Chapter 1

Introduction

THE STATE OF THE RIVER NILE BASIN REPORTS

The *State of the River Nile Basin 2012* is the first in a series of reports that will be produced every three years, targeted at policy makers, parliamentarians, and senior government officials in the riparian countries; the international development community; and the general public in the Nile Basin. The reports will provide accurate, reliable, and up-to-date information on the river and its tributaries, along with objective analyses and insights into the biophysical and ecological settings, and the social, cultural, and economic conditions within the basin.

THE NILE BASIN INITIATIVE (NBI)

This state of basin report has been prepared by the Nile Basin Initiative (NBI), an intergovernmental partnership of ten Nile riparian countries (Burundi, the Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, The Sudan, Tanzania, and Uganda). The Initiative, which was established in 1999, seeks to develop the River Nile in a cooperative manner, share the socio-economic benefits arising from utilization of the water resources of the Nile, and promote regional peace and security to achieve its shared vision of:

> *sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources.*

The institutional structure of the NBI consists of a Council of Ministers of Water of the member countries (Nile-COM), a Nile Technical Advisory Committee (Nile-TAC), and a regional secretariat (Nile-SEC) located in Entebbe, Uganda. The NBI also operates two sub-basin offices – the Nile Equatorial Lake Subsidiary Action Program Coordination Unit (NELSAP-CU) located in Kigali, Rwanda, and the Eastern Nile Technical Regional Office (ENTRO) located in Addis Ababa, Ethiopia.

Previous page, left to right: Fisherman on Lake Victoria, near Kampala; Irrigation scheme, utilizing Nego River, Ethiopia; Rusumo Falls, Kagera River.

Below, from left to right: Members of the Nile Council of Water Ministers (Nile-COM) pose for a photograph after attending a meeting in Sharm el Sheikh, 2010; The NBI Secretariat offices in Entebbe, Uganda.

PURPOSE OF THE REPORT

The primary purpose of the state of basin report is to support informed decision-making. Through the presentation of factual information and expert analyses, it will inform, educate and empower basin communities to exercise better stewardship of the common Nile water and environmental resources. The report helps to discern trends over time, including into the future, and to facilitate the understanding of complex issues. It draws attention to emerging issues and the need for appropriate management responses before the issues become critical. By so doing, it is hoped that the *State of the River Nile Basin 2012* will be an important first step on the path to an increased understanding of the:

- importance of the Nile in the daily lives and wellbeing of the basin communities, both upstream and downstream
- present condition of the Nile water and related environmental resources; drivers of change in the state of the resources and their impacts on ecosystem health and human wellbeing
- root causes of the development challenges in the Nile Basin, and the opportunities and challenges with respect to the sustainable management and development of the basin resources
- inter-dependence of Nile riparian countries, and the critical role that cooperation can play in optimizing the benefits and bringing about equitable utilization of the common Nile Basin water and environmental resources.

Experience from transboundary river basins in Europe has shown that the operation of common basin monitoring tools can contribute to mutual trust and joint policy-making. The state of basin report, a common planning tool for the basin, is expected, therefore, to contribute to the building of trust and confidence amongst Nile riparian countries. The report is further expected to generate discussion on broad basin issues, and trigger common policy interventions to address highlighted challenges.

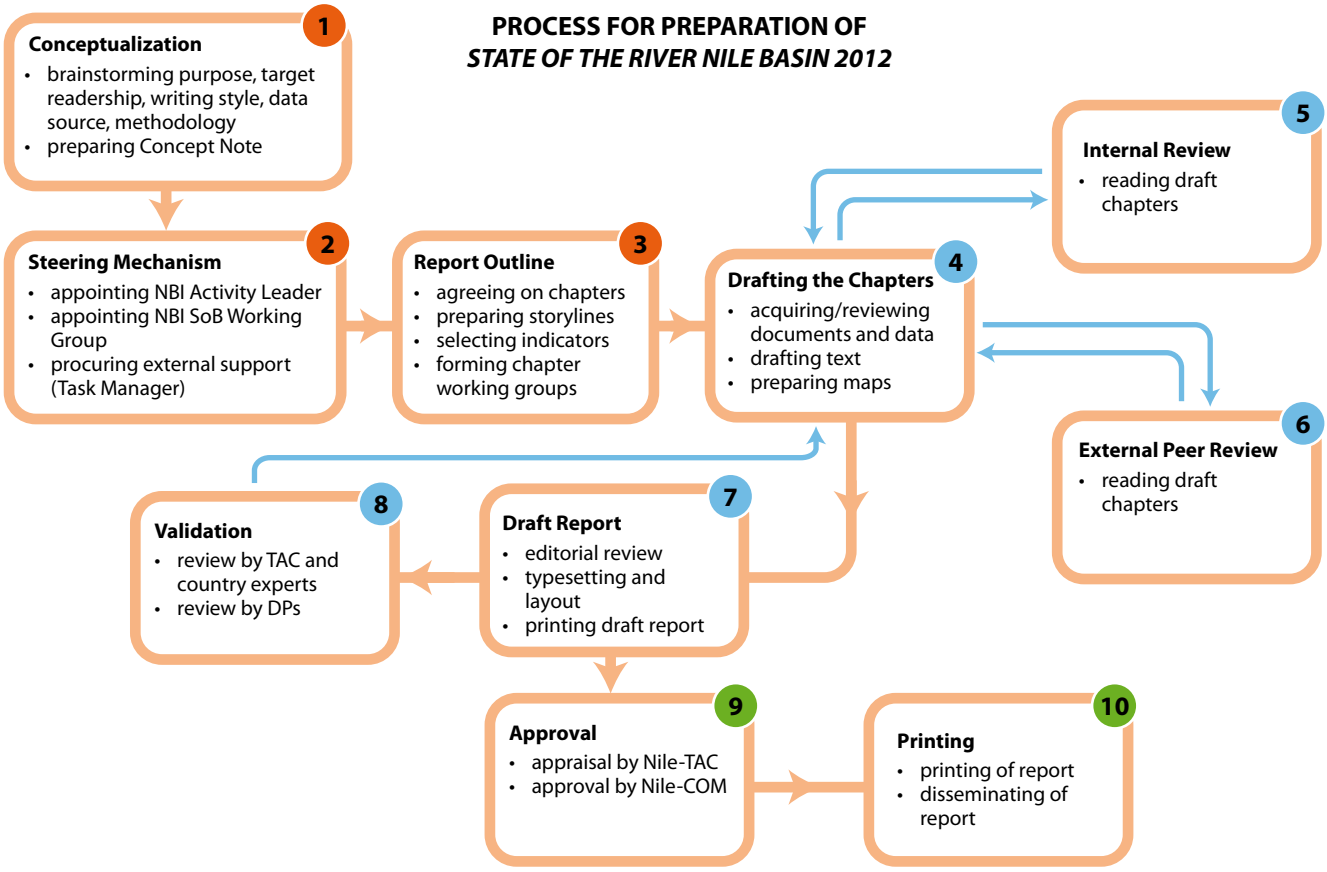
Members of Nile-TAC sharing knowledge.

HOW THE REPORT WAS PREPARED

The *State of the River Nile Basin 2012* is mainly based on information in the public domain. The report was written by teams of NBI staff, supported and guided by an external consultant. Additional consultants were engaged to peer review the report, while a professional firm was brought in to manage the graphic design and editorial process. On completion of the draft report, a group of stakeholders drawn from various sectors in the Nile riparian countries validated the report.

The process for preparation of the report involved the improvement of the systems for organizing, storing, analyzing, retrieving, and sharing data within the NBI. The process also involved the selection of indicators with which to illustrate the state of biophysical and ecological resources, and the status of human development in the basin. Indicators are a tool used to quantify and simplify complex phenomena and ease the understanding of complex realities. The selected indicators will be integrated into the proposed Nile Basin Strategic Monitoring Network, and will be reported upon in all subsequent publications of the report, which will thus serve as a monitoring and evaluation tool for the basin.

PROCESS FOR PREPARATION OF *STATE OF THE RIVER NILE BASIN 2012*



ANALYTICAL FRAMEWORK

There are many tools used to describe and quantify the environment. The *State of the River Nile Basin* reports follow a Driving Force–Pressure–State–Impact–Response (DPSIR) framework for analyzing the health of the basin. The DPSIR framework is based on the premise that different **driving forces** (or sectors of national development such as transport, agriculture, industry, and mining) produce **pressures** on the environment (such as water pollution and land-use changes), which then degrade the **state** of the environment (biodiversity, water quality, soil quality, etc), which in turn **impacts** on human and ecosystem health, causing society to **respond** with policy measures and development programmes.

Two of the chapters present the current state of the water and environmental resources of the basin. They also describe the driving forces and pressures that are causing a change in state, enumerate the impact of the pressures, and list society's responses to the threats to the environment. Five chapters take a closer look at the important driving forces in the basin.

REPORT STRUCTURE

The *State of the River Nile Basin 2012* has nine chapters. This first chapter outlines the purpose and motivation for the report and the way it has been organized. The chapters immediately following this introduction present the state of the basin's biophysical and ecological resources.

Top to bottom: The Blue Nile (Tis Issat) Falls, Ethiopia; the Sudd, Republic of South Sudan.

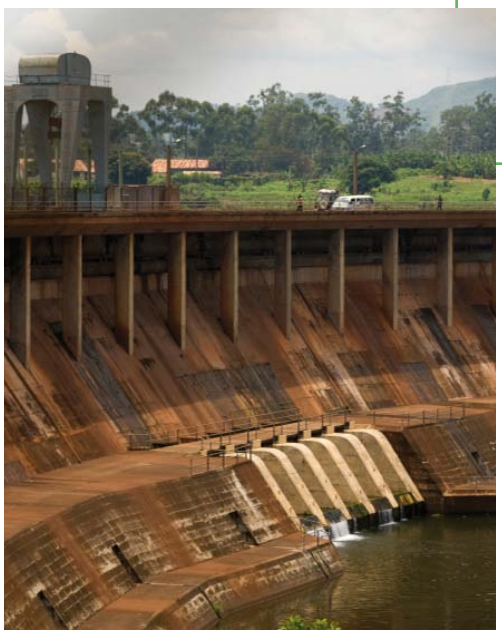
Chapter Two describes the hydrology of the River Nile and its sub-basins, and presents the waters resources of the basin in terms of their availability in space and time, current uses, and ability to meet the needs of present and future generations.

Chapter Three is devoted to the environment, and draws attention to the mounting pressure on environmental resources from human activities. It enumerates the main ecosystems of the basin and their characteristics with respect to geographic and climatic factors, dominant plant and animal species, and socio-economic uses. It elaborates the threats to the sustainability of the environmental resources, and states the underlying causes of the threats. It reviews past and ongoing efforts to address the environmental threats, and ends with suggestions for improving environmental governance at the transboundary level.

Chapter Four focuses on demography. Growth in human population is the primary factor behind the escalating demand for water for various uses, such as agriculture, domestic water supply, hydropower generation, fisheries production, industrial production, and recreation. Population growth is also the main factor responsible for land degradation and environmental pollution. Therefore, managing the basin's population growth is critical to achieving sustainable utilization of the water and environmental resources of the basin. The chapter looks at issues related to human population: its spatial distribution, growth rates and the opportunities and challenges that it presents for the socio-economic development of individual riparian countries and the basin as a whole.

Chapter Five addresses the issues surrounding agriculture and food security. Agriculture consumes more water than any other sector in the Nile Basin, despite the fact that irrigated agriculture is mainly practised in only two downstream countries (The Sudan and Egypt). The other countries are almost entirely dependent on rainfed agriculture for the production of food and cash crops. The chapter describes the characteristics of irrigated and rainfed agriculture, the likely impacts of climate change on agricultural production and food security, and options available for riparian countries to increase agricultural productivity and production without drawing more water from the Nile.

Chapter Six examines issues surrounding the development of hydroelectric power in the Nile Basin. This is the next most important water-use sector in the basin after agriculture, and is critical for reducing the huge energy deficit of the riparian countries. At present, the level of electricity production and consumption within the Nile Basin countries is very low compared to other parts of the world. At the same time, there are proposals to build some of the world's largest dams in the basin. The chapter describes the situation with respect to hydropower development in the Nile riparian countries, the opportunities for development of additional hydropower sites, challenges related to financing and potential environmental and social impacts, and opportunities for enhancing national energy security through regional power interconnection and power trade.



Chapter Seven is devoted to transportation in general and inland water transport in particular. Inland water transport is not as important in the Nile Basin as in some other basins, such as the Congo and Rhine. Nevertheless, if properly developed, it could play a complementary role to other modes of transport in deepening regional integration and trade. The chapter examines the existing regional transport corridors, compares the cost of transporting goods from the rest of the world to destinations within the basin, and the investment needed in the transport sector to improve the competitiveness of agricultural and industrial exports from the basin.

Chapter Eight reviews the cross-cutting issue of climate change, and its potential impacts on ecosystems and socio-economic development. The chapter describes the features of the current climate – which is characterized by high variability – and goes on to examine evidence for the occurrence of climate change in the basin. The chapter highlights the likely harmful impacts of climate change on sectors such as transport, communication, agriculture, energy, and wildlife conservation, and suggests possible transboundary-level interventions to enhance the basin's resilience to climate change.

Chapter Nine is a synthesis of all the chapters. It presents the conclusions of the report, and highlights the main recommendations for management interventions at national and transboundary level. It also presents a list of water 'hotspots' (areas where there is high pressure on water resources) and 'hopespots' (areas of significant success in water resources management).

The Annexes include indicators relating to the Nile Basin referred to in the text; additional indicators for future reporting; the sources for the text, graphics, and maps; a list of credits for the photographs; an index.

KNOWLEDGE PRODUCTS

The *State of the River Nile Basin 2012* is available in hardcopy and as an interactive PDF document accessible from the NBI's website (www.nilebasin.org).

Left, from top: School children, Rwanda; Farmers, Uganda; Nalubaale Power Station, Uganda.
Above: Dredger, Egypt; Parched landscape, Moroto District, Uganda; Malakal, South Sudan.