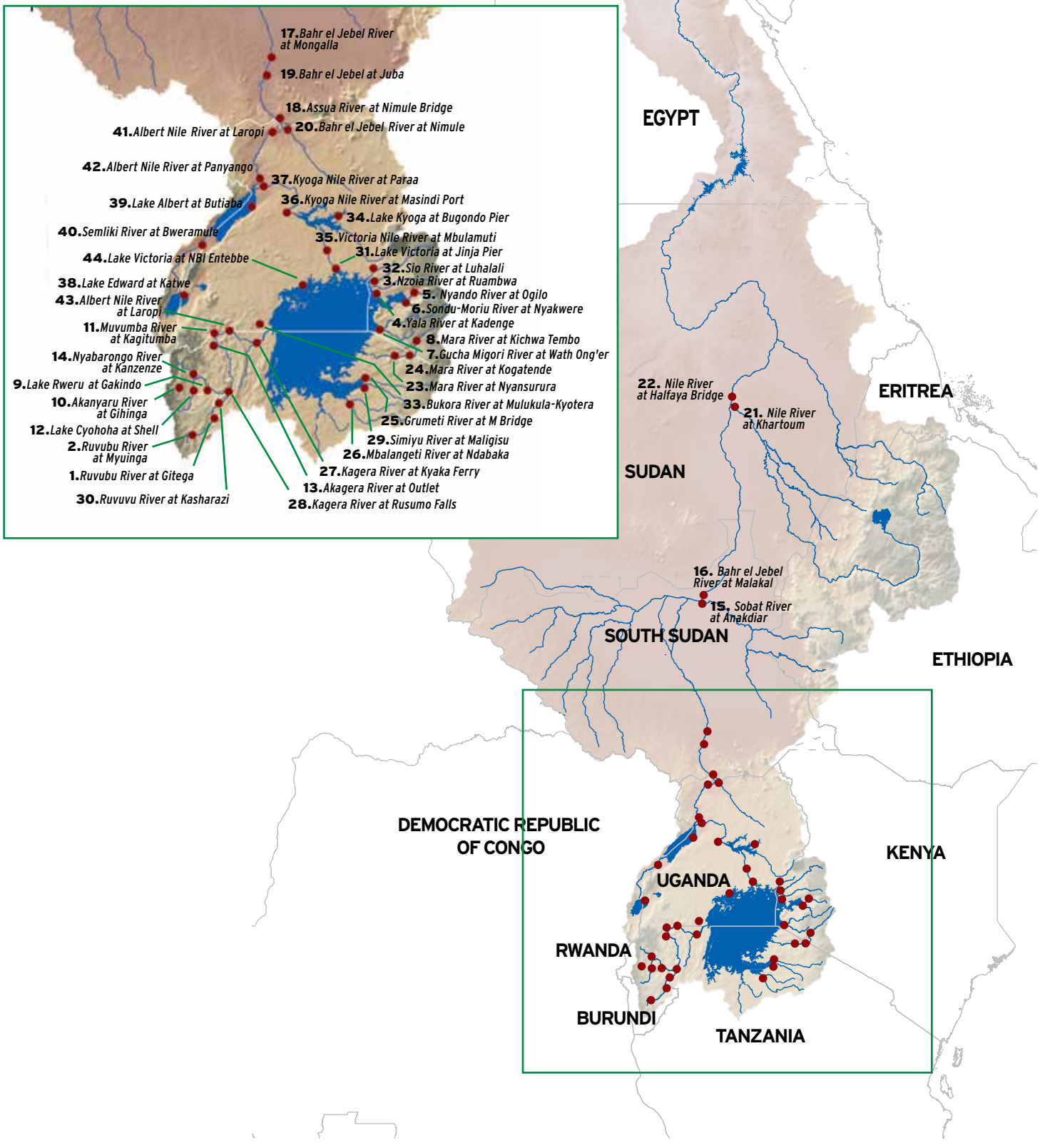
By 2050, the Nile Basin will stand as a global model of cooperative transboundary water management where knowledge, innovation, and trust converge to deliver prosperity, resilience, and sustainability for all who depend on the world's longest River.

ANNEX 1 - DEVELOPMENT IMPACTS OF NBI PROJECTS

TABLE 2: COMBINED IMPACT OF COMPLETED PROJECTS OR PROJECTS UNDER CONSTRUCTION			
INDICATOR/DESCRIPTION OF IMPACT	ENTRO APRIL 2022	NELSAP APRIL 2022	ALL OF NBI APRIL 2022
Population with access to safely managed drinking water		50,000 pax	50,000 pax
Population with access to safely managed sanitation facilities	0 pax	0 pax	0 pax
Installed hydropower generation capacity	0 MW	86 MW	86 MW
Length of new power transmission lines (all capacities)	230.5 km	5,210 km	5,440.5 km
Area equipped for agricultural irrigation	0ha	8,630 ha	8,630 ha
Area of planted forests	7,671 ha	0 ha	7,671 ha
Land area under sustainable management practices	299,888 ha	320 ha	300,208 ha
Conservation area under improved management	0 ha	41,500 ha	41,500 ha
Multipurpose water storage capacity	0 MCM	9 MCM	9 MCM
Number of new jobs created	0	5,200	5,200
Number of project beneficiaries	2,780,000	2,303,350	5,083,350
Length of Improved Waterway (km)	0 km	0 km	0 km

TABLE 3: COMBINED POTENTIAL IMPACT OF THE INVESTMENT PROJECTS AT IDENTIFICATION AND FEASIBILITY STAGE			
INDICATOR/DESCRIPTION OF IMPACT	ENTRO APRIL 2022	NELSAP APRIL 2022	ALL OF NBI APRIL 2022
Population with access to safely managed drinking water	101,450 pax	2,209,694 pax	2,311,144 pax
Population with access to safely managed sanitation facilities	30,500 pax	3,600 pax	34,100 pax
Installed hydropower generation capacity	4,474 MW	1,843 MW	6,317 MW
Length of new power transmission lines (all capacities)	2,460 km	6,637 km	9,097 km
Area equipped for agricultural irrigation	354,321 ha	366,975 ha	721,296 ha
Area of planted forests	0 ha	14,300 ha	14,300 ha
Land area under sustainable management practices	61,934,640 ha	311,098 ha	62,245,738 ha
Conservation area under improved management	17,123,460 ha	0 ha	17,123,460 ha
Multipurpose water storage capacity	51,715 MCM	1,043 MCM	52,758 MCM
Number of new jobs created	0 pax	9,720 pax	9,720 pax
Number of project beneficiaries	5,817,280 pax	18,114,920 pax	23,932,200 pax
Length of Improved Waterway (km)	500 km	2,350 km	2,850 km

Regional Hydrological Monitoring Network



ANNEX 3

SHARED VISION PROGRAMME PROJECTS

Nile Transboundary Environmental Action (NTEAP)	
Total Funding Mill. USD: 39.30 Starting date: October 2003 Closing Date: December 2009 Location of Project Management Unit: Khartoum, Sudan	**Objective** Provide a strategic framework for environmentally sustainable development of the R. Nile Basin and support Basin-wide environmental action linked to transboundary issues in the context of the NBI Strategic Action Programme
Regional Power Trade (RPT) - Phase I & 2	
Total Funding Mill. USD: 5.27 Starting date: July 2004 Closing Date: June 2011 Location of Project Management Unit: Dar es Salaam, Tanzania	**Objective** Establish the institutional means to coordinate the development of regional power markets among the Nile basin countries.
Efficient Water Use for Agricultural Production (EWUAP)	
Total Funding Mill. USD: 4.39 Starting date: July 2005 Closing Date: June 2009 Location of Project Management Unit: Nairobi, Kenya	**Objective** Provide a sound conceptual and practical basis to increase availability and efficient use of water for agricultural production.
Water Resources Planning and Management (WRPM)	
Total Funding Mill. USD: 21.27 Starting date: Feb. 2005 Closing Date: December 2012 Location of Project Management Unit: Addis Ababa, Ethiopia	**Objective** Enhance the analytical capacity for basin-wide perspective to support the development, management, and protection of the Nile Basin waters in an equitable, optimal, and sustainable manner.
Confidence Building and Stakeholder Involvement (CBSI)	
Total Funding Mill. USD: 11.56 Starting date: July 2004 Closing Date: December 2009 Location of Project Management Unit: Nile-SEC Entebbe, Uganda	**Objective** Develop confidence in regional cooperation and the NBI and ensure full stakeholder involvement in the NBI and its projects.
Applied Training Project (ATP)	
Total Funding Mill. USD: 16.98 Starting date: June 2004 Closing Date: December 2009 Location of Project Management Unit: Cairo, Egypt	**Objective** Strengthen capacity in selected subject areas of water resources planning and management in public and private sectors and community groups; strengthen centres with the capacity to develop and deliver the programme continuously; and expand the frequency and scope of the basin interchange among water professionals.
Socio-Economic Development and Benefit-Sharing (SDBS)	
Total Funding Mill. USD: 5.89 Starting date: June 2005 Closing Date: June 2009 Location of Project Management Unit: Entebbe, Uganda	**Objective** Strengthen the River Nile Basin-wide social-economic cooperation and integration through (a) joint identification, analysis, and design of cooperative development options and priorities; and (b) development of criteria, methods, and frameworks for sharing benefits/costs and managing attendant risks.
Regional Agriculture Trade and Productivity (RATP) Phase I & 2	
Total Funding Mill. USD: 8.0 Starting date: April 2008 Closing Date: April 2012 Location of Project Management Unit: Bujumbura, Burundi	**Objective** Increase knowledge of Basin agriculture in NBI institutions to promote more efficient and sustainable use of water resources and economically viable investment in agriculture.
Shared Vision Programme Coordination Project (SVP-C)	
Total Funding Mill. USD: 11.89 Starting date: October 2003 Closing Date: December 2008 Location of Project Management Unit: Entebbe, Uganda	**Objective** Strengthen the capacity of NBI institutions to execute basin-wide Programme and to ensure the effective oversight and coordination of NBI's SVP.

DEVELOPMENT PARTNERS

In delivering its mandate, NBI has been supported by Development Partners through bilateral, multilateral or other kinds of engagement. We take this opportunity to express our appreciation to all for the continued support to Nile cooperation.

ONE RIVER ONE PEOPLE ONE VISION

NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

25 YEARS ANNIVERSARY

NBI Member States

Nile Basin Initiative Secretariat

P.O. Box 192
Entebbe – Uganda
Tel: +256 417 705 000
+256 417 705 117
+256 414 321 424
+256 414 321 329
Email: nbisec@nilebasin.org
Website www.nilesec.nilebasin.org

Eastern Nile Technical Regional Office

Dessie Road
P.O. Box 27173-1000
Addis Ababa – Ethiopia
Tel: +251 116 461 130/32
Fax: +251 116 459 407
Email: entro@nilebasin.org
Website: www.entro.nilebasin.org

Nile Equatorial Lakes Subsidiary Action Program

Program Coordination Unit
Kigali City Tower
KCT, KN 2 St, Kigali
P.O. Box 6759, Kigali Rwanda
Tel: +250 788 307 334
Fax: +250 252 580 100
Email: nelcu@nilebasin.org
Website: www.nelsap.nilebasin.org

ISBN 978-9970-444-05-2

/Nile Basin Initiative @nbiweb

#NileCooperation; #NileBasin; #OneNile