



NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

STRATEGY FOR MANAGEMENT OF ENVIRONMENTAL FLOWS IN THE NILE BASIN

STRATEGY PREPARATION PROCESS

The strategy was prepared by the Nile Technical Advisory Committee (NILE-TAC) and Nile Basin Environmental Flows Expert Group through the course of the 'Preparation of NBI Guidance Document on Environmental Flows' - Project¹.

The Strategy preparation process involved two consultation workshops with a regional working group drawn from NBI countries - from the 29th July to 1st August 2015 in Kigali, Rwanda and 25th to 26th April 2016 in Addis Ababa, Ethiopia; a review of international practice in environmental flow management (documented in Background Document I: Environmental Flow Assessment: A review of global practices and experiences), a desk level assessment of the Nile Basin aquatic ecosystems types and their status (compiled as Background Document II: Aquatic ecosystems of the Nile Basin, their wellbeing and response to flow alterations) and a review of experiences with e-flow management in the Nile Basin countries (compiled in Background Document III: Management of environmental flows in the Nile River Basin: practices and experiences).

Based on the consultation and review of international and Nile Basin practices, a Nile Basin E-Flows Framework for site and basin E-flows assessments was drafted and tested with member states participation in four cross-border pilot case studies across the basin - Mara and Dinder-Atatish (detailed studies) and Kagera and Sio- Siteko-Malabakisi (desktop studies). Based on testing of the environmental flow framework on the four test sites, a Nile Basin Environmental Flows Framework Technical Implementation Manual was developed. This strategy captures the proposed way ahead in mainstreaming environmental flows management in the Nile Basin.

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ABBREVIATIONS

E-Flows	Environmental Flows
EFM	Environmental Flow Methods
EFR	Environmental Flow Requirements
ENSAP	Eastern Nile Subsidiary Action Program
NBI	Nile Basin Initiative
NBSF	Nile Basin Sustainability Framework
NELSAP	Nile Equatorial Lakes Subsidiary Action Programs
Nile-COM	Nile Basin Council of Ministers
Nile-SEC	Nile Secretariat
Nile-TAC	Nile Technical Advisory Committee
SAP	Subsidiary Action Programs
SDG	Sustainable Development Goals
TOR	Terms of Reference

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1. Background

The Nile Basin Initiative (NBI) seeks to support member states to develop the Nile River Basin in a cooperative manner and sustainably manage the transboundary water resources. The shared vision of the NBI member states is “achieving sustainable socio-economic development through the equitable utilization of and benefit from the common Nile Basin water resources”. To achieve sustainable management of the shared Nile Basin water resources, member states have committed to develop a framework of policy, strategy and guidance instruments under the Nile Basin Sustainability Framework (NBSF), including guidance and strategy for the management and assessment of aquatic ecosystems¹.

According to internationally accepted definition of the Brisbane Declaration (2007) environmental flows describe the quantity, quality and timing of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and wellbeing that depend on these ecosystems. Environmental flows are important for the maintenance of biodiversity and ecosystems services provided by the river including provisioning (e.g. water for basic human right to water, livelihoods from fisheries), regulating

¹ Under NBSF Key Strategic Direction 3 on environmental and water related natural resources management

The shared vision of the NBI member states is “achieving sustainable socio-economic development through the equitable utilization of and benefit from the common Nile Basin water resources”.



(e.g. water quality), cultural and supporting services². To maintain these ecosystem services, water needs to be allocated to sustain the functioning of the river ecosystem. Flow alterations can result in habitat changes that may lead to changes in the diversity of aquatic ecosystems and the ecosystem services they provide. The loss of ecosystem services can therefore involve a risk to the sustainability of the shared water resources water resources and the inherent trade-offs between water resources development and the alteration of ecosystem services have to be managed based on clear objectives and sound knowledge of the associated environmental flow requirements.

Recognizing this need, and based on the objectives of NBI's Environmental and Social Policy, which requires NBI (1) "to provide a set of principles and fields of action for the integration of environmental and social concerns in NBI programs" (2) "to provide guidance for managing transboundary environmental and social impacts of national activities", (3) "to provide support to Nile Basin countries for the protection and conservation of critical Nile Basin environmental resources" and (4) "to demonstrate commitment of the NBI and Nile countries to international best practices with regard to environmental and social management of development activities", NBI has developed an approach to support the establishment of environmental flows management in the basin. This document provides the strategy for its implementation.

Although many countries have developed drinking water quality and basic need standards, this is not the case for standards or guidelines for ecosystem basic water requirements. A few countries have started the process of legislating on the allocation of water resources to the environment, for example by the creation of two reserves of water: one for human needs and the other as an ecological reserve. The human reserve is for the purposes of drinking, food preparation, and hygiene. The ecological reserve focuses on the water needed to maintain ecosystem health, including aquatic species. To date, only a few member states of the Nile Basin have explicitly articulated the issue of environmental -flows and included it in their policies. Among the Nile Basin countries, Tanzania and Kenya are the only countries that have established policies and strategies, while Rwanda, Sudan and Ethiopia have general statements and provisions in their respective water policy documents, and Uganda is currently reviewing its policy accordingly.

This strategy also supports NBI member countries to respond to international conventions and agreements through which they have committed to addressing the health of their freshwater systems and specifically environmental flows. Under the Sustainable Development Goals (SDGs) countries have committed to by 2030 substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity (Target 6.4.2), including environmental flows. Under the Convention on Biological Diversity (CBD)³ Aichi Biodiversity Targets for 2020, countries have committed to a number of targets that are directly related to the protection of environmental flows – including Target 2 on mainstreaming biodiversity into national development planning, Target 5 on reducing the rate of loss

² The Millennium Ecosystem Assessment categorized ecosystem services as provisioning, regulating, cultural, and supporting (which sustains the other three types)

³ All NBI countries are party to the CBD

of habitats including aquatic ecosystems and Target 14 on restoration and safeguarding of ecosystems that provide essential services that contribute to human well-being. Also under the RAMSAR convention guidelines for the allocation and management of water for maintaining the ecological functions of wetlands (Resolution VIII.1, 2002) have been adopted and recommended approaches captured in the RAMSAR guidance documents⁴.

2. Definition of environmental flows

Environmental flows describe the quantity, timing and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend upon these ecosystems.⁵

3. Vision for environmental flow management in the Nile Basin

The vision for the successful management of environmental - flows in the Nile Basin is: “A Nile Basin in which water resources are developed and managed while sustaining the river flows required for healthy freshwater and estuarine ecosystems supporting human livelihoods and wellbeing that depend on them”. The vision objective is *“to achieve sustainable water resources development through management of the Nile Basin’s flows required to sustain the freshwater and estuarine ecosystems and the human livelihoods and wellbeing that depend on these ecosystems.”*

This vision is based on both the NBI’s Shared Vision and the Brisbane Declaration’s definition of environmental-flows.

4. An environmental flows framework for the Nile Basin

Environmental flow management frameworks: Environmental flow management frameworks are structured approaches designed to help consistent evaluation of environmental flow requirements across multiple ecosystems and scales and to guide stakeholders in the development and implementation of environmental flow standards. They can be considered as elements of a process quality standard.

Environmental flow assessment methods: several methods have been developed, tested, and anchored to EFA processes; they are generally classified into *hydrological environmental flow, hydraulic rating environmental flow, habitat-based environmental flow, and holistic environmental flow methods*. Although holistic methods and new risk based E-flow assessment approaches are promoted as best scientific practice and should be prioritized many rapid, more cost effective methods are available which can be used in an EFA to address certain E-flow management questions; according to time, level of details, data requirement considerations, cost, adaptability, transparency, flexibility and uncertainty.

⁴ Especially Handbook 10 on Guidelines for the allocation and management of water for maintaining the ecological functions of wetlands.

⁵ This definition is the provided by the Brisbane Declaration, 2007, Appendix 1.

NBI has developed an environmental flows management framework to suit the Nile Basin context by incorporating current global best practices and principles (collaboration, equitability, sustainability, evidence based, requisite simplicity, transparency and adaptability) into an adaptable but scientifically valid Nile environmental flows management framework.

The purpose of the framework is to provide orientation to NBI centres and member states in their approach to establishing and managing environmental flows at various scales and within a wide range of contexts. By converging around a common framework, the foundations for a joint understanding and multiparty practice of environmental flows management in the basin are established.

The framework is described in detail in the 'Nile Basin Environmental Flows Framework - Technical Implementation Manual'⁶ document and will be subject to periodic review as the body of evidence and experience from the basin increases. The Framework describes a seven-phase approach (Figure 1) to the establishment of environmental flows requirements, which can be summarized as follows:

- **Phase 1: Scoping the assessment and alignment to regional management requirements:** In this preparatory phase, a planned E-flows assessment is aligned with existing regional and basin scale management objectives and ensures that regional and spatial scale assessment requirements are considered.
- **Phase 2: Setting the Resource Quality Objective:** in this phase the Resource Quality Objectives are determined based on the local, national and regional governance (legal and institutional) frameworks.
- **Phase 3: Establishing the hydrological foundation:** This phase includes the baseline evaluation and modelling of hydrology data for the E-flows assessment. In this phase the foundations for the application of a specific Environmental Flow Assessment Method (EFM) are established. Available flow data, rainfall and evaporation data, water abstraction information, land use data and other information that may affect flows is used in this phase to characterise baseline flows and potentially describe any differences between these baseline flows and current flows.
- **Phase 4: Classifying ecosystem types.** Although no two rivers are exactly the same, systems that share physical features, and or occur within similar eco-regions and or contain similar animals may generally respond to flow alterations in a similar manner. This theory is the basis for the importance of characterising the ecosystem type being considered for E-flow assessments in an effort to assist building the knowledge base for future assessments.
- **Phase 5: Describing flow alterations.** Here alterations of flows from baseline or current flows

⁶ Nile Basin Initiative (NBI, 2016). Preparation of NBI Guidance Document on Environmental Flows: Nile E-flows Framework Technical Implementation Manual. Prepared by HYDROC GmbH on behalf of the Nile Basin Initiative and Deutsche Gesellschaft für Internationale Zusammenarbeit. Contract No. 81178948. Siegm

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under different management scenarios are modelled and described. These descriptions are then used in further phases to assess the socio-ecological consequences of these altered flows.

- **Phase 6: Establishing flow-ecosystem services linkages.** The importance of understanding what the consequences of altered flows will be, initially requires an understanding of the flow-ecological relationships for ecosystem protection considerations, and flow-ecosystem-service relationships to describe social consequences of altered flows.
- **Phase 7: Setting and monitoring the E-flow requirement.** In this phase the flows required to maintain the socio-ecological system in the desired condition established under the resource objective setting phase are described and presented to stakeholders for consideration. A decision is then taken on the setting of the environmental flow requirement. The flow requirements in general have many uncertainties associated with the availability of evidence used in the assessment, the understanding of the flow-ecology and flow-ecosystem-service relationships and analyses procedures used. A monitoring programme suited to the specific context and the degree of certainty desired for management can subsequently be developed to enable periodic review of the environmental flow requirement in an adaptive management cycle.



NBI has developed an environmental flows management framework to suit the Nile Basin context by incorporating current global best practices and principles (collaboration, equitability, sustainability, evidence based, requisite simplicity, transparency and adaptability) into an adaptable but scientifically valid Nile environmental flows management framework.



Figure 1: Summary of the seven phases of the Nile Basin E-flows Framework established to direct the management of E-flows in the Nile Basin.

5. Guiding principles for managing environmental flows in the Nile Basin

A series of guiding principles have been considered in developing this strategy for the establishment of environmental flows management in the Nile Basin. These are:

- **Recognise the challenge:** for the successful introduction of the environmental flow management all stakeholders need to recognise that flows in the Nile Basin are limited, shared and in need of careful management. There is a need to build awareness for environmental flows management in the whole basin.
- **Strive for appropriate simplicity:** managers must strive to keep environmental flows implementation plans and procedures simple and flexible, to start small and encourage communication and transparency.
- **Learn while doing:** adaptive management is a key principle of environmental flows management. For this a balance between a desire for action, and evidence or knowledge to support action is needed.

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- **Learn from each other and share experiences:** for the successful implementation of environmental flows management, although stakeholder engagement is important and both failures and successes must be disclosed, successes should be highlighted to encourage stakeholders to take action. Lessons learned from failures are documented and addressed.
- **Consider resource availabilities:** the management of environmental flows on a regional and basin scale must be realistic. This includes careful consideration of human and financial resource requirements and availability. Successful implementation of environmental flows may require the initial development of human capabilities and development of mechanisms to allow managers and/or technicians to carry out their activities efficiently and effectively.
- **Prepare to manage environmental flows at multiple scales.** Although it may not be possible to consider regional and basin scale environmental flows immediately, by starting with capacity building and the systematic collection of knowledge and information now, these assessments may be readily undertaken in the future. The basin's countries can thus gradually move from site and sub-basin to basin-wide environmental flows implementation.
- **Embrace subsidiarity:** While it is primarily the responsibility of the member states to manage environmental flows, the NBI can play a catalytic role in the establishment of a coherent practice of environmental flows assessment across the entire Nile Basin.



6. Goals of the strategy

The overarching goal of the strategy is “to facilitate and develop a culture of incorporation of collaborative, best practice E-flow management into the water resource planning, management and policies of the countries who share the Nile Basin (short term) to ultimately result in the establishment of an integrated, basin scale E-flows management system (long term)”. *Given that this is the first strategy for management of environment flows prepared under the Nile Basin Initiative, on one hand, and that there is limited capacity and experience in the member states of the NBI on the processes of environmental flows, on the other, the goal of the strategy in the first five years (2016/17 – 2021/22) shall be to develop capacity in members states and build body of knowledge on environmental flow processes through gradual piloting on specific cases in the Nile Basin.*

7. Strategic objectives and strategic action areas

Based on NBI’s mandated role, five strategic objectives with contributing strategic action areas have been identified:

1. Develop an E-Flows management framework appropriate for the Nile Basin

Strategic Objective: Develop a good-practice e-flows management framework appropriate for the Nile Basin to inform and facilitate a coordinated approach to management of e-flows across multiple scales and ecosystems in the Nile Basin.

Strategic Actions⁷:

- Review of the international best-practices and the experiences with e-flow management in the Nile Basin.
- Establish an NBI / Nile Basin Expert Group on Environmental Flows.
- Develop and test with NBI member states an e-flow management framework for the Nile Basin, with due adaptations and lessons drawn for the future.
- Develop a Technical Manual to help member states and NBI centres to apply the e-flow management framework.
- Develop a strategy for establishment of environmental flow management in the Nile Basin.
- Develop the Technical Manual (Annex) to provide guidance on establishing e-flows for wetlands.

2. Build capacity and awareness amongst national technical staff and policy makers.

Strategic Objective: Build awareness and capacity amongst national technical staff and policy makers to facilitate mainstreaming of e-flows management into national policy and practices.

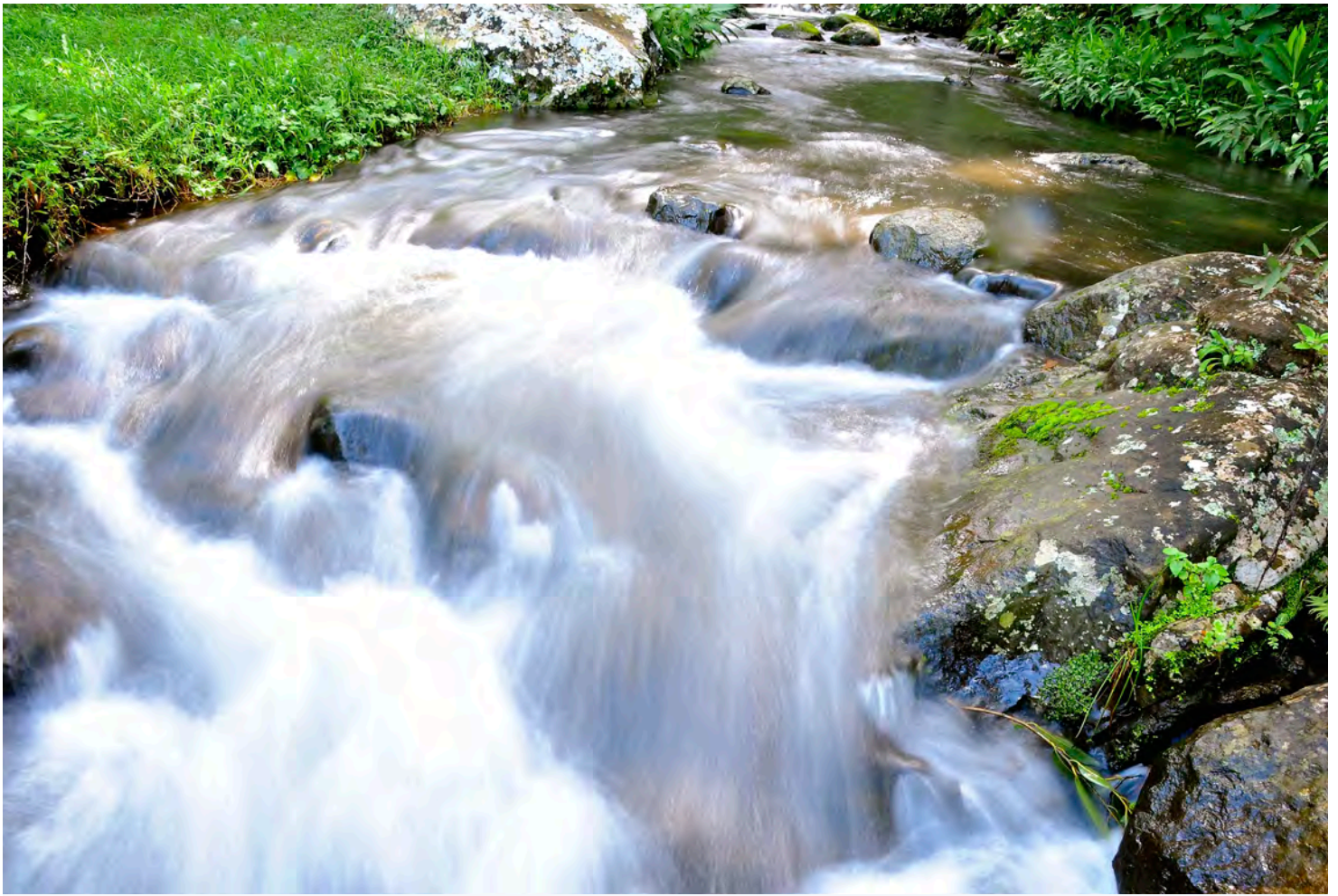
Strategic Actions:

- Develop blended/e-learning modules on NBI's approach to environmental flows management that can be used for awareness and capacity development for different target audiences.
- Organise awareness and training workshops for national technical staff and policy makers.
- Organise exchange with other river basins to share experiences and create awareness.
- Provide opportunities for regional peer to peer learning on e-flows assessments and management.
- Develop partnerships with regional/international Higher Education Institutions for delivering basic training and capacity building in environmental flows management to national staff.
- Build and engage a network of research units/centres in regional universities and research institutions that can contribute to E-flows assessment and management in region.
- Develop and disseminate policy briefs and knowledge products related to the application of the Nile Basin E-flows Framework.
- Create awareness on environmental flows management at relevant policy makers forums in the basin such as the Nile Basin Development Forum.

3. Support establishment of enabling national policy environments for E-flow management

Strategic Objective: Support NBI member countries efforts to establish E-flow management provisions in their relevant policies, legislation and strategies.

⁷ Note: Actions I-IV have been completed



Strategic Actions:

- Undertake baseline assessment of the capacity and current practice of each country to implement the Nile E-flows Framework (legal, institutional and human resource capacity, current practice of e-flow management, strengths and weaknesses) based on the request of the countries.
- Develop guidance on systematic incorporation and mainstreaming environmental flows in national policy, legislation and planning frameworks.
- Provide technical support to countries to review or establish e-flows policy elements in national policy and planning frameworks as required.

4. Increase the number of environmental flow assessments carried out in the Nile Basin

Strategic Objective: Enhance the level of experience and empirical information in the Nile Basin by increasing the number of environmental flow assessments carried out in the Basin through gradual piloting of the e-flow framework based on NBI Member States' requests.

Strategic Actions:

- Mainstream e-flows assessments into NBI's Strategic Water Resources Assessments/analysis.
- Mainstream e-flows assessment into the investment project preparation cycle of SAPs of NBI, specifically the SEIA, EIA and EMP through gradual piloting of the e-flow framework on case by case basis.



- Upon request of NBI sub-basin riparian countries, mainstream joint transboundary e-flow assessments into the work program of sub-basin level cooperation mechanisms / agreements.
- Develop a standard Terms of Reference (TORs) structure for e-flow assessments to help project managers to mainstream the implementation of Nile e-flows Framework in their project work; e.g. feasibility studies, ESIA, design and operation.
- Develop a roster / panel of recommended experts with experience in the Nile region to support regional e-flows management.
- Mobilize financial resources to support e-flows assessments in regional and national projects upon request by NBI Members States.

5. Develop a regional e-flow knowledge management, quality assurance and support function at NBI

Strategic Objective: Support a coherent regional and mutual-learning implementation process of the Nile Basin environmental flows framework across the Basin through establishment of a regional knowledge management, quality assurance and monitoring/review function at NBI.

Strategic actions:

- Establish and continuously manage a web-based study repository and meta-database of all environmental flow assessments carried out in the Nile Basin.

- Develop a classification of aquatic ecosystems to facilitate meta-data capturing and analysis of E-flow assessments based on ecosystem types and flow response comparisons between ecosystem types. This information will inform the future studies basin-wide.
- Establish a panel of experts with regional experience to review the quality of regional E-flows management on a regular medium term (approximately every five years) basis.
- Jointly monitor, through the NBI/Nile Basin Expert Group on Environmental Flows, the application of the Nile E-flows Framework based amongst others on the studies deposited in the repository and the achievements against the “e-flows policy and capacity baseline assessment”.
- Jointly evaluate, through the NBI/Nile Basin Expert Group on Environmental Flows, lesson learned, application challenges and achievements.
- Update the NBI E-Flows Framework Technical Implementation Manual based on the emerging experience across the basin and recommendations for improved practice.
- Provide technical secretarial support to the NBI/Nile Basin Expert Group on Environmental Flows.

8. Implementation arrangements and responsibilities

The principle implementation mechanism of this strategy is the mainstreaming of identified strategic actions into the relevant work programs and action plans at national, sub-regional and basin-wide levels:

- NBI will mainstream the implementation of the strategy into the Strategic Action Plan/Programmes (Nil-Sec, NELSAP, ENSAP).
- NBI will encourage and support mainstreaming into other relevant programs of regional inter-governmental partner institutions of NBI in the Nile Basin as appropriate.
- NBI will encourage and support mainstreaming into the relevant national water resources management and sector planning frameworks and water-related national management and development programs executed by line agencies.

Specifically, the role of the NBI organs and member states is:

Nile Basin Council of Ministers (Nile-COM): The Nile-COM is the governing body and the supreme policy and decision making body of the NBI and will approve the strategy document and any revisions of it.

Nile-TAC: The Nile-TAC participates actively in the formulation process of policies, strategies and guidelines and ensures that relevant national stakeholders are adequately consulted during formulation processes. Nile-TAC is responsible to induce technical review of any policy, strategy or guideline developed for the NBI, and advises Nile-COM on their suitability for application. Nile-TAC will oversee and provide strategic guidance and advice for the implementation of the strategy.

This strategy shall be effective upon adoption by Nile-COM and shall remain effective until further notice. The strategy shall be reviewed and updated periodically as required; the revision can be initiated by the Nile-SEC in consultation with the Nile-TAC and the NBI Expert Group on Environmental Flows.

NBI / Nile Expert Group on Environmental Flows: The Expert Group is nominated through Nile-TAC and brings together key national responsible policy makers and experts from NBI member states line agencies that hold responsibility for environmental flows management policy. The expert group is the key consultative format in the formulation process of related policies, strategies and guidelines and their review and evaluation. The Expert Group reports to Nile-TAC. Regional and international subject-matter experts will be part of the Expert Group transitorily when their inputs is essential.

Nile Secretariat (Nile-SEC): Nile-SEC is the full-time professional body that assists Nile-COM and Nile-TAC in their respective functions and coordinates basin-wide activities of the NBI. Nile-SEC will be responsible for mainstreaming the strategy into the NBI work program / strategic action plan. Nile-SEC will also coordinate the development of policies, strategies and guidelines required for the E-flows framework and will be responsible to develop the central service functions as outlined in the strategy.

Subsidiary Action Programs (SAPs): The SAPs of the Eastern Nile (ENSAP) and Nile Equatorial Lakes region (NELSAP) will contribute to the formulation of basin-wide E-flows policies, strategies and guidelines. They will be responsible to mainstream the strategy into their work program/strategic action plan and to ensure the application of the Nile Basin Environmental Flows Framework in the preparation and implementation of NBI investment programmes and projects.

National Line Agencies: The national line agencies, together with relevant ministries, and represented and guided through the Nile-TAC and the NBI/Nile Basin Expert Group on Environmental Flows will help to identify key national stakeholders to participate in the formulation and review of e-flows policies, strategies and guidelines. They will be responsible to mainstream strategic actions of the strategy into their work programs as appropriate. Furthermore, they will be in charge of coordination of the participation of national agencies and other stakeholders in environmental flow assessment activities of both SAPs and national projects.

9. Date of effectiveness and review

This strategy shall be effective upon adoption by Nile-COM and shall remain effective until further notice. The strategy shall be reviewed and updated periodically as required; the revision can be initiated by the Nile-SEC in consultation with the Nile-TAC and the NBI Expert Group on Environmental Flows.



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