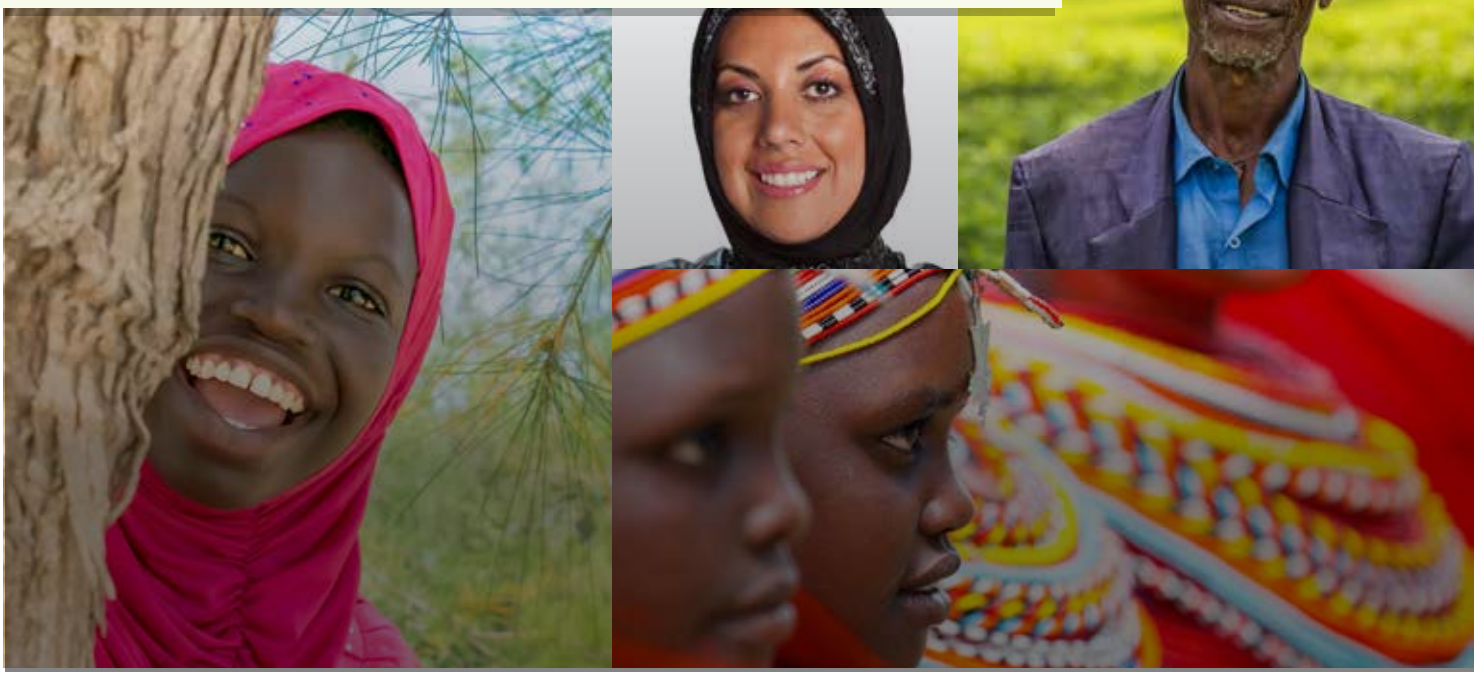
NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

BUILDING ON SHARED BENEFITS

TRANSFORMING LIVES IN THE NILE BASIN



Acknowledgements
The following persons contributed to the preparation of this publication - Building on Shared Benefits: Transforming lives in the Nile Basin.

Contributors
- Mr. Emmanuel Daniel Chonza,– NELSAP-CU, Kigali - Rwanda
- Dr. Wubalem Fekade – ENTRO, Addis Ababa - Ethiopia
- Dr. Mohsen Alarabawy– Nile-SEC, Entebbe - Uganda
- Mr. Tom Waako – Nile-SEC, Entebbe - Uganda
- Ms. Jane K. Baitwa – Nile-SEC, Entebbe - Uganda

Reviewers
- Senior Management staff of NBI, across the three Centers - Nile-SEC, ENTRO, NELSAP-CU.
- Members of the Nile Technical Advisory Committee (Nile-TAC) – Member States

Editorial Team
- Ms. Jane K. Baitwa – Nile-SEC, Entebbe - Uganda
- Ms. Elizabeth Agiro –Nile-SEC, Entebbe - Uganda

ISNB: 978-9970-444-04-5

EXECUTIVE SUMMARY

The Nile is an iconic river of global significance. It is a symbol of the human capacity to harness water for the development and growth of civilizations, but also of the fragility of our existence and unremitting dependence on water's life-giving properties.

The Nile is also a complex river system in hydrological, environmental and climatic terms. It crosses the borders of eleven different countries namely; Burundi, DR Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, The Sudan, Tanzania and Uganda with very different social, cultural and economic realities. Sharing water resources between so many countries (and their growing populations and their demands) is a challenge in itself, but the geopolitical and hydro political realities in the Basin turn it even more complex.

To this end, the Nile Basin countries came together in 1999 to establish the unprecedented Nile Basin Initiative (NBI), to jointly overcome the challenges and take advantage of the opportunities to maximize benefits. This publication looks at how, in the space of a little over 17 years, NBI has successfully established a program of work that has generated a swathe of shared benefits, transforming lives in the Nile Basin.

The introduction part provides an overview of NBI's achievements, which have resulted in a step change in development across the Basin. The overall achievement can be summarized as a transformation in the way countries sharing the river perceive joint challenges and act to tackle them.

In the long-term, the achievements of the NBI will be measured benefits that go far beyond the Basin alone. This in turn will foster more regional integration and enable increased economic growth and regional peace and security. These wider benefits will be of immense importance as the Basin States further strive to address the development challenges of the 21st Century.

There has been a concerted effort at

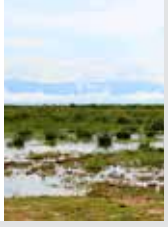


Photo: Vivek Bahukhandi

There has been a concerted effort at strengthening the awareness of the need for and benefits to be derived from cooperation - of which this publication is a part.

strengthening the awareness of the need for and benefits to be derived from cooperation – of which this publication is a part.

Chapter 1 showcases benefits for each Member State, both achieved and in the pipeline, covering a range of energy, food and water, , needs. These include the Ethiopia-Sudan Transmission Interconnection benefiting 1.4 million people, Rusumo Falls Hydro-electric project benefitting 1, 146,000 people in Burundi, Rwanda and Tanzania. Others are planned irrigation and watershed projects basin-wide, which will put 14,000 ha of farmland under improved agriculture.

Chapter 4 looks at the NBI - a strong regional institutional platform for dialogue and cooperation, which is all inclusive and neutral.

Chapter 5 is about possible futures - first highlights the baseline and then describes future challenges.

Lastly, nothing stays the same. The Nile Basin is a dynamic system, subject to constant buffeting by climate and other human and nature-induced forces. The imperative of cooperation is well understood, but not a given – it needs to be able to respond to change and to adapt to new circumstances. As the NBI continues to evolve into a permanent basin institution that coordinates country actions to ensure the continued generation of economic, social and environmental goods, continued support is required from a range of partners - all basin governments, international community, regional economic communities, non-governmental institutions, private sector, knowledge community and the media, as well as other networks and organizations committed to the principles of peaceful and sustainable development. This collective action approach will be central to cooperation in the Basin throughout this Century.

The Nile Basin is a dynamic system, subject to constant buffeting by climate and other human and nature-induced forces. The imperative of cooperation is well understood, but not a given - it needs to be able to respond to change and to adapt to new circumstances.

Chapter 2 focusses on enhanced capacity not only of professional competencies and capabilities to jointly manage and develop shared water resources but also capacity to cooperate, build trust and confidence among Basin States as a means by which to provide a wider enabling environment for investments.

Chapter 3 describes the credible and impartial knowledge and information created and analytic tools developed in support of more robust planning and development strategies for improved livelihoods.

"We need to build on NBI's core strength as the only cooperation mechanism through which the basin states can discuss with trust and confidence how to jointly address the challenges while benefiting from the development opportunities presented by the Basin"
Hon. Dr. Vincent Biruta, Minister of Natural Resources - Rwanda, during the 23rd Nile-COM meeting held in 2015 in Dodoma, Tanzania

ACRONYMS

AET	Actual Evapotranspiration
CCS	Climate Change Strategy
CFA	Cooperative Framework Agreement
CU	Coordination Unit
DR Congo	Democratic Republic of Congo
EAPP	Eastern Africa Power Pool
EGH	Elder of the Order of the Golden Heart
ENCOM	Eastern Nile Council of Ministers
ENSAP	Eastern Nile Subsidiary Action Program
ENSAPT	Eastern Nile Subsidiary Action Program Team
ENTRO	Eastern Nile Technical Regional Office
ESIA	Economic and Social Impact Assessment
ESP	Environmental and Social Policy
EWUAP	Efficient Water Use for Agricultural Productivity
GCM	Global Climate Model
GDP	Gross Domestic Product
GERD	Grand Ethiopia Renaissance Dam
GHG	Greenhouse Gases
ha	hectares
HAD	High Aswan Dam
HYDROMET	Hydrometeorological Monitoring of the Nile
HP	Hydropower
IDB	Internal Drainage Basin
IDEN	Integrated Development of the Eastern Nile
IWRM	Integrated Water Resources Management
IWRMD	Integrated Water Resources Management and Development
JMP	Joint Multipurpose Project
KV	Kilovolts
KW	Kilowatts
KWh	Kilowatt Hours
LSU	Livestock Unit
LVBC	Lake Victoria Basin Commission
MCM	Million Cubic Metres
MP	Member of Parliament
MSc	Master of Science
MSIOA	Multi-Sectoral Investment Opportunity Analyses
MT	Metric Tonnes
MW	Megawatts
MWh/yr	Megawatt hours per year
NBI	Nile Basin Initiative
NB-DSS	Nile Basin Decision Support System
NBSF	Nile Basin Sustainability Framework
NBUF	Nile Basin University Forum
NCORE	Nile Cooperation for Results Project
NEL	Nile Equatorial Lakes
NELCOM	Nile Equatorial Lakes Council of Ministers
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
NELSAP-CU	Nile Equatorial Lakes Subsidiary Action Program Coordination Unit
NEL-TAC	Nile Equatorial Lakes Technical Advisory Committee
NGO	Non-Governmental Organization
Nile-COM	Nile Council of Ministers
Nile-SEC	Nile Basin Initiative Secretariat
Nile-TAC	Nile Technical Advisory Committee
PhD	Doctor of Philosophy
RBO	River Basin Organization
RCM	Regional Climate Model
RPT	Regional Power Trade
SADC	Southern Africa Development Community
SAPP	Southern Africa Power Pool
SAPs	Subsidiary Action Programs
SIWI	Stockholm International Water Institute
SME	Small and Medium Enterprise
SSEA	Strategic Social And Environmental Assessment
SVP	Shared Vision Program
TECCONILE	Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Nile Basin
TWPAP	Transboundary Water Policy Approach Paper
UNDUGU	Brotherhood of the Nile Basin Organization
USD	United States Dollars
UNCED	United Nations Conference on Environment and Development
VoA	Voice of America
WMS	Wetlands Management Strategy
WRD	Water Resources Development
WRMD	Water Resources Management and Development

Photo: iStock

CONTENTS

THE NILE COUNCIL OF MINISTERS

Hon. Eng. Gerson Lwenge (MP)
Minister of Water and Irrigation, Tanzania
(Chairman of the Nile-COM: June 2015 – 14th July 2016)

Hon. Emmanuel Niyonkuru
Minister of Water, Environment, Land Management and Urban Planning, Burundi

Hon. Robert Bopolo Mbongeza
Minister of Environment, Conservation of Nature and Sustainable Development, DR Congo

Hon. Dr. Mohamed Abdel Ati
Minister of Water Resources and Irrigation, Egypt

Hon. Motuma Mekasa Zeru
Minister of Water, Irrigation and Electricity, Ethiopia

Hon. Eugene L. Wamalwa, EGH
Cabinet Secretary, Ministry of Water and Irrigation, Kenya

Hon. Dr. Vincent Biruta
Minister of Natural Resources, Rwanda

Hon. Sophia Pal Gai
Minister of Water Resources and Irrigation, South Sudan

Hon. Amb. Mutaz Musa Abdalla Salim
Minister of Water Resources, Irrigation and Electricity, The Sudan

Hon. Sam Cheptoris
Minister of Water and Environment, Uganda

As the highest political and decision making body under the Nile Basin Initiative, the Nile Council of Ministers (Nile-COM) performs the following roles and responsibilities:

- Approves annual work plan and budget
- Ensures smooth implementation of NBI's activities
- Ensures government financial contribution from Member Countries as well as funding from external support agencies and NGOs
- Appoints and terminates the services of the Executive Director on recommendation of the Nile Technical Advisory Committee
- Takes all policy and political decisions of the organization
- Approves the filling of other senior posts by the Nile Technical Advisory Committee

FOREWORD

The River Nile is a trans-boundary resource shared by eleven countries with a combined population of at least 437 million people. Stretching some 6,695 kilometers from the farthest source of its headwaters in the Kagera Basin in Rwanda and Burundi through Lake Victoria, to its delta in Egypt on the Mediterranean Sea, the Nile remains the world's longest river, feeding millions and giving rise to entire civilizations.

The Nile Basin – the entire watershed of the river – offers significant potential for co-operative management and development. Notable among potential 'win-win' benefits are clean energy (hydropower) development and trade as well as improved and expanded cultivation under irrigated and rain-fed systems in conjunction with greater water use efficiency. Additional broader benefits include achieving long-term regional economic integration and the promotion of peace and security across the basin.

Implementation of trans-boundary cooperation on the ground is a particular challenge in river basins where there is historic mistrust or conflict as well as entrenched misperceptions between states as well as asymmetric information. Nevertheless, through the Nile Basin Initiative (NBI), Basin States have a positive story to share, one of growing cooperation and joint development of resources, increasing dialogue and ensuring the long-term sustainability of the entire river system.

The NBI was launched on 22nd February 1999 and quickly became an all-inclusive regional platform for Nile Basin countries to come together and develop investment projects. It was the first time in the Basin's history that all countries opted for multilateral cooperation and since that time it has continued to demonstrate tangible benefits from and future potential for Nile cooperation.

It is gratifying to note that 17 years of cooperation under the NBI has resulted in higher levels of trust and confidence among the Basin States, strengthened capacity and created an environment for active information sharing. Member States have come together in unprecedented ways to prioritize, plan and implement regionally-significant investment projects worth more than USD 6 billion. These projects are proving to be transformative in terms of energy, food and water security, improving the lives of millions of Nile Basin citizens.

Going forward, besides maintaining its institutional strength, the NBI is focusing more on mobilizing additional resources for investments across a suite of already-prepared projects, notwithstanding continued legal and institutional challenges.

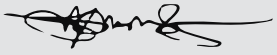
Fortunately, all NBI Member States recognize that non-cooperation is undesirable and unlikely and have reiterated their commitment to Nile Cooperation as the only way to achieve effective management and development of the basin's resources.

It is incumbent upon all Member States to continue to invest further in the political capital necessary for continued cooperation, the fruits of which will be streams of benefits for economies, societies and environments across the basin for years to come.

On behalf of the NBI Secretariat, I would like to acknowledge the invaluable support of all our partners. We are committed to continue working with each one of you to deliver a better life to every Nile Basin citizen.

Member States have come together in unprecedented ways to prioritize, plan and implement regionally-significant investment projects worth more than USD 6 billion. These projects are proving to be transformative in terms of energy, food and water security, improving the lives of millions of Nile Basin citizens

Furthermore, my sincerest appreciation also goes to the dedicated current and former employees of the NBI who have contributed substantially to our current success story.



HON. ENG. GERSON LWENGE (MP)
CHAIRMAN, NILE COUNCIL OF MINISTERS AND
MINISTER OF WATER AND IRRIGATION
THE UNITED REPUBLIC OF TANZANIA

MESSAGE FROM THE EXECUTIVE DIRECTOR

Dear Reader

Welcome to this flagship communication product in which we have systematically captured and documented the lasting legacy of 17 years of Nile Cooperation under the NBI.

Showcasing benefits from cooperation that range from energy, food and water security, to greater regional integration, peace and stability, our goal is to strengthen commitment to sustaining Nile cooperation by increasing country ownership of the process and raising public awareness and visibility of the NBI.

As you turn and read the pages, I hope that you are struck by the remarkable successes registered to date. Cases in point are building trust and confidence on water resources development among Member States, establishing an enabling environment for sustainable and equitable development of shared Nile Basin water resources as well as working together to negotiate, agree and prepare 34 investment projects that are socially and economically viable and environmentally friendly. Worth more than USD 6 billion, these projects are currently being advanced by the Member States to generate clear, sustainable regional and mutual benefits for the majority of the Nile Basin population in the coming years.

Other notable achievements are developing analytical tools, strengthening capacity and sharing credible and impartial scientific knowledge and information that can contribute to better decision making and further strengthen cooperation. In addition, most Member States now have policies in place to support engagement on trans-boundary water issues. At the same time most countries now also regard such cooperation as essential to advancing regional integration through identifying and developing joint investments.

Our success and the accruing benefits to Nile Basin citizens are a result of the tremendous support and commitment from our partners: NBI institutions, Member States governments, Members of Parliament, policy makers, technocrats, River Basin Organizations, Development Partners, civil society, media, and academia, among others. I take this opportunity to whole-heartedly thank you all!

The staff of NBI are committed to the common cause and it is my deepest hope that the spirit of cooperation continues to grow as we work together to build our common future.

This booklet is very much a 'live' document, which we will update over time as we register additional achievements and generate more benefits.

I wish you an interesting
and informative read!

Member States now have policies in place to support engagement on trans-boundary water issues. At the same time most countries now also regard such cooperation as essential to advancing regional integration through identifying and developing joint investments.

JOHN RAO NYAORO, HSC (PHD)
EXECUTIVE DIRECTOR
NILE BASIN INITIATIVE SECRETARIAT

INTRODUCTION

Photo: iStock

Our achievements – an overview

The 11 countries that share the River Nile, namely Burundi, DR Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, The Sudan, Tanzania and Uganda all face tremendous development challenges. Ten of the 11 Nile Basin countries fall in the 'low human development' category include eight ranked amongst the 25 poorest. All Nile countries regard development of the river as key to achieving future development success.

Recognizing that, given such competition for resources, cooperation on the Nile is crucial to tackling multiple development challenges and taking advantage of opportunities for win-win outcomes, riparian countries have been undertaking different attempts at cooperation for over 45 years.

There has been various attempts by Nile Basin countries to cooperate on the management and development of the shared Nile Basin water resources. Formal Nile Cooperation in recent times can be benchmarked from the Hydro-

"It is to be recalled that the NBI has been set up as a transitional mechanism of cooperation. It has served its purpose well for the last 17 years. But NBI needs to be crowned with something more enduring and lasting to commemorate its outstanding achievements." H.E. Motuma Mekasa, Minister of Water, Irrigation & Electricity, of Ethiopia, speaking during the 24th Annual Nile-COM meeting – 14th July, 2016

EVOLUTION OF NILE COOPERATION

HYDROMET: 1967 – 1992

Ethiopia and DRC as observers (after 1971 and 1977, respectively).

UNDUGU: 1983 – 1992

Ethiopia and Kenya as observers.

TECCONILE: 1993 - 1999

Ethiopia and Kenya as observers.

KEY NBI MILESTONES

1999

- Nile Basin Initiative (NBI) is established on 22nd February
- NBI Policy Guidelines adopted
- Nile Equatorial Lakes Subsidiary Action Program established
- NBI Secretariat (Nile-SEC) established

2001

- International Consortium for Cooperation in the Nile (ICCON 1) meeting held in Geneva to mobilize resources;
- US$ 140 million pledged by Development Partners.
- Nile Basin Trust Fund proposed by Nile-COM as mechanism for the funding
- ENTRO established
- NBI accorded legal and diplomatic status in Uganda

2002

- Nile Equatorial Lakes Subsidiary Action Program Coordination Unit (NELSAP-CU) established

2003

- Shared Vision Program launched
- Negotiations on the Cooperative Framework Agreement (CFA) commence

2004

- NBI starts to implement projects, starting with the Shared Vision Program projects

2005

- The first set of cooperative investment projects starts in the NEL region, focusing on river basin and fisheries management.
- First batch of post graduate scholarships awarded

2006

- Results Based Monitoring and Evaluation System adopted (a change from activity based project management system to results based planning and monitoring)
- Biennial Nile Basin Development Forum launched

2007

- First batch of MSc students graduated
- Annual Nile Day event launched

2008

- Shared Vision Program successfully closed
- Institutional Strengthening Project launched

2009

- NBI 10th Anniversary marked in Dar es Salaam

2010

- Cooperative Framework Agreement (CFA) opened for signature in Entebbe

2011

- Nile Basin Decision Support System (NB DSS) launched
- Nile Basin Sustainability Framework adopted

2012

- Regular State of River Nile Basin report launched South Sudan joins NBI

2013

- Nile Cooperation for Results Project (NCORE) launched
- Ethiopia-Sudan Power Transmission Interconnection project commissioned

2014

- Biennial Nile Media Awards launched

2016

- Baseline results and projection of future water demand and supply in the Nile Basin.prepared
- Nile Basin Water Resources Atlas launched

Photo: NBI

Ministers in charge of Water Affairs during the 24th Annual Nile-COM meeting held on 14th July, 2016 in Entebbe, Uganda

met project that was started in 1967, focusing on hydro meteorological surveying of the Great Lakes region. Running parallel to Hydromet was 'Undugu' from 1983 to 1992 the focus of which was on the establishment of a Nile Basin Economic Community. This was later followed by the Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Basin (TECCONILE) in 1993. TECCONILE focused on technical cooperation (environmental and water quality). However, all these initiatives were affected by a lack of inclusivity (with key riparian countries not represented in the effort) and funding to implement the Nile Trans-boundary Action Plan under TECCONILE. Above all, these efforts did not anchor cooperation efforts in a comprehensive institutional setting and through a Shared Vision Objective.

A trans-boundary institution – the Nile Basin Initiative – established and consolidated

On 22nd February, 1999 the countries came together and for the first time in the Basin's history established an all-inclusive, neutral and basin-wide Nile Basin Initiative (NBI). Over the years, the NBI has, among other things, focused on activities aimed at assisting Member States to achieve their development objectives, with a number of remarkable achievements as summarized in the introduction section of this booklet.

Since 1999, Nile Basin countries have overcome centuries of mistrust, a difficult colonial legacy and challenges of access to and use of the shared waters of the Nile to build a unique trans-boundary institution. This major achievement marks a significant departure from earlier unilateralism and represents a profoundly different kind of approach involving collective dialogue, broad consultation, joint planning and ultimately collective action to develop the river system for all peoples of Nile Basin.

Though still in transition, the NBI continues to provide a key global focus for policy makers, planners, scientists and politicians involved in Nile Basin development issues. The core functions of the NBI are to:

1. facilitate basin-wide cooperation;
2. promote basin-wide water resources planning and management and
3. promote cooperative water resources development and investment.

Consideration of trans-boundary dimensions in national plans for water resources management and development is evident in almost all Member States, with nearly all having a dedicated trans-boundary unit, division or department within their Water Affairs ministries dealing with trans-boundary water resources issues. In addition each country has established a National NBI office Overseen and guided by the Nile-COM and staffed by experts drawn from Nile countries, NBI is organized on the principle of subsidiarity through two sub-basin programs – the Eastern Nile Subsidiary Action Program (ENSAP) and the Nile Equatorial Lakes Subsidiary Action Program (NELSAP). This set up has enabled NBI to leverage the unique potentials and mitigate risks in the respective sub-basins.

Complex political decisions, meaningful negotiations and knowledge of different trade-offs involved in achieving sustainable resource use and equitable benefit sharing requires answers to difficult questions, including: How much water is in the system, where and when? How much water is lost, where and how, during conveyance and storage? How much water is used, where, for what purpose and by whom?

Photo: iStock

Group of children from the Nile Basin

Substantial financial and technical support from development partners during NBI's formative years has been critical in establishing capacity to deliver results. Countries now recognize that in order to ensure long-term sustainability they themselves need to commit more finance and in-kind resources to support the instituion's core functions and capacities.

The NBI also plays a key role in facilitating processes and negotiations, including the Cooperative Framework Agreement (CFA), designed to support a transition from an initiative to a permanent River Basin Organization (RBO).

Though much work remains to be done, NBI has already transformed how riparian countries view Nile resources, entrenching a commitment to trans-boundary perspectives within national-level planning, management and development. Above all, the NBI has demonstrated the imperative of cooperation in the face of growing risks and challenges including those related to climate change and the impacts of human actions on the natural environment.

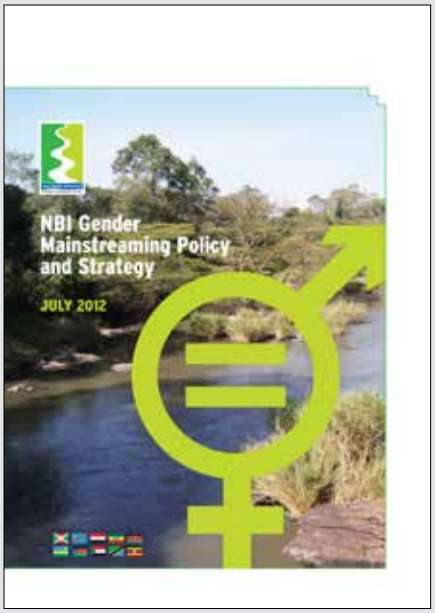
Trans-boundary and Member States' technical and institutional capacity developed

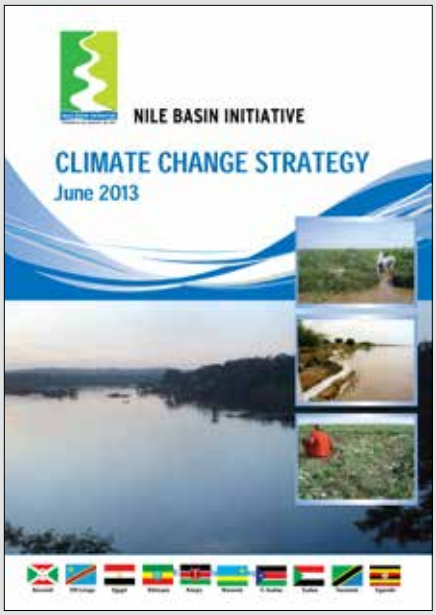
At its inception, the NBI recognized the need to grapple with disparities and asymmetries prevailing among Member States. In order for states to establish dialogue and to partner and plan effectively they needed minimum levels of technical capacity embedded within robust institutions. As a result of this need the overarching NBI Strategic Action Program established the Shared Vision Program (SVP) and Subsidiary Action Programs (SAPs). The SVP addressed head on issues of technical and institutional strengthening (as well as issues of inter-riparian trust and confidence building). The latter sought investments in project preparation to run in parallel and demonstrate the feasibility – and tangible fruits – of cooperation. The Shared Vision and Subsidiary Action Program offices were intentionally spread across the basin with a center in every Member State. This facilitated rapid diffusion of technical knowledge and skills, including power trade studies and planning (Dar es-Salaam), the environment (Khartoum), agricultural water use (Kenya); water resources planning (Ethiopia), capacity building and training (Cairo) and inter-riparian trust and confidence (Entebbe).

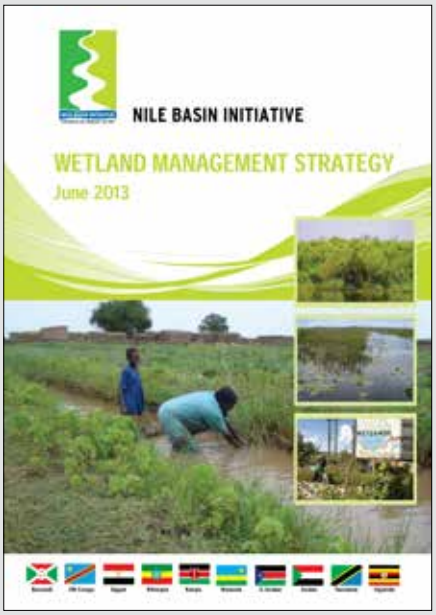
Since then, thousands of riparian water professionals, policy makers and managers have benefitted from a wide array of technical capacity development. This has fostered more informed and knowledge-based policy and planning on trans-boundary water resources including management for results, water resources modeling and scenario generation. Others are climate change impact

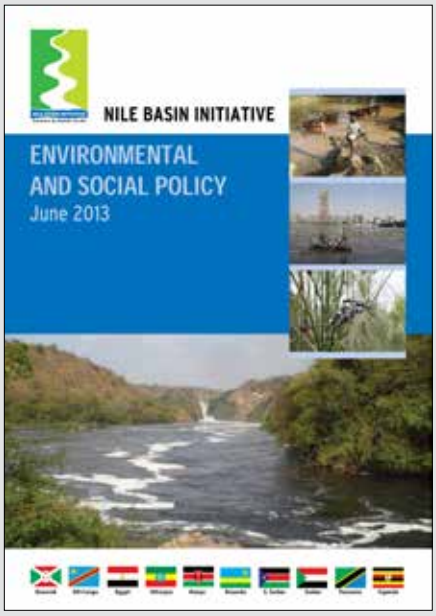
analysis, environmental assets and biodiversity studies, strategic environmental and social assessments, dams safety guidelines (social and environmental safeguarding), as well as communication and hydro-diplomacy activities.

Training has been conducted both through formal methods (e.g. sponsoring M.Sc. and Ph.D. students from basin countries), and more informally through targeted training workshops, seminars, conferences, experience-sharing exchange visits and, perhaps most importantly, by supporting young and upcoming water resources professionals under internship programs. Ultimately the success of these efforts lies in positively influencing the way countries mainstream trans-boundary perspectives within national decision making. This includes supporting the provision and analysis of hard data, information, knowledge and science outputs. Not all success achieved can be directly attributed to the NBI, but in many instances, the initiative has provided the important foundations on which future success has been and can continue to be achieved. The task remaining for all involved is to ensure the continued strength of these foundations and, through them, build new levels of cooperation that can drive future development for the countries and peoples of this key river basin.









A common Nile Basin water resources knowledge base created and tools of analysis developed

Successful Nile cooperation to a large extent relies on sound science. Complex political decisions, meaningful negotiations and knowledge of different trade-offs involved in achieving sustainable resource use and equitable benefit sharing requires answers to difficult questions, including: How much water is in the system, where and when? How much water is lost, where and how, during conveyance and storage? How much water is used, where, for what purpose and by whom? Where and how can water use efficiency be increased? How much water is needed for critical ecosystem and environmental functions? How will climate change affect water availability in the short and long-run? And what is the demand-supply balance in all basin countries – including under different future scenarios?

Such critical and strategic questions require framing and answering at the 'whole basin' scale. It is also important that the process be a joint exercise with answers jointly arrived at, agreed upon, and then validated using standardized hydro-meteorological, water resources, environmental, and socio-economic datasets. The joint ownership and development of analytical tools is similarly key, and led to the Water Resource Planning and Management Project under the SVP. The project was later institutionalized as the Water Resources Management Department and is based at Nile-SEC in Entebbe.

Photo: Atiol Elmailk - South Sudan

Children from South Sudan

As a result of these efforts at knowledge and data consolidation, a world class Decision Support System (the Nile Basin DSS) was developed by the 10 Member States. Now fully operational and in use by resource professionals and researchers across the Basin, the NBI is following up this success with the establishment of a regional Nile Basin hydro-meteorological monitoring system to support joint monitoring of the Nile Basin waters and related resources. Complementing these computer-based systems, the NBI has also set up the first State of the River Nile Basin Report which describes in detail key socio-economic and natural resource trends in the basin. First published in 2012 a second report is already on its way and will provide further publically-accessible knowledge and information on Nile Basin trends and development. In addition, the first-ever Nile Basin Strategic Water Analysis prepared baseline results and projection of future water demand and supply in the Nile Basin. The information will support Member States in their efforts to identify development paths that are regionally optimal and sustainable as well as address key trans-boundary issues in national water resources development planning. This is in addition to the first Nile Basin Water Resources Atlas developed by NBI for the Nile Basin presenting factual information on Nile Basin water resources, its spatial and temporal distribution as well as uses. Taken together, these knowledge products constitute a significant process of establishing the greater public good of strong knowledge, information and data on the basin for use by all key decision-making communities. This remains, however, a continuous process reflecting the dynamism and change with the river basin itself.

Basin-wide trans-boundary policies and strategies formulated and adopted

Building on a solid basis of knowledge and data, the NBI has also established complementary policies and strategies that enable guidance on ways of working in the basin and provide policy directions for the NBI and its partners. The Nile Basin Sustainability Framework (NBSF) provides the umbrella for a suite of policies and strategies and was adopted by the Nile Council of Ministers in 2011.

Under this framework, the NBI has developed an Environment and Social Policy (ESP) which supports NBI-related investments in avoiding forced displacement without livelihood guarantees and compensation, and preventing avoidable destruction of critical habitats, ecosystems and the services they provide. The ESP also provides a

key framework for the adoption of social and environmental safeguarding, including SSEA, ESIA within the SAPs. Facilitating the implementation of the ESP are the NBI's Communications and Stakeholder Engagement Strategy and its Gender Mainstreaming Strategy. Respectively, they foster greater transparency and accountability, including providing space for participation as well as addressing (and redressing) gender imbalances in employment and project implementation.

The Climate Change Strategy (CCS) supports adaptation to the threat of climate change impacts including the climate-proofing of NBI investments, while the Wetland Management Strategy (WMS) prioritizes the preservation of unique environmental assets and services related to wetlands ecosystems.

Strengthening trans-boundary approaches within national water policies has been addressed through an Approach Paper (TWPAP) which defines an NBI-specific approach to promoting trans-boundary cooperation in the Nile Basin through supporting the development of suitable national water policies. Also developed as part of the NBSF, is the Nile Environmental Flow Framework as well as the Interim Data, Information Sharing Procedure (the latter is in the absence of a fully ratified CFA) and Draft Project Information Disclosure Guidance document.

While the variable mainstreaming of all these policies and strategies at a national level reflects the differing robustness of respective national institutions, at a trans-boundary level these policies and strategies have proven indispensable, informing and guiding how the NBI supports water resources management and investment planning and implementation.

Dialogue and negotiation facilitated

The NBI has also promoted and supported inter-riparian dialogue, consultation and negotiation through different fora. This includes basin-wide governance and policy meetings, technical advisory team meetings, a range of technical working meetings and sessions of different working groups, SAPs investment preparation and planning consultations and through knowledge-and-exchange visits of riparian experts to other basins of the world. At the same time, NBI experts regularly attend international meetings and contribute to sessions on trans-boundary waters, sharing experience across borders, basins and different

Going forward, it is possible to plan more cooperative trans-boundary projects that straddle the water-food-energy-environment (biodiversity, ecosystem, environmental services) nexus and maximize benefits and minimize costs.

NBI engages with stakeholders from Kenya in 2015

Photo: NBI

Photo: NBI

Regional Rusumo Falls Project area as viewed from the Sub-station site

regions of the world.
Providing a key convening function, NBI has also facilitated negotiations on the CFA, which was concluded in 2010 after 13 years of negotiations, and which has now been ratified by three Member States. The process of continued engagement and maintaining lines of communication supports attainment of common positions and reduces the risks of failure.

Cooperative, joint trans-boundary investments prepared and implemented

The effort and resources expended by NBI have demonstrated multiple benefits to all countries – albeit it being only a fraction of the potential that continued cooperation and investment can provide. Member States have worked together to negotiate, agree and prepare more than 30 projects with regional, shared benefits. Nearly 30 million people over the next decade could benefit once these projects that address food, water and energy security goals are implemented. The supporting and enabling NBI polices and strategies applied during project preparation have reduced environmental, political, social and reputational risks and have provided measures to mitigate any risks and to make these investments economically, financially, socially and environmentally viable. Risk reduction has enabled countries to attract and mobilize finance for project implementation, including grants and soft loans from development partners, loans from international finance institutions and/or from national budgets. The demonstration effect of these projects at a national level in terms of good practice and lessons learnt about responsible, transparent and accountable planning and implementation to ensure social and environmental safeguards is also substantial.

Going forward, it is possible to plan more cooperative trans-boundary projects that straddle the water-food-energy-environment (biodiversity, ecosystem, environmental services) nexus and maximize benefits and minimize costs. To achieve this however, there is the need to think of scale required to bring about significant regional impact. NBI has laid the foundations and demonstrated the feasibility of such approaches – its demonstration effect arguably has been very substantial. The processes of basin/sub-basin collaboration and cooperation engendered can now be leveraged to catalyze the formation of regional markets and eventually wider regional integration.

"Beyond the River" gains

This is perhaps the most elusive, most difficult to quantify and yet the most critical outcome that will determine future trajectories of Nile Basin cooperation. This has first and foremost to do with the values, perceptions and attitu-

de of policy and decision makers both at national and basin/regional levels. It also involves water resources professionals and experts, staff in ministries of water resources and related ministries nationally and, more importantly, the attitudes and values of the common Nile Basin citizen – the teachers, students, professors, media professionals, religious leaders, local leaders and others who build the fabric of society in which cooperation can be nurtured. The critical question is this: has there been a discernible change - a shift, no matter how incipient, in perceptions, values and attitudes - in the direction of demanding, supporting and facilitating basin wide and sub-basin cooperation? We dare to answer this question in the affirmative for the following reasons:

Awareness: As can be easily monitored from Nile Basin Media or high school and university courses, compared to fifteen years ago, there is now - across the basin - more information flowing across borders about the Nile. There seems to be growing awareness of the Nile's shared transboundary nature, of its fragility, of its finiteness, and of the vulnerability of its wetlands and unique ecosystems and biodiversity. There is a stronger sense of the upstream-downstream interdependency and, perhaps above all, of the shared risks presented by growing resource demand and growing climate change uncertainty. There is now more recognition and appreciation of each other's needs and fears – the mutuality as it were – of upstream, midstream and downstream countries. Today it will be indeed difficult to find official pronouncements from any basin country that defy these realities. Upstream leaders often include in their statements appreciation and recognition of the concerns of downstream countries. Downstream countries also reciprocate by recognizing the development needs of upstream countries. Compared to the pre-NBI adversarial and competitive postures, today the atmosphere is more conducive for collaboration to exploit as yet unharnessed basin potential.

Culture of dialogue, negotiation, trust and confidence: Over the years, as outlined above, born out of regular interactions of riparian water resources policy makers and professionals, countries seem to know each other better. There is a tendency toward more peaceful resolution of differences, moving away from viewing differences in shared water resource management as battles to be won or lost (win-lose) toward instead viewing them as joint problems seeking collaborative, cooperative solutions that satisfy the needs of both parties. The search for common grounds seems to gain ground.

Regional integration: Transboundary Nile cooperation has advanced regional integration through identifying and developing joint investments. Furthermore, the NBI's facilitation of joint preparation and implementation of investments by member states has enabled the latter to establish common values, principles and norms,

all of which are key ingredients for regional integration.

Increased economic growth: due to increased and stable power supply, bigger regional markets and cross border trade are possible – and recognized as such by sub-basin communities.

Regional peace and security: Though countries may disagree on many issues of common interest, such as over the CFA or in the Eastern Nile over the Grand Ethiopian Renaissance Dam (GERD), these issues are under discussion and have not formed the basis of violent conflict. There has been, if anything, de-escalation and a shift in tone towards trumpeting cooperation over conflict. All countries remain engaged and regularly communicate.

CHAPTER 1

Improved energy, food and water security

Nile Basin countries and communities increasingly recognize that they are tied together by the Nile, running through them all, providing nourishment and sustaining lives. The Nile is the hub for countries to harness future trans-boundary water potentials in order to meet fast-growing demand for energy, food and water.

The challenge of trans-boundary river basin management is the need to reconcile conflicting demands and uses across different time horizons (short vs. long-term), between sectors (hydropower vs. agriculture vs. navigation vs. municipal supply vs. environment), and lastly, but most significantly, between countries both upstream and downstream. It is in the midst of this complexity that Nile resources need to be optimized, made economical and less harmful to the environment and to provide for people. Making complex water resources investment decisions on a shared trans-boundary water course with multiple stakeholders and potential multiple impacts, while striving to maintain the integrity of the river system as a single hydrological unit, is impossible unilaterally – it has to be a collective, multilateral process.

During processes of investment identification and preparation, ENSAP and NELSAP are required to factor in and leverage or otherwise overcome the unique hydrological, socio-economic, historical, hydro-political potentials and constraints these two main sub-basins offer. The singular value addition of ENSAP and NELSAP is not only optimization or rationalization of water resources development, important as that is (but can be accomplished through national planning), rather it is their

"Poverty reduction is interlinked with water resources management, development and sanitation. Therefore, implementation of investment projects prepared by NBI in agriculture and other areas will be required as one of the options in meeting the poverty reduction goals".

Hon. Dr. Vincent Biruta, Minister of natural Resources, Rwanda - speaking during the 24th Annual Nile-COM meeting - 14th July, 2016

INVESTMENTS ON THE GROUND

Some of the investment projects prepared have been advanced and implemented on the ground, demonstrating the feasibility and low-hanging fruits of cooperation to riparian communities, while others are at different stages of implementation.

The trans-boundary perspectives that ensure equity among all involved countries and the focus on long-term sustainability makes these projects unique. Because they are trans-boundary in nature, these projects are characterized by a low ratio of preparation to investment cost; they have continuously posted a ratio of 1:10 (about USD1 leveraging investment worth USD 10). Mobilizing resources for their implementation is also much easier compared to unilateral efforts, as the voice of a multi-country resource mobilization effort is stronger than that of a single country.

The projects, which are worth more than USD 6 billion, will greatly contribute to improved livelihoods in the Basin in the next decade by generating the following basin-wide benefits:

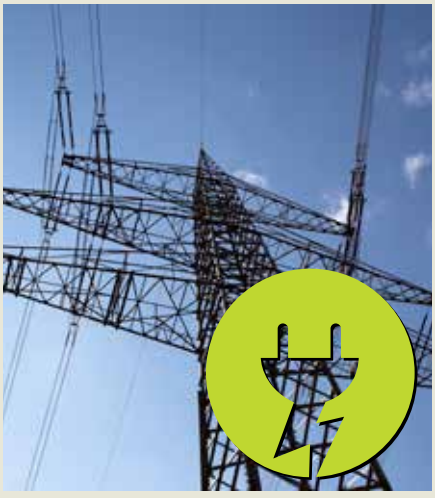


Photo: iStock

Photo: iStock

Photo: iStock

ENERGY SECURITY

- More energy is expected to be available by 2020: over 8,500 MW through new regional interconnection lines, and at least 170 MW through new generation capacity
- At least 3,000 km of new transmission lines are expected to improve regional connectivity so electricity can easily be moved from source to demand
- A total of 22 million people could benefit through more reliable power supply and lower cost per unit of power generation
- By sharing risks, costs and benefits between countries, cooperation is reducing national costs of infrastructure projects, and promoting regional power markets.

FOOD SECURITY

- Planned irrigation and watershed projects basin-wide to put 14,000 ha of farmland under improved agriculture.
- Irrigation projects projected to benefit almost 4 million people
- A total of 1.5 million people in the Nile Equatorial region to benefit from additional seasonal employment due to improved agriculture production.

WATER SECURITY AND ENVIRONMENT PROTECTION

- Watershed management projects to benefit 17 million people
- Reduced downstream sedimentation in some areas of the Eastern Nile region
- Daily bulletin issued on flood preparedness and early warning used by 43 organizations and benefitting 350,000 people directly and 1.7 million people indirectly
- Reduced downstream sedimentation in some areas of the Eastern Nile region

capacity to build in trans-boundary externalities, i.e. to factor in positive and negative socio-economic and environmental trans-boundary impacts.

The NBI Shared Vision Objective and derivative Subsidiary Action Programs Visions as background factors

The NBI Shared Vision Objective is the conceptual foundation that informs and justifies cooperation among Member States to advance common interests through joint water resources development. In essence it confers benefits not only on riparian countries, but ultimately on the Nile itself since cooperative development makes possible enhanced rationalization and optimization of the river's scarce waters.

The Shared Vision Objective espouses achievement of "sustainable socio-economic development through the equitable utilization and benefit from the common Nile Basin water resources". Similarly, the 2001 ENCOM-articulated 2020 Operation Vision for the Eastern Nile unpacks the Shared Vision Objective by emphasizing that in the Eastern Nile Sub-basin, the River Nile "will serve as catalyst" for "regional integration" and for "rational, efficient, environmentally sustainable" joint investments in irrigated agriculture, hydropower generation, power pooling and power trade.

Table 1: Summary of investment projects facilitated by NELSAP-CU for the Nile Equatorial Lakes sub-basin and ENTRO for the Eastern Nile sub-basin

Project Description	Benefits	Beneficiaries
Kenya-Tanzania Power Interconnection Project	Increased power supply into national grids leading to reduced power tariffs and increased access to Kenya and Tanzania	The population of the two countries
Uganda (Nkenda) - DR Congo (Beni-Bunia-Butembo) Power Transmission Line Study	Increased power supply leading to reduced power tariffs and increased access to DRC and Uganda	Population in the Eastern DR Congo and Uganda
Regional Rusumo Falls Hydroelectric and Multipurpose Project- project preparation	Increased power generation and transmission capacity for Burundi, Rwanda and Tanzania	Directly to the population of Burundi, Rwanda and Tanzania, indirectly NEL regional countries population
Power Transmission Lines from Rusumo Falls Hydroelectric Dam	Increased power supply to national grids leading to reduced power tariffs and increased access In Burundi, Rwanda and Tanzania	520,00 people in Burundi, 467,000 people in Rwanda, and 159,000 in Tanzania to directly benefit
Interconnection of Electric Grids projects- project preparation	Backbone of power interconnection grid around Lake Victoria region and connecting Burundi, DRC, Kenya, Rwanda and Uganda grids	Estimated 135 million people will benefit when the project is completed
Tanzania - Zambia Power Interconnection Study (Mbeya - Kasama) Study	Interconnection in the rest of the NEL region and SADC region not covered by project of grid around Lake Victoria	Population of the NEL region estimated to be 216 million (estimate of 2005)
Gogo Falls Project	Identified by NBI but taken over by the Government of Kenya for implementation.	A total of 11 million people with improved accessibility to reliable power supply.
Power interconnection Iringa - Mbeya Transmission line	Improved regional power interconnection, between the South and Eastern Africa regions.	Population of Northern, Eastern, central, and Southern parts of Africa.
Power interconnection Uganda (Nkenda - D R Congo (Beni - Butembo) Power interconnection transmission line	Power supply to North Eastern of DR Congo and particularly the towns of Beni, Bunia and Butembo with electricity from Uganda through high voltage; 396 km.	Population in the Eastern D R Congo and Uganda
Ethiopia-Sudan Interconnection	From 100 MW Electric power trade (from Ethiopia to Sudan). 194 km Transmission interconnection between Bahr Dar and Gondar in Ethiopia; 321 km connecting Gonder-Shehedi-Metema in Ethiopia with Gedaref in Sudan	Estimated 1.4 million households
Eastern Nile Regional Transmission Line. Ethiopia-Sudan (Rabak)-Egypt (Nage Hamadi). Feasibility study prepared with financing from AfDB. Transmission only:	Total EN net benefits from savings of fossil fuel = 1,200-1,500 million USD/yr; Ethiopia's export of electricity: over 600 million USD/yr.	Additional electricity access to over 2 million persons in Sudan; 197 flood-affected communities in Sudan to benefit from improved river regulation;
Ruvyironza Reservoir	Storage 266 - 373 MCM, height 57-59m, hydropower generation Feasibility studies plannedfor 2015-16. Hydropower potential 19.6 MW.	28,000 households
Kabuyanda Irrigation and watershed project	Storage 10MCM, height 20m, catchment area 109Km^3. Feasibility studies planned.	12,000 people
Lake Victoria basin in Tanzania: Two projects:	Funding from Tanzania Water Sector Development program. Ngono 11,681Ha, Storage 760 MCM, Bugwema 2,030Ha; - Mara Valley 8,340Ha	20,000 for Ngono; & 10,000 for Mara Valley

Table 1: Summary of investment projects facilitated by NELSAP-CU for the Nile Equatorial Lakes sub-basin and ENTRO for the Eastern Nile sub-basin

Project Description	Benefits	Beneficiaries
Ngono & Mara Valley Projects	Multipurpose Water resources development Projects including hydropower, Irrigation and environment management	20,000 for Ngono; & 10,000 for Mara Valley
Bugesera Integrated Water and Irrigation Project (Rwanda-Burundi)	Integrated management of the Lake Cyohoha, Rweru and Akanyaru Marshlands.	42,000 farmers; 50,000 fisher families; 4,500 households involved in alternative income generating activities.
Kagera Sub-Basin Small Multipurpose storage reservoirs and watershed management - (Burundi, Rwanda, Tanzania, Uganda)	Water resources development infrastructure in four sites in the Kagera sub-basin, Taba- Gakomeye, Buyongwe, Karazi, Bigasha.	Populations benefiting from water supply, Power, irrigation and environment management accruing from the project.
Sio Malaba Malakisi Sub-Basin Small Multipurpose storage reservoirs and water shed management (Maira Dam)	Livelihood and socio-economic development such as livestock management, conservation agriculture, sustainability of fisheries, and sanitation Improving sub-catchment hydomet monitoring system, groundwater assessment and monitoring, environmental water requirements, and early warning system Sustainable land use management practices, and biodiversity protection.	3,000 farmers to directly benefit from Irrigation
Sio-Malaba-Malakisi (SMM) Sub Basin- Implementation of Sub Catchment Management Plans (Kenya and Uganda)	Integrated management and development, including infrastructure, of trans-boundary Water resources of Sio-Malaba-Malakisi river system.	2 million people for SMM; 10,000 people from Maira Dam on SMM; 200,000 people from pollution control in Bungoma and 20,000 people rom Lwakhaka
Sio- Malaba- Malakisi (SMM) and Kagera Sub Basins: Implementation of integrated watersheds and wetlands program in the SMM and Kagera river systems.	Integrated management and development, including infrastructure, of trans-boundary Water resources of Sio-Malaba-Malakisi river system.	2 million pple for SMM; 200,000 pple in Kagera Subbasin
Sio-Malaba-Malakisi Subbasins: Nyabanja and Lerekwe Irrigation Development and watersheds Management Projects (Uganda and Kenya)	Integrated management and development, including infrastructure, of trans-boundary Water resources of Sio-Malaba-Malakisi river system.	Nyabanja 12,000 farmers; Lerekwe 2000 farmers
Mara Sub-Basin Small Multipurpose storage reservoirs and water shed management of Borenga and Norera (Tanzania, Kenya)	Integrated management and development, including infrastructure, of trans-boundary Water resources of Mara river.	34,000 people
Implementation of Integrated Forest Management Program for the Mau Forest	Integrated management and development of trans-boundary Water resources of Mara river.	162,000 people
Egypt Irrigation & Drainage: (West Delta) (agreed regionally through NBI, prepared and implemented nationally)	Improvement of the irrigation and drainage systems in the West Delta region of the Nile In Egypt.	Farming communities: 107,200 people in Egypt
Baro-Akobo-Sobat Multipurpose Water Resource Development Study Project	Small scale farmers; pastoralists in South Sudan and Ethiopia in Baro-Akobo- Sobat sub-basin	Key environmental and social Issues to be addressed important for the sustainable management and livelihoods of the pastoralists and farming communities in the sub-basin.
Nyimur Multipurpose Water Resources Project studies	South Sudan and Uganda	Improved livelihoods of the population through irrigation, hydropower, fisheries, flood mitigation, and water supply and sanitation.
Lake Victoria Environmental Management Project - Phase 2 for Rwanda and Burundi (prepared by NELSAP)	Institutional strengthening, pollution control and watershed management in the L. Victoria basin in Burundi and Rwanda.	Sustainable management of the River Kagera Catchment, including control of evasive water weeds, planning infrastructure among others.
Mivumba falls project (Project taken over for implementation by the government of Rwanda).	Storage of 109 MCM, expansion of irrigated area by 13,000ha, hydropower generation of 2.9MW/ 25.3GWh/year, potable water supply, flow regulation for drought/flood control, and restoration of degraded upper sub-catchment.	Project to improve livelihoods of population through the multidimensional benefits planned.
	USD 25 m secured from AfDB/GEF and the two participating countries.	To benefit 11 million people.
Lakes Edward and Albert Fisheries Project (LEAF I)	US$ 25 m secured from AfDB/GEF and the two participating countries.	To benefit 11 million people.
Regional Agricultural Trade and Productivity Project (RATP)	Burundi, DR Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda	Project outputs informing policy and planning in the agriculture sector
Trans-boundary Integrated Water Resources Management & Development Project in Kagera, Mara, and Sio-Malaba-Malakisi	Burundi, Kenya, Rwanda Tanzania and Uganda	Project outputs promoting the trans-boundary dimensions policy and planning.
Nile Equatorial Lakes Water Resources Development Project for identification of multipurpose water resources development projects/pre-feasibility studies for irrigation development projects	Burundi, DR Congo, Kenya, Rwanda, South Sudan, Tanzania, and Uganda	Appraisal of the irrigation development potential in the NEL region facilitating planning of Irrigation by member states.

Table 1: Summary of investment projects facilitated by NELSAP-CU for the Nile Equatorial Lakes sub-basin and ENTRO for the Eastern Nile sub-basin

Project Description	Benefits	Beneficiaries
Climate change Adaptation Mainstreaming Project for development of guidelines and designing the climate proof water resources project	Burundi, DR Congo, Kenya, Rwanda, Tanzania, and Uganda	Increased success rates of development projects prepared with climate change limitations foresight..
Integrated Management of Trans-boundary Water Resources of Lakes Cyohoha, Rweru and Akanyaru Marshland Project (Bugesera)	Burundi and Rwanda	Sustainable management of the trans-boundary marshlands.
Watershed Management Project	Jointly identified and agreed trans-boundary 60,000 ha of watershed hotspots in Sudan.	Sudan: 65,000 Households.
Eastern Nile Watershed Management – new round of investment projects	Restoration of watersheds integrity in critical watersheds of the Eastern Nile, a capital base for development of the region.	Chemoga (Ethiopia) - 205,000 people; Fincha (Ethiopia) ; 160,000 people; Tilkuk (Sudan) – 185,000 people; Atbara (Sudan); 120,000 people
Ethiopia Tana-Beles Integrated Water Resources Development	Jointly identified and agreed trans-boundary 80,000 ha of watershed hotspots in Ethiopia	Ethiopia: 30,000 households engaged
Ethiopia Irrigation & Drainage Project	Regionally Prepared , nationally implemented project.20,000 ha out of planned 100,000 ha in Ethiopia.	Ethiopia: 56,700 farmers
Eastern Nile Irrigation and Drainage Projects	Irrigation planning and developmt with Tran boundary considerations in view.	Ethiopia: 92,000 people; Sudan: 50,000 people; total: 142,000 people.
Eastern Nile Flood Preparedness and Early Warning Project Phase 1	National Flood Forecasting Centres (NFC) for Egypt and Sudan strengthened and that for Ethiopia established; flood risk mapping completed over 1,750 km^2 – Ethiopia; 778 km^2 – Sudan; Improved regional early warning forecasts distributed daily from ENTRO during flood season	8 pilot communities (>500,000 people) Lake Tana in Ethiopia (>1 million people) in the floodplains in Sudan; 500 persons trained; 150,000 persons in Ethiopia and 200,000 in Sudan benefit from early warning flood season messages
Eastern Nile Flood Preparedness and Early Warning project-Phase 2	Flood disaster management; Government and Non-Government institutions; Flood prone communities	50,000 people benefit directly and another 500,000 indirectly
Eastern Nile Joint Multipurpose Project Study (launch and Identification)	Egypt, Ethiopia, Sudan multi-sectoral water using sectors, public and private. Study identified Abbay/Blue Nile sub-basin as most suitable for cooperation among the three countries on large scale transformational multipurpose water infrastructure development from which each country would derive benefit (win-win outcome)	Regional transformation project for all the population of the Eastern Nile Countries namely; Egypt, Ethiopia, South Sudan and Sudan

Photo: NBI

BURUNDI

As the ultimate upstream country, Burundi is home to the southern-most source of the River Nile found in Bururi province, which is linked from Lake Victoria to its headwaters via the Ruvyironza River. With an estimated land area of 27,834 km^2 Burundi is also the second smallest country among NBI Member States, after Rwanda. About 49.39 percent of the total country area falls in the Nile Basin and 58.8 percent of its population lives within the Basin.

In terms of support to NBI, Burundi provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 4.9 million to-date (Refer to Annex II on page 60).

Burundi has been part of Nile cooperation since the Hydromet project (1967-1992), followed by UNDUGU (1983-1992), before joining NBI in 1999. Burundi signed the Cooperative Framework Agreement on 28th February, 2011.

Access to reliable and affordable electricity

The 80 MW Regional Rusumo Falls Hydroelectric project will provide an additional 27 MW of renewable hydroelectric power to Burundi, bridging the gap between the current installed capacity of 47 MW and the required peak load capacity of 130MW. This will increase the access rates by 5.4% (520,000 people) from the estimated access rate of only 10 percent at present.

Other benefits include reduction in electricity costs, lower final cost of goods and services and a strengthened national power grid. It is anticipated that the project will support economic activity as well as private sector development in areas such as agriculture and related processing, water supply provision, the health and education sectors trade and tourism. There will also be enhanced power trading within the region allowing Burundi to import power when in deficit and to sell surplus power within the region, as well as expand rural electrification by the national utility as more capacity will be available in the national grid at Gitega.

In addition, there will be a reduction in GHG emissions from diesel and other generating sources leading to reduced pollution and an improved environment. Besides substituting thermal generation, the alternative energy sources will save on biomass depletion and deforestation.
This relatively inexpensive electricity will contribute to provide foreign exchange savings and improve balance of payments since the power generated will replace costly imported petroleum products.

Photo: I, SteveRwanda, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=2436031

Bujumbura

Also envisaged is improvement to roads undertaken during dam construction as well as the creation of jobs both during and after construction.

At a regional level, the transmission lines will form a 'backbone system' that will link the Great Lakes region allowing power exchange with Eastern DR Congo as well as other East African Community countries and later, it is envisaged, to the Southern Africa Power Pool. This will facilitate power trade among Member States and beyond and improve regional power supply reliability.

Through the Regional Transmission Interconnection Project (220 KV line, 143 km-long Burundi-Rwanda Interconnection and 220 KV 545 km long Burundi-DRC-Rwanda Interconnection), 15 villages of about 25,000 people and two tea factories (Nshili and Mata) will benefit from rural electrification. Small businesses, schools, and health centers will also benefit.

Additional households will access electricity following construction of multipurpose water resource development projects identified under the Kagera River Basin Management project, namely; Buyongwe (520

Photo: Courtesy, Ministry of Water, Environment, Land Management and Urban Planning, Burundi

households); Ruvyironza (22 MW benefiting 28,000 households), Akanyaru (14.5 MW benefitting 846,000 people both in Burundi and Rwanda) and Upper Ruvubu (3.6 MW) respectively. The additional energy will promote the development of Small and Medium Enterprises (SMEs) in water supply, health and sanitation. It will also result in reduced use of biomass fuels (which exacerbates deforestation) as well as reduce greenhouse gas emission.

Food security

Under the Integrated Management of Transboundary Water Resources of Lakes Rweru, Cyohoha and the Akanyaru marshland project, more than 42,000 farmers (both in Burundi and Rwanda) will benefit from irrigation of 4,200 ha of land in the marsh and the hills , while 320 pilot producer groups will receive 1,280 dairy cows. This is in addition to fishery resources development and management, with more than 4,500 members of fishing communities benefitting from 40 pilot fish cages established in Lake Cyohoha for four fishing cooperatives, four community-based fish hatcheries and nine fishing cooperatives. Last but not least, rural infrastructure will benefit nearly 50,000 families both in Burundi and Rwanda (both farmers and fishermen/women).

Other benefits include irrigation of 980 ha under Buyongwe multipurpose water resources development project targeting 4,900 farmers. This is in addition to livestock watering for 34,000 equivalent LSUs and 74 small fish ponds. Ruvyironza multipurpose water resources development project will benefit 28,000 farmers through irrigation of 14,000 ha. The Akanyaru multipurpose WRD project will benefit 24,000 farmers through irrigating 12,400 ha while the Upper Ruvubu multipurpose WRD project will benefit 15,000 farmers through irrigation of 8,138 ha.

Furthermore, pre-feasibility studies for five irrigation schemes have been prepared covering five focal areas of: Ndurumu – 4,905 ha, Moso – 12,784 ha, Nyanza Lake – 8,616 ha, Nyamuswaga – 3,644 ha and Ruvubu River – 5,265 ha. This is in addition to other outputs delivered by the project, including virtual water trade, a cross-border trade corridor analysis, best practice examples for smallholder irrigation and water harvesting as well as investments to improve livestock export potential to Gulf countries.

All these agriculture-related interventions will contribute to enhanced income through increased production and higher value products, trade development for the supply of inputs and sale of products, reduced food import bills, increased household food security and anticipated improvements in nutritional values and dietary intake.

Water security and environment protection

Under the Integrated Management of Transboundary Water Resources of Lakes Rweru, Cyohoha and the Akanyaru marshland project, 12 water monitoring stations were established including bathymetric analysis of the two lakes. In addition, 765 ha of river banks and lake shores were restored (265 ha around Lake Cyohaha, 200 ha around Lake Rweru and 300 ha around Akanyaru), six community-based wetland management plans were developed and implemented, 2,500,000 agro-forestry and fruit trees were planted, including 300,000 indigenous and bamboo trees in lakes and river catchments areas (0-100m). In addition, 12 catchment management plans were prepared and a basin hydrological and water resources database established while 1,400 wood-saving stoves and 310 biogas digesters were distributed to households. Other benefits include potable water supply for at least 635,000 people, improved income from tourism and recreational, watershed restoration and recreation in the created reservoirs.

DEMOCRATIC REPUBLIC OF CONGO

Rich in rainfall, covered largely in rainforest, the DR Congo is abundant in water resources. With a land area of 2,345,410 km^2 DRC is also vast country – the third largest by area in sub-Saharan Africa and the fourth largest by population. While the country receives more than 2,000 mm of rain annually in some places, and is dominated by the Congo Basin, it is also forms part of the Nile Basin to the east. Though just 0.91 percent of the total country area lies in the Nile Basin and only 3.8 percent of the population lives there, the Nile still plays an important role in the country's ecology and economy. DR Congo shares borders with five other Nile Basin countries (Burundi, Rwanda, South Sudan, Tanzania and Uganda), as well as sharing the water resources of Lake Albert, Lake Edward, Lake Kivu and Lake Tanganyika.

In terms of support to NBI, DR Congo provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 4.9 million to-date (Refer to Annex II on page 60).

The Eastern region of the country feeds the waters of the River Nile through Lake Edward, the Semilki River and Lake Albert, which are shared with Uganda. This is also an area of the country rich in resources including minerals, fish and agriculture. At the same time, these resources need to be developed and managed more effectively and sustainably through cooperative actions with other countries.

DR Congo has been part of the Nile cooperation since UNDUGU (1983-1992), followed by TECCONILE (1993-1999) before joining the NBI in 1999.

Access to reliable and affordable electricity

The NBI has so far facilitated two major power projects in the country, namely the Regional Transmission Interconnection Project: Burundi-DRC-Rwanda Interconnection (length 545 km) which will benefit 15 villages in the districts of Musanze, Nyabihu and Rubavu with about 40,000 people and two tea factories of Nyabihu and Pfunda through rural electrification. Other beneficiaries include small businesses, schools and health centers.

Photo: I, SteveRwanda, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=2436031

Kinshasha

In addition, 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. At least 154,000 others will benefit from rural electrification. Other institutional beneficiaries include small businesses, schools and health centers.

Photo: www.hearcongo.org

Food security

The USD 23.5 million Lake Edward and Albert Integrated Water Resources and Fis-

heries Project will increase the contribution of fisheries to GDP from a 2008 baseline of 1.5% to 3.5%. The project will provide access to safe water, improve people's livelihoods and improve fisheries thus benefiting 5.5 million people.

Other remarkable benefits are a 20% increase in annual aggregate fisheries production from a 2008 baseline of 25,000 MT and a 10% increase in Catch per Unit of Effort (kg fish per boat per day) from a 2008 baseline of 70kg. Other benefits are a 50% reduction in illegal fishing, a 50% reduction in pollutants (water effluents including metals and nutrients) from a 2008 baseline of 2,000 m^3/sec and the establishment of 30 water monitoring stations (from a baseline of 2008 when there were none). During the pilot phase (2006-2009) the community benefitted from development activities such as implementation of small scale projects (through micro-grants) to support to fishing communities for alternative livelihoods and various social measures to accompany reductions in fishing pressure on the resources. They were also given the opportunity to co-manage the fishery resources (development of local management regulations; training /capacity building; and establishment of formal structures) as part of measures to improve the sustainable governance of fisheries in the two lakes.

Furthermore, pre-feasibility studies have been prepared for five irrigation schemes covering the focal areas of Abia Tungudu – 4,358 ha, Boga – 9,361 ha, Rutshuru Mutabo – 7,291 ha, Bilukwa – 1,259 ha, and Kitoba Lubango – 5,664 ha.

Water security and environment protection

The Lakes Edward and Albert Fisheries Project catchment management component is envisaged to improve the water quantity and quality in the sub-basin. The drivers to endemic poverty like land degradation and associated silt load in the water bodies will be addressed through identification and application of best practices.

Communities in Eastern DR Congo have benefitted from afforestation as well as training in environment education.

EGYPT

It is virtually impossible to think about Egypt without thinking of the Nile. The country's history and culture – in fact, its entire existence have been linked to the river since ancient times, prompting the Greek historian Herodotus to call Egypt "the gift of the Nile."

In terms of support to NBI, Egypt provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 6.7 million to-date (Refer to Annex II on page 60).

Those ties are just as strong today, as 30 percent of the total country lies in the Nile Basin and fully 95 percent of the population lives along its banks. The river accounts for nearly all of Egypt's drinking and irrigation water; nearly all farmland is irrigated. At the same time the Nile is also a key transportation route, and supplies about a fifth of Egypt's energy though projects like the Aswan High Dam. The Nile's fundamental importance to Egypt has made water management a priority there for centuries, if not millennia.

Egypt has been part of the Nile cooperation since Hydromet (1967 – 1992), UNDUGU (1983-1992), followed by TECCONILE (1993-1999) before joining the NBI in 1999.

Access to reliable and affordable electricity

Egypt is set to benefit from the ongoing Eastern Nile Regional Transmission Line; Ethiopia-Sudan (Rabak)-Egypt (Nage Hamadi). The Ethiopia-Egypt line in particular will provide 2,000 MW or 7,700 MWh/yr. Furthermore, the country participated in the Eastern Nile Joint Multi-Purpose (JMP) study which identified the Abbay/Blue Nile sub-basin as most suitable for cooperation

Photo: NBI

among the three countries (Egypt, Ethiopia and Sudan) on large-scale transformational multipurpose water infrastructure development from which each country would derive benefits. The Study produced two working papers, Paper 1 on 'Environmental and Social Perspectives on Blue Nile Multipurpose Development' and Paper 2 on 'Strategic Options Assessment for Blue Nile Multipurpose Development'.

Photo: Arne Hoel / World Bank

Cairo at night

Food security

At least 107,200 farming communities will benefit from 25,200 to 27,800 ha under the Egypt Irrigation and Drainage project (West Delta). Additional numbers will benefit from 40,000 ha (rehabilitated and under sustainable land management) through the Eastern Nile Watershed Management Project.

Water security and environment protection

Through implementation of the Lake Nasser-Nubia watershed management investment project (part of the Eastern Nile Watershed Management Project), demography- and poverty-related drivers and causes of watershed degradation have been identified. Also identified are critical Eastern Nile watershed hotspots adversely impacting any future water resources infrastructure development in the region. The capacity of national institutions to undertake watershed management has been enhanced and sediment and water quality monitoring frameworks have been established.

The Flood Preparedness and Early Warning Project strengthened the National Flood Forecasting Centre, including instituting peak-season community surveillance and data acquisition as well as designing communications and flood forecasting systems.

ETHIOPIA

Ethiopia is the source of the Blue Nile (Abbay) which forms by far the largest tributary of the River Nile. Flowing from Ethiopia's Lake Tana the Blue Nile joins the White Nile at Khartoum in Sudan where it contributes about 85 percent of the water that makes up the main Nile. Since Biblical times, the life of the country has been attached to the Nile culturally, politically, and economically. Of the estimated land area of 1,144, 035 km^2, some 32 percent lies in the Nile Basin, and about 40 percent of the population lives there.

In terms of support to NBI, Ethiopia provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 24.2 million to-date (Refer to Annex II on page 60).

Ethiopia has been part of the Nile cooperation since 1999 when the country became a member of the NBI. The country signed the Cooperative Framework Agreement on 14th May, 2010 and ratified it on 13th June, 2013.

Access to reliable and affordable electricity

Fully commissioned at the end of 2013, the Ethiopia-Sudan Interconnector (194 km transmission interconnection between Bahr Dar and Gondar in Ethiopia; and 321 km connecting Gonder-Shehedi-Metema in Ethiopia with Gedaref in Sudan) with a capacity of 100MW has brought a number of benefits to Ethiopia. Nearly 1.4 million households (in both Ethiopia and Sudan) are able to access affordable and reliable electricity. Capacity to generate revenue from exporting power was also raised, to the extent that the export of surplus power has already boosted the country's foreign exchange earnings by USD8.8 million annually. The predominantly hydro-system in Ethiopia has also reaped benefits by being part of a larger power system with Sudan, the significant thermal generation of which provides security of supply in periods of low hydropower production.

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

Photo: The Reporter Newspaper, Ethiopia

Furthermore, Ethiopia participated in the Eastern Nile Joint Multi-Purpose (JMP) Study which identified the Abbay/Blue Nile sub basin as most suitable for cooperation among the three countries (Egypt, Ethiopia and Sudan) in terms of large-scale transformational multipurpose water infrastructure development from which each country could derive benefits (a classic 'win-win' outcome). The Study produced two working papers, Paper 1 on 'Environmental and Social Perspectives on Blue Nile Multipurpose Development' and Paper 2 on 'Strategic Options Assessment for Blue Nile Multipurpose Development'.

Photo: The Reporter Newspaper, Ethiopia

Addis Ababa

The Eastern Nile Regional Transmission Line: Ethiopia-Sudan (Rabak)-Egypt (Nage Hamadi) will enable the country to generate over 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.

Food security

A total of 56,700 farmers will benefit from 20,000 ha of irrigation under the on-going construction of Ethiopia Irrigation and Drainage project. Another 92,000 people will benefit from the 7,500 ha Dinger Bereha irrigation scheme under the Eastern Nile Irrigation and Drainage Projects.

More than 2,800 households benefitted from 14 newly-developed small scale irrigation schemes under the Tana-Beles Integrated Water Resources Development Project in the upper Blue Nile.

Improvements in soil and water conservation, agricultural practices, and access to extension services have led to increases in land productivity in different parts of the country. The project established 35 farmer training centers 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, supplied 735 modern beehives as well as 163 pieces of bee-keeping equipment. With the end of free animal grazing, fodder and livestock productivity also improved significantly.

In addition, small scale farmers and pastoralists in the Baro-Akobo-Sobat sub basin will benefit from implementation of the Baro-Akobo-Sobat multipurpose water resources development study project, which will identify upstream key environmental and social issues in this relatively pristine area and prepare medium and short term projects.

Water security and environment protection

The Tana-Beles Integrated Water Resources Development Project in the upper Blue Nile has carried out a number of physical and biological soil and water conservation measures on 46,276 ha of cultivated land using a combination of technologies. Reduction in rainwater run-off has led to increases in groundwater recharge, river/stream bedflow rates, water flows over time and greater water volume in the system.

New springs have emerged, leading to a noticeable rise in availability of water for domestic use and for irrigation. Land vegetation cover in the protected areas has also increased, and indigenous plant species regenerated. In addition, 680 safe water points have been constructed, providing access to potable water for at least 75,000 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 Eastern Nile Watershed Management programme – new round of investment projects.

The Eastern Nile Flood Preparedness and Early Warning-Phase 1 established the National Flood Forecasting Center and has completed flood risk mapping over 1,750 km^2. 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 is focusing on capacity development in flood risk management and technical institutional strengthening.

KENYA

Kenya is an upstream country of the Nile Basin. The Nile Basin borders Lake Victoria in the country's west. Although it makes up only about nine percent of the country's total area of 593,116 km^2, the basin provides about 50 percent of Kenya's water and its role in the country's economic development seems set to increase. 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 – which contributes most of the flow of the White Nile further downstream.

In terms of support to NBI, Kenya provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 6.2 million to-date (Refer to Annex II on page 60).

Kenya was a member of the HYDROMET: (1967-1992) before joining the NBI in 1999. The country signed the Cooperative Framework Agreement on 19th May, 2010.

Access to reliable and affordable electricity

Photo: iStock

The 256 km, 220 KV Uganda (Bujagali)-Kenya (Lessos) interconnection transmission line under the Regional Power Interconnection project will increase power from 30 MW to 250 MW. This, together with the interconnection from Isinya, 40 km south of Nairobi in Kenya to Singida in Tanzania through the 510 km 400KV Kenya-Tanzania Power Interconnection project will result in accelerated decommissioning of expensive power generation facilities, reduced tariffs and transmission network support to the country's rural electrification programs. An estimated 18,000 inhabitants in villages along the Kenya-Tanzania Interconnection transmission line will benefit from rural electrification along with other beneficiaries including small businesses, schools and health centers.

Electricity supply to rural towns will replace and/or reduce the consumption of woody biomass and petroleum products for cooking, lighting, and power. Other benefits are connection of the Southern Africa Power Pool (SAPP) to the Eastern Africa Power Pool (EAPP) and the wider Nile Basin Region through the Zambia-

Tanzania Interconnection. Other benefits are development in the agriculture sector (including irrigation pumps, poultry, animal husbandry, preservation of food products), the promotion of small- and medium-scale industries (including flour mills, rural water supply installations, tanneries, and coffee processing plants) as well as industrial growth, revenue gains, and reduction of transmission losses. In addition, the projects will result in reduced deforestation and soil erosion as women stop collecting firewood and last but not least, hold out the possibility of an interconnection to Ethiopia.

Photo: Curt Carnemark, World Bank

Nairobi

Additional electricity will be generated from Maira dam and Sango irrigation and watershed management projects respectively under the Sio-Malaba-Malakisi River Basin Management project. The Gucha-Migori multipurpose project will have four dams, which will also generate additional power. These are Bunyunyu Dam (2.0 MW) benefitting 1.1 million people, the Ol Ngobor Dam (10 MW), benefiting 750,000 people, the Gogo Falls (20 MW) benefitting 1.152 million people and the Kodero Dam.

Additional hydropower potential has been identified under four multipurpose water resources development projects in the Yala river basin. These include Keben – 1.5 MW project benefitting 45,000 people, Moi University, a 1.8 MW project benefitting 60,000 people, Nandi Forest – a 50MW project benefitting 372,123 people and Mushangubu, a 42MW project benefitting 360,000 people.

Food security

A total of 61,000 people (in Lwakhakha), 71,000 people (in Lower Sio) and 85,000 people (in middle Malaba) are benefiting in terms of enhanced agricultural productivity following implementation of the sub-catchment management plans in these watersheds. Another 25,000 have also seen an increase in agricultural production as a result of the Sio Siteko Wetland Restoration project.

In addition, Sio-Malaba-Malakisi River Basin Management project will generate multiple benefits including irrigation of 2,000 ha, benefiting 3,000 people under the Maira Dam/Lower Sio Irrigation Development project. Another 12,000 will benefit from irrigation of 1,790 ha under the Sio-Sango irrigation and watershed management project, while a further 400 will benefit from irrigation of 25 ha of the Sitabicha/ Chepkaraam Suswo irrigation schemes.

Furthermore, pre-feasibility studies have been prepared for four irrigation schemes covering the focal areas of Kuja – 5,141 ha, Kano Plains – 7,160 ha, Nzoia River Basin – 3,599 ha, and Sio Basin – 7,248 ha.

The Gucha-Migori multipurpose project will also have four dams, which will contribute to increased agricultural production, namely the Bunyunyu Dam - 3,000ha of irrigation, benefitting 1.1 million people, the Ol Ngobor Dam - 21,800 ha benefitting 750,000 people, and the Gogo Falls - 30,000 ha benefitting 1.152 million people as well as the Kodero Dam.

The Mara River Basin Management project also includes a number of projects contributing to food security. Cases in point are the Norera multipurpose water resources development project where 8,200 people will benefit from 1,200 ha of irrigation, 162,000 others from enhanced agricultural productivity as a result of conservation of Maasai Mau and Transmara Forest Blocks of the Mau Forest Complex. Furthermore, 38,085 from Isei, 41,000 from Engare-Ngiito and 20,816 from Lelaitich, will benefit from sustainable agricultural and land use practices.

Additional irrigation has been identified under four multipurpose water resources development projects in the Yala river basin. These include Keben – 400 ha, (plus 2,000 ha land use management), benefiting 45,000 people, Moi University – 700 ha benefitting 60,000 people, Nandi Forest – 7,000 ha benefitting 372,123 people and Mushangubu – 4,000 ha benefitting 360,000 people.

Soil and water conservation, promotion of sustainable agricultural practices and afforestation implemented under the Mara Integrated Watershed Management Project will conserve 217,305 ha leading to increased farm production.

Water security and environment protection

The various projects implemented under the Sio-Malaba-Malakisi River Basin Management project have generated significant benefits to date. Cases in point are the cross boarder Busia, Malaba and

Lwakhakha pollution control projects where a total of 1.2 million people have benefitted from improved water quality and a cleaner and healthier environment.

The Sio Siteko Wetland Restoration project has seen another 25,000 people benefit in terms of improved water quality and reduced wetland biodiversity loss.

The Angurai water supply project on the other hand has enabled access to clean water supply for 10,000 people while the Malaba solid waste management project has enabled at least 500,000 people to access improved water quality and a clean and healthy environment – including reducing solid waste contamination of the Malaba river.

Bomet waste management project under the Mara River Basin Management project is benefitting 25,700 people in terms of improved water quality through reduction in solid waste discharge into the Nyangores River as well as providing a cleaner and healthier environment. An additional 8,200 have gained access to clean water supply and are also benefitting from flood control resulting from the Norera multipurpose water resources development project. In addition, Mulot water supply and sanitation project is providing clean water to at least 20,000 people.

Other benefits are increased forest cover and restoration of degraded areas in the Maasai Mau and Transmara forest blocks (767 km^2) and climate change adaptation following conservation of Maasai Mau and Transmara Forest Blocks of the Mau Forest Complex as well as enhanced catchment afforestation and reduction in soil fertility loss under the Mara Integrated Watershed Management project.

Additional water storage and supply has been identified under four multipurpose water resources development projects in the Yala river basin. These include Keben – 0.098 MCM storage, 2000m^3/day benefitting 45,000 people, Moi University – 0.158 MCM storage, 12,000m^3/day benefitting 60,000 people, and Nandi Forest – 4.56 MCM storage, 43,000m^3/day benefitting 372,123 people and Mushangubu – 1.96 MCM, 43,000m^3/day benefitting 360,000 people.

The Gucha-Migori multipurpose project will also have four dams, which will contribute to domestic water supply and flood control, namely the Bunyunyu Dam – 14.4 MCM storage 55,910m^3/day befitting 1.1 million people, the Ol Ngobor Dam – 520 MCM storage 36,000m^3/day benefitting 750,000 people, and the Gogo falls – 155 MCM storage 86,400m^3/day benefitting 1.152 million people and Kodero Dam.

Chemaner soil and water conservation demonstration project covered 428 Acres (141 farms), resulting in increased ecosystem resilience and integrity as well as climate change adaptation.

Soil and water conservation, promotion of afforestation implemented under the Mara Integrated Watershed Management project will conserve 217,305 ha leading to enhanced catchment afforestation.

RWANDA

Rwanda is a small, mountainous country in the far southwest of the Nile Basin. The country has water resources totaling some 5 billion cubic meters per year. Almost 84.1 percent of the country area26,338 km^2 is found in the Nile Basin and 81.7 percent of the total population lives within the Basin and is engaged in agriculture. Water management is a key issue.

In terms of support to NBI, Rwanda provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 10.4 million to-date (Refer to Annex II on page 60).

Rwanda has been part of the Nile cooperation since HYDROMET (1967-1992), UNDUGU (1983-1992), followed by TECCONILE (1993-1999) before joining the NBI in 1999. Rwanda signed the Cooperative Framework Agreement on 14th May, 2010 and ratified it on 28th August, 2013.

Access to reliable and affordable electricity

Under the Regional Transmission Interconnection project, the Uganda-Rwanda Interconnection component will increase power supply allowing the transfer of about 150-250MW of electric power along the 172 km power line. There will be reduced power tariffs leading to various social-economic benefits for institutions including small businesses, schools and health centers.

The Burundi-Rwanda Interconnection component (length 143 km) will benefit 15 villages of about 25,000 people while two tea factories of Nshili and Mata will benefit from rural electrification. Others to benefit include small businesses such as schools and health centers.

Burundi-DRC-Rwanda Interconnection

Photo: The New Vision

component (length 545 km) will benefit 15 villages in the districts of Musanze, Nyabihu and Rubavu with about 40,000 people, while two tea factories of Nyabihu and Pfunda will benefit from rural electrification. Others to benefit include small businesses such as schools and health centers. Other benefits are accelerated decommissioning of expensive power generation options such as thermal and the use of generators, load diversity savings, positive contribution to environmental management through reduced deforestation.

Rwanda will also receive an additional 27 MW of power from the Regional Rusumo Falls Hydroelectric project. The additional power will result in an estimated increase in electricity access rates of 5.4% (467,000 people). Other benefits are increases in economic activity as well as private sector development in areas such as agriculture and related processing, water supply, health, education, commerce and tourism. Besides substituting thermal generation, the alternative energy sources will save the biomass/deforestation. Furthermore, the relatively inexpensive electricity will contribute to foreign exchange savings and improved balance of payments since the power generated will replace imported petroleum products. Also envisaged is improved access roads – usually undertaken during construction as well as job creation during and after construction.

At the regional level, the transmission lines will form a 'backbone system' that will link the Great Lakes region allowing power exchange with Eastern DR Congo as well as other East African Community countries and later to the Southern Africa Power Pool. This will facilitate power trade among member countries and beyond and improve regional power supply reliability.

The Taba-Gakomeye multipurpose water resources development project which is part of the Kagera River Basin Management Project will generate 55 kW (Pico hydropower) that can power 550 households while the Akanyaru multipurpose water resources project will generate 14.5 MW, benefitting 846,000 people. These will also contribute to reduced use of biofuels (reducing deforestation), reduced greenhouse gas emission, and saving in energy costs and time fetching firewood with related improvements in health.

Food security

Under the Integrated Management of Trans-boundary Water Resources of Lakes Rweru, Cyohoha and the Akanyaru marshland, irrigation of 4,200 ha will contribute to food security in Rwanda. This is in addition to more than 4,500 fishermen/women benefiting from 40 pilot fish cages established in Lake Cyohoha for four fishing cooperatives, four community-based fish hatcheries, nine fishing cooperatives as well as from the established fisheries information system and database. In addition, more than 42,000 farmers have benefited from technical training and agricultural inputs. Last, but not least, rural infrastructure shall benefit nearly 50,000 families (farmers and fishermen/women).

Photo: Lemurbaby - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=22201101

Kigali

Other benefits are from the Kagera River Basin Management project where the Taba-Gakomeye multipurpose water resources development project has enabled livestock watering for 57,000 equivalent Livestock Units (LSUs) and the establishment of 27 small fish ponds resulting in improved dietary intake and nutritional value

as well as increased income from increased production and higher value products. This project has also contributed to irrigation of 100 ha, benefiting 500 farmers while Akanyaru multipurpose water resources development project on the other hand, will benefit 24,000 farmers from irrigation of 12,400 ha. These interventions will result in increased income from greater levels of production and higher-value products, as well as increased trade development for the supply of inputs and sale of products and a reduced food import bill.

Pre-feasibility studies for five irrigation schemes have been prepared covering the following focal areas: Sake – 2,073 ha, Akagera NP – 6,558 ha, Kigali – 2,694 ha, Muyira/ Butare – 8,618 ha, and Nyabitekeri – 1,927 ha.

Water security and environment protection

Integrated Management of Transboundary Water Resources of Lakes Rweru, Cyohoha and the Akanyaru marshland project generated a number of benefits including establishment of 12 catchment management organizations involving local communities, as well as the restoration of the lakes and river catchments by planting 2,500,000 agro forestry and fruit trees. In addition the project led to the restoration of 765 ha of river banks and lake shores (265 ha of Lake Cyohaha, 200 ha Lake Rweru and 300 ha Lake Akanyaru). Other benefits include the establishment of 12 water monitoring stations including bathymetric analysis of the two lakes, a basin hydrological and water resources database as well as development and implementation of six community-based wetland management plans.

The Taba-Gakomeye Multipurpose Water Resources Development project which is part of the Kagera River Basin Management project will greatly contribute flood control as well as reduced asset, livestock and human losses. The project will also provide potable water supply.

SOUTH SUDAN

Geographically, South Sudan falls almost wholly (96 percent) within the River Nile Basin. Its growth and prosperity are therefore directly linked to developments within the River Nile Basin. The White Nile, a tributary of the River Nile, flowing north through South Sudan is the major geographic feature of the country and supports agriculture and large wildlife populations. South Sudan is also home to the world's largest tropical wetland, the Sudd, with an area of approximately 57,000 km^2.

In terms of support to NBI, South Sudan provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 0.2 million to-date (Refer to Annex II on page 60).

The Republic of South Sudan was admitted to the NBI by the Nile Council of Ministers during their 20th annual meeting held on 5th July, 2012 in Kigali, Rwanda.

Access to reliable and affordable electricity

An indicative strategy and plan for integration of South Sudan's potential power generation options into the regional grid has been completed. The study assessed the viability of Ethiopia-South Sudan Interconnectors (220 KV DC); and the Karuma-Juba Interconnector (400 KV). This will improve power options for not only South Sudan, but the entire region, where the future incremental requirement for power is estimated to be in the region of 1,000 MW per year.

Photo: Atiol Elmalik - South Sudan

Other possibilities for integration of South Sudan into the Regional Grid are the Kenya-Uganda, 400kV line, the Rwanda-Uganda, 220kV line, the Uganda-DR Congo, 220kV line, the Tanzania-Kenya 400 kV line, the Burundi-Rwanda, 220kV line, the Rwanda-DRC, 220 kV line, the Ethiopia-Kenya, 500-kV line and the Tanzania –Zambia, 400kV line (connecting to the Southern Af-

rica Power Pool). When developed, technical studies indicate a tariff of USD0.08/KWh which is attractive when compared with the South Sudan Electricity Company's (SSEC) average tariff of USD0.22/KWh.

Additional agriculture irrigation potential has been identified under the Aswa Basin Multipurpose Water Resources Development project for three projects; Nyimur Project (7,000 ha of irrigation and 14,300 ha of land use management), the Parajok Project (21,800 ha of irrigation). Both projects will benefit people in Magwi town. The Fulla Rapids project on the other hand will have 2,700 ha under irrigation and these will benefit people in Nimule town.

Furthermore, small scale farmers and pastoralists in Baro-Akobo-Sobat sub-basin will benefit from implementation of the Baro-Akobo-Sobat Multipurpose Water Resources Development Study project, which will identify upstream key environmental and social issues in this relatively pristine area as well as preparing short- and medium-term projects.

Food security

The NBI also concluded a multi-sector investment opportunity analysis, which has identified potential investment options in South Sudan. These include some 450,000 ha of potential irrigable land in the Bahr el-Jebel, the Sudd and Bahr el-Ghazal. Expansion of Agricultural Production Pre-feasibility Studies have been undertaken, namely in the Aweil Focal Area with a command area of 3,000 ha, the Pagarau Irrigation Scheme with a command area of 5,000 ha, the Jebel Lado with a command area of 5,000 ha, the Renk Irrigation Scheme with a command area of 3,000 ha and the Wau Irrigation Scheme with a command area of 6,000 ha.

Additional agriculture irrigation potential has been identified under the Aswa Basin Multipurpose Water Resources Development project. Three projects have been earmarked namely; Nyimur project (7,000 ha of irrigation and 14,300 ha of land use management) and Parajok project (21,800 ha of irrigation). Both projects will benefit people in Magwi town. The Fulla Rapids project on the other hand will have 2,700 ha under irrigation and these will benefit people in Nimule town.

Photo: Atiol Eimalik - South Sudan

Juba

Furthermore, small scale farmers and pastoralists in Baro-Akobo-Sobat sub-basin will benefit from implementation of the Baro-Akobo-Sobat Multipurpose Water Resources Development Study project, which will identify upstream key environmental and social issues in this relatively pristine area as well as preparing short- and medium-term projects.

Water security and environment protection

The Baro-Akobo-Sobat Multipurpose Water Resources Development Study project will enhance the water resources planning and management capabilities in the sub-basin through preparation of water resources development plans and projects that respect social, environmental and economic sustainability.

The Parajok Multipurpose Water Resources Development project identified under Aswa Basin Multipurpose Water Resources Development project will provide a 36,000 m^3/day water supply and 520 MCM of water storage. This will benefit the people in Magwi town.

Implementation of the Integrated Management and Development Plan for the Sudd Wetlands is currently underway. The multi sector investment opportunity analysis concluded by NBI also identified potential investment options in South Sudan, including regional opportunities for enhancing river transport and maritime safety as well as port development along the major river systems in South Sudan. This will improve regional trade and boost growth.

THE SUDAN

If any single country can be said to be geographically dominating the Nile Basin, it is surely The Sudan. With an estimated total area of 1,864,049 km^2, The Sudan is the- third largest country in Africa. It makes up 44 percent of the Basin's land area, has 75 percent of its area within the Basin and 87 percent of the population lives in the Basin. The Nile runs through the entire country from south to north providing about 77 percent of Sudan's fresh water. Khartoum is also where the White Nile and the Blue Nile converge to form the main Nile, giving it a central role in the history of the entire Basin.

In terms of support to NBI, Sudan provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 5.7 million to-date (Refer to Annex II on page 60).

The Sudan has been part of the Nile cooperation since HYDROMET (1967-1992), UNDUGU (1983-1992), followed by TECCONILE (1993-1999), before joining the NBI in 1999.

Access to reliable and affordable electricity

The Ethiopia-Sudan Interconnector (194 km transmission interconnection between Bahr Dar and Gondar in Ethiopia; and 321 km connecting Gonder-Shehedi-Metema in Ethiopia with Gedaref in Sudan) has generated a number of benefits for the Sudan. Fully commissioned at the end of 2013 the Interconnector with a capacity of 100MW has enabled nearly 1.4 million households (both in Sudan and Ethiopia) to access reliable electricity. Apart from improved reliability of supply, consumers have gained from lower tariffs of US$ 0.05 per kWh for imported electricity as compared to US$ 0.096 per kWh from power generated domestically.Improvements in reliability and security of supply have yielded benefits including lighting of schools and homes, better access to social services, and greater opportunities for business development. Small- and medium-sized industries such as flour mills, rural water supply installations, tanneries and coffee processing plants are creating employment and contributing to poverty alleviation.

photo: Courtesy, Ministry of Water Resources, Irrigation and Electricity, The Sudan

Other key benefits are ability to better integrate its energy reserve capacities and in the process improve reliability of supply on the interconnected system enabling savings on capital and operating costs. Furthermore, the country participated in the Eastern Nile Joint Multi-Purpose (JMP) Study, which identified the Abbay/Blue Nile sub basin as most suitable for cooperation among the three countries (Egypt, Ethiopia and Sudan). The JMP envisaged large scale transformational multipurpose water infrastructure development from which each country would benefit. The Study produced two working papers, Paper 1 on 'Environmental and Social Perspectives on Blue Nile Multipurpose Development' and Paper 2 on 'Strategic Options Assessment for Blue Nile Multipurpose Development'.

The Eastern Nile Regional Transmission Line; Ethiopia-Sudan (Rabak)-Egypt (Nage Hamadi) will generate additional electricity to benefit 2,000,000 people. A feasibility study for the 1,200 MW or 9,200 MWh/yr Ethiopia-Sudan connection and the Ethiopia-Egypt connection (2,000 MW or 7,700 MWh/yr) has been completed. In addition, over 197 flood-affected communities will benefit from improved river regulation.

Food security

The Eastern Nile Watershed Management project has created a shared understanding of the watershed problems and enabled commitment among the Eastern Nile countries to undertake joint action.

In Sudan, over 27,000 ha of degraded agricultural land has been rehabilitated, and farm yields for dominant crops have shown significant improvement, with sorghum yields increasing from a baseline 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

photo: Courtesy, Ministry of Water Resources, Irrigation and Electricity, The Sudan

Khartoum

from 887 kg/ha to 2,480 kg/ha in Lower Atbara. Over 300 km of livestock routes have been mapped, demarcated and opened for pastoralists, reducing cattle transit conflicts. Over 5,010 ha of rangeland have been reseeded with nutritious and soil rehabilitating varieties of fodder. Fodder production has been initiated in 24 villages.

Under the Eastern Nile Watershed Management project, 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 as well as strengthening the productivity of existing small- and large-scale agriculture through improved agricultural water use. At least 50,000 people will benefit from 7600 ha (plus 107,000 ha in other areas) under the Wad Meskin irrigation project.

Water security and environment protection

The Flood Preparedness and Early Warning project aims at enhancing regional collaboration and improving national capacity in the mitigation, forecasting, early warning, emergency preparedness and response to floods in the Eastern Nile Basin. Among other things, The Sudan National Flood Forecasting Center (NFC) was strengthened and flood risk maps prepared for over 778 km^2 covering the entire reach of the Blue Nile from El Deim to Khartoum. In addition, a number of flood-related activities were funded at the national level. These include flood risk mapping studies, development of technical flood embankment manuals and guidance on voluntary resettlement policies. A total of 1.3 million people from 198 flood-prone communities are benefitting from the project interventions, with some 200,000 benefitting directly and 1.1 million indirectly.

The Baro-Akobo-Sobat Multipurpose Water Resources Development Study project will enhance the water resources planning and management capabilities in the sub-basin through preparation of water resources development plans and projects that respect social, environmental and economic sustainability.

The Eastern Nile Regional Transmission Line: Ethiopia-Sudan (Rabak)-Egypt (Nage Hamadi) will benefit 197 flood-affected communities in Sudan through improved river regulation.

TANZANIA

Tanzania is a country with abundant water resources stored or flowing in dozens of major rivers and lakes. Though it only covers about 13 percent of the national area, the basin borders on Lake Victoria, offering a wide range of opportunities and affecting the entire economy. Some 21 percent of the country's population lives in the Nile Basin.

In terms of support to NBI, Tanzania provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 5.6 million to-date (Refer to Annex II on page 60).

The United Republic of Tanzania has been part of the Nile cooperation since HYDROMET (1967-1992), TECCONILE (1993-1999) before joining NBI in 1999. Tanzania signed the Cooperative Framework Agreement on 14th May, 2010 and ratified it on 26th March, 2015.

Access to reliable and affordable electricity

The 80 MW Regional Rusumo Falls Hydroelectric project will provide an additional 27 MW of renewable hydroelectric power to Tanzania with an estimated increase in electricity access rates of 0.34% (159,000 people). Improved access to renewable clean energy will lead to an increase in economic activity as well as private sector development in areas such as agriculture and related processing, water supply, health, education, commerce and tourism. It will also substitute for thermal generation. Alternative energy sources will support a reduction in biomass loss and deforestation. Furthermore, this relatively inexpensive electricity will contribute to foreign exchange savings

and improved balance of payments since the power generated will replace imported petroleum products.
Also envisaged are improved access roads – usually undertaken during construction as well as job creation during and after construction (it is estimated that 1,000 people in total will be employed by the project).

At a regional level, the transmission lines will form a 'backbone system' that will link the Great Lakes region allowing power exchange with Eastern DR Congo as well as other East African Community countries and, later, connecting to the Southern Africa Power Pool. This will facilitate power trade among member countries and beyond and improve regional power supply reliability.

The Iringa-Mbeya Interconnection on the other hand will reinforce the Tanzanian power grid and extend the 400 KV system up to Mbeya and later to Kasama (Tanzania's border with Zambia). This project will benefit 72,000 inhabitants in villages along the transmission line through rural electrification. It will also be part of the main Kenya-Tanzania–Zambia Interconnection that will link the East African Power Pool/NBI grid to the Southern Africa Power Pool (SAPP).

The 400 KV Kenya-Tanzania Interconnection starting from Isinya substation, 40 km south of Nairobi to Singida in Tanzania through Arusha, will add 510 kilometers to the existing grid. A total of 18,000 inhabitants in villages along the transmission line will benefit from rural electrification with other beneficiaries being small businesses, schools and health centers.

Furthermore, hydropower of 2.5 MW, from Ngono Valley Multipurpose Water Resources Development project under the Kagera River Basin Management project will benefit 20,000 households while 3MW under Borenga multipurpose storage reservoir will benefit 26,000 people. Benefits include saving time spent on fetching firewood as well as improved health; reduced use of biofuel (deforestation); greenhouse gas emission; saving in energy costs and creation of more income generating activities.

Photo: Courtesy, Ministry of Water and Irrigation, Tanzania

The 1,000 km Tanzania (Mbeya)-Zambia (Kabwe) transmission line will complete the Kenya-Tanzania-Zambia connection, making the significant link between the EAPP and the SAPP.

Food security

Besides increased food security, a number of hectares put under irrigation by the different water resource development projects facilitated by the Kagera River Basin Management project will benefit farmers in various ways. These include higher income from increased production and higher value products, increased trade development for supply of inputs and sale of products and a reduced food import bill. The projects include Ngono Valley Multipurpose Water Resources Development where 13,680 ha irrigation will benefit 22,000 farmers and Karazi Multipurpose Water Resources Development where irrigation of 493 ha will benefit 2,465 farmers. This also includes livestock watering for 72,000 equivalent Livestock Units (LSUs) and 22 small fish ponds.

Additional benefits are from activities facilitated by Mara River Basin Management project. Soil and water conservation, promotion of sustainable agricultural practices and afforestation under the Mara Integrated Watershed Management Project will conserve 217,305 ha leading to increased farm production while Marasomoche Livestock Improvement Centre will benefit 2,500 livestock keepers in terms of improved animal/livestock husbandry, increased livestock productivity, value addition to livestock products and reduced soil erosion due to overloaded land bearing capacity.

Irrigation of 8,340 ha under Borenga multipurpose storage reservoir will benefit 26,000 people. Another 44,000 people in 15 villages in Tobora sub-catchment and 37,000 others in 13 villages of Somoche sub-catchment will benefit from sustainable agricultural and land use practices in the sub catchments.

Under the Mara Valley Irrigation and Watershed Management project, 26,000 people will benefit from irrigation of 8,340 ha. Some 400 ha under Nyakunguru irrigation and watershed management project will benefit 2,220 people, and another 450 ha under Mesaga irrigation and watershed management project will benefit 1,920 people.

Pre-feasibility studies for five irrigation schemes have been prepared covering the focal areas of Biharamulo – 3,994 ha; Geita Plains – 3,698 ha; Katunguru – 1,495 ha; Simiyu Duma Valley – 5,284 ha, and Suguti Valley (Musoma) – 499 ha.

Photo: Alidamji at English Wikipedia, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=46877997

Dar es Salaam

Water security and environment protection

The Mara River Basin Management project has facilitated a number of projects aimed at making water accessible to communities, both for domestic and livestock uses. Benefits accruing from these efforts include clean water supply, improved health through reduction of waterborne and water related diseases, time saved from reduced fetching distances used in other economic activities and provision of a clean and healthy environment.

Among the projects is Bisarwi Small-holder Irrigation Project benefitting 5,620 people, the Weigita community water supply and sanitation project benefitting 4,388 people, the Kewanja and Nyangoto solid waste management project benefitting 24,244 people, the Nyamongo Alternative AS mining practices benefitting 15 groups of small scale miners, the Borenga multipurpose storage reservoir and Mara valley irrigation and watershed management project each benefitting 26,000 people.

Other benefits derive from projects implemented under Kagera River Basin Management Project. The multi-purpose water resources management projects of Karazi and Ngono Valley have provided potable water supply to 120,000 people and 20,000 people respectively.

Besides increasing access to water, the Mara River Basin Management project has also contributed to environment protection. Cases in point are increased forest cover and restoration of degraded areas in the Maasai Mau and Transmara forest blocks covering 767 km^2. Under Mara Integrated Watershed Management Project, 217,305 ha will be conserved for enhanced catchment afforestation. In addition, sustainable wetlands management (Napuiyapui and Masurura) of 6,300 ha will reduce wetland biodiversity loss.

Still under the Mara River Basin Management project, the Borenga multipurpose storage reservoir will control flooding to downstream users, benefitting 26,000 people, while Tobora and Somoche sub-catchments will reduce erosion, improve vegetation cover and steady the flow of water. This will benefit 44,000 people in 15 villages in Tobora sub-catchment and 37,000 others in 13 villages of Somoche sub-catchment.

UGANDA

Uganda has played a key role in the story of the River Nile ever since 1862, when the explorer John Henning Speke found the spot at Ripon Falls where the river flows out of Lake Victoria, near the current day town of Jinja. The country has hosted previous cooperation mechanisms on the Nile, namely the HYDROMET (1967-1992) and TECCONILE (1993 – 1999).

In terms of support to NBI, Uganda provides financial contribution as per the agreed increments in table 3 on page 54. This is in addition to in-kind contribution of USD 9.54 million to-date (Refer to Annex II on page 60).

With 99.51 percent of the total area of Uganda in the Nile Basin, and 99.5 percent of the population living within the Basin, the river touches the lives of nearly all of the country's population. As it meanders north and west from Lake Victoria, crashing through the magnificent Murchison Falls before turning north at Lake Albert, the river is used for hydropower generation, transportation, fishing, agriculture and a wide range of other activities.

Uganda has been part of the Nile cooperation since HYDROMET (1967-1992), followed by UNDUGU (1983-1992) and later TECCONILE (1993 – 1999) before joining NBI in 1999. Uganda signed the Cooperative Framework Agreement on 14th May, 2010.

Access to reliable and affordable electricity

Under the on-going Interconnection Project of Electric Grids of the Five Nile Equatorial Lakes countries, Uganda's power supply will be increased allowing the transfer of about 150 -300MW of electric power along the 255 km Uganda-Kenya power line. This will also reduce power tariffs leading to various socio-economic benefits including small businesses such as schools, health centers, among others.

Other energy benefits will be generated from the Uganda-DR Congo 396 km high-voltage Power Transmission Line and associated substations.

An additional 100 kW will be generated from Pico hydropower under the Kabuyanda multipurpose water resources management project facilitated by the Kagera River Basin Management project. This will not only save energy costs but also time spent on fetching firewood, the latter resulting in improved health.

Photo: The New Vision

Photo: By Andrew Regan - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=11082077

Kampala

Food security

A number of hectares planned for irrigation by the different water resources development projects facilitated by the two river basin management projects of Kagera and Sio-Malaba-Malakisi respectively, will benefit farmers in different ways including generating income from increased agricultural production and higher value products, increasing trade development for the supply of inputs and sale of products, and reducing the food import bill and increasing household food security. These include 450 ha irrigated command area under Bigasha multipurpose water resources development project that will benefit 118,000 farmers, provide livestock watering for 151,000 equivalent Livestock Units as well as 20 small fish ponds; and another 4200 ha, under the Kabuyanda Multipurpose Water Resource Development project that will benefit 28,000 farmers.

Other planned projects include 110 acres under Lukhuna Irrigation Demonstration Scheme benefiting 500 people and the proposed 5,530 ha under the Nyabanja Irrigation and Watershed Management project, which will benefit 12,000 people. Other projects include 415 ha under Nyamatunga Irrigation and Watershed Management project that will benefit 5,000 people; 341 ha, under Lirima Irrigation and Watershed Management will benefit 5,154 people and 480 ha under Bukhabusi Irrigation and Watershed Management project will benefit 6,200 people. Busia community fish ponds on the other hand will benefit 2,250 people. Besides higher income from increased production and higher value products, projects will also contribute to improved dietary intake and nutritional value.

The USD 23.5 million Lake Edward and Albert Integrated Water Resources and Fisheries project will increase the contribution of fisheries to GDP from 2.5 percent to 4.5 percent. The project will provide access to safe water, improve people's livelihoods and improve fisheries thus benefiting more than 2.5 million people.

It is anticipated that the project will generate a 20% increase in annual aggregate

fisheries production from a 2008 baseline of 25,000MTand a 10% increase in Catch per Unit of Effort (kg fish per boat per day) from a 2008 baseline of 70kg. Other benefits are a 50% reduction in illegal fishing, a 50% reduction in pollutants (water effluents including heavy metals and nutrients) from a 2008 baseline of 2000m3/sec, and the establishment of 20 water monitoring stations (in 2008 there were none).

During the pilot phase (2006-2009) the community benefitted from small scale projects (through micro-grants) that supported fishers for alternative livelihoods and other social measures to accompany reductions in fishing pressure on the resources. They were also given the opportunity to co-manage the fishery resources (development of local management regulations; training /capacity building; and establishment of formal structures) as part of measures to improve the sustainable governance of fisheries in the two lakes.

Uganda is also benefitting from the 2 million Euro, Nyimur Multipurpose Water Resources Project that is undertaking Feasibility studies and designs for irrigation, electricity, flood mitigation as well as watershed management.

Furthermore, pre-feasibility studies for irrigation schemes have been prepared covering the following areas: Acaba – 4,327 ha; Soroti – 6,619 ha; Rwimi – 4,415 ha and Lumbuye – 9,812 ha.

Water security and environment protection

A number of projects have been developed that aim to increase domestic water supply and water for livestock. These include activities under the Sio-Malaba-Malakisi River Basin Management project such as Mella Water Supply and Sanitation project that is benefitting 12,000 people in Tororo, the comprehensive Malaba town storm water and drainage master plan expected to benefit 500,000 people, the proposed Nyabanja Irrigation and Watershed Management Project and Nyamatunga Irrigation and Watershed Management project.

In addition there are a number of small scale projects such as Lwakhakha Pollution Control that will benefit 20,000 people. Furthermore, a total of 100,000 community members will benefit from implementation of the Lwakhakha Sub-catchment Management Plan.

Other significant results of the project are enhanced access to data and information for water resources planning following the installation of 40 standard rainfall stations, six automatic weather stations, 12 river gauging stations and 58 hydro-meteorological stations as well as the Sio-Malaba-Malakisi State of the Basin Report.

CHAPTER 2

Photo: NBI

Training NB DSS users at Nile-SEC

Enhanced capacity to jointly manage and develop shared water resources

When the NBI was launched, there were substantive capacity differences between the Basin States. Many countries lacked trans-boundary water resources management and development capacities including in the academic and professional realms. Addressing this challenge, including capacity to cooperate and sustain gains over time became a prerequisite and therefore a priority. Capacity needs assessment was conducted and critical short- and long-term gaps identified. A multi-pronged approach was taken that embedded capacity development in each of the projects of the SVP program. The latter was conceived as a special program aimed at capacity development not only of professional competencies and capabilities, but also of capacity to cooperate, building trust and confidence among Basin States as a means by which to provide a wider enabling environment for investments facilitated by the two SAPs.

Training new cadres of Nile experts

Extensive range of technical training intended to leverage the capacity of countries to manage water resources in a more sustainable manner and with a trans-boundary orientation continues to be offered in particular to government officials of Member States. This is through specific training programs, such as the Shared Vision Program's (2002-2009) Applied Training Project which trained citizens at Doctorate, Masters and postgraduate diploma level, the Institutional Strengthening Project, as well as through other sub-programs and project preparation processes. Training has covered technical issues (e.g. hydrology, Integrated Water Resource Management, modeling tools, dam safety assessment and environmental and social issues) that address sectoral capacity constraints, of particular importance to upstream countries. Capacity to cooperate has been leveraged through training in various fields including communications, advocacy, media management, stakeholder dialogues, hydro-diplomacy and benefits of trans-boundary perspectives.

Different modes, tools and approaches have been employed including various training modules and sessions, coa-

REMARKABLE RESULTS TO DATE

Considering that capacity development is a continuous process, the NBI continues to identify and seize capacity development opportunities so as to sustain gains made in last 17 years and to keep up to date with evolving best practice in basin management and development. While it may be difficult to monitor and measure the impact and level of attribution to NBI's capacity development efforts it is known that much of the knowledge gained has been applied across sectors in the Member States. The following are some of the remarkable achievements from capacity development undertaken:

- A strong cadre of trained water professionals hitherto lacking in most Nile countries. Overall, more than 30,000 people have benefitted from capacity development in key technical areas.
- The qualitative and quantitative disparities in capacities among the Member States and of the institutions and the professionals involved have been fairly even.
- There is increased recognition and relative uniformity in consideration of trans-boundary water resources management and development in the Member States.
- Trans-boundary dimensions have been strengthened in the national water policies of Member States, with technical assistance extended to Kenya and Rwanda, specifically, in the revision of their Water Policies.
- Transboundary considerations within institutional formations have been gaining prominence with an increasing number of countries establishing a dedicated department or unit within established structures.
- Six universities and tertiary training institutions have been strengthened by hardware, software, curriculum, and teaching materials with training modules subsequently adopted by universities
- Improved policy and decision makers' awareness on water resources planning and management enhanced through targeted appreciation workshops, exchange visits, and advocacy.
- Countries have developed capacity to identify and prepare bankable joint investment projects, with an impressive ratio of USD 1 spent on project preparation leveraging investment worth USD10.
- NBI countries are now capable of applying state-of-the-art analytical systems, using the most sophisticated technologies to derive multi-criteria and identify key trade-offs.
- The participation of NBI institutions and experts in the international arena within both high-level technical meetings and dialogues has greatly expanded during the past 17 years, especially in water resources development and related fields.
- Enhanced common understanding of the river system, including potential for development and the risks of non-cooperation.
- The presence of sophisticated monitoring and evaluation systems indicates significant human and institutional capacity in place.

Countries have developed capacity to identify and prepare bankable joint investment projects, with an impressive ratio of USD 1 spent on project preparation leveraging investment worth USD10

ching and mentoring, technical support and assistance, e-learning (with modules on the Nile Basin Decision Support System and on-boarding, among others), hands-on demonstration and exercises, professional experience sharing programs, study tours, as well as internships and intensive engagement in all NBI activities and tasks. Capacity development has subsequently been approached from two main fronts: the long-term capacity development in which students from Basin States have pursued postgraduate training in masters, doctoral and postdoctoral courses, and short-term capacity development including training workshops, exchange visits and study tours. Many Basin citizens have benefited from this dual approach to capacity development.

Capacity development across sectors and on regional approaches to development

The NBI approach has also focused on specific challenges including fragmentation between sectors, limited integration among various sectors of water use, and between water quantity and quality, and surface and groundwater. Programs targeting both the short-and

Some of the young professionals who have benefitted from the NBI internship program

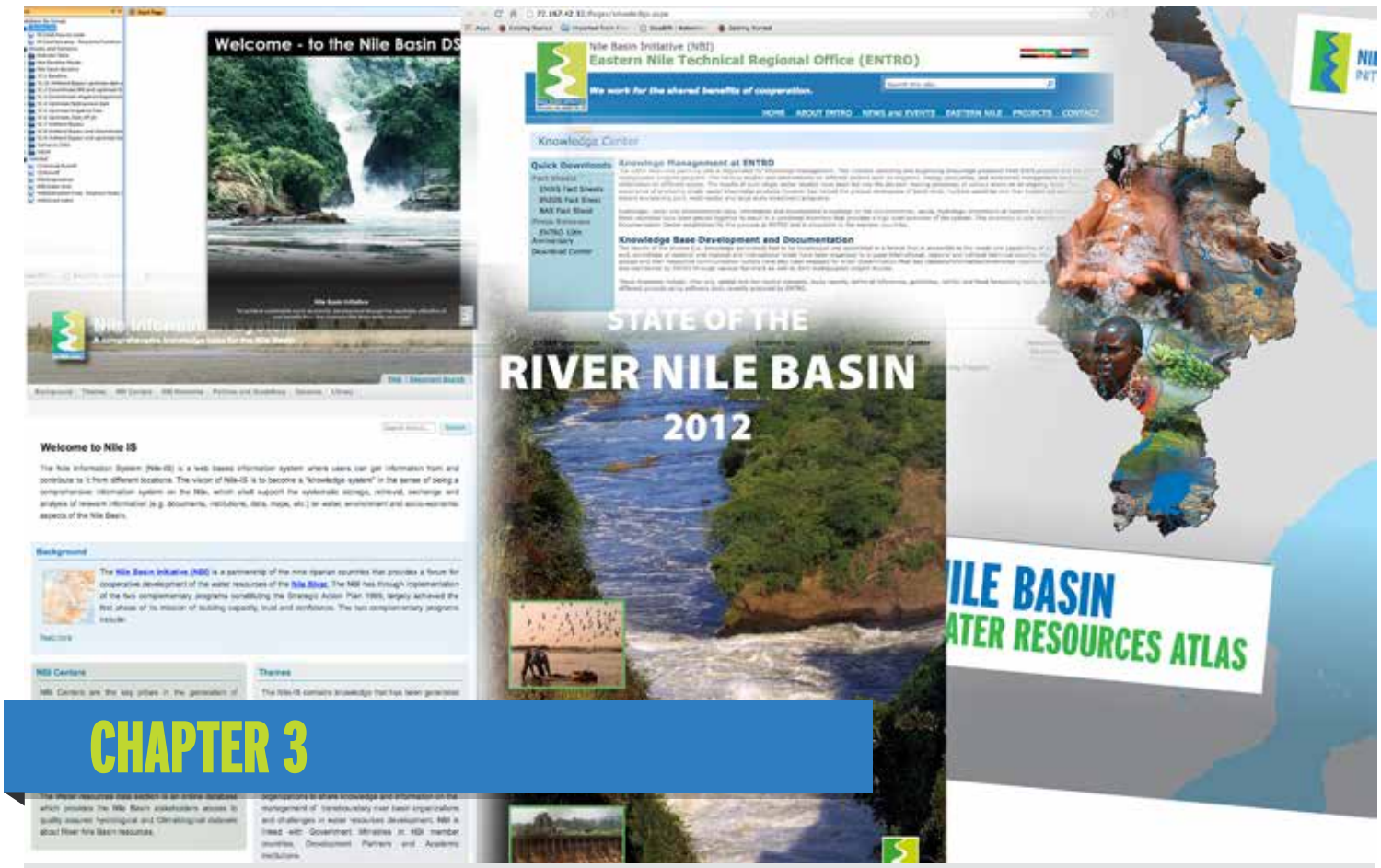
"NBI has continued to train professionals in water and related fields and also equip our countries with information on existing development potentials to benefit our people". Hon. Sam Cheptoris, Minister of Water and Environment, Uganda - speaking during the 24th Annual Nile-COM meeting – 14th July, 2016.

long-term capacity needs and specific areas were designed. The NBI also provided in-country and high priority training sessions related to water policy formulation and implementation, as well as trans-boundary and technical dimensions of Integrated Water Resources Management (IWRM). In order to address long term capacity needs, NBI provided fellowships that prioritized Training of Trainers targeting groups of postgraduate trainees. This is in addition to establishing the Nile Basin University Forum (NBUF) as a basin wide network of lead training institutions in IWRM.

The benefits of cooperation are most keenly felt where regional processes are effectively integrated into national development. The NBI has implemented projects and activities aimed at strengthening the capacity of national institutions in order to improve inter-sector coordination and planning at a national level and to support cooperative management of Nile resources. This is in addition to improving the integration of NBI programs and projects into national development contexts including areas of finance, water, environment, energy, agriculture, and foreign affairs.

Table 2: Numbers of individuals trained

Group	No. of Training Workshops/ Tours	No. trained	Description
Formal			
PhD	2	15	Courses leading to PhD in water relevant disciplines undertaken.
MSc	2	111	Courses in water and its related fields undertaken leading to MSc degrees.
Postgrad Diplomas	2	50	Postgraduate courses organized to enhance capacity in water related disciplines.
Institutional capacity development			
Permanent Secretaries of Water	2	9	Study tour to Eastern Nile Watershed restoration and Rusumo Falls
Nile-TAC	4	18	Hydro diplomacy, Study tours to Niger Basin Authority, Okacom and the Mekong River Commission
National NBI Desk Officers	9	9	Multi-stakeholder dialogues, advocacy and communication, media relations, results-based work planning and reporting (6)
Communication Officers	3	9	Media relations, advocacy and communication, results-based work planning and reporting
Media/journalists	3	100	VoA supported regional media training, SIWI supported Eastern Nile Media training; study tours to Rusumo, Jinja, Alexandria and Bahir Dar
NB DSS User community	3	50	
Environment experts	1	4	Eastern Nile water professionals have been to China, Rwanda and TZ on study tours
Members of Parliament	4	72	EN Parliamentarians visited Lesotho highlands, Sudan, Ethiopia
Program/Project-based Capacity Development			
Confidence Building and Stakeholders' Involvement Project	90	570	ENSAP, NELSAP, Nile-SEC training workshops in various confidence and capacity building arenas
EWUAP Trainings	8	400	Regional training sessions in efficient water use for agriculture, water harvesting
EWUAP	15	300	National training sessions in efficient water use for agriculture, water harvesting.
EWUAP Study tours	9	149	Study tours within basin 5 and outside basin 1
RPT Project	23	788	Beneficiaries have ranged from hands-on technocrats to CEOs of power utilities and permanent secretaries of government ministries responsible for power development (Energy/Electricity, Finance, Planning and Water)
NELSAP Kagera RBM Project Trainings Study tours	 8 5	 157 70	Training in: project planning and management - 24 (16 women and 8 men); ESIA 29 (10 women and 19 men); Hydrometry 13 (2 women and 11 men); Mike Basin 18 (4 women and 14 men); NB DSS 3 (1 woman and 2 men); IWRM 34 (13 women and 21 men); Conflict Management and Resolution 26 (17 women and 9 men); Rwanda Hydromet installation 10 (1 woman and 9 men) Study Tours were conducted to: ORASCOM/KOMATI 8 (1 woman 7 men); Loess Plateau 8 (1 woman and 7 men); Kasese 24 (3 women and 21 men); Niger Basin Authority 9 (2 women and 7 men); Rufiji Basin 21 (4 women and 17 men)
NELSAP Sio-Malaba-Malakisi Project Training Study tours	 8 4	 113 62	Training of: 6 staff and 60 community members on IWRM; 34 (13 women and 21 men in community-based watershed management); 8 (1 woman and 7 men) trained on use of DSS; 3 staff trained in social analysis techniques; 2 staff trained in use of World Bank procurement guidelines for consultants and works. 40 (12 women and 28 men participated in exchange visit with Ewaso Ngiro North catchment area); 6 county staff and 8 community members participated in study tour to Pangani basin in Tanzania; 2 staff participated in study tour to Loess in China; 6 staff (1 woman and 5 men) participated in the Niger Basin Study tour.
NELSAP Mara RBM Project Training Study tours	 	 4,605 79	2,300 persons benefitted from awareness creation meetings; 14 on technical training; two were trained in MS Project and Advanced MS Excel; four attended training in social analysis; more than 2,285 on awareness creation. 79 from international study tours;
Young Professionals			
Nile-SEC, NELSAP -CU and ENTRO Internship programs		137	Young and mid-level professionals who have benefited from NBI's internship program across a range of subject matter training aimed at facilitating technology and knowledge transfer.



CHAPTER 3

NBI's knowledge and analytic tools

Knowledge and analytic tools for improved decision making

Before NBI was established, basic information about the Nile system was lacking in many basin contexts. Ad hoc approaches prevailed and development planning relied mainly on approximations and hypotheses. Besides countries lacking a thorough understanding of the biophysical phenomena and hydrological characteristics of the basin there was a shortage of reliable analytical tools as well as widely acceptable analytic framework. Further still the level of cooperation and sharing of knowledge and data was minimal. Indeed, a prominent challenge hindering greater cooperation was precisely the lack of commonly-acceptable sets of data and information. Under NBI, the knowledge landscape has changed dramatically.

One key improvement has been provision of knowledge services that enhance shared scientific knowledge and provide credible and impartial information for better decision making on the management and development of shared Nile Basin water resources. Associated with this is development of tools of analysis. As a result, more and more is known about the Nile Basin as more is made available across the basin in support of more robust planning and development strategies for improved livelihoods.

Bringing data together for use

The NBI drives a process of drawing together key data to inform key sector decision makers and the wider public. Cases in point include the regular State of the River Nile Basin report widely used by NBI Member States for informed planning and decision-making. The report provides evidence-based

Sharing a common analytic framework boosts the individual capabilities of member states, enables cross-learning and sharing of experience, and improves water resources planning and development practice.

data and information on Nile biophysical features and characteristics covering hydrology of the river, demography, economic and social changes, the environment and human resources development among others. On the other hand, the Water Resources Atlas for the Nile Basin presents well synthesized and interpreted information with a special focus on spatial and temporal distribution of the resources within the Basin. Both documents are used as

Photo: NBI

Participants in a group discussion during NB DSS training at Nile-SEC

"Egypt fully supports the right of the Nile Basin countries for development and efforts exerted in that direction, with the understanding that a strong and sustainable development of the Nile Basin countries requires a strong commitment towards transparency, shared vision, development based on a win-win situation, joint management of shared resources based on scientific and well researched projects and programs". H.E. DR. Mohammed Abdel Aty, Minister of Water Resources and Irrigation, Egypt, speaking during the 24th Annual Nile-COM meeting – 14th July, 2016

tools for periodic monitoring and wide dissemination of trustworthy information on the Basin.

The comprehensive knowledge platforms namely the Nile Information System (Nile-IS), ENTRO's web portal, Nelshare and the library have proved to be very resourceful to Nile Basin institutions and individuals alike. Accompanying these is the Information Disclosure Policy aimed at promoting and regulating information sharing. Subscriptions are rising and items made available have already substantially contributed to building, harmonizing, and affecting the use of credible and impartial information in support of substantial improvements to Integrated Water Resources Management and Development across the Basin.

In the absence of a fully ratified Cooperative Framework Agreement (CFA), NBI developed the Nile Basin Data and Information Sharing and Exchange Interim Procedures to guide, stimulate and facilitate exchange and sharing of data among all riparian countries. The interim procedures are further supported by a comprehensive set of guidelines. The Nile Basin Monitoring Strategy was prepared to guide the regional Hydromet system design that integrates all national networks, data management systems, and attributes to provide comprehensive sets of hydrologic and meteorological real time data and information that are openly accessible to all NB countries. Real time data is necessary for proper planning, operation, and prediction and management of natural disasters such as floods and droughts.

Analytic tools

In response to the growing demand from its Member States for quantitative information on the benefits, effects and limitations of different activities in trans-boundary water cooperation, NBI together with Member States developed the state of the art Nile Basin Decision Support System (NB-DSS). The latter is NBI's flagship innovation in the field of water resources planning. The NB DSS provides Member States with a set of analytical and scenario multi-criteria evaluation tools to ensure efficient management and optimal use of the Basin's shared water resources.

Sharing a common analytic framework boosts the individual capabilities of member states, enables cross-learning and sharing of experience, and improves water resources planning and development practice. At the same time it provides a commonly-acceptable platform for addressing regional issues with high confidence in the results, outputs and recommended strategic measures.

International Best Practices and the Environment

The Nile Basin Sustainability Framework (NBSF) is a suite of policies,

Photo: iStock

Agriculture irrigation

strategies and guidance documents. It supports enabling environment for trans-boundary investment projects and promotes integration of shared benefits, participation and environmental concerns that ensure investment projects have long-term benefits. It also provides strategic directions and policy landscape for sustaining the health and integrity of the river system, guides sustainable development basin-wide, and informs water and related natural resources cooperative planning, management and development.

Taken together, the Environment and Social Policy (ESP), Climate Change Strategy (CCS) and Wetland Management Strategy (WMS) provide a shared framework, agreed principles, joint methodologies and unified approaches, as well as a set of systematic tools and instruments that support basin wide and sub-basin projects.

Operationalization of the policy instruments has addressed the critical needs and priorities of investment project preparation by the two NBI Subsidiary Action Programs (under ENTRO and NELSAP-CU) and those at national level. These included efforts and undertakings to harmonize the Social and Environmental Management Guidelines, enhanced capacities to develop Resettlement Action Plans, strengthening Transboundary Water Management components in national policies and assisting Member States in monitoring the policy provisions as well as providing replicable blended learning courses for NBI national focal points.
In recognition of the challenges of social dimensions in trans-boundary water resources development, the NBI has also supported countries to abide by women's rights through the "Gender Mainstreaming Strategy". This document supports gender mainstreaming in both regional and national practices and endeavors, covering the entire spectrum of women's engagement and involvement in all levels of planning, decision making and implementation. The Communication and Stakeholders Engagement Strategy" also provides structure and clarity in addressing the need for stakeholder involvement in river basin development. The strategy ensures a structured means of full participation of all categories of actors and stakeholders within the whole cycle of basin-wide planning and management of natural resources and decision making processes.

In order to ensure the health and environmental conditions of the Nile and its eco-systems, environmental flow strategy and technical implementation manual have been prepared. The development of the strategy and guidance documents involved technical experts

Photo: iStock

Scarcity of water

One key improvement has been provision of knowledge services that enhance shared scientific knowledge and provide credible and impartial information for better decision making on the management and development of shared Nile Basin water resources.

from all basin countries in addition to decision makers. Integrating environmental flows within the context and practices of national and regional water resources planning will assist the NB States in meeting development needs in sustainable manner.

Addressing climate change and biodiversity

Besides being faced with poverty, instability and rapid environmental degradation, the Nile Basin region is prone to high seasonal and inter-annual variability in rainfall. Climate change will increase the vulnerability of some basin countries and could even reverse development gains so far achieved. To help mitigate and adapt the Basin to climate change, NBI developed a Climate Change Strategy that describes how all NBI projects and programs are climate proofed and also how the countries could effectively adapt to climate change impacts.

This is in addition to undertaking analytic work to downscale the Global Circulation Models (GCMs) into a Regional Circulation Model (RCM) that informs riparians of possible climate change impacts – in both time and space - and suggests necessary measures to adequately adapt to those impacts as well as supporting structural measures such as afforestation, soil stabilization, adjusted cropping patterns, diversifying sources of income, migration to locations that are less prone to severe weather events (floods and droughts). Others are uptake of low-carbon technologies, and modernized agricultural practices and non-structural measures such as risk mitigation plans and preparedness to disaster management. Furthermore, effects of climate change are taken into account within the context of Nile water resources strategic analysis; both water supply and demand projections factor in climate change.

As part of Nile Basin Monitoring, the Nile Basin Regional hydro-meteorological monitoring system serves and equally responds to both regional and national (Nile Basin countries) needs and demands in terms of data and information and also aims to improve information in the public domain. Associated with this is mapping actual evapotranspiration. Data is estimated for the Nile Basin every eight days, monthly and annually, and is available freely to Member States via the Nile Information System. Eight-day and annual values for any area of interest are availed not only on request but also openly through NBI electronic means such as the Nile-IS.

SHOW CASE: USE OF THE NB DSS

Since its launch in 2012, the NB-DSS has been applied at regional level to support regional 'joint' water resources planning and management. A case in point is the use of the tool to support water strategy development and catchment planning processes. And with more than 400 licenses distributed, the tool has supported development planning and socio-economic growth at national level and it has become common practice to apply the NB-DSS in resolving water use competition and water management problems.

The NB-DSS is used for the Multi Sector Investment Opportunity Analysis (MSIOA) at the Subsidiary Action Programs (SAPs), simulation of catchments, sub-basins, and the whole Nile basin, and the strategic water resources analysis that predicts the situation of the basin by 2050, identify the unmet demands, and define the solution space of strategic options to bridge the gap and cope with the challenges. Results and findings of assessment, ranking, and clustering of measures as well as recommended improvement measures drawn from NB-DSS application cases not only informs the riparian dialogue, guides the collaborative efforts and actions, and assist the NBI Member States in meeting water requirements for sustainable development needs but also alleviates the sources of conflict and dispute over uncoordinated courses of actions.

BURUNDI

In Burundi, the NB-DSS has been used to address specific national water resources issues and challenges; e.g. 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 Ntahangwa catchment river, undertaking a feasibility study of the development of new hydropower schemes in the upper part of Ruvyironza river (Nyamabuye site) under the framework of the SONGA Project, and assessment of climate change impacts on Burundi's North Lakes "Lac aux oiseaux".

DR CONGO

DR-Congo applied the NB-DSS in Mpioka catchment planning that included hydropower, reservoir operation, and irrigation projects. Currently, DR-Congo is using the NB-DSS in studying the Sankuru area (Kasai) regarding population, available water resources, and the evaluation of the impacts of mining on population growth and poverty, as well as the study of one catchment of the Lukaya River. The tool was also employed to study different planning scenarios for water transfer from Congo Basin to the Lake Chad Basin, hydropower development at the Grand Inga (44,000MW) and Zongo (275MW) sites, Nkundi Irrigation projects (65,000 ha), and for a number of water supply systems.

Photo: iStock

ETHIOPIA

Ethiopia used the NB-DSS to study the Upper Awash sub-basin. This included defining scenarios of water resources development, and to evaluating these scenarios using appropriate indicators. The tool enabled the country to estimate water availability and current water use pattern for various uses, assess the current water resource administration and management issues and apply appropriate tools to address these issues. Using NB-DSS, Ethiopian experts were able to configure, calibrate and validate baseline models that represented the present state of water resource development in the sub basin, strengthening the Awash Basin Authority to discharge its duties and responsibilities by building professional capacities of staff, and establishing a GIS and water resource information management database.

Photo: iStock

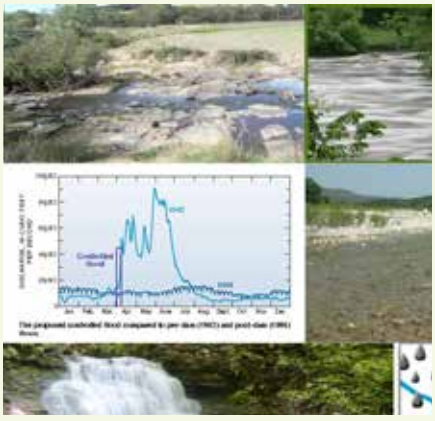
KENYA

Kenya has used the NB-DSS 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 Upper Tana Basin assessment of water resources. It has also been used in considering hydropower from Masinga, Kamburu, Gitaru, Kindaruma and Kiambere dams, developing irrigation (Mwea scheme), and the water supply source for the City of Nairobi, as well as assessing pastoralism, wildlife, and environmental integrity for the Tana Delta Ecosystem.

RWANDA

In Rwanda, the NB-DSS tool has been used to quantify the amount of water available for use within the Muvumba catchment, allocate water to different users (irrigation, hydropower and domestic supply) to optimize production, and to evaluate overall impact of development projects on downstream catchments.

Furthermore, modeling of the Sebeya dam using the tool for flood control in the Sebeya River catchment greatly assisted the country in reservoir operation and floodplain control, identification of the location of the reservoir, assessment of the social, economic and ecological impact of the reservoir on the surrounding environment and population as well as avoiding repeated flood damage.



UGANDA

Uganda has used the NB-DSS in undertaking the National Water Resources Assessment and developing the National Water Resources Strategy, which do not only respond to National Development objectives but also take account of climate change impacts. The NB-DSS provided a framework for management and development of the country's water and related resources by 2040. In addition, the NB-DSS has been used as a data processing tool and supported preparation of six Catchment Management Plans in six water catchments and also provided analysis and studies of the Rivers Mubuku and Rwimi Basins.

Photo: iStock

SOUTH SUDAN

In South Sudan, the NB-DSS was successfully applied to study and analyze several development scenarios in Kenyeti, Bahr el Jebel, Bahr el Ghazal, and the Upper White Nile.

TANZANIA

In Tanzania, the NB-DSS has been used as a database and data processing tool for all nine water basins. It has provided analysis and studies of the Rufiji Basin, and supported preparation of the IWRMD Plans for the Internal Drainage Basin (IDB) and Lake Nyasa Basin. Scenario Evaluation using Multi-Criteria Analysis led to the formulation of structural development and demand management plans, and incorporation of climate change adaptation measures and practices. Furthermore, integrated water resources management and development in the great Ruaha catchment and integrated water resources simulation and scenario assessment for the Nyasa Basin have been undertaken using the NB-DSS.

SUDAN

Sudan has used the NB-DSS to study the impacts of the Grand Ethiopian Renaissance Dam on the Blue Nile reservoir system (including reservoir operation, agriculture, hydropower and navigation). This is in addition to studying the effects of climate change on agricultural productivity of Gedaref rain-fed agricultural schemes, the Abu Habil water resources development studies, and optimization of reservoir operation under climate change conditions. Applying the NB-DSS, Sudan was able to investigate the effect of climate change on agricultural production at a regional level, anticipate the adverse effects of climate change on agriculture production for the next five decades, recommend suitable crop types and agricultural practices, and examine complementary irrigation from a nearby river (the Atbara, east of Gadaref).

The tool was further used to investigate the possibility of increasing the storage of the Rumela Burdana dam to satisfy future irrigated schemes, maintain downstream requirements of the Atbara River (to the Main Nile), and compare the results with Aqua crop modeling. Sudan also used this information to apply the delta change factor to daily rainfall data as a way of determining future sowing date changes and impacts on crop yields using daily time steps.

Photo: iStock

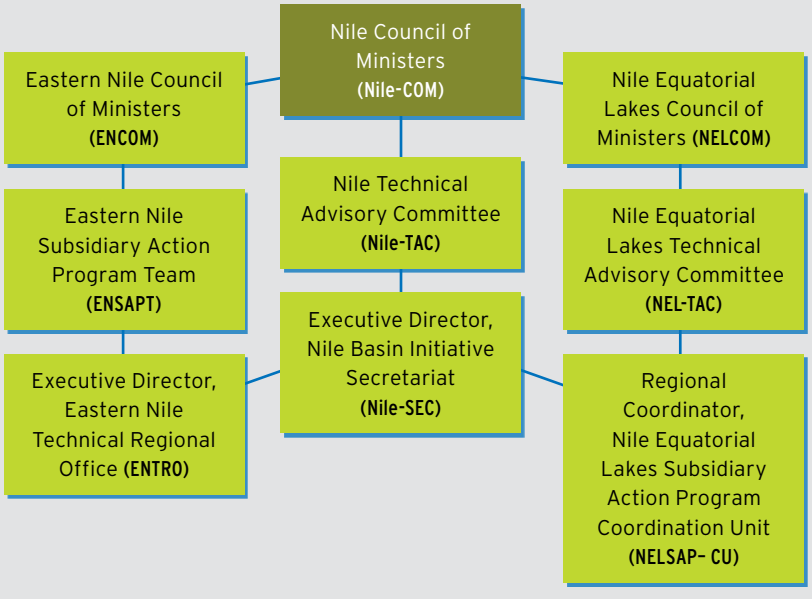
CHAPTER 4

A strong regional platform for dialogue and cooperation

The River Nile has been characterized by a long history of mistrust, low levels of cooperation, low stakeholder involvement in Nile development processes and tensions and instability both between and within states. Across all countries varied capacity existed in the water sector, with a number significantly disadvantaged in terms of institutional development, technical knowledge and incomplete data. This made it even harder to demonstrate development opportunities and provide incentives for cooperation.

The NBI provides the first and only all-inclusive platform for Basin states and citizens to discuss with trust and confidence how to collectively take care of and sustainably use the shared Nile Basin water resources such that win-win benefits are maximized and risks and costs minimized Seventeen years later, NBI has grown into a well-established, impartial and strong regional institution with an evolving institutional infrastructure and a set of critical skills required to deliver its three programs, namely 'Basin Cooperation', Water Resources Management' and 'Water Resources Development'. These are underpinned by Member States' commitment to finance the institution's minimum functionality.

The organization has played a fundamental role, overcoming decades of mistrust and generating higher levels of mutual understanding and confidence



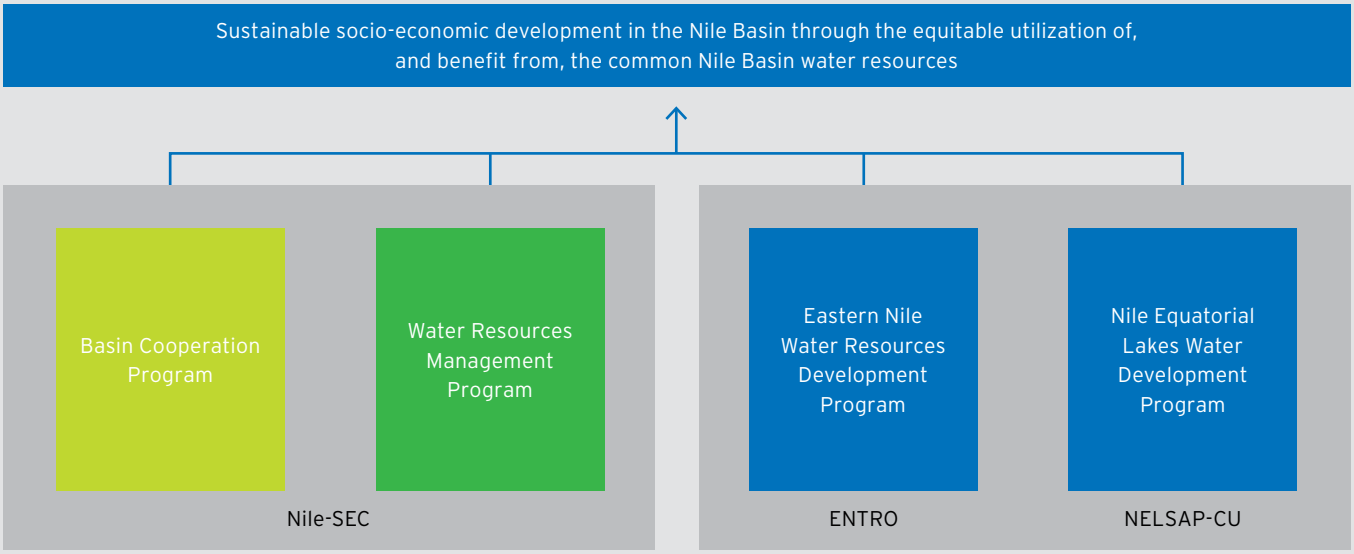


Photo: iStock

"Before NBI, our Basin was a region of mistrust and conflict. Trust among countries was not in abundant supply". Hon. Kebede Gerba, Ethiopia's former State Minister of Water, Irrigation and Energy, speaking as Guest of Honor during ENTRO' 10th anniversary celebrations, in October, 2012

among the Member States as well as closing the information and knowledge gap.

Perhaps most significantly, trust and confidence built via this strong institutional platform as well as shared information and knowledge has created a substantial enabling environment and laid strong foundations for sustainable and equitable use of shared Nile basin resources. The NBI's facilitation of joint planning, preparation and implementation of investments by Member States has enabled the latter to progressively create departments in charge of transboundary waters, establish common values, adopt shared approaches and orientations, principles and norms as well as a raft of policies, tools and standards all of which are key ingredients for sustainable cooperation.

By engaging and coordinating a wide range of partners (including politicians and policy makers, opinion leaders from academia and the media, parliamentarians, civil society, communities, the private sector and scientific communities) through various political, technical-scientific and social fora (including Nile-COM, Nile-TAC, NBDF, Nile Day, technical meetings/workshops, internship programs) and at all levels (from project through national, sub-regional and regional) NBI has not only greatly contributed to raising

awareness and promoting an informed dialogue on issues surrounding the Nile Basin and Nile cooperation, it has also promoted vertical and horizontal networking and cohesion within the Basin.

Coupled with this is a remarkable change in the discourse of cooperation and in the ways that States and citizens alike think about the Nile and about each other. There is greater appreciation that the River Nile is for everyone, is a shared asset to be jointly used and collectively taken care of, and is for the benefit of current and future generations. The reality of upstream-downstream mutual dependence receives greater recognition than ever before and a community of like-minded people is growing focused on addressing the need for collective action and through such action delivering benefits to peoples and ecosystems within the Basin. "Just building confidence and trust has been a major achievement, water resources used to be a big secret, but now we communicate openly. Everyone sees now that management can't just be done by one country. There must be a partnership", Lister Kongola, former Nile-TAC member from Tanzania.

This strong platform has given all Nile countries a collective and strong voice in articulating issues surrounding the Nile Basin and sustainable Nile cooperation, particularly within international and regional fora such as the World Water Forum, World Water Week and Africa Water Week.

With benefits such as those above, it is not surprising that key players today no longer question whether a cooperative approach should be pursued but rather how to sustain and strengthen existing cooperation. And because Nile countries are committed to cooperation, they have pledged to fully cover core operational costs of NBI by 2017.

Management of NBI is from three Centers: The Secretariat (Nile-SEC) based in Entebbe, Uganda and two other Centers - leveraging unique sub-basin potentials and mitigating unique sub-basin risks. These are the Eastern Nile Technical Regional Office (ENTRO) based in Addis Ababa, Ethiopia for the Eastern Nile sub-basin and the Nile Equatorial Lakes Subsidiary Action Program Coordination Unit (NELSAP-CU) based in Kigali, Rwanda for the Nile Equatorial Lakes sub-basin.

The National NBI Office in each Member State ensures synergy between the basin-wide, sub-basin and national structures in order to synchronize planning and management processes and to embed regional/sub-regional NBI interventions in national development planning. To ensure delivery of the Shared Vision Objective, NBI implements three programs. Responsibility for each of the programs is clearly delineated among the three NBI Centers.

Table 3: Agreed scaled country contribution 2013/14-2017/18

Financial Year	Annual contribution to each center per country (in '000 USD) and number of assumed contributing countries per center (in brackets)			Total annual contribution by country (in '000 USD)		Total Contribution	Core Cost Coverage (in %)
	Nile-SEC	NELSAP-CU	ENTRO	Countries paying for 2 centres	Countries paying to all centers		
2012/13	35	15	110	50	130	780	21%
2013/14	90	47	164	137	301	1,727	45%
2014/15	90	47	164	137	301	1,727	45%
2015/16	145	79	249	224	473	2,763	73%
2016/17	145	79	249	224	473	2,763	73%
2017/18	200	111	333	311	644	3,800	100%

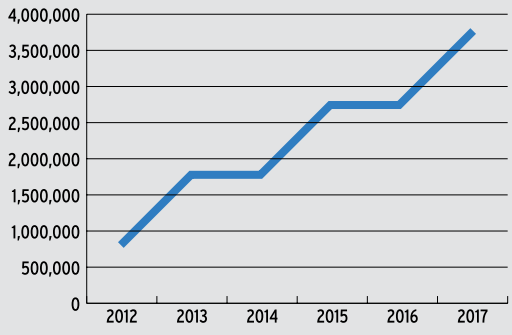


Photo: iStock

CHAPTER 5

Looking ahead to possible futures

Where have we come from? The baseline

In this document we have described the critical path taken in promoting the benefits of Nile Basin Cooperation from the birth of the Nile Basin Initiative to the present day. We have shown how the Nile Basin is one of the most complex, variable and fragile river systems in the world with a rich history but currently under unprecedented threats. We have also noted that while the last 17 years are the blink of an eye in Nile history, they represent a decisive turning point in Nile basin development.

For the past 60 years the Nile Basin has witnessed the birth of new nations – Kenya, Uganda, Tanzania, Burundi, Rwanda, DR Congo, Sudan, and most recently Eritrea and South Sudan. The post-colonial emergence and development of these nations has been a sometimes difficult process, not least during the long Cold War period up until the end of the 1980s. For much of the past six decades, Nile Basin countries have been characterized by endless intra and inter-country conflicts and wars – including genocide, huge human suffering and displacement and the destruction of key natural environments. Endemic poverty and sometimes negative economic growth have characterized the situation for many national economies, with millions of people struggling on a daily basis to make ends meet.

Within this harsh political-economic climate, earlier efforts at cooperation over the common Nile Basin water resources found little traction amongst governments and peoples. Mutual mistrust and suspicion, lack of confidence in the actions of others, and ignorance of each other's needs and concerns constituted what has been called the 'attitudinal baseline' from which Nile Basin cooperation had to start. The relatively positive political environment that emerged following the end of the Cold War enabled the search for national and regional peace and conflict prevention coupled with a focus on economic development and poverty alleviation to become a lens through which to view cooperation over Nile Basin resources. With this lens the multiple benefits in all spheres that greater cooperation could achieve became much clearer.

The ultimate concept undergirding Nile Cooperation is that the common Nile

"The competing uses of water such as irrigation, hydro-power generation, domestic water supply and environmental needs will continue to exert more pressure on the already scarce water-resource base. There is therefore, an urgent need for enhanced coordinated efforts for sustainable development and management of these resources for the benefit of our people. One such key area is to double our efforts in resource mobilization to support implementation of the prepared projects". Hon. Eugene Wamalwa, Cabinet Secretary, Ministry of Water and Irrigation, Kenya - speaking during the 24th Annual Nile-COM meeting – 14th July, 2016

Basin resources, particularly the River Nile itself – scarce, variable and finite as it is – should be reason, impetus and catalyst for regional integration that brings riparian countries together to cooperate, much like the cooperation that spawned the European Union emerged out of the post-war scarcity in key commodities such as steel and energy.

Multiple complexities confronted the emergence and growth of the NBI. One primary complexity was the dynamic and variable nature of the river shared by 11 countries. Another lay in the significant asymmetry between upstream countries with the lowest two riparian countries - Egypt and Sudan – having a far more developed water resources infrastructure to enable harnessing and utilization of the river for irrigation and hydropower. They also had far superior scientific, technical and institutional capacities established during the colonial period, in particular. Further complexity lay in the lack of science knowledge on the river with very few shared and standardized hydro-meteorological stations, river gauging stations, water quality and sediment monitoring, water resources data, information and knowledge as well as analytical tools. Indeed no mechanism for data and information sharing existed with few, if any, joint studies and cooperative investments. NBI cooperation therefore had to start largely from scratch.

FUTURE CHALLENGES

Legal foundation

If the NBI is to transition into a permanent River Basin Commission, it will require foundation on a Treaty. This was the parallel track, the Negotiation Track, pursued for thirteen years along with the Cooperation Track under the NBI which culminated in the conclusion of the negotiation when the CFA was signed by six upstream countries. Completing the ratification of the CFA will enable its transformation into a treaty enabling the establishment of the Nile River Basin Commission.

Bringing Egypt back to the NBI

Looking ahead, Egypt's re-entry into NBI is an essential prerequisite for future cooperation and development of the river. As a sisterly Nile country, the most downstream and the most vulnerable to fluctuations in the river, Egypt has a huge stake in all developments taking place across the length of the river. Understandably this is an issue at the heart of the country's social, economic and water security and is recognized as such by all members of the NBI. It is in the interest of all Nile Basin countries, and the international community, to help resolve the impasse and encourage Egypt to return to the fold. Key challenges of Nile development – including significant climate change impacts on the Nile Delta where 30 million people live – cannot be addressed unless there is a collective will and capacity to do so. Egypt needs the Nile and the Nile needs Egypt just as much.

Politics is the art of the possible and the hydro politics of the Nile is no different. Provided there is goodwill, creativity in searching for common ground and a sustained effort, breakthroughs are possible. An expressed desire to resolve the issue is a key starting point. Business as usual, that is continuing unilateralism, is not an option given risks that climate change pose for all Nile countries, and given the finiteness and fragility of 'whole basin' resources including precious ecosystems. Allowing an impasse that jeopardizes collective action and cooperation to persist means that problems and challenges will continue to emerge and reproduce themselves. There is a real danger that gains made to date through cooperation could be reversed.

Sustaining the gains

Sustaining and consolidating gains is therefore a challenge – and an imperative. The need for more robust data, information generation and knowledge building to inform current and future decision making means there is an urgency to understanding the science of the river and the drivers of change in the Basin. Above all there is an urgent need to understand climate change impacts on the Basin in order to identify low and no-regrets adaptation measures. There is also a need to increase water use efficiency in order to do more with less water as demand on the resource increases as there is a critical need to track and conserve key biodiversity including species endemic to the Nile Basin.

Photo: iStock

Ownership and resources

Member States have been increasingly assumed responsibility for the NBI in terms of providing increasing cash and in-kind contributions to cover annual core costs. But not all have shown the requisite due diligence in this respect. This needs to be remedied urgently and Member States need to continue allocating from national budgets, or otherwise seek additional funding sources in order to implement jointly-identified and prepared cooperative water resources projects. There is also a need to embark on the next round of cooperative water resources management and development projects and toward this end, the international community – especially development partners – need to be engaged on a continuing basis and maintain critical financial and technical support. Cultivating links to new development partners is also a priority and in order to build a stronger 'family of partners' the NBI must continue to demonstrate its professionalization and capacity to implement actions at all levels.

Conclusion

The distance travelled in the 17 years of NBI's existence is almost as long as the river itself – in terms of the change in cooperation that has emerged. This achievement cannot and should not be underestimated. It has laid robust foundation for a future River Basin Organization in terms of building national capacities, generating data, building knowledge and analytic tools and establishing trust.

The NBI has entrenched the imperative of basin-wide cooperation within countries and institutions at all levels. The promotion of cooperation is now the norm across the basin. The two Subsidiary Action Programs have promoted and supported countries to partner, commit resources and embark on much-needed joint investments worth billions of dollars spanning hydropower, power interconnection and trade, watershed management, irrigated agriculture, and the adoption of international best practice in social and environmental management. In short, NBI has demonstrated the economic, social and environmental – not to speak of regional peace and security – worthiness of trans-boundary cooperation and set in motion a shift in attitudes and perceptions. It has also triggered the emergence of a key knowledge constituency of basin decision makers and water resources professionals.

Realization of the ultimate vision of NBI however requires all those involved to ensure constant nurturing and strong guidance towards sustainable Nile cooperation. In this noble cause, Nile Basin leaders need full backing and encouragement from all sectors of basin population, and from the international community which also has a major stake in regional peace and security. With the weight of this support behind us the launch and consolidation of the NBI into a River Basin Organization is within sight. Come and join us in making the leap.

CONSEQUENCES OF NON-COOPERATION

RESOURCE BASED

Pressure and mismanagement of common natural resources

Environmental degradation

Uncoordinated actions to tackle climate issues

MANAGEMENT

Riparian countries' disregard for trans-boundary dimensions in their national water plans/ strategies

Limited coordinated monitoring of the resource-base

DEVELOPMENT

Increasing unilateral development of large-scale infrastructure without cooperation/ collaboration/ consultation

Opportunities for joint action foregone

POLITICAL

Significant harm to the mutual trust built between Nile riparians during the last 17 years

Political/diplomatic conflicts that might take years to solve

"...cooperation among the Nile Basin States is not a choice but a must; it is the greatest hope for a better future for every individual, every family, every community and every country..." Hon. Amb. Mutaz Musa Abdalla Salim, Minister of Water Resources, Irrigation and Electricity of The Sudan in his speech during the 23rd annual Nile-COM meeting, 4th June 2015, Dodoma, Tanzania

ANNEX - 1

Photo: iStock

The course of the River Nile

At a length of 6,695km, the Nile is one of the great rivers of the world, feeding millions and giving birth to entire civilizations.

The most distant source of the Nile is the Ruvyironza River, which flows into Lake Victoria through the Ruvubu and Kagera rivers. Other rivers converging into Lake Victoria – the largest of the Nile Equatorial Lakes – include the Simiyu-Duma, Grumati-Rwana, Mara, Gucha-Migori, Sondu, Yala, Nzoia, Sio, Katonga and Ruizi.

From Jinja in Uganda, the White Nile emerges from Lake Victoria as the Victoria Nile and travels northwards, passing through two other Equatorial Lakes – Kyoga and Albert. Through these two Lakes, the Nile captures runoff from two mountainous and high-rainfall areas (Mts Rwenzori and Elgon) on the southwestern and southeastern peripheries of the basin.

The river re-emerges from Lake Albert as the Albert Nile and journeys northwards to Nimule near the South Sudan–Uganda border. From this point, the river, now known as the Bahr el Jebel (meaning river of the mountains), flows over the Fula rapids and through the Sudd before meeting the Bahr el Ghazal (meaning river of the gazelles) at Lake No. The Bahr el Ghazal drains high rainfall areas of western South Sudan. From Lake No, the river turns eastwards to join with the Sobat River, which carries high, seasonally variable, flows originating in the Ethiopian Highlands.

The combined Bahr el Jebel and Sobat rivers form the White Nile, which continues its northward descent and meets with the Blue Nile at Khartoum, The Sudan. The Blue Nile (also known as the Abbai or Abay) originates in Lake Tana in Ethiopia, and is the second principal stream of the Nile. Before meeting the White Nile, the Blue Nile is joined by a number of rivers, the main ones being the Rahad and Dinder, both originating in the Ethiopian Highlands. From Khartoum, the combined rivers of the Nile flow northwards, and are joined by the Atbara (Tekezze), also originating in the Ethiopian Highlands. The Main Nile continues travelling northwards and flows into Lake Nasser/Nubia, a major man-made reservoir on the border between The Sudan and Egypt that provides inter-annual regulation for Egypt. The Nile eventually discharges into the Mediterranean Sea via its delta.

ANNEX II

In-kind contribution

In-kind contribution from Member States varies from country to country. This section highlights some of the in-kind contribution per Member State.

Burundi

Staff time in terms of supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as participation of government officials in specialized meetings on NBI issues. Burundi has also rented office space for SVP Project Management Units based in Burundi, namely the Regional Agricultural Trade and Productivity Project (2009 – 2012).

In-kind contribution is also in the form of hosting incoming NBI missions and financially contributing to regional events such as the annual Nile-COM and NELCOM meetings, Technical Advisory Committee meetings, annual Nile Day event (2009), held on 22nd February, among others.

Steady progress is also being made in integrating NBI activities in the national plan and budget.

DR Congo

Staff time in terms of supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as participation of government officials in specialized meetings on NBI issues.

In-kind contribution is also in the form of hosting in coming NBI missions and financially contributing to regional events such as the annual Nile-COM and NELCOM meetings, Technical Advisory Committee meetings, annual Nile Day event (2011), held on 22nd February, among others.

Steady progress is also being made in integrating NBI activities in the national plan and budget.

Egypt

Staff time in terms of supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC, ENSAPT and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as participation of government officials in specialized meetings on NBI issues.

Furthermore, Egypt has provided office space for SVP Project Management Units based in Egypt, namely the Applied Training Project (2004 - 2009).

In-kind contribution is also in the form of hosting in coming NBI missions and financially contributing to regional events such as the annual Nile-COM, ENCOM and NELCOM meetings, Technical Advisory Committee meetings, among others.

Ethiopia

Prime land and office building for ENTRO and a diplomatic status, with associated privileges and immunities to the organization and its staff.

Furthermore, staff time in terms of supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC, ENSAPT and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as participation of government officials in specialized meetings on NBI issues. It also includes providing office space for the SVP Project Management Units based in Ethiopia, namely the Water Resources Planning and Management Project Management Unit (2005 - 2012).

In-kind contribution is also in the form of hosting incoming NBI missions and financially contributing to regional events such as the annual Nile-COM, ENCOM and NELCOM meetings, Technical Advisory Committee meetings, annual Nile Day event (2008 and 2013), held on 22nd February, and the biennial Nile Basin Development Forum (2006) among others.

Steady progress is also being made in integrating NBI activities in the national plan and budget

Kenya

Staff time in terms of supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as participation of government officials in specialized meetings on NBI issues. This is in addition to providing office space for Project Management Units based in Kenya namely, the Sio-Malaba-Malakisi River Basin Management Project (since 2006) and the SVP's Efficient Water Use for Agricultural Productivity Project (2005-2009).

In-kind contribution is also in the form of hosting incoming NBI missions and financially contributing to regional events such as the annual Nile-COM and NEL-

COM meetings, Technical Advisory Committee meetings, annual Nile Day event (2016), held on 22nd February and the biennial Nile Basin Development Forum (2014), among others.

Steady progress is also being made in integrating NBI activities in the national plan and budget.

Rwanda

Staff time in terms of supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as participation of government officials in specialized meetings on NBI issues.

In-kind contribution also includes paying rent for NELSAP-CU offices, hosting incoming NBI missions as well as financially contributing to regional events such as the annual Nile-COM and NELCOM meetings, Technical Advisory Committee meetings, annual Nile Day event (2007), held on 22nd February and the biennial Nile Basin Development Forum (2012), among others.

Steady progress is also being made in integrating NBI activities in the national plan.

South Sudan

Staff time in terms of supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC, ENSAPT and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as participation of government officials in specialized meetings on NBI issues.

In-kind contribution is also in the form of hosting in coming NBI missions and financially contributing to regional events such as the annual Nile-COM, ENCOM and NELCOM meetings, Technical Advisory Committee meetings, among others.

The Sudan

Staff time in terms of supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC, ENSAPT and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as participation of government officials in specialized meetings on NBI issues. It also includes renting office space for SVP Project Management Units based in The Sudan, namely the Nile Transboundary Environmental Action Project (2003 – 2009).

In-kind contribution is also in the form of hosting incoming NBI missions and financially contributing to regional events such as the annual Nile-COM, ENCOM and NELCOM meetings, Technical Advisory Committee meetings, annual Nile Day event (2015), held on 22nd February and the biennial Nile Basin Development Forum (2008), among others.

Steady progress is also being made in integrating NBI activities in the national plan and budget.

Tanzania

Staff time in terms of supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as participation of Ministry officials in specialized meetings on NBI issues.

It also includes hosting incoming NBI missions, providing office space for the Mara River Basin Management Project (Since 2006) and the SVP Project Management Units based in Tanzania, namely the Regional Power Trade Project (2004-2012).

In-kind contribution is also in the form of hosting in coming NBI missions and financially contributing to regional events such as the annual Nile-COM and NELCOM meetings, Technical Advisory Committee meetings, NBI's 10th anniversary event (2009), Nile Media Awards ceremony (2015), among others.

Steady progress is also being made in integrating NBI activities in the national plan and budget.

Uganda

Prime land and office building donated to the NBI Secretariat in Entebbe and a diplomatic status with associated privileges and immunities to the organization and its staff. Uganda also hosted the Nile Equatorial Lakes Subsidiary Action Program Coordination Unit (2002 - 2004); Lake Edward and Albert Fisheries Project (2005-2009) as well as Project Management Units of two SVP Projects namely, the Confidence Building and Stakeholder Involvement Project (2004 - 2009) and the Socio-economic Development and Benefit Sharing Project (2005 - 2009).

Governance stopgap towards the supervision and technical guidance of the NBI Secretariat arising from the country's hosting role and close proximity of the office locations.

In addition, the country offers staff time, supervision and technical guidance through country representation on the Technical Advisory Committees (Nile-TAC and NEL-TAC). This is in addition to the time of the entire staff of the NBI National Office as well as, participation of Ministry officials in specialized meetings on NBI issues. This is in addition to hosting incoming NBI missions as well as financially contributing to regional events such as the annual Nile-COM and NELCOM meetings, Technical Advisory Committee meetings, annual Nile Day event (2010, 2012 and 2014) held on 22nd February, among others.

Steady progress is also being made in integrating NBI activities in the national plan and budget.

Development Partners

Canadian International
Development Agency

Agence canadienne de
développement international

ONE RIVER ONE PEOPLE ONE VISION

NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

NBI Member States

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

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

www.nilebasin.org · Nile Basin Initiative · @nbiweb