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Project title: Enhancing Conjunctive Management of Surface and Groundwater Resources in Selected Transboundary Aquifers: Case Study for Selected Shared Groundwater Bodies in the Nile Basin

Country (ies): Burundi; Ethiopia; Kenya; Rwanda; Sudan; Tanzania; Uganda	Implementing Partner (GEF Executing Entity): Nile Basin Initiative	Execution Modality: IGO Execution
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Contributing Outcome (UNDAF/CPD, RPD, GPD):

There is not CPD for the Nile Basin as a region. Country by country CPD is given below.

Burundi (2018-2027) outcome: By end 2027, an increased proportion of the population have access to have sufficient quantity and quality of water for efficient and equitable use without compromising the environment, improve and safe drinking water and sanitation, manage and regular supply of sectors in drinking water and basic sanitation, practice appropriate hygiene behavior, ensure sustainable management of the environment, mitigate climate change and improve land use planning.

Ethiopia (2016-2020) outcome 1: By 2020 key government institutions at federal and regional level are better able to plan, implement and monitor priority climate change mitigation and adaptation actions and sustainable natural resource management.

Ethiopia (2016-2020) outcome 2: By 2020, the Ethiopian population, in particular women, children and vulnerable groups will have access to, and use of affordable, safe and adequate WASH services.

Kenya (2018-2022) outcome 1: By 2022, an increased proportion of the population has access to sustainable and safe drinking water and sanitation, and practice appropriate hygiene behavior.

Kenya (2018) outcome 2: By 2022, people in Kenya benefit from sustainable natural resource management, a progressive and resilient green economy.

Rwanda (2013-2018) outcome: Rwanda has put in place improved systems for: sustainable management of the environment, natural resources and renewable energy resources, energy access and security, for environmental and climate change resilience, in line with Rio+20 recommendations for sustainable development.

Sudan (2018-2021) outcome 1: By 2021, people’s resilience to consequences of climate change, environmental stresses and natural hazards is enhanced through strengthened institutions, policies, plans and programs

Sudan (2018-2021) outcome 2: By 2021, the populations in vulnerable situations have improved health, nutrition, education, water and sanitation, and social protection outcomes.

Tanzania (2016-2021) outcome: Improved environment, natural resources, climate change governance, energy access and disaster risk management.

Uganda: (2016-2020) outcome: By end 2020, natural resources management and energy access are gender responsive, effective and efficient, reducing emissions, negating the impact of climate-induced disasters and environmental degradation on livelihoods and production systems, and strengthening community resilience.

UNDP Social and Environmental Screening Category: High	UNDP Gender Marker: 1 (Activities contribute in some way to gender equality, but not significantly)
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Expected date of Mid-Term Review: 31 Dec 2022	Expected date of Terminal evaluation: 31 Dec 2024
<p>Brief project description: At the basin and national levels, each of the Nile basin countries regards groundwater as an insufficiently understood asset that can contribute to resilience (e.g to droughts) as a supplement to surface waters. Groundwater is one of the most important sources of drinking water for people and livestock. There is an increasing use of groundwater for other economic activities including in irrigation, fisheries, mining, industries, etc.</p> <p>The importance is reflected in the proportion of population (>70% of rural population) that is dependent on groundwater in many parts of the Nile basin. Regardless of the promise groundwater holds in filling the growing imbalance between water supply and demand, the resource is under human or naturally induced climatic and non-climatic pressures. The pressure is more felt in the small transboundary constellation of aquifers of enormous local importance.</p> <p><u>The project aims to attain more effective utilisation and protection of selected shared aquifers in the selected sub-basin in the Eastern Nile and the Nile Equatorial Lakes region through further improving the understanding of available groundwater resources and demonstrating 'conjunctive management' that optimizes the joint use of surface and groundwaters.</u></p> <p>The challenges, in addition to those related to natural/climate change causes, are linked to lack of knowledge/understanding of aquifers and their extent; poor or non-existing policies relating to groundwaters (and the differences/incompatibility of policies between countries); poor management practices that allow pollution (domestic, agriculture and industrial), limited practice to enhance groundwater storage, or over exploitation coupled with inadequate enforcement controls to prevent depletion, and; inadequate or insufficient monitoring systems. Given the complexity of addressing transboundary water resources in the Nile Basin, as the first step, the project shall focus on studies, governance, pilot schemes, capacity building and awareness creation that are of Technical Assistance in nature in selected aquifers. The project aims to contribute to gender equality in all ways possible.</p>	
(1) FINANCING PLAN	
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(1) Total Budget administered by UNDP	USD: 5,329,452.00
(2) CONFIRMED CO-FINANCING	

UNDP	USD: 350,000
Government of Burundi	USD: 2,000,000
Government of Ethiopia	USD: 2,000,000
Government of Kenya	USD: 2,000,000
Government of Rwanda	USD: 2,000,000
Government of Sudan	USD: 3,000,000
Government of the United Republic of Tanzania	USD 2,000,000
Government of Uganda	USD: 3,000,000
NBI	USD: 3,000,000
GIZ BMZ EU	USD: 8,500,000
(3) Total co-financing	USD: 27,850,000
(4) Grand-Total Project Financing (1)+(2)	USD: 33,179,452

SIGNATURES

Signature: 

Agreed by
Implementing
Partner

Date/Month/Year:

Signature: 
Ms. Elsie Attafua, UNDP Resident
Representative, CO Uganda

Agreed by UNDP

Date/Month/Year:
17/06/2020

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ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
CIDA	Canadian International Development Agency
CRWASH	Climate Resilient Water Sanitation and Hygiene
DFID	Department of International Development
ENSAP	Eastern Nile Subsidiary Action Program
ENTRO	Eastern Nile Technical Regional Office
FAO	Food and Agriculture Organization
FSP	Full Sized Project
GEB	Global Environmental Benefits
GEF	Global Environment Facility
GEFSEC	Global Environment Facility Secretariat
GEF TWAP	Global Environment Facility Transboundary Water Assessment Program
GIZ	German Society for International Cooperation
GTP	Growth and Transformation Plan
GW	Groundwater

GWWD	Groundwater and Wadi Directorate, Sudan
IAEA	International Atomic Energy Agency
IAH	International Association of Hydrogeologists
IGAD	Inter-Governmental Authority on Development
IGRAC	International Groundwater Resources Assessment Scale
IWMI	International Water Management Institute
IW LEARN	International Waters Learning Exchange and Resource Network
LVBC	Lake Victoria Basin Commission
MAR	Managed Aquifer Recharge
MCM	Million Cubic Meter
MSP	Medium Sized Project
NBI	Nile Basin Initiative
NBDSS	Nile Basin Decision Support Tool
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
Nile COM	Nile Basin Commission
Nile SEC	Nile Basin Initiative Secretariat
Nile TAC	Nile Technical Advisory Committee
ODA	Overseas Development Assistance
PIF	Project Identification Form
PIR	GEF Project Implementation Report
POPP	Programme and Operations Policies and Procedures
PPG	Project Preparation Grant
SADA	Shared Aquifer Diagnostic Analysis
SAP	Strategic Action Plan
SDG	Sustainable Development Goal
SLM	Sustainable Land Management
STAP	GEF Scientific Technical Advisory Panel
SW	Surface Water
ToC	Theory of Change
UNESCO	United Nations Education Science and Culture Organization
UNDAF CPD	United Nations Development Assistance Framework Country Program Document
UNDP-GEF	UNDP Global Environmental Finance Unit
USAID	United States Agency for International Development
UPgro	Unlocking the Potential of Groundwater for the Poor
WASH	Water Supply Sanitation and Hygiene
WB	World Bank
WWAP	World Water Assessment Program

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II. DEVELOPMENT CHALLENGE

Background and rationale

- 1 The interaction between groundwater and surface water systems (rivers, wetlands, lakes) has not been adequately considered in most transboundary river basin management initiatives, including the Nile basin. The most pressing driver of heightened interest around groundwater in the Nile basin is the growing imbalance between water demand and water supply. This necessitates the need to look for alternative water sources. Groundwater holds the promise of closing the gap between water supply and demand, and in buffering the effects of climate variability. The other driver of interest around groundwater is the role that groundwater plays in addressing the SDG targets for drinking water (SDG 6.1) and other SDG6 targets such as IWRM SDG 6.5. To reach SDG 6 goals, groundwater delivered thorough multiple delivery mechanisms (e.g. boreholes, springs, reticulated systems, dug wells) has a vital role to play.
- 2 Groundwater use for socio-economic improvements is in a growing stage in Africa and in the Nile basin in particular. Experience elsewhere in the world (South East Asian countries) and in some cities in Sub-Saharan Africa show that this precious resource can rapidly degrade and deplete. A UNEP report (Morris et al., 2011) demonstrates that groundwater storage that provides the ultimate resources buffer is threatened with a double jeopardy - depletion and degradation. The pressure is already felt in the numerous small aquifers in the upper Nile riparian countries.
- 3 Reliance on groundwater is rapidly increasing. This is partly attributed to climate change, high rainfall variability, and land use/land cover changes leading to declining amount of surface water in different areas. Subsequently, this has forced people to turn to groundwater sources as an alternative to support their livelihoods. Due to climate change and variability, many of the perennial rivers are now becoming seasonal, some lakes are shrinking from their original dimensions and there is increasing dependency on groundwater resources in all the aquifer areas under consideration.
- 4 At the basin and national level, each of the Nile basin countries regard groundwater as an insufficiently understood asset that can contribute to climate resilience. The importance is reflected in the significant populations that are dependent on groundwater in many parts of the basin.
- 5 There is ample evidence that groundwaters in the Nile basin are under threat from unsustainable exploitation; climate change (affecting aquifer water levels, recharge and changes in groundwater regimes), and pollution (urban pollution and issues associated with high fluorides or salinization). These in turn are impacting water availability, causing changes in quantity and quality of groundwater-dependent ecosystems, affecting groundwater -surface water interaction. The threats on transboundary aquifers are more severe because of lack of common groundwater governance and management mechanisms.
- 6 This project aims to overcome the different barriers limiting effective utilization and protection of shared aquifers in the upper riparian countries of the Nile. Unlike the downstream end of the Nile, which holds aquifers of continental size, the upper riparian countries of the Nile are dotted by small but numerous aquifers of enormous local, regional and basin-wide socio-economic significance. Many recent studies demonstrate that groundwater availability (or depletion of it) in the region, has a strong bearing on poverty, migration, conflict, school attendance, and human health. Three aquifer areas have been chosen for the current intervention (figure 1), namely the Kagera aquifer shared among Uganda, Tanzania, Rwanda and Burundi; the Mt Elgon aquifer shared between Uganda and Kenya; and the Gedaref-Adigrat aquifer shared between Sudan and Ethiopia. The aquifers are located in diverse ecological zones. The Gedaref-Adigrat aquifers represent arid semi-arid environment with pastoral and agro-pastoral landscapes. The Mt Elgon aquifer represent humid highlands where principal water use is for ecosystem services such as for wildlife watering and as source of drinking

water for rapidly growing population. The Kagera aquifer represents a typical African basement aquifer where the shallow groundwaters support drinking water sources and complex ecosystem niches.

- 7 During the Project Preparation Stage (PPG) detailed account of the situation analysis of the aquifers have been conducted by team of national consultants and a gender expert. The consultants produced seven national reports for the seven countries and one gender analysis report. The situation in the aquifers described in the national reports substantiates the various barriers and drivers identified during the Project Identification Stage (PIF). Summary of the findings are presented below.

Environmental context:

- 8 The Mount Elgon Aquifer: Mount Elgon is an extinct volcano straddling the border between Uganda and Kenya. The mountain hosts a transboundary aquifer that contributes to the waters of the Nile River basin via Lake Victoria and Lake Kyoga. The exact boundaries of the aquifer system remain undefined or unknown. It is believed that the boundary of the aquifer is much larger than the IGRAC confirmed boundary of the Mt Elgon transboundary aquifer. Studies have indicated that a shallow unconfined aquifer occurs from 15m depth, while for the deeper confined aquifers, there are two layers up to 100m, beneath which are either volcanic rock sequences at higher altitudes, or metamorphic rocks at lower altitudes. Geologically, the area consists of Mozambique Belt (MB) rocks as the oldest unconformably overlain by Neogene volcanics and Pleistocene to Recent soils as the youngest units. Quartzites, muscovite, biotite, and hornblende minerals are the major compositions of the MB rocks. The Mt. Elgon Series are Neogene phonolitic and nephelinitic lavas with intercalated bands of agglomerate, breccias and tuff. Control on the piezometric surface is not good on the middle to upper altitudes of the mountain due to lack of boreholes there. In the Lake Victoria basin, isotopic data indicates that groundwater plays an important role in supporting wetlands, rather than the lake itself (IAEA/UNDP/GEF, 2016).
- 9 The Kagera transboundary aquifer: The Kagera transboundary aquifer is predominantly a basement aquifer overlain by basement regolith composed of alluvial gravel, sand and fluvial deposits. The aquifer is largely discrete (limited in extent) and occurs with an unconsolidated weathered overburden (saprolite) or underlying fissured bedrock (saprock) of crystalline basement rocks. The in situ weathered (saprolite) features a variable transmissivity ($T = 5-20 \text{ m}^2/\text{d}$) which regionally is an important source of groundwater with storage provided by the overlying regolith. The aquifer extends over four countries, namely Burundi, Rwanda, Tanzania and Uganda. The total aquifer area and its boundaries are unknown. However, a map prepared by the International Groundwater Resources Assessment Centre (IGRAC) shows an aquifer with a minimum area of 5200 km^2 . The actual aquifer area is expected to be much larger than this. Groundwater is extensively developed for drinking water supply for the small urban areas and for the wider rural population. The Kagera aquifer region is dotted by numerous wetlands whose surface areas reaches 3000 km^2 . The majority of these wetlands are believed to be groundwater dependent. Groundwaters in the Kagera aquifer region show a high degree of salinity (e.g. in Tanzania). In all the countries, groundwater is mainly exploited through shallow wells (0-30 m). Groundwater discharges to the various springs, wetlands and streams. The shallow nature of the Kagera aquifer makes it vulnerable to contamination and climate change. A study in Uganda shows a high degree of incidence of microbial contamination owing to catchment degradation.

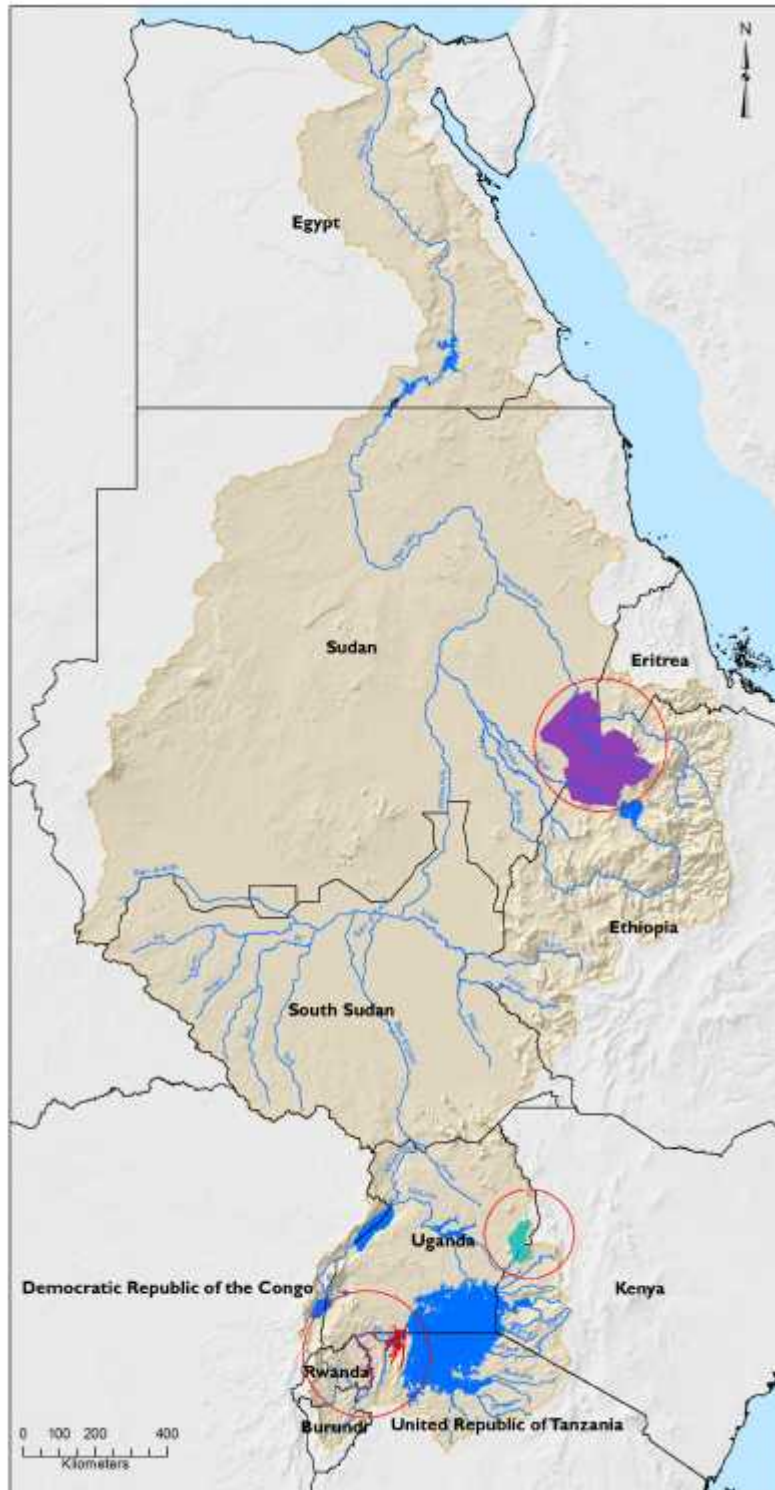


Figure 1. Map of Nile Basin showing the aquifers under consideration in current project (encircled)

- 10 Gedaref-Adigrat sandstone transboundary aquifer: In Sudan, the Gedaref sub-aquifer basin is composed of Cenozoic basalts and the Gedaref formation of Maastrichtian age (conglomerates, sandstones, sandy mudstones and mudstones). The Gedaref formation is named as the Adigrat sandstone in the Ethiopia part. In Ethiopia, the Adigrat sandstone occupies part of the Tekeze basin. The Tekeze basin is underlain by four main lithologies; a) the extensive but thin inter-granular aquifers comprising alluvial and lacustrine sediments, b) Tertiary volcanic aquifer in headwater area, c) Mesozoic Adigrat/Nubian sandstone and d) Hard rock aquifer/aquiclude of Precambrian metamorphic rocks. In Sudan alone, The Gedaref transboundary aquifer extends over an area of 28 000 km², stores 140 billion m³ of groundwater with 30 million m³ of annually renewable recharge of which abstraction for irrigation and water use take 15 million m³. In Sudan, the groundwater is usually abstracted using deep wells (ranging in depth from 150 to 350 m). In Ethiopia, the Sandstone aquifer yields up to 4 l/s. The water table is generally shallow (10-30 m) and groundwater is abstracted using shallow wells and hand dug wells.

Socio economic context:

- 11 The Mount Elgon aquifer: The major use of groundwater in the Mount Elgon region is for domestic and drinking purposes. During the wet seasons, the communities living within the aquifer boundaries use the surface water resources owing to availability of stream flow and nearby rivers. However, during the dry seasons, boreholes and shallow wells becomes their only alternative source of water. Other uses of groundwater in the area are for livestock watering, limited irrigation and urban water supply sourcing. The Mount Elgon area provides sustainable source of water supplies for major industries in both Kenya and Uganda. The Trans-Nzoia county government of Kenya plans to establish a border town at the border crossing to Uganda just as the Government of Uganda has done across the border. This will increase the water demand in the area and thus the exploitation of the Elgon transboundary aquifer. The wildlife in the Mount Elgon National Park also use the surface water resources, springs and waterholes in the forest for drinking and cooling purposes (in dry seasons). Water accessibility and availability is diminishing particularly in the lower pastoral and agro-pastoral zones for both domestic and livestock consumption.
- 12 The communities regard water as sacred and the responsibilities of protection and management of the water sources are vested in the elders. Long queues for water are a permanent feature during dry season in the drier lowland areas and conflicts over existing water resources are common. Small scale mining is practiced in areas endowed with mineral deposits.
- 13 Since there are protected areas on the Kenya side of the mountain such as Mt. Elgon National Park and Forest Reserves, groundwater in the middle to upper parts of the mountain are generally not polluted. However, pollution is noted in the foot slope and lowland areas for a number of reasons, including: completed boreholes have wellhead protection that is limited spatially to the immediate vicinity of the well, and shallow wells tend to lack wellhead protection and generally have microbiological contamination. In addition, environmental degradation mainly due to inappropriate landuse practices has increased sediment load in the rivers and diminished groundwater recharge.
- 14 The Kagera aquifer: In Tanzania 25 % domestic water supply comes from groundwater sources. Groundwater abstraction is increasing. Up to 1600 new boreholes are annually drilled. Domestic supply (both urban and rural) is the largest user of groundwater and consumes 755,000 m³/day (60% of total groundwater use) against total water demand of 0.8 to 3.4 MCM/day. Sugarcane irrigation, flower farming, and vegetables and fruit production consumes 130,000 m³/day (10% of total use) while mining and industrial activities consume about 30,000 m³/day (2% of total groundwater use). Livestock and other activities such as dry-land fish farming consume about 350,000 m³/day (28% of total groundwater use). The total groundwater use is about 1.265 MCM/day which is about 12% of available groundwater resources (11 MCM/ day).
- 15 In Rwanda, there is significant need for groundwater abstraction from the Kagera aquifer owing to the large population of livestock, the high susceptibility of the area to drought and increasing desertification

(deforestation). According to the Rwanda Climate Change Profile 2015, the four most food insecure areas are located in the Kagera basin. In this area, because of the shallow and low yield nature of the basement regolith and the sediment aquifers, the only reasonable way to exploit groundwater is by aquifer harvesting; that is, by sinking a large number of relatively shallow wells into well-defined areas of fissures.

- 16 The exploitation of groundwater in Burundi is new, and this is accompanied by a lack of data. Formerly the country's rural and urban settlers largely depended on spring water sources. Currently, groundwater abstraction through drilled tube wells is increasing. Currently, three large towns depend mainly on boreholes. In addition to these towns, village water supply relies more and more on boreholes and springs. There are 56 groundwater monitoring stations installed recently in Burundi. Out of these monitoring stations, 17 (11 manual and 6 automatic) are located with the Kagera groundwater basin.
- 17 Like in most of the countries in the Nile basin, aquifer specific groundwater database is either lacking or is incomplete. Data entry is not consistent within the same database or across different aquifer regions; many boreholes have no data recorded and for others the data is incomplete. This is because most of these boreholes are unknown/unregistered.
- 18 Uganda is probably the country with the most advanced groundwater database and information system. Here, groundwater information is captured through databases divided up into the rural water supply database and water resources management database; parameters for the rural water supply database include water source location, enumerator details and survey time, type of source, operation and maintenance, operation status (functionality), general information (e.g. ownership, source number, funding source, estimated users), village guide/respondent, and data verification. The water resources management database specifically captures well completion records (e.g. lithological logs, static water level, well design and dimensions), key chemical quality parameters, survey methods (e.g. vertical electrical sounding and profiling), drilling methods, test pumping records, water level and temporal climate records. Uganda also has detailed district and sub district-based groundwater availability maps.
- 19 Systematic groundwater monitoring of the transboundary aquifer is lacking. In Uganda there are 47 groundwater monitoring stations distributed all over the country. In Tanzania, there is a need to rehabilitate existing borehole monitoring stations distributed all over the country. All in all, groundwater monitoring is low and sparsely done; the activities implemented are sometimes different from what is originally planned. Most of the times, the monitoring done do not influence the implementation of activities, as the structure is not well entrenched into management of the sector.
- 20 The Gederaf-Adigrat aquifer: the principal livelihood type in the aquifer area both in Sudan and Ethiopia is agro-pastoralism and pastoralism. The livelihood activity entirely depends on groundwater sources for its water needs. Groundwater is mainly abstracted through hand dug wells and other customary water abstraction practices such as Haffris and river bed excavations. Conflict over the scarce water sources is common. In the Sudan and Ethiopia, water level monitoring has, in the past, been undertaken only during regional studies. Previous plans to carry out monitoring on the national scale have been hampered by various difficulties, such as access, transport, equipment and capacity.
- 21 In both Ethiopia and Sudan systematic monitoring of the aquifers is lacking. In Sudan, the Groundwater and Wadi Directorate (GWWD) is responsible for the collection and interpretation of groundwater monitoring data (water level, quality, abstraction). However, the country lacks an integrated, national monitoring network. Regional networks have been established in Gash basin, South Darfur in wadi Nyala, and northern state around Dongola. However, these data are of limited application for resource estimates or quantification of storage depletion from local abstraction due to the lack of reliable information on specific yield. No monitoring network exists in the Gadaref aquifer area. Data collection has usually been discontinued on completion of study projects and as a result there are few long-term records with which to study variations in annual recharge

or trends in water levels. Past attempt to establish systematic monitoring has limited success due to technical, economic and operational reasons including: shortage of transport and trained staff, difficulties of access to remote sites during the wet season, damage to recorders or boreholes, and costs of constructing dedicate boreholes.

- 22 In Ethiopia, regardless of the big emphasis given to groundwater exploration and exploitation, groundwater monitoring is not embedded into any national programs or strategy. Ethiopia’s Climate Resilient Wash Program developed in 2018 underlines the urgent need to reach hydrogeologically difficult arid and semi-arid lowlands environments through systematic use of deep groundwaters. The conventional approach of reaching communities through use of shallow groundwaters using low end technologies (eg. hand dug wells) didn’t yield high Water Supply Sanitation and Hygiene (WASH) coverage/access in the arid environments, such as in the surroundings of the aquifer under consideration.

Prevailing groundwater management issues and threats/problems to be addressed

- 23 Summary of prevailing environmental challenges is given in table 1. Notable problems are depletion of the groundwater resources, degradation of water quality and degradation of ecosystems dependent on surface and groundwaters. Groundwater use pattern is rapidly changing from non-commercial use (drinking water for people and cattle) a few decades ago to use of groundwater for commercial purposes (mining, fish ponds, industries etc). These observations are remarkable in all the aquifer areas (mainly in the Kagera and Gedaref-Adigrat aquifer systems). One of a good evidence that demonstrates the long term (three decades) changes in water quantity, quality and use comes from the Gedaref-Adigrat Aquifer transboundary aquifer (see box 1). The report in the box 1 taken from a recent publication by the British Geological Survey and the Oxford University, demonstrates that in a site in the Gedaref aquifer system human interventions have affected groundwater recharge and led to depletion of the resources. While current abstraction from the alluvial aquifer should provide more than enough water for the local population, water needs have grown to include commercial activities outside the Abu Delaig catchment area. The trend is almost similar all over the aquifer areas under consideration.

Table 1. Showing summary of finding from the seven national reports and a gender report on the stated aquifer

Aquifer area	Management issues and threats to be addressed
Kagera aquifer	<ul style="list-style-type: none"> • Lack of harmonized monitoring systems • Lack of harmonized working groundwater database • Identification of aquifers and their potential • Lack of knowledge of the aquifer including its extent, sustainable yield, and trends • Salinization owing to increase in evaporation and water logging • Vulnerability to extensive abstraction owing to small storage capacity of basement aquifers • Degradation of groundwater dependent ecosystems (wetlands and lakes) • Microbial contamination of drinking water sources • Poor water quality as the result of contamination by Uranium
Gedaref – Adigrat aquifer	<ul style="list-style-type: none"> • Lack of monitoring systems and standardized database • Demand (from non-conventional water use sectors- e.g. mining, irrigation) rapidly catching up with available renewable groundwater resource, threatening water availability • Low degree of natural recharge owing to low rainfall in the area • Conflict over scarce water sources • Unsafe sources (unprotected hand dug wells, river bed excavations, haffirs) widespread source of domestic water in both countries • Water level decline in the aquifers and water quality degradation (mainly pollution from fertilizers and salinization)
Mt Elgon	<ul style="list-style-type: none"> • Water accessibility and availability is diminishing particularly in the lower pastoral and

Aquifer	<p>agro-pastoral zones for both domestic and livestock consumption in both Uganda and Kenya.</p> <ul style="list-style-type: none"> • Long queues for water are a permanent feature during dry season in the drier lowland areas and conflicts over existing water resources are common. • There have been changes in vegetation due to environmental degradation and poor landuse practices as well as increase in the human population resulting in increasing conflicts in the area. • Based on an analysis of Mount Elgon, climate change is expected to have a number of impacts including: more frequent, prolonged, intense, and extensive floods and droughts; increased intensity of runoff; reduced or less reliable streamflow; warmer streams/rivers; reduced groundwater recharge and groundwater levels, and; increased water stress
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Box 1: Decadal changes in groundwater regime, case of Abu Delaig township, an aquifer basin adjacent to the Gedaref-Adigrat Transboundary aquifer area, Sudan (Excerpt from a British Geological Survey and Oxford University publication, 2018. J of Applied Geochemistry)

In 1982, the town of Abu Delaig reportedly had a population of 2000 people and was typical of many Sahel-margin settlements in that people depended on water from dug wells in the shallow alluvium overlying the Nubian sandstone. Since 1982, the population of Abu Delaig has grown tenfold, and groundwater extraction has increased by the use of electric pumps in boreholes densely drilled near the wadi. Groundwater use now accommodates water use for mining. Additionally, the Ingaz Dam (built during the fervor of the Ingaz revolution of 1998) was placed in a high-elevation gorge 17 km upstream of Abu Delaig. Although the Ingaz Dam was intended to store 1 MCM by the end of the rainy season, it actually holds much less, likely due to a greater permeability of soils and bedrock than expected. It is thought the dam may be focusing and augmenting groundwater recharge.

In 2012, 30 years after the initial investigation, a follow-on study was undertaken within a 400 km² subset area to further investigate groundwater recharge.

The 1982 study compiled a depth to water table map of shallow dug wells in the Abu Delaig area. The static water levels along Wadi Jugjugi ranged from 23.9m in the southwest to 5.3m downstream. The static water levels on the south side of Wadi Jugjugi were slightly less than on its north. The 2012 study re-sampled some of the same wells and found static water level readings from 94m in the northwest corner of the map about 5 km away from the wadi or any surface water source, to about 20m to water in the center of Abu Delaig. While some of the well readings are similar to those of the 1982 study, or at least not dissimilar enough to be accounted for by seasonal fluctuations, there appears to be a 10m drop in the center of Abu Delaig and where wells are located in close proximity. While current abstraction from the alluvial aquifer should provide more than enough water for the local population, water needs have grown to include commercial activities outside the Abu Delaig catchment area.

Root Causes

- 24 Detailed root causes analysis will be done for each aquifer during the shared aquifer diagnostic analysis (SADA) undertakings under component 1 of the current project. Presumably, the root causes (other than those related to natural/climate change causes) are linked to lack of knowledge/understanding on aquifers and their extent (including the availability and inter-connection between groundwater bodies or between groundwaters and surface waters); poor or non-existing policies relating to groundwaters (and the differences/incompatibility of policies between countries); poor management practices that allow pollution (domestic, agriculture and industrial) or overexploitation to occur with inadequate enforcement controls to prevent it, and; inadequate or insufficient monitoring systems for both surface water and groundwater (quantity and quality). These causes are made worse by an overall lack of infrastructure that would reduce the impact of wastewaters. Addressing these root causes will improve resilience to hydrological variability by improving (ideally, optimizing) the balance between surface and groundwater use. Lack of a governance regime for groundwater resources is a further impediment to a sustainable and cooperative management and utilization of transboundary aquifers. The Nile Basin Initiative, the only regional platform that brings together the Nile riparian states, has identified groundwater as a major water security issue in its 10 years strategy (2017-2027) and is starting the integration

of groundwater issues into its largely surface water focussed programs. As the first project focusing on groundwater, the focus of the project is on selected aquifers and sub-basins.

Barriers to be addressed

- 25 Apart from the inadequacy of financial resources available to address the root causes, significant barriers include: policy differences between countries or different administrative jurisdictions in the same aquifer system; lack of appropriate policies, legislation and management institutions; lack of capacity; low public awareness; overall lack of knowledge on aquifer systems and their interaction including with surface waters. Thus, the main drivers for such water management reform at both the national and sub-basin levels include (i) the need to meet supply/demand imbalances for the future; (ii) water quality deterioration and associated health and environmental risks; and (iii) weak service delivery, reliability, and transparency and associated quantity and quality measurements along with financial sustainability and cost recovery issues.
- 26 The shared aquifers included in the project were selected in consultation with the Nile Technical Advisory Committee (Nile-TAC). The proposed project is designed to reduce or minimize many of these barriers, addressing the root causes of the overall environmental problems, by increasing knowledge, awareness and management capacity of groundwaters (and the conjunctive management of surface and groundwaters). For enhancing the project impact on the ground, the project interventions will focus on the three selected shared aquifers in the Nile Basin rather than stretch over the entire Nile Basin. Based on the results of the project, future/follow up projects will be designed with basin-wide coverage. Further, to enhance effectiveness of project impact, it is critical that groundwater issues are not dealt with in isolation from surface water management issues in the sub-basins covered by the project. Therefore, the Nile Basin Initiative (NBI) will be the main implementing partner for the project to enable mainstreaming of groundwater issues into the deliberations on surface water. However, given the complexity of addressing transboundary water resources issues in the Nile Basin, as a first step, the project shall focus on studies and pilot schemes that are of Technical Assistance nature in the selected aquifers.
- 27 The long-term solution of the project is to achieve sustainable development, ecological sustainability and water security. Details of the five barriers identified under this project given below.
- 28 **Barrier 1: Insufficient knowledge:** Knowledge about the groundwater resources in the Nile basin and in the aquifer areas is patchy. Hydrological investigation in the last century focuses largely on surface water resources and disregards the role of groundwater in the basin water resources. A recent project implemented by IAEA/UNDP/GEF demonstrated that groundwater makes an integral part of the water resources. The project, through the use of Isotope hydrology tool, demonstrates the connection between the surface and groundwaters along the main segment of the Nile River. Such information is largely lacking on aquifer- by - aquifer basis and the knowledge on the shared aquifers is even worse because of absence of data collection and sharing mechanism on transboundary aquifers. The aquifers selected for the current investigation, though they are key sources of water for the communities (farmers, fishermen, mining, small industries, pastoralists, parks/wildlife, marginalized communities), are located in remote areas far from easy reach of central governments. As the result, key information is lacking. The water resources of transboundary aquifer systems selected for the current project are poorly known and at the same time increasingly threatened by rising demand for water (e.g. from mining, fish ponds development, industries, pastoralists, marginalized communities, growing urban centres, and rural inhabitants), adverse effects of variability / climate change, degradation of quality due to pollution from various sources (agriculture, urbanization, industries). Even when key physical information on the aquifers is readily available, the sustainability of the aquifer under natural and human induced (climatic/non-climatic) pressures is largely unknown.
- 29 *Component 1* of the project is envisaged to help the countries in overcoming the knowledge barrier by creating knowledge, information base and constructing hydrological models with in-built scenarios.

- 30 **Barrier 2: Lack of governance mechanism for shared aquifers:** Unlike the other transboundary aquifers in the Nile Region (e.g. the Nubian Sandstone Aquifer System), West Africa (the Illumiden aquifer system in west Africa) or the SADC region (e.g. Okavango system), the three aquifer systems under the current intervention have no form of governance mechanism in place. For example, there is no SADA or SAP developed for these key aquifers. Past UNDP/GEF and other financed interventions focus on large continental scale aquifers. Regardless of the fact that the aquifers under current investigation are not as big in size as the other aquifers in the Nile basin or elsewhere, it is within these aquifer areas that most of water related poverty problems prevail, including: conflict over scarce water sources, rapid loss of ecosystems that depend on the groundwaters, hunger and migrations, and poor water supply and sanitation coverage. This means there is an urgent need to conduct a transboundary shared aquifer diagnostic analysis on these aquifers.
- 31 There is no existing governance system for the small constellation of aquifers in the upstream region of the Nile. There is limited policy, legal, regulatory and institutional framework for management of the shared aquifers. It is only recently that the aspects of groundwater came into picture of the decision makers community, thanks to the completed (e.g. IAEA/UNDP/GEF groundwater mainstreaming project) and the ongoing projects (e.g. IGAD groundwater project). There is an increasing interest among the NBI member states to incorporate the dimension of groundwater into their future water security strategy (e.g. NBI's 2017-2027 strategy).
- 32 The increasing interest for groundwater-surface water conjunctive use, the increasing pressure on groundwater and the rapid shift of groundwater use from conventional drinking water use to a more productive use necessitate taking of urgent management actions (including: policy, regulatory, institutional, financial etc).
- 33 *Component 2* of the current project envisages addressing these issues through the development of action plans on groundwater resources governance, management, and protection for inclusion in national, sub-basin frameworks: – also including consideration of surface water/groundwater resources conjunctive use. *Component 3* of the project takes the learning from component 2 and lessons learned from other projects (and global experience) to convert some of the action plans into actual interventions.
- 34 **Barrier 3: Capacity gap:** Capacity is the major constraint for groundwater management to move forward in the Nile Basin context. There is an increasing number of African university academics involved in groundwater research in the region. This is visible in the increasing number of research publications pertaining to groundwater and originating from African Institutions. This growing capacity is the result of international research collaboration with universities in the north. As donors increase funding for groundwater research in Africa (e.g. The Oxford University REACH project, DFID's UPGro groundwater research program in Africa, World Bank investment in African Centre of Excellence building including in areas of Water), African groundwater academia is benefiting from such research investments (see section on national projects for details). Regardless of this, groundwater expertise is generally missing among the decision-making community, government agencies, civil societies and communities on the ground. In most International Basin Organizations in Africa, the number of groundwater specialists insufficient.
- 35 Through targeted local, national and sub regional trainings as well as through South-South and North-South exchange programs and awareness raising workshops, *component 4 and 5* of the project aim to increase capacity at various levels in the countries and in the region.

National and regional projects

- 36 Groundwater is gaining a firm policy stand in most of the participating countries. As the result a number of groundwater projects have been initiated in the past by the governments, the development partners and the research institutions. Because of the complexity of the region and the transboundary nature of the water resources and the aquifers under consideration, lack of knowledge and management mechanism remain key barriers. The list of projects and activities related to groundwater aspect is given below.

- 37 **Burundi:** Many surface water analysis studies have been carried out, and water management strategies have been developed and published, such as the national water master plan, water policy, a decision support system tool for the water sector, river discharges analysis and others. However, the groundwater dimension has not been taken into account. This has contributed to a lack of an effective water resources management tool for socio-economic sectors, such as agriculture, industry, urban water supply, energy and so on. Since 2012, a project IGEBU/BGR has been implemented in some provinces such as Gitega, Kirundo, Rutana; Ruyigi and Rumonge. The main objective of the project IGEBU/BGR is groundwater resources management. The main ongoing activities are groundwater quantity and quality monitoring and evaluation.
- 38 **Ethiopia:** The current focus is on exploration and exploitation with less emphasis given to GW management. Currently mapping of shallow and very shallow groundwater is being undertaken by the Ministry of Water, Irrigation and Energy, and the Agriculture Transformation Agency. As part of the new Climate Resilient Wash Program (CRWASH), deep regional aquifers are being mapped in arid areas of the country so as to reach marginalized communities (pastoralists, internally displaced people, refugee camps etc). There is a policy-push for shallow groundwater development for use in small scale (as well as conjunctive rain fed – groundwater fed) irrigation at household level to enhance household food production. The main policies relating to groundwater include: GTP II: Growth and Transformation Plan [2015-2020]; Universal Access Plan: Ethiopian Water Resources Management Proclamation 197/2000. A number of ministries and institutes have an interest in groundwaters, including: Ministry of Water Irrigation and Energy; Geological Survey of Ethiopia; Ministry of Environment. Key national and regional projects include: Sustainable Land Management Programme (WB, DFID, GIZ, EU etc.) to reduce land degradation and improve land productivity in selected watersheds in targeted regions in Ethiopia; Agricultural Growth Program (AECID, CIDA, USAID, WB, FAO, UNDP etc.) to increase agriculture productivity through sustainable land management program, groundwater use and technology innovation; Feed the Future Innovation Lab for Small-Scale Irrigation (US)- to benefit farmers of Ethiopia by improving effective use of scarce water supplies through interventions in small-scale irrigation; The Agriculture Transformation Agency's Initiative to map shallow groundwater across Ethiopia; UPGro Program 1: Hidden Crisis (DFID): unravelling current failures for future success in rural groundwater supply; UPGro Program II: GroFutures (DFID): Groundwater Futures in Sub Saharan Africa, a research program on groundwater features, uses and impacts; REACH program: Improving Water Security for the Poor (DFID); and, a number of [>10] large projects of mapping deep groundwaters for irrigation in high prospect areas of the country by the Federal Ministry of Water Irrigation and Energy; Abay Basin Authority's a River Basin Organization planning to conduct River Basin planning for Abay (Blue Nile in Ethiopia) including groundwater.
- 39 **Kenya:** The groundwater potential is not well understood and the government has initiated country-wide groundwater mapping programme. There is a draft groundwater strategy, and the current National Water Policy that is yet to be adopted articulates groundwater as an important water resource. Conjunctive surface/groundwater management is implemented through the Water Resources Authority (WRA) and at sub-catchment level by Water Resources Users Associations. Key policies and legislation include: Water Act 2016; National Water Master Plan 2030; Draft Groundwater Strategy; EMCA 1999; WRA Rules, 2007; Transboundary Water Policy; Draft National Water Policy. These policies/strategies are in place but the enforcement capacity is inadequate. A number of ministries and institutes are involved directly and indirectly with the management of water resources, including: Ministry of Water & Sanitation and Irrigation, WRA, Kenya Water Towers Agency; Kenya Forest Service, Kenya Wildlife Service, National Environmental Management Authority. Relevant national and regional projects include: National / regional projects addressing GW; National Groundwater mapping programme; Groundwater-Surface water interaction on the Kilimanjaro aquifer system
- 40 **Rwanda:** the 2011- 2015 water resources management sub-sector plan identifies meeting increasing multiple water demands, in the face of declining water quantity and quality, and inadequate governance framework is the main challenge facing the country. According to the strategic plan, ground water accounts for 86% of safe drinking water supply for rural areas. Establishing the nature, physical and geo-chemical characteristics, discharge capacities of the aquifers and main recharge areas is one of the main issues that have been cited in

the 2011- 2015 strategy for improved management and sustainable use of groundwater aquifers. One of the specific objectives of the National Water Resources Master Plan of 2015 is to quantify available water resources (surface and groundwater, in time and space). The Master Plan underlines, it is difficult, almost impossible, to achieve such objective without a positive change in the knowledge and capacity for groundwater management. One of the identified shared aquifers covered by the project lies in Rwanda. In this regard, the proposed project through its special focus on enhancing the knowledge and capacity for sustainable management groundwater resources will be of high relevance to the management of groundwater aquifers in Rwanda.

- 41 **Sudan:** There is limited surface and groundwater conjunctive management in some areas in Sudan for agriculture and domestic supply. A new regulation for permitting groundwater extraction has just received ministerial approval and will be implemented later this year. The Ministry of Water Resources, Irrigation and Electricity (MWRIE) has overall management of all waters and other ministries involved include: Ministry of Agriculture; Ministry of Animal Wealth; Ministry of Forestry; State Ministries of Water Resources; and, the Ministry of Environment. Currently the only groundwater ODA project is the UNDP/GEF Nubian Aquifer SAP implementation.
- 42 **Tanzania:** Groundwater management is insufficient due to inadequate information on resources, threats and potential for exploitation. All sources are managed separately (no conjunctive management) and inter-dependencies between surface and groundwaters are not clear. A ground water mapping project had been initiated through support from World Bank aiming to map ground water aquifer including yield and water quality. The project will also assess ground water resources of the Country including availability, aquifer dynamics and historical changes by compiling all existing information on ground water level and quality. The main groundwater related policies and acts include: National Water Policy (NAWAPO) of July 2002, Water Resources Management Act No 11 of 2009 and Environment Management Act of 2004. Key ministries and institutes include: Water, Vice President's Office Environment Department, President's Office- Regional Administration and Local Government, Water Management Institute. Relevant national projects include: Water Sector Development Programme (WSDP) –phase 2; Water Sector Support Project II .
- 43 **Uganda:** A few studies have been conducted or are underway on the interaction between groundwater and surface water in the country. Key relevant policies on groundwater include: National Water Policy, Water Act and relevant regulations that provide policy and legal basis for management of groundwater; Permits for regulation of groundwater including Groundwater abstraction permits, Borehole Drilling License and Waste Water Discharge Permits. Groundwater is of interest to a number of ministries and institutes, including: Ministry of Water and Environment, Makerere University and various NGOs, CSOs. Relevant national and regional projects include: Ministry of Water and Environment studies related to groundwater availability, potential and pollution; A groundwater mapping exercise for use in planning of groundwater development activities for about 85% of Uganda; Studies on groundwater - surface water interactions on deeply weathered surfaces of low relief in the Upper Nile Basin of Uganda; Groundwater/surface water assessment and monitoring activities in relation to catchment based water resources management; Coordinated research project on interaction of groundwater and surface water at one of the stations at L. Kyoga. Lakes Edward and George Integrated Fisheries and Water Resources Project (AfDB/GEF/NBI); Lake Victoria Environmental Management Project (Lake Victoria Basin Commission/World Bank); Water Management and Development (World Bank); Water Management Zones Project (various donors); Support to Water Resources Management project (various donors).
- 44 **Regional projects:** The project's international stakeholders (GIZ-BMZ-EU, IGAD, UNICEF, World Bank) are all involved in water projects in the Nile Basin countries and they have mechanisms in place in creating knowledge platform on which south-south cooperation can be implemented. The projects include:
 - Ground Water Availability and Conjunctive Use Assessment in the Eastern Nile: This study is currently being undertaken by the NBI-Eastern Nile Technical Regional Office (ENTRO). The study is financed from the CIWA Trust Fund administered by the World Bank;

- Biodiversity assessment and sustainable utilization of transboundary wetlands and wetlands of transboundary significance in the Nile Basin: This project is being implemented by NBI (all three centres) through funding from the German Government. The project focuses on building inventory and atlas of wetlands; evaluation of economic value of wetland ecosystem services; hydrological assessment and modelling of major wetlands, including the Sudd wetland in South Sudan and carbon sequestration potential of peat deposits in wetlands.
- Collaborative water supply and demand assessment: This study is aimed at developing current and projected water supply and water demands in the Nile Basin for key sectors. The study aims at developing strategic options for meeting the growing water demands sustainably. The study is financed under the EU-BMZ Nile Basin cooperation project.
- First phase implementation of the Nile Basin Hydro-Met system: The NBI developed detailed design of a regional Hydro-Met system in 2015. The system design includes monitoring quantity and quality of surface and groundwater resources. The first phase implementation focuses on hydrological monitoring network across the Nile Basin.
- Enhancing climate change data and information for the Nile Basin: This study is part of the Nile Cooperation for Results project funded from CIWA Trust Fund through the World Bank. It is aimed at generating high resolution climate change projections data for the Nile Basin.
- Inland Water Resources Management Project (INWRMP) of the Inter-Governmental Authority on Development (IGAD)
- Implementation of the Water Accounting Plus (WA+) approach to assessing the current status of water resources in the Nile Equatorial Lakes Region by IWMI and NELSAP. This project will assess the role of groundwater in renewable water resources; assess aquifers as a storage reservoir for droughts and a buffer for floods. Also, the project will assess groundwater vertical recharge, groundwater withdrawals and groundwater return flows will be estimated using the groundwater module. The surface and groundwater balance for the basin will be estimated for the normal, dry and wet year conditions.

Relevance to national development priorities

- 45 A preliminary meeting of the countries and the NBI was held to ensure that the project objectives, outcomes and outputs are in line with national priorities. At the regional level, the project is consistent with NBI's objective of including groundwater issues into their plan to manage the waters of the Nile Basin. The project is consistent with, and will contribute to, the NBI's ENSAP and NELSAP investment programmes. At the national level, all selected countries have actively contributed to the formulation of the outputs/outcomes and have actively contributed to the preparation of the PIF and ProDoc, thereby ensuring countries' needs are expressed adequately. Specific priorities identified by the countries both during the PIF and the PPG stage include:
- In Ethiopia groundwater is included in the next five-year development strategic plan (GTP III) with the expansion of groundwater irrigation and the improvement (through 2.4. billion USD investments) to improve drinking water supplies largely dependent on groundwater sources. Furthermore, Ethiopia's new Climate Resilient WASH program (2017) intends to tap into deep regional aquifers to reach marginalized communities (e.g. pastoralist communities) in arid environments.
 - In Kenya, the project is supportive of the flagship Vision 2030 and the 2016 Water Act, EMCA 1999 (recently updated). The project will also support economic development through the identification and sustainable use of water resources and improve the knowledge and understanding of shared aquifers.
 - In Tanzania, the Water Resources Management Act 2009 requires the classification of water resources considering both surface and groundwater sources. Furthermore, The National Five-Year Development Plan 2016/17 – 2020/21, "Nurturing Industrialization for Economic Transformation and Human Development" plans to increase groundwater development.
 - In Sudan, the project is supportive of the Sudan Water Policy and Agriculture and Food Security Plan
 - In Uganda, the Water Policy, Water Act and Water Resources Regulations have clear provisions for the management of surface and groundwaters.

- In Rwanda, the National Water Resources Master Plan (2015-2040) incorporates groundwater aspect in the document. The Annual Water Status Report 2016-2017 recognizes that knowledge regarding Rwanda's groundwater resources is still very limited. Rwanda intends to ensure a better understanding of the trends in groundwater use and availability for the future Annual Water Status Reports through investigations supported by installation of groundwater monitoring infrastructures, inventorying groundwater wells and geophysical investigations of groundwater resources. These measures will ensure a better understanding of the trends in groundwater use and availability for the future Annual Water Status Reports.
- In Burundi, the project is supportive of the various regulations and practices such as a) National guide for determining perimeters for the protection of water catchments intended for human consumption, August 2014, b) the decree No 100/185- Procedures for determining and setting up perimeters for the protection of water catchments intended for human consumption and c) Ministerial Order No. 770/1590 which lays down the technical rules and requirements for the issue of the authorization of drilling, well digging and sounding exercises for the purpose of research, abstraction or exploitation of groundwater.

Relevance to global environmental and/or adaptation issues

- 46 By strengthening the understanding and management of groundwaters in the selected sub-basins, the countries and the NBI will be better placed to utilize and protect effectively the water resources in the selected sub-basins. Groundwater is a primary source of water for the population and dependent ecosystems. Groundwater also plays an important role in providing resilience to the management of water resources systems under extreme hydrologic variability conditions. Ecosystems conditions are shaped by hydrogeological and hydro-chemical features of related aquifer systems. However, groundwater in the Nile Basin is at the risk of being over-exploited and/or contaminated due to mismanagement. Such over-exploitation could lead to quantitative and qualitative deterioration of aquifer systems. Thus, sustainable use of groundwater is one of the most important aspects in order to achieve sound water resources management in the basin and ensure sustainable livelihoods for millions of inhabitants of the selected countries. The strengthening of groundwater management and effective conjunctive use of both surface and groundwaters will help the selected countries with the provision of water and sanitation for people, agriculture and economic development whilst meeting the SDGs.

Relevance to sustainable development goals

- 47 The project will increase participating countries capacity to achieve the SDG targets. Countries will be better equipped to achieve and report progress towards SDGs, in particular SDGs 1 (poverty), 2 (hunger food and nutrition security), 5 (gender equality and empowerment of women and girls), 6 (water and sanitation), 8 (decent work), 13 (climate change) and 15 (sustainable terrestrial ecosystems). The project intervention will take strong account of climate change adaptation needs through its pilot interventions, thereby contributing to SDG 13. The project aims to increase water access and availability to marginalized communities through inclusive and equitable social and economic development thereby contributing to poverty alleviation. The project aims contribute towards SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture) through its pilot intervention in MAR and promoting sustainable land management.

Baseline conclusions

- 48 Investment in groundwater exploration, development and management is gaining traction in the Nile Basin countries. Some basic knowledge on groundwater resources is available in the countries but the knowledge has not been systematized in the context of basin water resources management and in the context of transboundary aquifer management. Multiple evidences show depleting groundwaters levels, deterioration in water quality, and degradation of groundwater dependent ecosystems threatening the full benefit of groundwater use for livelihood improvement. There is a need to develop and enhance capacity to assess and protect the ecosystems dependent on the water resources of the aquifer, in particular to mitigate the

potential impacts of climate change and variability within the region. In addition, the NBI needs further strengthening to develop and implement effective management actions (including a regular monitoring programme). Further work through pilot demonstration activities will assist the seven governments in collaborative actions that will both strengthen their capacity on conjunctive management and improve the livelihoods of the local population dependent on the resources of the selected areas. Without further support, the benefit of groundwater-surface water conjunctive use of the transboundary aquifers cannot be attained.

III. STRATEGY

Project objectives and proposed alternatives

49 The baseline activities (that is ongoing interventions, national and regional projects) fall short of comprehensively exploiting the full benefit of conjunctive use and management of surface and groundwaters resources as well as fall short of protecting the aquifers. The barriers to these are lack of appreciable knowledge of the state of the aquifers and their connections to the surface waters, lack of management strategies, and lack of awareness to fully appreciate the benefit of conjunctive use and management of surface and groundwaters at different tiers of the stakeholders. Through its knowledge creation component, designing actions plans for interventions and pilot demonstration activities, the project envisages to strengthen the governments' capacity on conjunctive management and improve the livelihoods of the local population dependent on the resources of the shared aquifers.

50 The objective of the project is to strengthen the knowledge base, capacity and cross-border institutional mechanisms for sustainable use and management of selected transboundary aquifers in the Nile Equatorial Lakes and Eastern Nile sub-basins. The project targets to overcome the barriers that have been identified (see section 1 for details). In line with this objective and the context given in section II, the project has been subdivided into five components.

Component 1: Furthering knowledge and understanding about availability of groundwater resources in the selected aquifers underlying watersheds in the sub-basins of the Eastern Nile and the Nile Equatorial Lakes.

Component 2: Development of action plans on groundwater resources governance, management, and protection for inclusion in national, sub-basin frameworks: – also including consideration of surface water/groundwater resources conjunctive use

Component 3: Targeted pilot projects to explore conjunctive use of surface and ground waters, and links to biodiversity conservation and climate change adaptation

Component 4: Further strengthening capacity to address groundwater issues at the national and regional levels

Component 5: Communications and awareness raising.

51 Building on previous works Understanding the proposed project strategy requires a) an appreciation of the previous similar works that has already taken place in the Nile Basin and b) deriving lessons from similar other projects conducted or being conducted on transboundary aquifers elsewhere in Africa and globally. During the project inception phase, detailed assessment of key outcomes/lessons from these projects will be done. The various projects to be consulted include:

- Mainstreaming Groundwater Considerations into the Integrated Management of the Nile River Basin' (IAEA/UNDP/GEF);
- Regional Strategic Action Programme for the Nubian Aquifer Project' (IAEA/UNDP/GEF);
- Integrated and Sustainable Management of Shared Aquifer Systems and Basins of the Sahel Region (UNESCO/IAEA/GEF)
- Groundwater Availability and Conjunctive Use Assessment in the Eastern Nile (WB financed ENTRO executed project)
- Pertinent national databases and study reports

Project rationale and policy conformity

- 52 The project is consistent with, and supportive of GEF IW 6 Objective 1: Catalyze Sustainable Management of Transboundary Waters (Program 1 - *Foster Co-operation for Sustainable Use of Transboundary Water Systems and Economic Growth*) and GEF IW Objective 2: Catalyze investments to balance competing water-uses in the management of transboundary surface and groundwater and to enhance multi-state cooperation (Program 3- *Advance Conjunctive Management of Surface and Groundwater through Effective Institutional, Legal, and Policy Measures*; Program 4 - *Addressing the Water/Food/Energy/Ecosystem Security Nexus*).
- 53 The project is also consistent with the UNDAF-CPDs. In undertaking the project, contributions will be made to the seven/eight UNDAF CPD outcomes through knowledge creation, policy recommendations (action plans) and pilot actions for upscaling components of the project.
- **Burundi (2018-2027) outcome:** By end 2027, an increased proportion of the population have access to have sufficient quantity and quality of water for efficient and equitable use without compromising the environment, improve and safe drinking water and sanitation, manage and regular supply of sectors in drinking water and basic sanitation and practice appropriate hygiene behavior, ensure sustainable management of the environment, mitigate climate change and improve land use planning.
 - **Ethiopia (2016-2020) outcome 1:** By 2020 key government institutions at federal and regional level are better able to plan, implement and monitor priority climate change mitigation and adaptation actions and sustainable natural resource management
 - **Ethiopia (2016-2020) outcome 2:** By 2020, the Ethiopian population, in particular women, children and vulnerable groups will have access to/and use of affordable, safe and adequate WASH services
 - **Kenya (2018-2022) outcome 1:** By 2022, an increased proportion of the population have access to sustainable and safe drinking water and sanitation, and practice appropriate hygiene behavior
 - **Kenya (2018) outcome 2:** By 2022, people in Kenya benefit from sustainable natural resource management, a progressive and resilient green economy.
 - **Rwanda (2013-2018) outcome:** Rwanda has in place improved systems for sustainable management of the environment, natural resources and renewable energy resources, energy access and security, for environmental and climate change resilience, in line with Rio+20 recommendations for sustainable development.
 - **Tanzania (2016-2021) outcome:** Improved environment, natural resources, climate change governance, energy access and disaster risk management
 - **Uganda: (2016-2020) outcome:** By end of 2020, natural resources management and energy access are gender responsive, effective and efficient, reducing emissions, negating the impact of climate-induced disasters and environmental degradation on livelihoods and production systems, and strengthening community resilience.
- 54 The project has a wider range of Global Environmental Benefits (GEBs), including:
- Reducing demand through the application of measures to use the water resources of the shared aquifers more efficiently
 - Reducing pressure on other national and transboundary water resources where available (e.g. Nile River)
 - Flow of data including on water levels, abstraction rates and water quality
 - Assessment of the fragile ecosystem
 - Sharing experience on common issues through carefully selected pilot projects
 - Training of personnel from the countries in different fields
 - Awareness raising among the relevant institutions and the public at large on the environmental issues and the threats of climate change on the ecosystem and biodiversity

- Improving the institutional and legal system to achieve a rational management of the shared groundwater resources
- Introduction of suitable agricultural practices and water conservation techniques
- Environmental protection particularly in groundwater recharge zones

55 The benefits from this project will also contribute to other multi-lateral environmental agreements including the Ramsar Convention, Agreement on the Conservation of African-Eurasian Migratory Water Birds, etc. dependent on the water resources available at wetlands fed by the groundwaters.

56 The project is in line with the ten years NBI's 2017-2027 strategic goals. In undertaking the various components of the project, contributions will be made to the following goals strategic goals.

- Goal 1: Enhance availability and sustainable utilization and management of transboundary water resources of the Nile Basin
- Goal 3: Enhance efficient agricultural water use and promote a basin approach to address the linkages between water and food security
- Goal 4: Protect, restore and promote sustainable use of water-related ecosystems across the basin
- Goal 5: Improve basin resilience to climate change impacts
- Goal 6: Strengthen transboundary water governance in the Nile Basin

Theory of Change

57 The Theory of Change (ToC) for the project presents a semi-structured map to link strategic actions with desired outcomes. It sets out to identify explicitly the assumptions underlying the proposed actions. It is anticipated that reality could unfold in the near future subject to certain strategic actions that the project intends to take. The following diagram demonstrates the envisioned Theory of Change for this project.

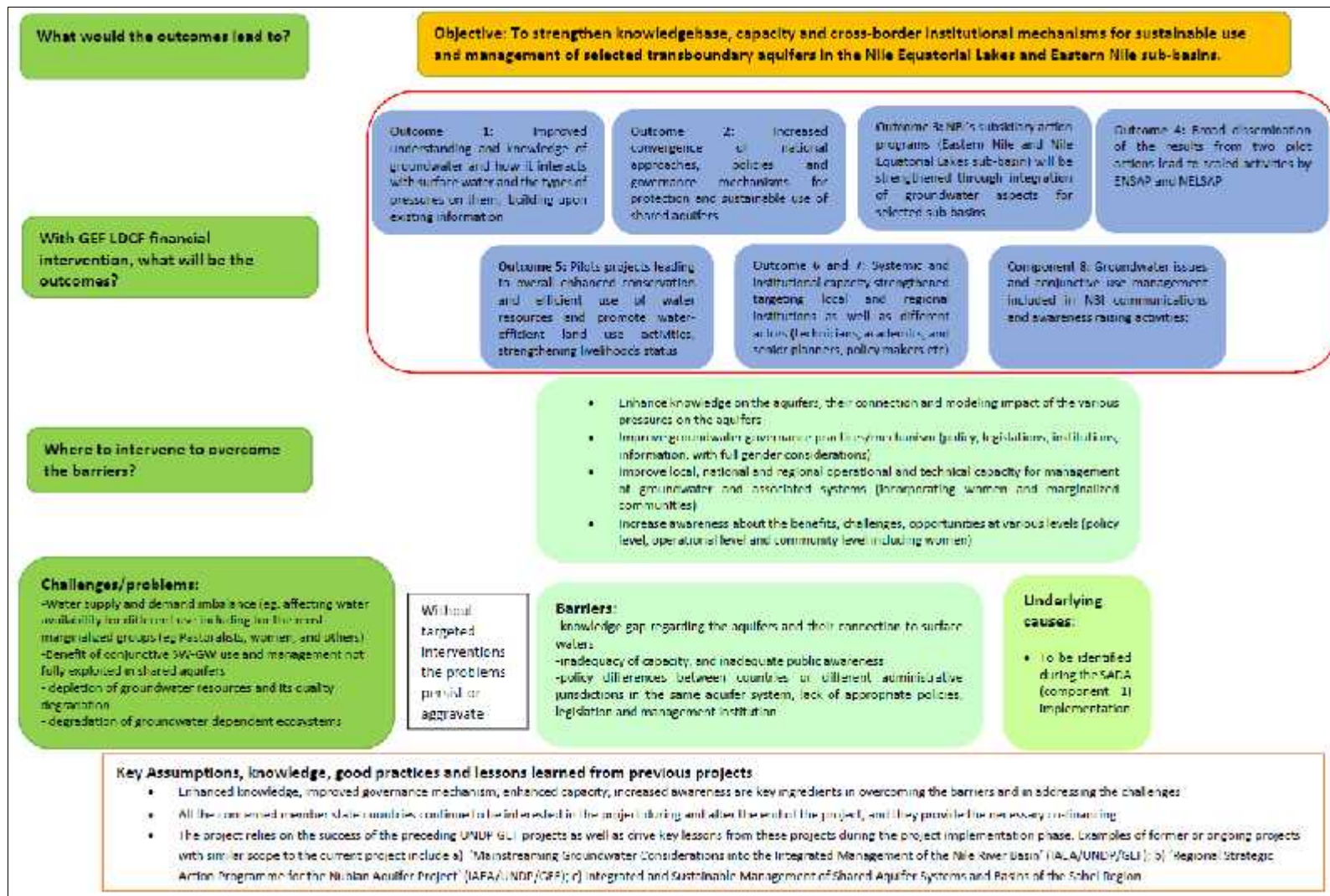


Figure 2. Theory of change diagram

Partnership and stakeholder engagement

- 58 The project is going to be undertaken with close partnership with international, regional and local institutions (see section IV for details). These institutions have ongoing projects and programs in the region. In working in close collaboration with these institutions/stakeholders, the project aims to build synergy and share learnings and experiences. Furthermore, the partnership will be helpful to reduce redundancy and to avoid delivery of multiple incompatible policy messages to the countries.

Country ownership

- 59 The seven beneficiary countries of this project have demonstrated their commitment by actively taking part in the project formulation, design and commitment to co-financing the project. In all the countries, groundwater consideration is increasing in national groundwater policies and managements. The alignment of the project with the national policies and strategies will increase the countries sense of ownership of the project. That the project link to various SDG outcomes also means, the benefit for the seven countries is evident.

IV. RESULTS AND PARTNERSHIPS

Expected Results:

60 The project aims to foster more effective utilization and protection of selected shared aquifers in the selected sub-basin in the Eastern Nile and the Nile Equatorial Lakes region through further improving the understanding of available groundwater resources and demonstrating ‘conjunctive management that optimizes the joint use of surface and groundwaters’. The project will also contribute to aid the national achievements and reporting of water related Sustainable Development Goals; and will be supportive to environmental protection whilst enhancing socioeconomic development of the basin’s population. The gender aspects of the expected results is presented in the gender action plan (annex F) section and in the multiyear workplan given in Annex A.

61 The baseline situation - (knowledge, mechanisms, institutions) falls short of fostering effective utilization and protection of the shared aquifers. The alternative project approach is comprised of the components, outcomes, outputs, and activities mentioned below.

62 **Component 1: Furthering knowledge and understanding about availability of groundwater resources in the selected aquifers underlying watersheds in the sub-basins of the Eastern Nile and the Nile Equatorial Lakes.**

Purpose of component: This will build and expand on the understanding of groundwater resources through detailed mapping and assessment of selected aquifer systems. The analysis will also consider the implications of impacts of potential climate change scenarios on the overall basin surface and groundwater resources in the Nile. The work will also document the current groundwater abstraction/use and anticipated groundwater abstraction trends (in irrigation, industry and drinking water) from the aquifers of basin wide significance to inform modelling, decision support systems, etc.

63 The findings of the assessments will establish the baseline knowledgebase for the key aquifers, identify current state of knowledge and gaps, and identify priority follow – on actions for addressing the knowledge gaps. The assessments shall build on and complement previous assessments (including assessment reports based on the GEF TWAP methodology).

64 This component will use existing data supported by limited on ground data collection in order to generate the knowledge base on the three shared aquifers. Due to limitation of project funding no bore holes will be drilled for survey of aquifer extents and monitoring of groundwater levels. The need and scope for future more detailed monitoring based on monitoring wells will be explored and recommendations drawn within the project.

65 **Outcome 1:** Improved understanding and knowledge of groundwater and how it interacts with surface water and the types of pressures on them, building upon existing information

66 Outputs and activities of Component 1 shall include the following:

Output 1.1: Shared aquifers diagnostic analysis reports for all selected shared aquifers that serves as baseline fact-based analysis of current status of the aquifers, historical trends in resource availability, existing governance mechanisms at national and cross-border levels and threats that the aquifers face. The reports will, among others, cover the following:

- a) Safe recharge and sustainable yield and subsequent development of conceptual hydrogeological models
- b) Status of utilization of groundwater resources

- c) Governance structures (national and regional) including existing policies, legislation and institutional arrangements for management of shared aquifers, The information on governance structure for management of shared aquifers will include role of women in management of groundwater in general and shared groundwater bodies, in particular.
 - d) GW/SW conjunctive management practices and options for further improvements
 - e) Identification of key threats to sustainability of shared groundwater aquifers (climate change scenarios, increased/unsustainable withdrawals, land use/change)
 - f) Status on monitoring of shared aquifers and identification of key gaps in current monitoring infrastructure and develop recommendations for subsequent projects.
 - g) Recommendations for sustainable conjunctive groundwater – surface water use covering technical, institutional and governance aspects. The recommendations will be used to develop action plans for cooperative management and use of the shared aquifers
- 67 **Activity 1.1.1:** Establishing liaison with National Focal Institution and with National Focal Person and verifying/updating the final list of all stakeholders in the stakeholders engagement plan
- 68 **Activity 1.1.2.** Recruiting national and international consultants who perform the production of SADA reports for the three shared aquifers
- 69 **Activity 1.1.3:** Deploying national and international consultants to conduct inventory of existing data, field data gathering and conduction of aquifer level,
- 70 **Activity 1.1.4:** Desktop based and field data collection by national and international consultants. Wherever applicable, all data collected shall be gender disaggregated to ensure an important dimension on role of women in the use, protection and management of groundwater resources clearly documented. The data collected will be analyzed to identify gaps in current practices, policies and legislations with respect to empowering women and youth in the management of groundwater resources.
- 71 **Activity 1.1.5:** Conduct of workshops/trainings (the training content to be delivered by the consultants, National Focal Institution will coordinate local level engagement of stakeholders). Conduct two aquifer level workshops in the aquifer area in each country (14 total aquifer area workshops) involving local stakeholders (farmers, pastoralists, etc). Workshop participants will be selected maintaining gender balance. Conduct two national level workshops involving national and regional stakeholders (a total of 14 national workshops). Conduct two regional workshops (at NBI or at agreed up location).
- 72 **Activity 1.1.6:** Production (completion) of SADA report that encompass physical and socio-economic aspect of the shared aquifers by national and international consultants
- 73 Two major results are expected from these activities
- Provide a description of the present hydrogeological, environmental, socioeconomic, and governance conditions of the three shared aquifers and their interactions with surface waters. In addition to the information derived from national and regional sources and experts networks, newly collected data from satellite image processing (e.g. Gravity Recovery and Climate Experiment – GRACE observations), and from modelling will be used in some cases to fill gaps in information coverage, complementing/extrapolating

available information, producing projections and scenarios, and identifying parameters to be monitored over time. Wherever applicable, the data will be gender disaggregated and clearly show how women are involved (or lack of it) in the use, protection and management of groundwater resources.

- Engagement of stakeholders at various level (aquifer level, local level and regional level) in forms of workshops and trainings. Stakeholders will serve both as providers of data and information and recipient of knowledge products for further use in their improving their lives. Therefore, knowledge products will be structured to target the various types of stakeholders from farmers, pastoralists, implementers of government and local government programs and others.

74 **Output 1.2: A regional groundwater knowledgebase for all shared aquifers that draws on data and analysis carried out as (1.1) above.** The knowledgebase will comprise aquifer maps and geo-database of key aquifer attributes. The aquifer maps shall, at a minimum, include aquifer areal extents, water table elevation, key water recharge areas, key water demand centers they support (if any), and water quality status (using key parameters) with identified water quality hotspots. The geo-database will be integrated into the Nile Basin Decision Support System (NB DSS); Each focal point institution in each participating country will be capacitated with dedicated computers on which geodatabase and information system is loaded. Technicians from the focal point institutions will be trained on how to use, update and maintain the geo-database. The data collection and population of the database shall be conducted collaboratively by contractors, consultants, relevant experts from the national focal institutions, and the local and international stakeholders.

75 **Activity 1.2.1:** Identification and contracting of a local or an international firm for establishing geodatabase system

76 **Activity 1.2.2:** Aquifer inventory and characterization, with the leadership of an international/local firm with experience on database development; (inventory to be performed in close collaboration and engagement with aquifer level, local, national and regional stakeholders and partners)

77 Two major results are expected from these activities

- Making the three shared aquifers “visible” and recognized by countries, all stakeholders, and decision makers through **new geodatabase** that comprises geological and hydrogeological maps and drawn on the basis of existing data/information (including previous isotope surveys and data, making use of data being gathered by ongoing or completed national projects, making use of international data repositories and making use of remote sensing methodologies are required). The existing geological and hydrogeological information will be harmonized in a compatible format to be easily used by modern software platforms.
- Engagement of stakeholders, supported by gender disaggregated data on stakeholders, at various level (aquifer level, local level and regional level) in forms of workshops and trainings. Stakeholders will serve both as providers of data and information and recipient of knowledge products.

78 **Output 1.3: Water balance modelling of the selected aquifers with quantified: recharge, outflows (base flow, deep percolation, etc) and withdrawals.** Trends in aquifer recharge as a result of changes in precipitation or land use/cover will be quantified and documented. The water balance study shall employ isotope hydrology techniques coupled with hydrologic modelling of linked aquifer – river systems to quantify the components of the water balance of each shared aquifer. Being the first attempt for developing the water balance, the project focuses on some of the selected aquifers.

79 **Activity 1.3.1:** Identification and contracting of groundwater modelling local and international consultants

80 **Activity 1.3.2:** Construction of conceptual and numerical groundwater model by team of national and international consultants

81 **Output 1.4: Projection of groundwater availability and use under climate change for selected aquifers:** Further, as part of the modelling, the water balance of selected shared aquifers will be projected into the future (up to 2050) for selected SSPs (Shared Socio-economic Pathways), and range of climate change scenarios to identify strategic recommendations for sustainable management and utilization of the selected shared aquifers.

82 **Activity 1.4.1.** Construction of the numerical model under different socio economic and climate scenarios with year up to 2050 in the horizon (same consultants tasked with output 1.3 will be tasked for this activity)

83 **Component 2: Development of action plans on groundwater resources governance, management, and protection for inclusion in national, sub-basin frameworks: – also including consideration of surface water/groundwater resources conjunctive use**

Purpose of component: From the map of groundwater aquifers bodies highlighted in Component 1, work will be directed at targeted aquifers to develop appropriate guidelines (technical and policy) on the exploration and use of ground waters as a valuable resource together balancing the use of ground and with surface waters towards optimized use of both resources. The project will focus on the key aquifers within the basin with approaches being replicated and up-scaled where appropriate. The work will be central to the development and agreement of an overall basin approach to groundwater, in ensuring a harmonization of use and management of ground waters within and adjacent to the whole Nile River Basin.

84 Findings from the assessments (Component 1) will be used to guide actions to address gaps in knowledge, policies and practice to improve groundwater management and governance. The component has two outcomes and five outputs as described below:

85 **Outcome 2:** Increased convergence of national approaches, policies and governance mechanisms for protection and sustainable use of shared aquifers.

86 **Output 2.1: Regional Shared Aquifers Integrated Management Action Plan for strengthening cooperative management and utilization of the selected shared aquifers will be developed. The Action Program is envisaged as a collection of recommended measures that are intended to address gaps and threats identified in Component 1 and enhance sustainable use of shared aquifers. The action plan will cover the following:**

- a) **Actions for improving groundwater monitoring** using ground and remote sensing-based technologies. Given the advantage of large area coverage of remote sensing data, the technologies selected will also be promoted for use for other aquifers within each country covered by the project. The measures that will be covered by the action plan will cover aspects of monitoring the status of the groundwater resource base (water levels, recharge, water quality) as well as its use (abstraction).
- b) **Technical manuals and guides** support conjunctive use groundwater and surface water resources. These technical manuals and guides will address, among others, measures for enhancing aquifer recharge (such as through MAR) and sustainable yield, water quality protection, and conservation of groundwater dependent aquatic ecosystems linked to the selected aquifers.

- c) **Recommended institutional mechanisms** for sustainable management and utilization of the groundwater resource. Further, the recommendations will also cover aspects for strengthening national inter-sectoral coordination to promote protection and sustainable conjunctive use of surface and groundwater resources. Gender aspects will be integrated in all recommendations with the aim improving roles of women and youth in groundwater resources management.
- d) **Measures for maintenance of groundwater to sustain groundwater-dependent aquatic ecosystems** (wetlands, floodplains and river reaches).
- e) **Strategies for conjunctive** surface and groundwater use as a key climate change adaptation measure at national and regional levels.

87 **Activity 2.1.1:** Establishing liaison with National Focal Institution and with National Focal Person and preparing the final list of all stakeholders

88 **Activity 2.1.2:** Recruiting national and international consultants who lead the production of action plan documents (manuals, guidelines) reports for the three shared aquifers;

89 **Activity 2.1.3:** Deploying national and international consultants for conduction of inventory of existing data, field data gathering and conduction of aquifer level data collection;

90 **Activity 2.1.4:** Review for the updating of groundwater monitoring practices, surface water groundwater conjunctive use practices, current institutional arrangement at local and national levels pertaining to the shared aquifers and make an inventory of groundwater dependent aquatic ecosystem;

91 **Activity 2.1.5:** Conduct of workshops/trainings (content to be delivered by consultants, coordination by NBI, National Focal Institutions and Nation Focal Person). Conduct two aquifer level workshops in the aquifer area in each country (14 total aquifer area workshops) involving local stakeholders (farmers, pastoralists, etc). Conduct two national level workshops involving national and regional stakeholders (a total of 14 national workshops). Conduct two regional workshops (at NBI or at agreed up location) involving the seven countries (NB: aim of local workshops is both to collected field socio economic data from local level stakeholders as well as to engage the local stakeholders as recipients of knowledge and information products).

92 **Activity 2.1.6:** Prepare action plan document for improving groundwater monitoring, technical manuals and guides for conjunctive use of surface water and groundwater and recommendation of institutional mechanism. The action plan document with be customized for national level and local level monitoring.

93 **Outcome 3:** NBI's subsidiary action programs (Eastern Nile and Nile Equatorial Lakes sub-basin) will be strengthened through **integration** of groundwater aspects for selected sub-basins.

94 **Output 3.1: Technical guide on integration of groundwater aspects in NBI's subsidiary action programs for the selected sub-basins targeting key activities:** The findings under output 2.1 will be used to develop guidance manuals to integrate groundwater aspects in selected projects of the NBI Subsidiary Action Programs. Key projects that will be targeted include watershed management and sub-basin integrated water resources management plan development. While the project doesn't directly cover larger wetlands in the Nile Basin, such as the Sudd and the Baro-Akobo-Sobat wetlands, the experiences and knowledge generated on groundwater-surface water interactions will help in advancing the understanding significance of larger

wetlands in sustaining the hydrology of the connected rivers and the dependent ecosystems. The technical guides will cover issues of gender mainstreaming in groundwater resources management.

- 95 **Activity 3.1.1:** Identification of programs within the subsidiary action programs for integration of groundwater aspect by team of national and international consultants;
- 96 **Activity 3.1.2:** Preparation of technical guide for groundwater integration (by consultants hired under component 2).

97 **Component 3: Targeted pilot projects to explore conjunctive use of surface and ground waters, and links to biodiversity conservation and climate change adaptation**

- 98 **Purpose of component:** Pilots will be implemented in the three selected aquifer areas to demonstrate novel approaches for sustainable management of groundwater and conjunctive use of groundwater and surface water resources. The results and lessons will also help to inform the development of national and regional action plans (Component 2). Successful pilots from this project will be scaled up through other national and sub-regional initiatives. Component 3 has two outcomes and two outputs (one for each outcome).
- 99 **Outcome 4:** Broad dissemination of the results from two pilot actions lead to scaled activities by ENSAP and NELSAP.
- 100 During the project identification stage, a number of tentative potential pilot actions have been identified and incorporated in the PIF. The PIF's output 4.1 recommends up to 5 pilots illustrating appropriate innovative techniques for sustainable conjunctive use of groundwater and surface water to be implemented. The proposed outputs and pilots included in PIF are given below. The plans have been re-visited during the PPG stage and finally three pilots were selected for implementation. The process of the selection and prioritization of the pilots is given below.
- 101 **Output 4.1:** Up to 5 pilots illustrating appropriate innovative techniques for sustainable conjunctive use of groundwater and surface water resources will be implemented during the lifetime of the project. The PIF proposed the detailed scope and geographic focus of each pilot will be determined during the PPG phase. Implementation of the pilots shall emphasise the participation of local communities and water user groups in all aspects (design, construction and management), to learn from local knowledge that can be upscaled to other areas and build local capacity which shall be critical to the sustainability of the implemented projects. The pilots shall include the following:
- a) **Managed Aquifer Recharge (MAR) interventions:** the MAR will be piloted in two sub-basins of the Nile. In both cases, the MAR will be designed to complement on-going watershed management activities of the Nile Subsidiary Action Programs. The pilot shall include the detailed study, design and on-site implementation of the MAR measures integrated with appropriate instrumentation for monitoring effectiveness of the measures. At least one pilot will be integrated with improving water supply for a small – medium sized town dependent on groundwater. The MAR will be targeted, among others, to meet the growing water demands for the pilot town under selected SSPs and climate change scenarios.
 - b) **Pilot Water Funds for sustainable watershed services to improve groundwater recharge and upstream-downstream collaboration will be explored.** The Water Fund pilot could possibly be linked to one of the pilots where the MAR (linked to urban water supply) will be implemented to demonstrate clear benefits to downstream water users while at the same time enhancing the role of upstream land and water management to enable sustainable groundwater recharge. The implementation shall be based on active participation of communities through capacity building, active participation in all project aspects, communication between upstream and downstream parties, among other measures. Of particular interest shall be measures to ensure

balanced understanding of communities on their roles in sustainable water resource management understanding of water cycle and how actions taken upstream may adversely affect downstream users, incentive structures through which downstream users can compensate upstream riparians for taking actions that protect the resources, balancing of upstream and downstream interests, etc.

- c) **Use of advanced remote sensing for monitoring and management of shared groundwater aquifers.** Under this pilot, customized monitoring tools will be developed that use available remote sensing images for mapping and monitoring a selected groundwater aquifer that is intensively used to supplement surface water resources. The monitoring tool will then be mainstreamed at the relevant national institution to support sustainable management of the groundwater resource. The roles of local communities shall include ground-truthing of information, and uptake of knowledge products for use in their own decision-making.
- d) **Use of isotope hydrology technique for detailed modelling of interaction between ground and surface water for specific (selected) wetland ecosystems.** The focus of this pilot will be to establish the causal link between the dynamics of the selected wetland and the connected groundwater system. Under this pilot, a detailed model for surface water – groundwater interaction will be developed and linked to the NB DSS. This model will further be used in the protection and/or restoration of groundwater interactions with wetlands to conserve natural sources of livelihoods for the local populations, biodiversity and integrity of ecosystem (e.g. in the Sudd area).
- e) Integrating surface water diversions and groundwater withdrawals to maximize efficiency and minimize impacts on other resource users and ecological processes;
- f) Demonstrating comprehensive conjunctive use analysis and water utilization plans for small selected sub-basins as a pilot to identify optimal approaches for conjunctive use management at a basin scale;
- g) Shared and cross-border collaborative actions at identified groundwater/surface water interaction sites where impacts are noted by the GW/SW analyses (Component 1)
- h) Land-use and wetlands groundwater protection and/or restoring actions to conserve biodiversity and strengthen livelihoods
- i) Farmer/private sector specific action (irrigation, protection, etc.) that demonstrate benefits of conjunctive management within a SLM framework;
- j) Community specific actions that demonstrate benefits of conjunctive management

102 The pilots will serve as platforms for illustrating appropriate innovative techniques relevant to conjunctive management of surface and groundwater at the national and regional level.

Prioritization of the pilots

103 During the PPG phase, the national experts and Nile TAC members used a range of criteria to rank these tentative suggested pilot actions to select the preferred pilot projects. About 10 criteria were used to help prioritize the projects identified during the PIF stage. The criteria were: -

- Relevance to the project objectives
- Appropriateness: -is the pilot appropriate to be implemented in a specific aquifer area?
- Scope for upscaling: - if successful is there technical scope for upscaling the pilot?
- Scope for upscaling: is there a institutional scope (eg. presence of other programs/projects/strategies] for upscaling/piggy backing at national level
- Country experience: Is there sufficient country past experience in undertaking the pilots?
- Country capacity: Is there national/regional capacity to undertake the piloting in cost effective manner?
- Relevance and interest to the NBI and to local and national authorities with sustainability likelihood;

- Interest to multiple countries, to ensure lessons had greatest opportunities for replication;
- Pilots that offered significant training opportunities and had the highest possible engagement of local/national stakeholders; and,
- Feasibility/logistical aspects: pilots that would be readily accessible (i.e. would not involve excessive travel), would involve no major security issues, would be completed within agreed timescale and budget, etc.

104 Accordingly, three pilot actions have been selected to be implemented in the three aquifer areas and in the seven countries. **A summary of the three pilot types** (to be re-confirmed at the Inception Meeting/first PSC meeting and after a reconnaissance field survey by team of experts) suggested are given in table below:

Pilot action type	Aquifer area	Country concerned
Managed Aquifer Recharge	<ul style="list-style-type: none"> • Gedaref – Adigrat 	<ul style="list-style-type: none"> • Ethiopia, Sudan
Water fund for sustainable watershed services	<ul style="list-style-type: none"> • Mt Elgon • Kagera 	<ul style="list-style-type: none"> • Kenya, Uganda • Burundi, Rwanda, Tanzania, Uganda
Use of advanced remote sensing for monitoring and management of shared groundwater aquifers	<ul style="list-style-type: none"> • Kagera • Mt Elgon • Gedaref-Adigrat 	<ul style="list-style-type: none"> • Burundi, Rwanda, Tanzania, Uganda • Kenya-Uganda • Ethiopia-Sudan

105 It was agreed that a team of experts drawn from the NBI PMU, Nile SAPs, and expert representatives of the National Focal Institutions conduct a reconnaissance field survey of the aquifers immediately after the start of the project. The purposes of the reconnaissance visit are a) to get a better acquaintance of the project areas b) to fill any gaps in the baseline situation for all the project components with particular emphasis on the socio-economic and environmental aspects, c) to visit the proposed pilot sites and conduct assess opportunities and challenges to be factored into detailed planning of the pilot actions, and d) to validate and update the list of stakeholders for the pilot actions. The results of the reconnaissance visit will be used as an input to the planned project Inception Workshop (including discussion on the baseline, results framework, work plan) which shall be conducted within two to three months from the start of the project.

Description of the selected pilots

106 *Managed Aquifer Recharge (Sudan and Ethiopia):* Managed aquifer recharge has been proposed to be implemented in Ethiopia and Sudan both sharing the Gederef-Adigrat Sandstone aquifer system. Severe water scarcity, rapidly depleting groundwater sources and the rapid recent increase in groundwater abstraction for productive uses necessitate to take counter measures so as to increase water availability in these regions. The principal limiting factor in using groundwater for socio-economic benefit is the limited recharge/renewability owing to aridity and low rainfall in the regions. Both countries have technical and institutional experience to pilot the Managed Aquifer Recharge. Sudan has long experience in utilization of flood waters and wadi flows for drinking, irrigation and cattle watering. Among others the pilot action shall work to demonstrate how wadi flows, e.g. through improving specific design, can be better captured to enhance water availability for communities. The site identified in the Sudanese part of aquifer is the area surrounding the Gadaref town.

- 107 Ethiopia is undertaking a massive sustainable land management program which aims to enhance soil and water conservations so as to improve water supply and food security. In this practice, water and moisture is storage throughout the landscape-rather than in a few large reservoirs. This practice empowers the local level stakeholders to plan and implement water and soil conservation. Nevertheless, the various water and soil conservation practices implemented so far target the soil moisture storage with little consideration for intentional enhancement of groundwater storage and availability. The pilot action will focus on how to improve both engineering and institutional measures so as to increase the benefit of conjunctive use surface and groundwaters. The sustainable land management program is being undertaken through community participation and multiple donor funding. This means there is a good scope for upscaling a particular design or output at the National level. The lower plains of the Adigrat Aquifer area, adjacent to the border town of Humera is targeted for the pilot action in Ethiopia.
- 108 *Water fund for sustainable watershed services (Burundi, Kenya, Rwanda, Tanzania, Uganda):* - Groundwaters in the Mt Elgon and the Kagera aquifers system has connection to the surface water systems. Previous isotope hydrology studies demonstrate the presence of good linkage between the various wetlands and the groundwaters. That means, the ecosystem services of water are already proven. Forests and wetlands in the Mt Elgon as well as in the Kagera aquifer regions play an important role in sustaining water quality and quantity, providing storage medium for water and is supporting complex ecosystem niches of economic and environmental importance. Conversion of the natural ecosystem to farms and urban areas has resulted in increasing in silt load in rivers and thereby reducing the capacity of reservoirs and increasing the costs for water treatment/production. This is already affecting the water supply of the townships around Mt Elgon (including town is Kenya- Busia and Bungoma and town in Uganda- e.g. Tororo). This pilot aims to demonstrate the benefit for downstream users of the importance investing in upstream land and water management.
- 109 Two pilots will be implemented around the Mt Elgon aquifer- one in Kenyan part and the other in Ugandan part. In Kenya a similar project has been implemented in the Tana River Basin [<https://www.futurewater.eu/projects/nairobi-water-fund/>]. The current pilots aim to capitalize on the existing pilots and start by investigating the best practices from ongoing or completed projects. For this pilot, three townships and the catchments of the rivers providing water for for townships has been selected as pilot sites.
- 110 The specific site for water fund piloting in the Kagera aquifer system will be identified during the planned reconnaissance field visit.
- 111 *Use of advanced remote sensing for monitoring and management of shared groundwater aquifers:* - This pilot will be implemented in all the three aquifer areas and in the seven countries. The geographic scope of the pilot is the entire aquifer area of the three shared aquifers. The pilot aims to demonstrate the capacity of the remote sensing techniques in detecting changes in groundwater recharge, storage, availability and quality. The availability of many robust techniques didn't allow the piloting of a specific remote sensing approach at the PPG stage. The pilot will start with extensive review of existing remote sensing methodologies and testing selected approaches that suit the geophysical/hydrological setting of the aquifer areas. The presence of expertise within the region (e.g. The Regional Mapping Center in Kenya) will aid the upscaling of the outcome of the piloting.

- 112 During the PPG stage, the Nile TAC and the national experts also agreed on the implementing framework for the pilots. The framework outlines the roles and responsibilities of the various major stakeholders and project partners. The final list of stakeholders will be validated during the inception stage of the project. The roles and responsibilities of the various major stakeholders have been agreed by the Nile TAC, the NBI and the consultants and are given as follows:
- 113 **Role of NBI:** NBI is designated to a) making sure the pilot projects are in line with the project objectives, b) the pilot projects are aligned with Regional strategies at NBI level, c) select and approve the pilot projects, d) administer all financial flows related to the project, e) Identification through a formal procurement procedure, the pilot implementing institutions, f) identification and recruitment of national and international consultants.
- 114 **Role of NBI SAP:** The SAP are designated to a) developing detailed design for the implementation of the pilot projects in close collaboration with the National Focal Institutions b) conduct the Monitoring and evaluation of pilot project implementation within the countries and c) design upscaling strategy at National level and t regional levels and making sure the strategies are integrated into national and regional process and programs.
- 115 **Focal National Government Institution:** - The National Focal Government Institutions were tasked with a) Identification of specific geography of the pilot projects, b) aligning the outcomes of the pilot projects with ongoing national processes, projects, programs, c) in collaboration with SAPs design the project and d) facilitate stakeholders engagement plan within the countries with due considering for gender aspect.
- 116 **Local authorities (government) and communities:** relevant local authorities and communities in the selected pilot areas will be involved in all aspects of planning, design, implementation and final handing over of the pilot measures. Of particular importance is to ensure women and youth in these pilot areas are adequately represented in the consultations as well as in making management decisions with respect to the pilots.
- 117 **International, regional/local public or private institution:** - These institutions will have the role of a) execution of the selected pilot project, b) preparation of pilot project outputs and c) preparation of uptake strategies
- 118 Following the prioritization of potential pilots, three of the pilot projects were selected to be implemented in the three aquifer areas in the seven participating countries.
- 119 **Local and International consultants:** Local and international consultants to be hired under the project will be tasked with preparing detailed design and specification of the project, implementation follow-up and with preparation of all the reporting required under the project. The consultants will be responsible for providing technical backstopping during the pilot implementation.
- 120 International and local consultants will be hired to support the preparation of the detailed specification for the pilot design, to follow up pilot actions and to capture and report specific best practices and results for upscaling. The actual implementation of the pilots will be conducted by contractors from local or

international sources through NBIs contract administration procedures. Two of the pilots (MAR and Water Fund) require a mechanism to demonstrate their usefulness. This will be done through a dedicated monitoring planned (e.g. monitoring of silt load in rivers, monitoring of water levels, monitoring NDVI) under this project. The detailed monitoring design will be prepared by the consultants. The monitoring is expected to continue after the completion of the project by the national counterparts who have received trainings under component 4 of the project.

121 The activities under the output 4.1 will be the following

122 **Activity 4.1.1: Preparation stage activity**- collaboratively agreeing on the specific geography/site of the pilot actions (with thorough consultation of stakeholders) and agreeing on the final list of stakeholders. Identification of consultant providing technical backstopping will be done under this activity. Some pilots, especially the one on Managed Aquifer Recharge and the one on Water Fund will involve community level activities that may have potential impacts (positive or negative) impacts on Indigenous Peoples. A reconnaissance visit shall be carried out to all 3 aquifer areas during the inception phase. The purposes of the reconnaissance visit are a) to get a better acquaintance of the project areas b) to fill any gaps in the baseline situation for all the project components with particular emphasis on the socio-economic and environmental aspects, c) to visit the proposed pilot sites and conduct assess opportunities and challenges to be factored into detailed planning of the pilot actions, and d) to validate and update the list of stakeholders for the pilot actions. In addition, consultations shall be made with representatives on indigenous people in the aquifer areas that may be affected (positively or negatively) by pilot project activities and where necessary an Indigenous Peoples Plan shall be prepared for the relevant pilot project, including measures for FPIC (as needed), in event that the project activities are determined to have potential impacts (positive or negative) on indigenous peoples as per UNDP SES guidance and standards. The agreed measures will be incorporated in the pilot designs and their implementation will be monitored throughout the project implementation.

123 **Activity 4.1.2: Pilot detailed design activity**- (Preparation of detailed design by the national and international consultants (specification of the pilot in terms specific objectives, goals, logistics need, scale of activity etc; preparation of detailed budget breakdown; preparation monitoring design; identification of instrumentation needs; . In addition, pilot level ESMP and ESIA shall be prepared at this stage including security assessments and other FPIC procedures. The designs will incorporate recommendations of the indigenous peoples plan as defined above. No risk-causing activities can start until the ESMP is in place

124 **Activity 4.1.3: Pilot implementation activity** (Undertaking pilot implementation as specified above with follow up technical support provided by the consultants and PMU)

125 **Activity 4.1.4: M and E activity**- (NBI and the PMU assessment of progress and performance at mid-term to allow for any adaptive management changes)

126 **Activity 4.1.5: Capturing lessons learned**- (Results and lessons learnt of pilot demonstrations will captured by the international consultants as by the contractors under this activity). [NB: the report will serve as input to output 5.1.]

127 **Outcome 5:** Pilots lead to overall enhanced conservation and efficient use of water resources and promote water-efficient land use activities, strengthening livelihoods status;

128 **Output 5.1: Scaling up strategy:** based on the above pilots, a strategy and guideline will be developed for mainstreaming the most successful pilots into operational IWRM activities at national and regional levels

129 Integral to each pilot actions will be the development of a national and regional plan to support sustainability and to assist with identifying additional sites, programs and projects for replication. The NBI will lead the

process of the National upscaling strategy in close collaboration with the National Focal Institutions. The scaling up strategy will include strategy for addressing key gaps identified in the diagnostic analysis with respect involvement of women and youth. The various activities planned under this output are

- 130 **Activity 5.1.1:** Developing sustainability plan by the consultants for pilot actions considering exist strategy and continuity
- 131 **Activity 5.1.2:** Identifying potential sites for replication within the upper Nile regions by consultants and NBI
- 132 **Activity 5.1.3:** Identifying potential national and regional programs, processes, projects for upscaling by consultants and NBI
- 133 **Activity 5.1.4:** Preparation of upscaling strategy by the consultants hired under output 4.1 (lessons learned, results of activity 5.1.3, the strategy shall factor potential donors, local/national/regional/international partners, IWRM strategies)

134 **Component 4: Further strengthening capacity to address groundwater issues at the national and regional levels**

135 **Purpose of component:** Recognizing the underutilization and general lack of awareness issues associated with groundwater, the project will build upon the previous technical training provided by UNESCO/IAEA and to strengthen the ability to manage groundwaters (and conjunctive use aspects) at both the national and regional levels. This would address all levels of society (decision makers, technicians, academics, local authorities and communities) and assist with sector-specific training for policy makers, researchers, and private sector (including farmers). This component will cut across the whole project and will aid the post-project sustainability of the work to support the use and protection of groundwaters. The specific outcomes and outputs of this component are described below:

136 **Outcome 6:** Technicians, academics, and senior planners at national, sub-regional and regional levels capacitated on key requisite techniques on groundwater monitoring and sustainable management;

137 **Output 6.1:** Relevant national agencies, academics and NBI/LVBC representatives receive training on:

- a) Ground water assessment using ground based and remote sensing data sources
- b) Hydrogeology and ground water recharge estimation
- c) Ground water modelling
- d) Aquifer mapping
- e) Gender and groundwater resources management
- f) Planning and implementing Managed Aquifer Recharge
- g) Economic evaluation of (use) of groundwater vis-à-vis other sources

138 Potential beneficiaries of the training include: Technicians, academics, and senior planners at national, sub-regional and regional levels. Gender balance will be key consideration in the selection of participants.

139 The following activities are envisaged under output 6.1.

140 **Activity 6.1.1:** Identification of beneficiaries carried at national and regional level (including sex-disaggregated data collection and assessment)

141 **Activity 6.1.2:** Preparation of training material and modules for trainers, decision-makers, NGOs, water users (farmers, women’s groups) by national and international consultants. The training material as much as

- possible will factor the local context and utilize the locally gathered groundwater information (under component 1)
- 142 **Activity 6.1.3:** Training modules carried out at national and regional levels on a) Ground water assessment using ground based and remote sensing data sources, b) Hydrogeology and ground water recharge estimation, c) Ground water modelling, d) Aquifer mapping and e) Planning and implementing Managed Aquifer Recharge
- 143 **Activity 6.1.4:** Dissemination of material and training outcomes by NBI PMU
- 144 **Outcome 7:** Regional and national decision makers have increased their understanding on importance of groundwater and capacitated to develop and adopt recommendations emerging from the analyses related to groundwater governance and conjunctive management facilitating policies.
- 145 **Output 7.1:** Targeted knowledge exchange programs and processes, including South-South cooperation, visits, exchanges, etc. The beneficiaries of this knowledge exchange programs will include universities and research institutions relevant to the specific sub-basins covered by the project.
- 146 The following activities are envisaged under output 7.1:
- 147 **Activity 7.1.1:** Identification of beneficiaries carried at national and regional level, identification of host institutions within the Nile region and globally outside the Nile region;
- 148 **Activity 7.1.2:** Preparation exchange visit programs and plans;
- 149 **Activity 7.1.3:** Conduct exchange programs.
- 150 **Output 7.2:** Targeted training at various administrative levels in groundwater governance and management, applying the recommendations contained in the Framework for Action on Groundwater Governance (GEF/FAO/UNESCO/WB/IAH). Potential topics of the training include:
- a) Groundwater governance including empowerment of women and youth
 - b) Conjunctive surface groundwater management and protection
 - c) water and gender for the promotion of gender equality and women empowerment, and on the collection of gender disaggregated data using the UNESCO WWAP Toolkit
- 151 The following activities are envisaged under output 7.2.
- 152 **Activity 7.2.1:** Identification of beneficiaries carried at national and regional level (including sex-disaggregated data collection and assessment)
- 153 **Activity 7.2.2:** Preparation of training material and modules for trainers, decision-makers, NGOs, water users (farmers, women's groups) by national and international consultants. The training material will be prepared whenever possible using the results of the component 1 of the project. The PMU of the project will ascertain the possibility of linking the various capacity building activities and the results coming from the other projects.
- 154 **Activity 7.2.3:** Training modules carried out at national and regional levels on a) groundwater governance, b) conjunctive surface groundwater management and protection, c) water and gender for the promotion of gender equality and women empowerment, and on the collection of gender disaggregated data using the UNESCO WWAP Toolkit
- 155 **Activity 7.2.3:** Dissemination of material and training outcomes by NBI PMU.

156 **Component 5: Communications and awareness raising**

157 **Purpose of component:** This component is an important aid to the overall implementation of national action plans relating to groundwaters and to guide the sub-regional policy development on conjunctive management on surface and groundwaters. This will support both the work of the NBI and national authorities to understand and explain to their stakeholders the importance, values and benefits from conjunctive use of surface and groundwaters to protect the environment and support livelihood development within the selected sub-basins.

158 **Outcome 8:** Groundwater issues and conjunctive use management included in NBI communications and awareness raising activities;

159 **Output 8.1:** Up to 5 communication and awareness raising products generated and disseminated to national stakeholders through NBI communication platforms using channels for reaching out to the various stakeholders. During pilot implementation, communication and awareness raising shall also target local communities and agencies that support the communities (local government, CBOs, NGOs). Examples of such channels include: radio program, outreach material (leaflets, brochures, etc), local radio programs, NBI's website and social media. The communication products will be used to raise awareness and understanding on role of groundwater management and conjunctive use of surface – groundwater resources. Further, role of groundwater in sustaining ecosystems will be covered by the communication products complementing other activities of NBI with respect to watershed management and transboundary wetlands.

160 The following activities are envisaged under output 8.1.

161 **Activity 8.1.1:** Identification of communication products from among the project component activities. The design of the communication products will consider, among others, the needs of the target audience and communication channels that are best suited for reaching out the target audience.

162 **Activity 8.1.2:** Identification of knowledge dissemination platforms

163 **Activity 8.1.3:** Preparation of knowledge materials in appropriate formats (websites, Facebook) (local or international consultants to be deployed for this activity);

164 **Activity 8.1.4:** Dissemination of knowledge material by PMU.

165 **Output 8.2:** A video documentary prepared and used by NBI to raise awareness on role of groundwater – surface water conjunctive use in integrated water resources management in selected sub-basins.

166 **Activity 8.2.1:** Identification by PMU of topics for video documentary

167 **Activity 8.2.2:** Preparation of contract document by PMU to recruit video production company (local or international)

168 **Activity 8.2.3:** Preparation of video documentary by a local or international contractor

169 **Outcome 9:** Lessons and experiences on conjunctive use management and the inclusion of groundwater considerations disseminated to IW (and other) projects globally.

170 **Output 9.1:** Information leaflets and guidance on groundwater issues prepared for different groups of stakeholders

- a) Website, use of virtual media (twitter, Facebook, etc.) to raise awareness
- b) 1% of overall GEF budget used to support project participation in GEF IW: LEARN activities
- c) Lessons and experiences documented and disseminated
- d) Groundwater /water network, IW: LEARN, CoP
- e) Active presence at Development Partners meetings and fora
- f) Scientific conference
- g) National engagements

171 Addressing topics including:

- i. Sustainable use of ground water resource use
- ii. Surface water quality and ground water link
- iii. Forest hydrology and groundwater recharge
- iv. Outreach material on successful groundwater – surface water conjunctive use
- v. Groundwater- surface water interactions
- vi. Policy briefs based on project outputs on significance of groundwater in sustaining wetlands of regional significance

Partnerships:

- 172 The project will work through key national, regional and international stakeholders/partners. At the national level, the project will work closely with key stakeholders/partners from government authorities and institutions through the co-financing provided by the seven countries. The project will also work with all GEF and Non GEF projects in the region having similar scope so as to share experience, reduce duplication of efforts and reduce delivery of conflicting policy messages/recommendations. The project will also work closely as a partner with the GEF IW: LEARN to help share the lessons and experiences of the project to the global IW community.
- 173 The project will co-ordinate with current and planned GEF and non-GEF projects in the region, including the projects:
- Enabling Implementation of the Regional SAP for the Rational and Equitable Management of the Nubian Sandstone Aquifer System (NSAS). UNDP/GEF (Egypt, Sudan, Libya, Chad)
 - Interaction of the GW-SW of the Kilimanjaro aquifer; Groundwater mapping of the Northern Kenya region (Part of a National Groundwater Mapping Program which was initiated in Northern Kenya)
 - Lakes Edward and Albert fisheries and water resources management Project (LEAF II). AfDB/GEF (DRC, Uganda)
 - Other donors including multi-lateral (e.g. EU) and bilateral (e.g. JICA, CIDA, DfID, SDC, etc.)
 - Results from within the NBI and from the previous Lake Victoria and Nile GEF projects;
 - Co-ordination with Nubian Aquifer Joint Authority
 - Co-ordination with Regional Groundwater Initiative for IGAD region through the World Bank;
 - Biodiversity conservation and sustainable management of transboundary wetlands and wetlands of transboundary significance. This project is currently being executed by the NBI with funding from the Government of Germany through GIZ. The project has components on understanding the water balance of key wetlands that will also include establishing the water balance components.

- Hydromet project implementation funded by European Union (GIZ-BMZ-EU) to monitor surface- and groundwater in the Nile Basin
 - Coordinate with ongoing and upcoming national groundwater projects of aquifer areas under consideration.
- 174 Through the NBI programmatic approach, the proposed project will be integrated into and contribute towards the development objectives of the three NBI programs. Specific examples are given below:
- 175 The Nile-Sec completed its first phase of strategic water resources analysis whereby first estimates of projected future (2050) water demand in the basin and likely water shortfall were prepared. The results showed considerable likely shortfall in water due to the planned substantial increase in irrigated agriculture. To address these likely shortfalls, a number of options were identified by the riparian states (later endorsed by Nile-COM). Nile-Sec has started the second phase of the analysis wherein the options are going to be explored, specific measures identified, quantified and prioritized. One of the options identified is surface water – groundwater conjunctive use. In this regard, the proposed project (component 1 - *Further improving the knowledge and understanding of groundwater resources available in the Nile River Basin and its adjacent areas*) is expected to contribute towards filling the knowledge gap in groundwater availability in the Nile Basin. The project is also expected to complement the on-going activity for the development of the second State of the Nile River Basin Report (2016 – 2018) and future reports. This will then lead to more informed dialogue among the riparian countries (project component 2- Development of action plans on groundwater resources governance, management, and protection for inclusion in national, sub-basin and basin-wide frameworks: – also including consideration of surface water/groundwater resources plans for conjunctive use) on the cooperative management and development of transboundary aquifers in the Nile Basin. Further, this component will contribute towards the water resources development program under the Eastern Nile and the Nile Equatorial Lakes (NEL) sub-basins.
- 176 In the Eastern Nile, ENTRO has secured World Bank (CIWA) funding for a study on Groundwater Availability and Conjunctive Use assessment. The objectives are: *to make preliminary assessment of Ground Waters resource (mapping, recharge and safe yield); to make preliminary assessment of the potential use of ground for irrigation and domestic use.* The proposed project for GEF funding will complement the study that is being undertaken by ENTRO.
- 177 Other on-going and planned projects related to and can benefit from this proposal include:
- EN Cascade Reservoir Operation (ongoing)
 - Baro-Akobo-Sobat Multipurpose Integrated Development Study Project (on-going)
 - EN Multi-Sector Investment Opportunity Analysis (EN MSIOA)
- 178 The project will work closely with the knowledge management structures of the NBI and LVBC to supplement current information on groundwater resources and knowledge on groundwater /surface water interactions. The project will be developing extensive information resources that will contribute to the countries and NBI/LVBC knowledge base and be available globally through the GEF IW: LEARN project. The project will also be developing specific stakeholder group targeted information to assist with the protection and sustainable exploitation of groundwater resources that will address the needs/concerns of government officials, private sector (including farmers) and community groups.

Risks and Assumptions:

- 179 Summary of the various potential risks identified during the PPG inception workshop by the workshop participants/stakeholders is given in table 3. Risk identification has also been conducted during the PIF preparation. A full UNDP risk management template is attached as annex A.

Table 2: Risks identified, their ratings and proposed risk mitigation strategy

Potential risk factor	Rating (L/M/H)	Risk_mitigation_strategy
Political stability	M	<p>The risks of instability in parts of the basin are assessed as medium. The project will monitor the situation and collect data/execute activities when UNDSS advise.</p> <p>The exact location of the pilot projects will be selected to minimize security risks and transport issues associate with remote locations.</p>
Lack of sufficient Information and data	L	<p>The project will work with all partners (countries, NBI, agencies, etc.) to ensure adequate data is generated and the project will highlight where additional information is needed.</p> <p>Modern remote sensing methodology (e.g. Remote sensing hydrology, remote monitoring) will be deployed to supplement the methodologies that require primary field data</p> <p>All available literature, local regional and international data repositories; published and unpublished reports and grey literature will be consulted to maximize the available data</p>
Willingness to share information between countries	L/M	<p>As there is lack of harmonized database system/information base system the willingness for sharing data may be limited. The geodata base that will be developed under the current project will aim to prepare data sharing protocol on groundwater to strengthen the existing data sharing procedure.</p> <p>Existing mechanisms of data sharing and agreements between the Nile Basin Cooperation Agreements will be evoked</p>
Engagement of national private sector stakeholders	M	<p>Use the stakeholder engagement plan and awareness raising components to engage the stakeholder. Demonstrate the benefit of the project outcomes to the various stakeholders as much as possible</p>
Climate Change	M	<p>Drought or flood hazards that may occur during the project may affect the communities residing in the aquifer areas, causing migration, displacement and conflict.</p> <p>The project will work closely with the countries on potential climate change scenarios and will work to help countries best adapt to hazards by utilizing limited resources more effectively (e.g. introducing improved irrigation methods)</p> <p>Project will integrate climate change aspect in Shared Aquifer Diagnostic Analysis to capture diagnosis under various extreme climate scenarios</p>
Lack of clear framework for ownership, construction, management and operation of transboundary infrastructure projects that will likely be the recommendation of the project	L	<p>NBI will form working groups that will comprise experts in groundwater issues and senior officials to represent their respective countries and continuously engage in project execution.</p>

Potential risk factor	Rating (L/M/H)	Risk_mitigation_strategy
Failure to up-scale successful results from the project.	L	The project is planned to be implemented through NBI's structure with NBI as main executing agency. This will help in mainstreaming project results into NBI's activities thereby enhancing the likelihood of scaling up the project results through the various NBI programs. Participation on Nile TAC in project oversight will ensure that the findings are taken up and incorporated in national and regional (transboundary) discourse, policies and development programs.
Failure to agree aquifer wide groundwater management approaches	L	NBI will form working groups that will comprise experts in groundwater issues and senior officials to represent their respective countries and continuously engage in project execution.

Stakeholder engagement plan:

- 180 The implementation of the project will be based on extensive engagement with stakeholders at all levels across the project. Stakeholders will be consulted and engaged throughout the project implementation phase to: (i) promote understanding of the project's outcomes; (ii) promote stakeholder ownership of the project through engagement in planning, implementation and monitoring of the project interventions; (iii) communication to the public in a consistent, supportive and effective manner; and (iv) maximization of linkage and synergy with other ongoing projects. Detailed stakeholder engagement plan pertaining to the outcomes and outputs of the project is given in Annex F.
- 181 The stakeholders at local levels (e.g. pastoralists, farmers, water user associations, national parks, Regional/County Governments, etc) will actively participate in all components of the project (as providers of key local level social and environmental information as well as as beneficiaries of the various workshops). For the pilot studies, all relevant local authorities and communities in the selected pilot areas will be involved in all aspects of planning, design, implementation and final handing over of the pilot measures. The role of women in the pilots will be ascertained through the gender action plan. All in all, the local stakeholders will a) provide field evidence for piloting studies; b) provide local context to the piloting studies; and c) participate in various field survey interviews. For all components of the project, the local stakeholders will be mobilized collaboratively by the National Focal Institutions, the NBI and the various contractors and consultants for the actual implementation (including construction works) of the pilots (including MAR and Water Fund pilots). The local level stakeholder engagement shall be guaranteed through the NBIs stakeholder engagement plan and through the national focal government institutions. The participation of these stakeholders is guaranteed through their participation in various workshops and trainings that will take place during the implementation of project components.
- 182 Keeping stakeholders well informed, actively engaged and committed to the Nile cooperation through robust communication and participation has been given due emphasis as one of the building blocks of NBI's' from the very first days. This project will piggy-back on the existing NBI Communication and Stakeholder Engagement strategy 2018-2023. This Strategy, while providing an NBI wide overarching framework and guideline, nevertheless is not a one-size fits all document. It permits each Centre (Nile-SEC, ENTRO and NELSAP-Coordination Unit) and well as ad-hoc projects to implement it in a way that is more adaptive to ad-hoc demands and requirements.
- 183 In order to foster ownership of the project, the ProDoc was formulated in close collaboration with government stakeholders from the outset. Engagement started well during the PIF development stage. Government representatives and key national hydrogeologists contributed to the drafting of the PIF

document and in defining the project objectives. It is important that the various outputs that will be delivered under the various project outcomes fully integrate the expertise available in the country and improve upon what is presently available, whilst providing a platform for knowledge exchange and mutual learning. Key national hydrogeologists and a gender expert participated actively in the preparation of the project document (ProDoc) through preparation of the national baseline reports (component A findings). The reports have been evaluated by the Nile TAC and government stakeholders during the PPG inception workshop held on the 13th and 14 of December, 2018. Other key stakeholders have been identified by the national experts (consultants) through national stakeholder engagement process. Extensive list of stakeholders has also been previously identified and mapped by NBI through a detailed stakeholder mapping methodology (see box 2 for classification of the various NBI stakeholders).

184 **Box 2. NBI's Targeted Communication and Stakeholder Engagement strategy excerpt**

NBI defines a stakeholder as an individual or organisation who directly or indirectly influences or has the potential to influence the achievement of NBI's 10-Year Strategy, either at national and or basin-wide level. This includes those directly affected by or benefitting from NBI's projects, as their specific buy-in and support (for example, within Project Affected Communities) is essential to attaining more broader societal and political support or buy-in for NBI and its work.

The stakeholder groups mapped out in the model below have been analysed in a stakeholder matrix and influence/interest grid in order to better understand their communication and engagement needs from NBI in general. This model has been used to come up with stake holder engagement plan presented in annex F.

Finally, the most relevant organisations and individuals representing these stakeholder groups has been captured in centre-specific stakeholder databases that are to be continually updated. This database will utilized as necessary during the project implementation stage.

Description of the stakeholders:

NBI staff: Employees of NBI's three centres are the first contact for different stakeholders. They therefore need be able to provide accurate basic information about NBI. Regular inter- and intra-Centre information exchange is hence essential and must reach all members of staff.

NBI's core governance group: NBI's core governance group is defined as the regional structures put in place to directly guide and supervise the work of NBI's three centres. These include the Council of Ministers, Technical Advisory Committees and National NBI Offices in National Water Ministries – overseeing NBI's work in general –, as well as Regional Expert Working Groups and Project Steering Committees, which supervise work on specific projects and activities. This group has high interest and high to very high influence in the work of NBI. NBI's core governance as such forms the highest priority stakeholder group, which must be continuously engaged and consulted on NBI's work and developments in the basin as well as involved in key decision-making within the organisation.

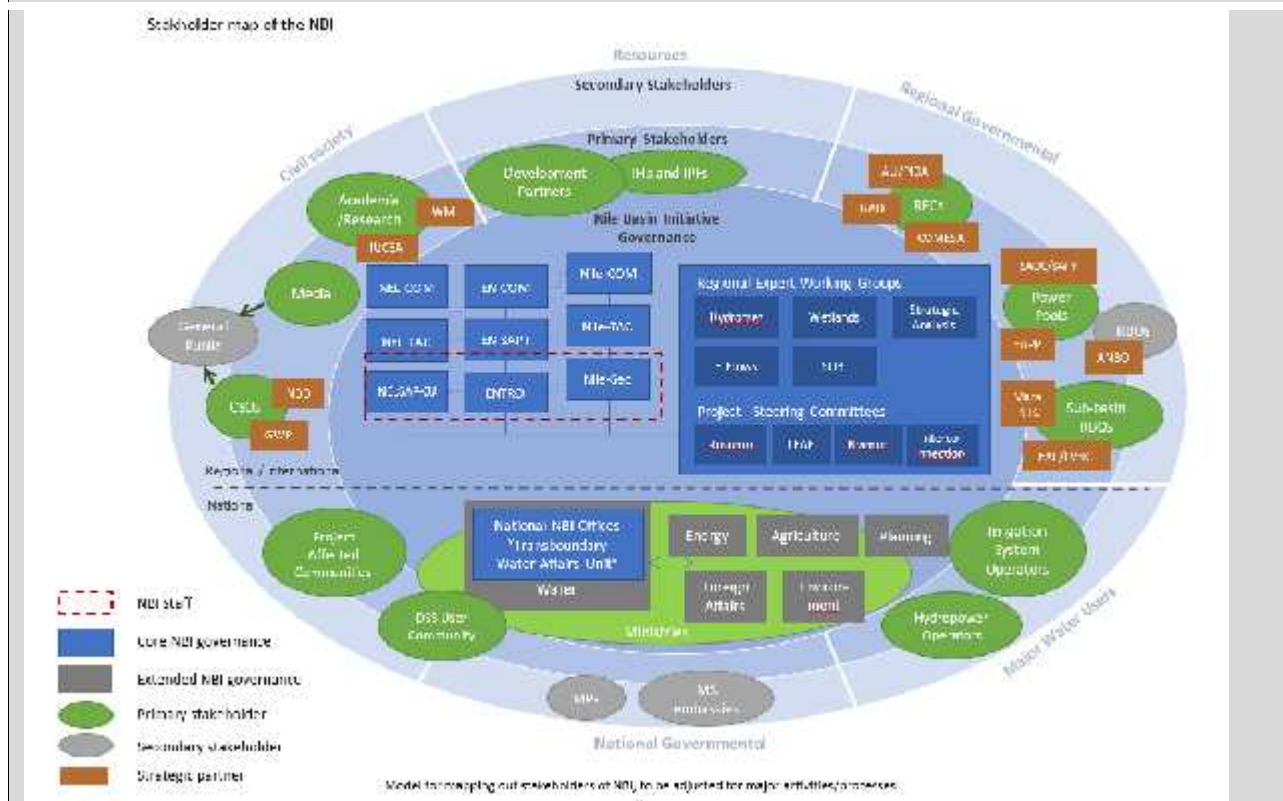
Extended governance group in national ministries: These are officials from National Ministries whose activities touch on the management and use of the shared Nile Basin water resources, namely Energy, Agriculture, Fisheries, Environment, Foreign Affairs, and Planning. This group has medium – high interest and high to very high influence in the work of the organisation. The officials must therefore be engaged and consulted in order to meet their needs while at the same time try to increase their interest level in NBI. Among other things, this group needs to be fully informed of the potential benefits implementation of the NBI 10-year strategy can bring to their field of work, in order to increase their interest in NBI. With increased interest, NBI may consider involving individuals in core governance structures, such as Regional Expert Working Groups and/or Project Steering Committees.

Primary stakeholders: Primary stakeholders are external groups on whose direct contribution the successful implementation of NBI's 10-year strategy relies. Primary stakeholders are considered to have high interest and medium - high influence on the work of NBI. They may finance NBI's agenda, provide technical input, set public agendas on Nile Basin issues, help generate buy-in for NBI's work, and/or be the co- or final implementers of NBI activities. Primary stakeholders need to be continuously informed on NBI's work in general and engaged/consulted

on those areas that directly relate to their work. NBI aims to increase the support of this group to its work, particularly through strategic partnerships.

Secondary Stakeholders: Secondary stakeholders have the potential to shape a constructive implementing environment for NBI’s agenda and therefore require positive information on NBI and its work through the media and online channels, and can be engaged on a case-by-case basis. While they are considered to have low–medium interest in the work of NBI, secondary stakeholders nevertheless hold medium–high influence and thus need to be kept informed via general channels and directly engaged on a case-by case basis. Selected groups and individuals (e.g. opinion leaders, relevant parliamentarian sub-committees) should be targeted with the aim of increasing their interest in NBI.

Strategic partners: They are the main implementing partners of NBI and, as such, the key target of NBI’s external engagement efforts. NBI needs to target them in order to attract their support and collaboration in managing the shared Nile Basin water resources, avoid fragmented approach to regional water resources management, reduce the risks of duplication of interventions and also enhance synergies, for the betterment of lives and livelihoods. Strategic partners so far identified include Lake Victoria Basin Commission (LVBC), Inter Governmental Authority on Development (IGAD) and Inter University Council of East Africa (IUCEA), Global Water Partnership Eastern Africa (GWP EnA) and Nile Basin Discourse (NBD). For some of them, Memorandum of Understanding has been signed while for others, areas of collaboration have been agreed.



Gender equality and empowering women:

185 A gender specialist has been recruited during the PPG phase to ensure that all aspects of the project consider the gender equality and women empowerment. The gender expert has worked with the National Consultants and the Government Stakeholders to ensure that gender mainstreaming aspects are given highest consideration in the various components of the project. A detailed gender situation analysis report has been prepared as the result of this engagement and has been used to prepare the gender action plan (annex G).

- 186 The experience gained and learned lessons developed from the gender analysis indicate that effective, efficient and equitable management of water resources is only achieved when both, women and men, are involved in consultation process and in management and implementation of water related services. Striking a gender balance will ensure that: (i) the roles and responsibilities of women and men are mobilized to best effect the creativity, energy and knowledge of both genders to contribute to making water schemes and eco-systems work better; and (ii) the benefits and costs of water use accrue equitably to all groups.
- 187 There is a better understanding and more awareness of the gender issues involved in water management and a range of initiatives have been introduced to improve the situation in the participating countries. Many countries recognized the benefits of involving women in all aspects of water use and thus most government guidelines, project designs, programmes and policies now address gender concerns. However, political and cultural impediments that are still difficult to eradicate and that require reasonable resources and strong political will have often been lacking. Hence implementation gaps have been explicit in the policies and programmes intended to improve access, use and management of water resources, which are the backbones of conjunctive ground water resource management.
- 188 The following gaps are identified to guide the development of the gender strategy for the proposed project:
- a) Limited participation of women in knowledge development and employability
 - b) Poor knowledge dissemination and communication channels on water-related issues and innovations
 - c) Weak national gender machineries and institutional mechanisms
 - d) Poor integration and implementation of gender dimensions in relevant policies
 - e) Gender inequality in public finance management
 - f) Inadequate gender dis-aggregated data and gender statistics to guide programme design, monitoring and evaluation
 - g) Weak monitoring and evaluation framework
 - h) Limited engagement of key stakeholders, especially the women's movement
 - i) Poor connection of water rights to land governance

Gender strategy action plan

- 189 The experiences gained and learned lessons developed from the PPG stage gender analysis indicate that effective, efficient and equitable management of water resources is only achieved when both, women and men, are involved in consultation process and in management and implementation of water related services. Striking a gender balance will ensure that: (i) the roles and responsibilities of women and men are mobilized to best effect the creativity, energy and knowledge of both genders to contribute to making water schemes and eco-systems work better; and (ii) the benefits and costs of water use accrue equitably to all groups.
- 190 The strategic objectives for the gender strategy have been developed by close consideration of the proposed project components and are intended to create greater impact to the following components: (i) Furthering knowledge and understanding about availability of groundwater resources in the selected aquifers underlying watersheds in the sub-basins of the Eastern Nile and the Nile Equatorial Lakes; (ii) Development of action plans on groundwater resources governance, management, and protection for inclusion in national, sub-basin frameworks: – also including consideration of surface water/groundwater resources conjunctive use; (iii) Increased convergence of national approaches, policies and governance mechanisms for protection and sustainable use of shared aquifers; (iv) Broad dissemination of the results from two pilot actions leading to scaled activities by ENSAP and NELSAP; (v) Further strengthening capacity to address groundwater issues at the national and regional levels; and (vi) Communications and awareness raising.
- 191 The goal of the proposed strategy is to enhance knowledge and capacity for sustainable use and management of the shared aquifers on the principle of gender equality and women's empowerment. The detailed gender

action plan is presented in annex G. Gender considerations are also included in the multiyear work plan (annex A).

South-South and Triangular Cooperation (SSTrC):

- 192 The project will primarily work with national, regional and local governments and with other non-government institutions. These institutions will collaborate in gathering data on the individual transboundary aquifers and share best practices. The project will use all available platform (e.g. the Nile Basin Development Forum, the Groundwater Working Group, the Nile Basin Discourse] to enhance cooperation and to send key messages across beyond the formally recognized stakeholders. The project's international partners (IGAD, IGRAC, WB, GIZ) are all involved in water projects in the Nile Basin countries and they have mechanisms in place to create a knowledge platform on which south-south cooperation can be enhanced.
- 193 The project will work closely with GEF IW: LEARN and related regional initiatives to further disseminate experiences and results. 1% of the GEF budget will be devoted to supporting IW: LEARN activities (including GEF IW Conferences, Experience Notes, Exchanges, participation in Communities of Practice, etc.).
- 194 The results of these projects will be disseminated through publications (including GEF Experience Notes) and exchange visits to other groundwater dependent regions through the GEF IW: LEARN twinning initiatives. Material on conjunctive use of surface water and groundwater prepared by IW: LEARN will be made available to the participating Nile countries' experts. Similarly, experiences from other regions (including activities undertaken in other aquifer basins in North Africa) will be promoted through NBI and partners.

Sustainability and Scaling Up:

- 195 The project is building on the work undertaken by the IAEA-UNDP-GEF-UNESCO MSP that prepared groundwater knowledge base in the Nile Basin Countries.
- 196 As key actions to facilitate the sustainability and scaling-up, the project will encourage the countries to (where needed):
- Update and reform policies, legislation and institutions to enhance the national and regional governance of the shared aquifers;
 - Actively involve Water Resources Experts within Ministries and Departments in the implementation of the project;
 - Gather high quality groundwater data for production of groundwater resources maps and groundwater models
 - Strengthen governance and technical capacity to implement any necessary reforms to policy etc.
 - Strengthen capacity to manage the water and ecosystem resources within the aquifer areas;
 - To further strengthen the involvement of women at all levels of governance, management and activities within the region;
 - Engage in gathering documentation and provision of information and data nationally and to the NBI by countries in accordance with the regional agreement;

- Strengthen the NBI at the regional level and communities, private sector (including farmers, pastoralists, international growers, bottlers, etc.) at more local levels on the importance of the transboundary aquifer resources and ecosystems dependent on the water;
- Improve the understanding of the transboundary aquifer resources and ecosystem and the potential impacts of climate change and variability
- Pilot improved approaches to water management across the transboundary aquifer basin, to demonstrate effective means to reduce water demand and pollution, and sustain fragile ecosystems that benefit local communities;

197 At the NBI level, the project’s capacity building activities and exchange programs with other regional water commissions will assist the NBI in analyzing the transboundary groundwater aquifer data producing technical reports and maps, updating the regional model and evaluating the refined local models. More fundamentally, the project will assist with reviews of the transboundary aquifer governance structures and operation to strengthen the regional and national offices of the NBI. The project will work with the ministries for water and environment to facilitate their understanding of the aquifer resources. The work to develop appropriate sustainability plans will be integral to the project’s exit strategy and all activities will closely consider the sustainability of interventions as part of the project inception phase.

198 At the national level, all the participating member state countries will delegate a project focal person and project focal institutions for the whole project or for the project components. The project focal institution and focal person shall a) serve as liaison between the project secretariat based at NBI and national bodies and national stakeholders as necessary, b) reach out to the potential stakeholders and partners to encourage participation and contribution to the project, c) ensures the member state country contribute to the project undertakings (data sharing, facilitation of meetings workshop, trainings, upscaling etc.) and d) Identify and liaise with ongoing national projects so as to create synergy, sharing information and build partnerships.

199 The end of project sustainability shall be guaranteed through the close partnership that will be created with the national focal institutions.

V. PROJECT MANAGEMENT

Cost efficiency and effectiveness:

- 200 The baseline scenario is costly to the countries. Under the business as usual scenario a number of challenges/problems leading to various environmental costs are happening, including: loss of vital ecosystems, depletion of water sources, water quality degradation, and widening gap between water supply and demand. These in turn are leading to social and economic costs to the countries. The primary cost related to the environmental degradation is perpetuation of poverty. Various research undertaken in the region shows water has a strong link to human health, school attendance, migration, conflict and income. The alternative scenario proposed under this project will reduce these costs by specifically targeting the various barriers which hinder the countries to take actions that can lead to the stated objective of the current project.

Project management:

- 201 The project is going to be operationalized by and at the Nile Basin Initiative Secretariat (Nile-SEC), based in Entebbe, Uganda, with the involvement of the two NBI Subsidiary Action Program offices, i.e. ENTRO and NELSAP-CU. The NBI governance structure consists of: The **Nile Council of Ministers (Nile COM)** of Water Affairs provides policy guidance and makes decisions; and the **NBI Technical Advisory Committee (Nile TAC)**, established in 1998 is made up of senior civil servants and provides technical advice and assistance to the Council of Ministers. The committee is made up of one representative from each riparian country and one alternate. It meets two to three times a year. A regional expert working group will be formed drawing technical experts on groundwater management from the seven participating countries.
- 202 The NBI is one institution with three operational centers: The **NBI Secretariat (Nile SEC)**, established in 1999 provides administrative support to the Council of Ministers and the Technical Advisory Committee. It is based in Entebbe, Uganda, headed by an Executive Director. Two subsidiary programs are managed by the **Eastern Nile Regional Technical Office (ENTRO)**, which is based in Addis Ababa, and the **NELSAP Coordinating Unit (NELSAP-CU)**, which is based in Kigali, Rwanda.
- 203 Overview of the Project will be guaranteed among others by Nile-COM and Nile-TAC. Nile-TAC will function as the Chair of Project Steering Committee (PSC), with the overall mandate of providing strategic guidance to the project, and of ensuring a basin wide perspective. The PSC will take into consideration the decisions of other existing NBI governance bodies and will refer any unresolved issues to Nile-COM. Terms of reference of PSC are approved by Nile-TAC. The coordination of the project activities (workshops, trainings, piloting, etc) within the countries will be done in close collaboration with the National Focal Institution. The National Focal Institution shall designate at least one national focal person for the project. The role of the national focal person is to serve as focal person for all project activities within the countries. The functions include a) Serve as liaison between the Project secretariat based at NBI and national bodies and national stakeholders as necessary, b) Reach out to the potential stakeholders and partners to encourage participation and contribution to the project, c) Ensures the member state country contribute to the project undertakings (data sharing, facilitation of meetings workshop, trainings etc.), d) Identify and liaise with ongoing national projects so as to create synergy, sharing information and build partnerships.
- 204 Agreement has been reached during the PPG stage that the following institutions (table 4) in each country serve as National Focal Institution in each country. Representatives of the subsidiary programs will make part of the working group.

Table 3. List of National Focal Institutions

Country	Name of National Focal Institution
Burundi	The Geographic Institute of Burundi (IGEBU) under Ministry of Environment and Livestock
Ethiopia	Groundwater Directorate under the Basin Development Authority, Ministry of Water, Irrigation and Electricity
Kenya	Transboundary Waters Department of the Ministry of Water & Sanitation and Irrigation
Rwanda	Rwanda Water and Forestry Authority under Ministry of Environment
Sudan	Water Resources Technical Organ (WRTO) at the Ministry of Water, Irrigation and Electricity
Tanzania	Directorate of Water Resources under Ministry of Water
Uganda	Directorate of Water Resources Management of the Ministry of Water and environment

205 Nile-SEC will have responsibility for coordinating all project activities, and for all reporting on the project. Specifically, Nile-SEC will:

- Coordinate project implementation;
- Coordinate and oversee overall fund flow and disbursements;
- Ensure information sharing;
- Conduct monitoring and evaluation;
- Define and supervise common NBI procedures for financial management and procurement, human resources management, and information management and reporting.

206 NBI will recruit a Project Technical Lead for the project who, together with other PMU take the primary responsibility for implementation of project activities including coordination of activities with ENTRO, NELSAP, project partners, stakeholders as well as the participating NBI Countries under the guidance of the Deputy Executive Director of NBI. The Project Technical Lead (PTL) has a dual role. Primarily the PTL is responsible to provide technical leadership during conceptualization, planning, design, and implementation of all project components (80 % staff time). In addition to being the senior technical lead , the PTL will be responsible for the overall management of the Project, including the mobilisation of all project inputs, supervision over project staff, consultants and sub-contractors (20 % of staff time)., as detailed in Annex C.

For the implementation of the pilots, tentative list of national and local stakeholders for the selected pilot actions

208 The following table shows the specific list of stakeholders identified for the three pilot types. This list will be validated and updated during the planned reconnaissance field visit by the NBI PUM, Nile SAPs and the government representatives. For each aquifer, national task team will be constituted comprising relevant actors at national, sub-national (local authority) and community levels.

209 For all pilots, local authorities (see table 5) and communities in the selected aquifers will be involved in the design, implementation and final handing over of the pilots to ensure mainstreaming and sustainability of the pilot measures in the management and utilization of the shared aquifers. Representatives from the local authorities (government) and communities will take part in key consultations and decisions regarding the pilots.

210 The project will make available cash grants for civil society and other non-governmental partners to cover costs of their participation in implementation of the pilot projects. The selection and implementation of all grants will be done in compliance with UNDP's Policy and Operational Guidance on Low-Value Grants.

Table 5: Local level actors by aquifer and selected pilots

Pilot type	Aquifer	Country	Stakeholders for Pilot projects
MAR	Gedarfe-Adigrat	Ethiopia	Local District (Woreda) Level Natural Resources Bureaus; Tigray

			Region Agriculture Bureau; Humera Town Water Utility; Representatives of pastoral communities; Indigenous communities; Private Irrigators; Ministry of Agriculture – SLM PMU; Ministry of Water Basin Authority; IDPs; Farmers; Women representatives; Kefta-Shiraro National Park
MAR	Gedaref-Adigrat	Sudan	Gedaref town water utility, Gedaref district water directorate, pastoral community representatives, Miners, Irrigators
Water Fund	Mt Elgon	Kenya	Ministry of Water and Sanitation; Sub-Regional Offices of Water Resources Authority; Basin Water Resources Committees; Water Users Association in the vicinity of the project area; Water utilities of the towns of Busia and Bungoma; The Elgon National Park Administration; Farmers associations; Bungoma, Trans-Nzoia and West Pokot Counties; Kenya Wild Life Service; Lake Victoria North Water Works Development Agencies; Kerio Valley Development Authority (KVDA); MEPI (Mt. Elgon Peace Initiative- a local based NGO) working on women’s issues/ or gender issues)
Water Fund	Mt Elgon	Uganda	Tororo township water utility, Tororo District Water Board, Wat San network Uganda
Water Fund	Kagera	Burundi, Rwanda, Tanzania, Uganda	To be identified after the planned reconnaissance field visit to be conducted by NBI PMU, NBI SAPs and government experts from the countries (1-2 months after the start of the project).
Remote sensing	All aquifers	All countries	National Focal Institutions in each country, University of Nairobi, University of Makerere, The Regional Centre for Mapping of Resources for Development (RCMRD) in Kenya, Ethiopian Mapping Authority, Other local universities are required

VI. PROJECT RESULTS FRAMEWORK

This project will contribute to the following Sustainable Development Goal (s):

SDG 6: Ensure availability and sustainable management of water and sanitation for all

SDG 13: Take urgent action to combat climate change and its impacts

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

This project will contribute to the following country outcome included in the UNDAF/Country Programme Document:

Burundi (2018-2027) outcome: By end 2027, an increased proportion of the population have access to have sufficient quantity and quality of water for efficient and equitable use without compromising the environment, improve and safe drinking water and sanitation, manage and regular supply of sectors in drinking water and basic sanitation, practice appropriate hygiene behavior, ensure sustainable management of the environment, mitigate climate change and improve land use planning.

Ethiopia (2016-2020) outcome1: By 2020 key government institutions at federal and regional level are better able to plan, implement and monitor priority climate change mitigation and adaptation actions and sustainable natural resource management

Ethiopia (2016-2020) outcome2: By 2020, the Ethiopian population, in particular women, children and vulnerable groups will have access to/and use of affordable, safe and adequate WASH services

Kenya (2018-2022) outcome 1: By 2022, an increased proportion of the population have access to sustainable and safe drinking water and sanitation, and practice appropriate hygiene behavior

Kenya (2018) outcome 2: By 2022, people in Kenya benefit from sustainable natural resource management, a progressive and resilient green economy.

Rwanda (2013-2018) outcome: Rwanda has in place improved systems for: sustainable management of the environment, natural resources and renewable energy resources, energy access and security, for environmental and climate change resilience, in line with Rio+20 recommendations for sustainable development.

Sudan (2018-2021) outcome 1: By 2021, people's resilience to consequences of climate change, environmental stresses and natural hazards is enhanced through strengthened institutions, policies, plans and programs

Sudan (2018-2021) outcome 2: By 2021, the populations in vulnerable situations have improved health, nutrition, education, water and sanitation, and social protection outcomes

Tanzania (2016-2021) outcome: Improved environment, natural resources, climate change governance, energy access and disaster risk management

Uganda: (2016-2020) outcome: By end 2020, natural resources management and energy access are gender responsive, effective and efficient, reducing emissions, negating the impact of climate-induced disasters and environmental degradation on livelihoods and production systems, and strengthening community resilience.

This project will be linked to the following output of the UNDP Strategic Plan:

Output 2.5: Legal and regulatory frameworks, policies and institutions enabled to ensure the conservation, sustainable use, and access and benefit sharing of natural resources, biodiversity and ecosystems, in line with international conventions and national legislation.

	Objective and Outcome Indicators (no more than a total of 15 -16 indicators)	Baseline¹	Mid-term Target²	End of Project Target	Data Collection Methods and Risks/Assumptions³
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¹ Baseline, mid-term and end of project target levels must be expressed in the same neutral unit of analysis as the corresponding indicator. Baseline is the current/original status or condition and need to be quantified. The baseline must be established before the project document is submitted to the GEF for final approval. The baseline values will be used to measure the success of the project through implementation monitoring and evaluation.

² Target is the change in the baseline value that will be achieved by the mid-term review and then again by the terminal evaluation.

³ Data collection methods should outline specific tools used to collect data and additional information as necessary to support monitoring. The PIR cannot be used as a source of verification.

<p>Project Objective:</p> <p>To enhance knowledge and capacity for sustainable use and management of transboundary aquifers and aquifers of regional significance in the Nile Basin</p>	<p><u>Mandatory Indicator 1 and 2:</u> copy one or both of the standard IRRF indicators linked to the output selected above.</p> <p>Extent to which legal or policy or institutional frameworks are in place for conservation, sustainable use, and access and benefit sharing of natural resources, biodiversity and ecosystems.</p> <p>Number of countries with legal, policy and institutional frameworks in place for conservation, sustainable use, and access and benefit sharing of natural resources, biodiversity and ecosystems</p>	<p>There is no legal or policy framework with regard to transboundary groundwater; some member state countries have signed the international resolution on transboundary aquifers</p>	<p>Updated information on national policies/institutions to protect /conserve transboundary aquifers and associated ecosystems</p>	<p>New policies and institutional mechanism to manage the transboundary aquifer resources recommended</p>	<p>Source of data and methodology:</p> <p>Ministry of Water/Environment in each country; inventory of policies at different stages of the project</p> <p>Risks:</p> <p>Countries not willing to cooperate on the transboundary groundwater resources management policy</p> <p>Assumptions:</p> <p>Policy revision cycles in the countries matches the timing of the project life time</p>
	<p><u>Mandatory indicator 3:</u></p> <p># direct project beneficiaries.</p>	<p>1 000 000 people</p>	<p><i>Expected level of progress by completion of 2nd GEF PIR</i></p> <p><i>50% (note at least 50% of the beneficiary are women)</i></p>	<p><i>Expected level when terminal evaluation undertaken</i></p> <p>100%</p>	<p>Source of data and methodology: NBI and National Focal Institutions [SADA reports, Groundwater modelling reports, Pilot upscaling strategy reports]</p> <p>Risks:</p> <p>Groundwater data difficult to obtain from remote aquifers, countries not willing to share data</p> <p>Assumptions:</p> <p>Population living in the aquifer areas considered as beneficiaries although direct/immediate benefit may be difficult to quantify</p>
<p>Component 1: Enhance current understanding and the knowledge on the resources base, threats and options for sustainable management and utilization of shared aquifers</p>					
<p>Outcome 1</p> <p>Improved understanding and knowledge of groundwater and how it interacts with surface water and the types of pressures on them, building upon existing information</p>	<p>Number of countries (shared aquifers) with SADA report completed</p> <p>[Aquifers diagnostic analysis (SADA) report for all the selected shared aquifers that serves as baseline fact-based analysis of current status of the aquifers (threats, immediate causes, root causes, use/abstraction; surface-groundwater connection, socio economics) with gender disaggregated data collection factoring also climate change and extreme climate</p>	<p>There is no SADA report on any of the aquifers.</p> <p>[There is some general knowledge of the geology, including subsurface stratigraphy relevant to the</p>	<p>Evaluation, harmonization and validation of all previous findings from local literature, published sources, and from international knowledge repositories</p>	<p>3 SADA reports completed for all aquifers [Assessment report including new geological and hydrogeological maps, new conceptual models, and new information on connection</p>	<p>Source of data and methodology:</p> <p>NBI, National focal ministries of water/environment and other relevant ministries/National and regional consultations</p> <p>Risks:</p> <p>Lack of good quality available information on the aquifers from secondary data sources</p> <p>Assumptions:</p> <p>Participating project stakeholders, technical</p>

	events]	three aquifers. However, the Member state countries lack: (i) a standardized, modern and harmonized characterization of the current state of groundwater resources and its interaction with surface water, (ii) a set of quantity, quality, ecological functions, socio-economic factors and current uses, and (iii) the assessment of the vulnerability to pollution and climate and land use changes]	(e.g. IGRAC, BGS, BGR, IGAD) compiled in a report format	between surface waters and groundwaters]	working groups and experts actively seek and provide aquifer information from available sources, interact with each other
	Harmonized and standardized groundwater knowledgebase (geodatabase and maps) for all the three shared aquifers in place with all pertinent information	Current groundwater base is not systematic in each country, there is no systematic groundwater geodata base for the shared aquifers, Hydrology database exists not groundwater (stations with flow data, not updated) An IGAD project is supporting installations	Old data sources identified and Quality checked Design of geodata base for the selected aquifers Data collection mechanism (training workshops) activated in the 7 countries Quality check of the collected data conducted and control procedures	Harmonized and standardized geodata base produced/established for the three aquifers and database mirrors established in each participating country three aquifer/hydrogeology maps produced for the three aquifers at a specified scale	Source of data and methodology: NBI National Focal Institutions Risks: Cost to the database development prohibitive, countries not willing to populate the database, maintaining the database after the completion of the project a challenge Assumptions: Countries and data owners agree to contribute data and information, and to make data freely available, training workshops used effectively in populating the database

		including monitoring station	developed		
	Water balance model describing/coupling SW-GW interaction and groundwater availability projected under different climate change, socio economic pathways (SEPs), and land use-land cover change scenarios <i>developed and used for decision making</i>	No such model exists in the three aquifer areas IsoBAL model for Nile published but lack SW-GW interaction aspect is regional in nature Nile Basin DSS available at NBI	Suitability of various models assessed Data for model inputs compiled and completed <i>Isotope hydrology studies for conceptual model development conducted</i>	A functional SW-GW coupled model capable of simulating water availability under different socio economic and physical changes in place for the three aquifers	Source of data and methodology: NBI, National Ministries of water/environment and other relevant ministries/ consultation with the ministries Risks: Uncertainties with the model do not allow model use for practical management actions Assumptions: Sufficient data is available to be used for model input and for calibration and validation of the models There is a suitable model that can match the geophysical setting to be modeled
Component 2: Development of action plans on groundwater resources governance, management, and protection for inclusion in national, sub-basin and basin wide frameworks: also including consideration of surface water/groundwater resources conjunctive use					
Outcome 2 Increased convergence of national approaches, policies and governance mechanisms for protection and sustainable use of shared aquifers.	Regional Shared Aquifer Integrated Management Action Plan (collection of recommended measures addressing gaps and threats identified in Component 1 developed and Submitted to Member states	Mechanism doesn't exist pertaining to groundwater, some mechanism exists for SW management in LV Basin	Assessment review of - national policy environment and groundwater management approaches in each country pertaining to the aquifers Stakeholders diagnostic is carried out in early stages of project (e.g. sex-disaggregated data collected) in order to e.g. identify stakeholder groups to	Action plan proposals conforming to gender responsive guiding principles developed through a participatory process with key stakeholders and submitted to member states and for inclusion in NBI's subsidiary action programs	Source of data and methodology: NBI, direct consultation Risks: Long distance (e.g. in Ethiopia and Sudan) between the location of the project implementation bodies in each country and the location of key stakeholder limit extensive interaction Assumptions: Countries are willing to develop a common action plan for the shared aquifers Mechanism is in place to fairly involve all key stakeholder/beneficiaries such as farmers, pastoralists, women etc The Action plan is a good indicator and means for increased convergence of national policies

			involve in project (e.g. water users, farmers, private sector, women's groups)		
	Harmonized groundwater monitoring action plan	<p>Mentoring is taking place haphazardly, insufficient or non-existing monitoring networks in most countries</p> <p>Limited monitoring equipment is available in the region, a systematic indicator-based groundwater monitoring system is absent in the region as access to monitoring boreholes is difficult</p>	<p>An assessment/enumeration of all groundwater monitoring approaches (modern RS techniques, telemetric monitoring, customary practices etc) worldwide in Nile context conducted</p>	<p>Groundwater monitoring action plan (to monitor water level changes, water quality changes, mapping abstraction changes) and monitoring design for the aquifer areas proposed</p>	<p>Source of data and methodology: NBI National Focal Institutions NILE SAP</p> <p>Risks: countries do not have sufficient skills to convert action plan into practice; some monitoring technologies are expensive and not friendly to use; countries don't have sufficient operational budget to install and maintain monitoring devices</p> <p>Assumptions: Countries have sufficient capacity to install and maintain monitoring devices</p>
	Technical manual and guideline so support conjunctive use of SW and GW (the manual/guideline will address measures to enhance MAR and sustainable yields, measures for water quality protection, conservation of groundwater dependent ecosystems, institutional mechanism to promote conjunctive use of SW and GW, and sustainable of groundwater dependent ecosystems)	Limited or no technical guide currently practiced in countries, Sudan has some extensive experience in MAR, In Ethiopia there is SLM technical guide being in use for the highland environments and such guides	Compilation and assessment of existing practices in MAR, Water quality protection, and conjunctive use of surface water and groundwater completed and prepared	<p>Preparation of the following technical guide completed with full consideration of gender issues</p> <p>MAR guideline and manual</p> <p>Water Quality Protection manual/guideline</p>	<p>Source of data and methodology: <i>NBI, consultation</i></p> <p>Risks: Manuals and tools not widely used by the countries because of limited capacity (operational and financial)</p> <p>Assumptions: Tools, manuals and guidelines are important elements to arrive at a shared and convergent national policies</p>

		are lacking for the aquifer area, Some NGOs are using own developed guideline for MAR in arid environments		Conjunctive SW-GW use manual/guideline	
Outcome 3 NBI's subsidiary action programs (Eastern Nile and Nile Equatorial Lakes sub-basin) will be strengthened through integration of groundwater aspects for selected sub basins.	Technical guide on integration Groundwater aspects in NBI' subsidiary action programs for the selected sub basins targeting key activities: watershed management, sub-basin integrated management plans, wetlands sustainable management activities	Groundwater integration in the Subsidiary programs is at its incipient stages;	Sufficient evidence (technical, social, economic) to feed into to the technical guide gathered	Technical guideline document prepared and readied for use	Source of data and methodology: <i>Subsidiary programs, consultation NBI, consultation</i>
		ENTRO is undertaking a groundwater assessment program in the Eastern Nile countries to map the potential of groundwater for conjunctive use under a WB project			Risks: Long distance (e.g. in Ethiopia and Sudan) between the location of the project implementation bodies in each country and the location of key stakeholder limit extensive interaction Assumptions: Countries are willing to develop a common action plan for the shared aquifers Mechanism is in place to fairly involve all key stakeholder/beneficiaries such as farmers, pastoralists, women etc
Component 3: Targeted pilot projects to explore conjunctive use of surface and groundwaters, and links to biodiversity conservation and climate change adaptation					
Outcome 4 Broad dissemination of the	Up to 5 pilots illustrating appropriate Innovative techniques for sustainable conjunctive use of groundwater and surface water resources. The pilots shall include the	A number of programs (e.g. Sustainable Land Management	All pertinent programs projects going on in the	Four pilot studies implemented	Source of data and methodology: <i>ENTRO and NELSAP consultation Focal Government Institutions</i>

<p>results from two pilot actions lead to scaled activities by ENSAP and NELSAP.</p>	<p>following: a) Managed Aquifer Recharge (MAR) interventions: the MAR will be piloted in two sub-basins of the Nile. At least one pilot will be integrated with improving water supply for a small – medium sized town dependent on groundwater.</p> <p>Pilot Water Funds for sustainable watershed services to improve groundwater recharge and upstream downstream collaboration will be explored. c) Use of advanced remote sensing for monitoring and management of shared groundwater aquifers. d) Use of isotope hydrology technique for detailed modelling of interaction between ground and surface water for specific (selected) wetland ecosystems. Under this pilot, a detailed model for surface water – groundwater interaction will be developed and linked to the NB DSS.</p>	<p>Program, rain water harvesting programs) are taking place in the countries and for smooth integration of learning from the pilots into the ongoing projects/programs</p>	<p>countries into which the scaling up strategy can be embedded identified in consultation with key stakeholders in each country</p>	<p>Based on the pilots, a strategy and guideline will be developed for mainstreaming the most successful pilots into operational programs and activities at national and regional levels</p>	<p>Risks: Improper identification of sites due to insufficient data, lack of local institutional and grassroots support to implement and manage the pilots, sustainability of water fund</p> <p>Assumptions: There exist ongoing programs/projects/strategies at national and regional level to piggy back the pilot projects on. The national institutions are willing to absorb the proposed pilots</p>
<p>Outcome 5</p> <p>Pilots lead to overall enhanced conservation and efficient use of water resources and promote water efficient land use activities, strengthening livelihoods status</p>	<p>Scaling up strategy document for selected pilots and integration into IWRM activities at national level</p>	<p>A number of IWRM programs (are taking place in the countries and for smooth integration of learning from the pilots into the ongoing projects/programs</p>	<p>All pertinent programs IWRM projects going on in the countries into which the scaling up strategy can be embedded identified in consultation with key stakeholders in each country</p>	<p>Based on the pilots a strategy and guideline will be developed for mainstreaming the most successful pilots into operational IWRM activities at relevant levels</p>	<p>Source of data and methodology: Focal Institution, consultation NBI, consultation</p> <p>Risks: Smooth integration of pilots into ongoing IWRM requires strong commitment from the countries</p> <p>Assumptions: Pilots lead to overall enhanced conservation and efficient use of water resources and promote water-efficient land use activities, strengthening livelihoods status IWRM mechanism exist in the countries</p>
<p>Component 4: Further strengthening capacity to address groundwater issues at the national and regional levels</p>					
<p>Outcome 6</p>	<p>Number of training for technicians, academics, and senior planners undertaken on key requisite techniques on</p>	<p>Building capacity in countries, in particular for</p>	<p>At least three training conducted for</p>	<p>Training provided on at least 6 topics for stakeholders in</p>	<p>Source of data and methodology:</p>

<p>Technicians, academics, and senior planners at national, sub-regional and regional levels capacitated on key requisite techniques on groundwater monitoring and sustainable management</p>	<p>groundwater monitoring and sustainable management with gender issues given high priority</p> <p>Training topics include</p> <ul style="list-style-type: none"> - Gender mainstreaming in Groundwater Management; water and gender for the promotion of gender equality and women empowerment, the collection of gender disaggregated data using the UNESCO WWAP Toolkit - Groundwater assessment using ground based and remote sensing data sources - Hydrogeology and groundwater recharge estimation - Groundwater modelling - Aquifer mapping - Planning and Implementing Managed Aquifer Recharge - Groundwater governance - Conjunctive surface and groundwater management and protection 	<p>concerns on groundwater exploration, exploitation and management is a high priority in the region</p>	<p>the key stakeholders in each county (target 40 percent of beneficiaries of the trainings are women)</p>	<p>each country</p>	<p>Risks:</p> <p>Key national experts have limited time to take part in the trainings</p> <p>Limited financial incentive may limit the level of participation in the trainings</p> <p>Trainees may move to other organisations and work where they are unable to utilize the gained skills</p> <p>Assumptions:</p> <p>The beneficiaries of the training have sufficient technical background to take part in the training, and stay on in their institutions to deploy the new skills</p>
<p>Outcome 7</p> <p>Regional and national decision makers have increased their understanding on</p>	<p>Number of targeted knowledge exchange programs and processes, including South-South cooperation, visits, exchanges, etc. The beneficiaries of this knowledge exchange programs will include universities</p>	<p>No such training pertaining to groundwater</p>	<p>Half of the planned and budgeted exchange programs</p>	<p>All the planned and budgeted exchange programs conducted and completed</p>	<p>Source of data and methodology:</p> <p>The beneficiaries /interview and questionnaire with the beneficiaries</p>

importance of groundwater and capacitated to develop and adopt recommendations emerging from the analyses related to Groundwater governance and Conjunctive management facilitating policies	and research institutions relevant to the specific sub-basins covered by the project.		conducted and completed (target 40 percent of beneficiaries of the exccage programs are women)	The beneficiaries apply the key lessons learned into their activities at various levels	<p>Risks:</p> <p>Key decision makers have limited time to take part in exchange visits</p> <p>Assumptions:</p> <p>The hosting countries and institutions in the region have sufficient accumulated knowledge base and lessons to share with the visiting beneficiaries</p>
	Number of targeted training at various administrative levels in groundwater governance and management, applying the recommendations contained in the Framework for Action on Groundwater Governance (GEF/FAO/UNESC O/WB/IAH). Potential topics of the training include: Groundwater governance, Conjunctive surface, Groundwater management and Protection, water and gender for the promotion of gender equality and women empowerment, and on the collection of gender disaggregated data using the UNESCO WWAP Toolkit	No such training	Half of the planned and budged training programs conducted and completed (target 40 percent of beneficiaries of the trainings are women)	All the planned and budged training programs conducted and completed	<p>The beneficiaries apply the key lessons learned into their activities at various levels</p>
Component 5: Communication and awareness raising including Knowledge management M and E					

<p>Knowledge Management and M&E</p>	<p>Number of key project lessons and strategies documented, disseminated and adopted at local, national and regional levels</p>	<p>Project implementation yet to start</p>	<p>Initial project results and lessons learned shared through dedicated project website (all completed technical reports available online in print formats for distribution);</p>	<p>Groundwater issues and conjunctive use management included in NBI communications and awareness raising activities; All project results and lessons learned compiled in at least to Experience Notes and shared through website, in leaflets, All completed technical reports available online;</p> <p>Information leaflets and guidance on groundwater issues prepared for different groups of stakeholders</p> <p>Up to 5 communication and awareness raising products generated and disseminated to national stakeholders through NBI communication platforms (website, Facebook)</p> <p>A video Documentary prepared by NBI to raise awareness on role of groundwater – surface water</p>	<p>Source of data and methodology:</p> <p>NBI PMU/consultations</p>
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				<p>conjunctive use in integrated water resources management in selected sub-basins</p> <p>Information leaflets and guidance on groundwater issues prepared for different groups of stakeholders</p> <p>Lessons and experiences on conjunctive use management and the inclusion of groundwater considerations inform IW (and other) projects globally</p>	<p>Risks: Limitation of internet connection and IT facilities limit stakeholders/beneficiaries (eg famers, pastoralists) access to the various knowledge sources</p> <p>Assumptions: Involvement in the design and implementation of project interventions and knowledge sharing on the experiences and expected benefits of the project practices will result in long-term support for the project and adoption of new knowledge, action plan and practices.</p>
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VII. MONITORING AND EVALUATION (M&E) PLAN

- 211 The project results, corresponding indicators and mid-term and end-of-project targets, as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results. If baseline data for some of the results indicators is not yet available, it will be collected during the first year of project implementation. The Monitoring Plan included in Annex details the roles, responsibilities, and frequency of monitoring project results.
- 212 Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the [UNDP POPP](#) and [UNDP Evaluation Policy](#). The UNDP Country Office is responsible for ensuring full compliance with all UNDP project monitoring, quality assurance, risk management, and evaluation requirements. Additional mandatory GEF-specific M&E requirements will be undertaken in accordance with the [GEF Monitoring Policy](#) and the [GEF Evaluation Policy](#) and other [relevant GEF policies](#). The costed M&E plan included below, and the Monitoring plan in Annex, will guide the GEF-specific M&E activities to be undertaken by this project.
- 213 In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report.

Additional GEF monitoring and reporting requirements:

- 214 Inception Workshop and Report: A project inception workshop will be held within 60 days of project CEO endorsement, with the aim to:
- Familiarize key stakeholders with the detailed project strategy and discuss any changes that may have taken place in the overall context since the project idea was initially conceptualized that may influence its strategy and implementation.
 - Discuss the roles and responsibilities of the project team, including reporting lines, stakeholder engagement strategies and conflict resolution mechanisms.
 - Review the results framework and monitoring plan.
 - Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP and other stakeholders in project-level M&E.
 - Update and review responsibilities for monitoring project strategies, including the risk log; SESP report, Social and Environmental Management Framework and other safeguard requirements; project grievance mechanisms; gender strategy; knowledge management strategy, and other relevant management strategies.
 - Review financial reporting procedures and budget monitoring and other mandatory requirements and agree on the arrangements for the annual audit.
 - Plan and schedule Project Board meetings and finalize the first-year annual work plan.
 - Formally launch the Project.
- 215 The Project Technical Lead will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the EA (NBI), UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Project Steering Committee.
- 216 GEF Project Implementation Report (PIR): The Project Technical Lead, the EA (NBI), UNDP Country Office, and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Project Technical Lead will ensure that the indicators included in the project results framework are monitored

annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR.

- 217 The PIR submitted to the GEF will be shared with the Project Board. The UNDP Country Office will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.
- 218 GEF Core Indicators:
The GEF Core indicators included as Annex will be used to monitor global environmental benefits and will be updated for reporting to the GEF prior to MTR and TE. Note that the project team is responsible for updating the indicator status. The updated monitoring data should be shared with MTR/TE consultants prior to required evaluation missions, so these can be used for subsequent groundtruthing. The methodologies to be used in data collection have been defined by the GEF and are available on the GEF [website](#)
- 219 Independent Mid-term Review (MTR): An independent mid-term review process will begin after the second PIR has been submitted to the GEF, and the MTR report will be submitted to the GEF in the same year as the 3rd PIR. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the MTR report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the [UNDP Evaluation Resource Center \(ERC\)](#). The evaluation will be 'independent, impartial and rigorous'. The evaluators that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project under review.
- 220 The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the evaluation process. Additional quality assurance support is available from the BPPS/GEF Directorate .
- 221 The final MTR report and MTR TOR will be available in English and will be posted on the UNDP ERC by 31 Dec 2022. A management response to MTR recommendations will be posted in the ERC within six weeks of the MTR report's completion.
- 222 Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the [UNDP Evaluation Resource Center](#).
- 223 The evaluation will be 'independent, impartial and rigorous'. The evaluators that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project being evaluated. The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the BPPS/GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Project Board. The TE report and TE TOR will be publicly available in English and posted on the UNDP ERC by 31-Oct-2024. A management response to the TE recommendations will be posted to the ERC within six weeks of the TE report's completion.
- 224 Final Report: The project's terminal PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be

discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information:

- 225 To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy⁴ and the GEF policy on public involvement⁵.

M&E Oversight and monitoring responsibilities:

- 226 Project Technical Lead: The Project Technical Lead is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project Technical Lead will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project Technical Lead will inform the Project Board, the UNDP Country Office and the UNDP-GEF RTA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.
- 227 The Project Technical Lead will develop annual work plans based on the multi-year work plan included in **Annex A**, including annual output targets to support the efficient implementation of the project. The Project Technical Lead will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. ESMP, gender action plan, stakeholder engagement plan etc..) occur on a regular basis.
- 228 Project Board/Project Steering Committee: The Project Board/**Project Steering Committee** will take corrective action as needed to ensure the project achieves the desired results. The Project Board/**Project Steering Committee** will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project's final year, the Project Board will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.
- 229 Project Implementing Partner: The Implementing Partner is responsible for providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes, and is aligned with national systems so that the data used and generated by the project supports national systems.
- 230 UNDP Country Office: The UNDP Country Office Uganda will support the Project Technical Lead on national actions as agreed and ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. UNDP do not hire/appoint project staff, do not handle project procurement functions, and do not handle M&E activities, except providing oversight to those activities, according to the GEF Financial Procedures Agreements.

⁴ See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

⁵ See https://www.thegef.org/gef/policies_guidelines

- 231 The UNDP CO is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed, and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the UNDP and the Project Technical Lead.
- 232 The UNDP will retain all M&E records for this project for up to seven years after project financial closure in order to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO).
- 233 UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor and the UNDP-GEF Directorate as needed.
- 234 Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

Monitoring and Evaluation Plan and Budget:

GEF M&E requirements	Responsible Parties	Indicative costs to be charged to the Project Budget ⁶ (US\$)		Time frame
		GEF grant	Co-financing	
Inception Workshop	UNDP Country Office	40,000	20,000	Within two months of project document signature
Inception Report	Project Technical Lead	None	None	Within two weeks of inception workshop
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	PMU NBI UNDP RTA	None	None	Quarterly, annually
Risk management	Project Technical Lead	None	None	Quarterly, annually
Monitoring of indicators in project results framework (NBI)	Project Technical Lead PMU	Per year: USD 4,000 x 5= 20,000	20,000	Annually before PIR
GEF Project Implementation Report (PIR)	Project Technical Lead and UNDP Country Office and UNDP-GEF team	None	None	Annually
Audit as per UNDP audit policies	UNDP Country Office	Per year:	5,000	Annually or other

⁶ Excluding project team staff time and UNDP staff time and travel expenses.

GEF M&E requirements	Responsible Parties	Indicative costs to be charged to the Project Budget ⁶ (US\$)		Time frame
		GEF grant	Co-financing	
		USD 3,000 – 5,000 4,000 x5years= 20,000		frequency as per UNDP Audit policies
Lessons learned and knowledge generation	Project Technical Lead	20,000	10,000	Annually
Monitoring of environmental and social risks, and corresponding management plans as relevant	Project Technical Lead UNDP Country Office	None	None	On-going
Stakeholder Engagement Plan	Project Technical Lead UNDP Country Office	None	None	On-going
Gender Action Plan	Project Technical Lead UNDP Country Office UNDP GEF team	None	None	On-going
Addressing environmental and social grievances	Project Technical Lead UNDP Country Office	None	None	On-going
Project Board meetings/Project steering committee meetings	Project Board UNDP Country Office Project Technical Lead	60,000	30,000	At minimum annually
Supervision missions	UNDP Country Office	None ⁷	0000	Annually
Oversight missions	UNDP-GEF team	None ⁷	0000	Troubleshooting as needed
GEF Secretariat learning missions/site visits	UNDP Country Office and Project Technical Lead and UNDP-GEF team	None	0000	To be determined.
Mid-term GEF Core indicators to be updated	<i>Project Technical Lead</i>	10,000	10,000	<i>Before mid-term review mission takes place.</i>
Independent Mid-term Review (MTR) and management response	<i>UNDP Country Office and Project team and UNDP-GEF team</i>	25,000	15,000	<i>Between 2nd and 3rd PIR.</i>
Terminal GEF Core indicators to be updated	Project Technical Lead	10,000	10,000	Before terminal evaluation mission takes place
Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response	UNDP Country Office and Project team and UNDP-GEF team	40, 000	30.000	At least three months before operational closure
Translation of MTR and TE reports into English	<i>UNDP Country Office</i>	5,000	5,000	<i>As required. GEF will only accept reports in English.</i>

⁷ The costs of UNDP Country Office and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.

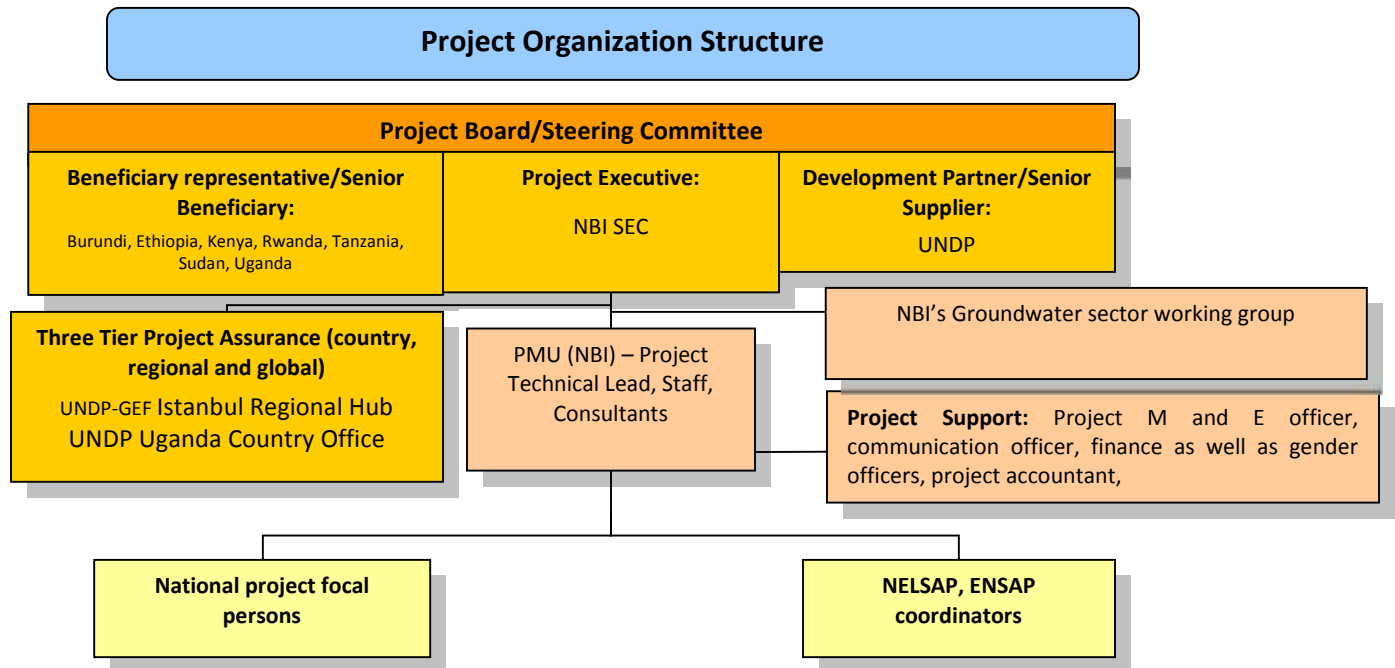
GEF M&E requirements	Responsible Parties	Indicative costs to be charged to the Project Budget ⁶ (US\$)		Time frame
		GEF grant	Co-financing	
TOTAL indicative COST Excluding project team staff time, and UNDP staff and travel expenses		USD 250,000	USD 155,000	

VIII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

- 235 Roles and responsibilities of the project's governance mechanism: The Project will be implemented by the United Nations Development Programme (UNDP/GEF), with substantive technical oversight provided by the UNDP-GEF Regional Technical Advisor (RTA) on Water and Oceans from the UNDP Istanbul Regional Hub. The UNDP CO Uganda will act as the lead UNDP office, Principal Project Representative, and will be responsible for overall project supervision and implementation project through IGO execution modality with Nile Basin Initiative (NBI). UNDP will be represented at the Project Steering Committee by UNDP Resident Representative or the UNDP/ GEF International Waters Regional Technical Advisor or any delegated UNDP official. Project Assurance from UNDP shall be provided by relevant UNDP Programme Officers and Associates at the Regional and leading Country Office.
- 236 The **Implementing Partner** for this project is **Nile Basin Initiative (NBI)**. The Implementing Partner is responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources.
- 237 The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document.
- 238 The Implementing Partner is responsible for executing this project. Specific tasks include:
- Project planning, coordination, management, monitoring, evaluation and reporting. This includes providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.
 - Risk management as outlined in this Project Document;
 - Procurement of goods and services, including human resources;
 - Financial management, including overseeing financial expenditures against project budgets;
 - Approving and signing the multiyear workplan;
 - Approving and signing the combined delivery report at the end of the year; and,
 - Signing the financial report or the funding authorization and certificate of expenditures.
- 239 Project stakeholders and target groups: Key project stakeholders will be invited to participate in the technical advisory group. National pilot activities will be undertaken through local management arrangements involving local communities and government representatives. Where they exist and when it is needed, private sector representatives will be also invited to participate.
- 240 UNDP: UNDP is accountable to the GEF for the implementation of this project. This includes oversight of project execution to ensure that the project is being carried out in accordance with agreed standards and provisions. UNDP is responsible for delivering GEF project cycle management services comprising project approval and start-

up, project supervision and oversight, and project completion and evaluation. UNDP is also responsible for the Project Assurance role of the Project Board/Steering Committee.

241 The project organisation structure is as follows:



242 **The Project implementation and execution setup** comprises of a Project Board (also referred to as Project Steering Committee); a Project Management Unit at the NBI Secretariat; task team at the two NBI Subsidiary Action Program offices, i.e. ENTRO and NELSAP-CU; national focal point institution in each of the seven participating NBI countries and local level government authorities in each participating NBI country. Further, to ensure participatory execution of the project and sustainability of the project results, for each aquifer, range of stakeholders covering local communities, and civil society organizations will be involved in the project execution. This section presents the project institutional setup based on data collected and consultations conducted during the PPG phase.

243 **Project Board:** The Project Board (also called **Project Steering Committee**) is responsible for making by consensus, management decisions when guidance is required by the Project Technical Lead, including recommendations for UNDP/Implementing Partner approval of project plans and revisions, and addressing any project level grievances. In order to ensure UNDP’s ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Board, the UNDP Resident Representative (or their designate) will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

244 Specific responsibilities of the Project Board include:

- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- Address project issues as raised by the project manager;
- Provide guidance on new project risks, and agree on possible mitigation and management actions to address specific risks;

- Agree on project manager’s tolerances as required, within the parameters set by UNDP-GEF, and provide direction and advice for exceptional situations when the project manager’s tolerances are exceeded;
- Advise on major and minor amendments to the project within the parameters set by UNDP-GEF;
- Ensure coordination between various donor and government-funded projects and programmes;
- Ensure coordination with various government agencies and their participation in project activities;
- Track and monitor co-financing for this project;
- Review the project progress, assess performance, and appraise the Annual Work Plan for the following year;
- Appraise the annual project implementation report, including the quality assessment rating report;
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project;
- Review combined delivery reports prior to certification by the implementing partner;
- Provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- Address project-level grievances;
- Approve the project Inception Report, Mid-term Review and Terminal Evaluation reports and corresponding management responses;
- Review the final project report package during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

245 The composition of the Project Board/Project steering committee must include the following

- Nile TAC members/representatives from the seven participating countries;
- Nile SEC representatives comprising the Executive Director and Deputy Executive Director of Nile-SEC
- UNDP (RTA or Resident Representative)
- Project Technical Lead

246 The composition of the Project Board must include the following roles:

- a. Project Executive: Is an individual who represents ownership of the project and chairs the Project Board. The Executive Director of the NBI Secretariat (Nile-SEC) will be a member of the Project Board representing the Nile Basin Initiative centers. The Project Executive is: **The Executive Director, Nile Basin Initiative Secretariat (NILE SEC)**. The Executive is ultimately responsible for the project, supported by the Senior Beneficiary and Senior Supplier. The Executive’s role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher level outcomes. The executive has to ensure that the project gives value for money, ensuring cost-conscious approach to the project, balancing the demands of beneficiary and supplier.

Specific Responsibilities: (as part of the above responsibilities for the Project Board)

- Ensure that there is a coherent project organization structure and logical set of plans;
 - Set tolerances in the AWP and other plans as required for the Project Technical Lead;
 - Monitor and control the progress of the project at a strategic level;
 - Ensure that risks are being tracked and mitigated as effectively as possible;
 - Brief relevant stakeholders about project progress;
 - Organize and chair Project Board meetings.
- b. Beneficiary Representative/Senior Beneficiary: Individuals or groups representing the interests of those who will ultimately benefit from the project. Their primary function within the board is to ensure the realization of project results from the perspective of project beneficiaries. The Senior Beneficiary role is held by a representative of the government or civil society. The Senior Beneficiary is Nile TAC. The Senior Beneficiary is responsible for validating the needs and for monitoring that the solution will meet those needs within the constraints of the project. The Senior Beneficiary role monitors progress against targets and quality criteria.

This role may require more than one person to cover all the beneficiary interests. For the sake of effectiveness, the role should not be split between too many people.

Specific Responsibilities (as part of the above responsibilities for the Project Board)

- Prioritize and contribute beneficiaries' opinions on Project Board decisions on whether to implement recommendations on proposed changes;
- Specification of the Beneficiary's needs is accurate, complete and unambiguous;
- Implementation of activities at all stages is monitored to ensure that they will meet the beneficiary's needs and are progressing towards that target;
- Impact of potential changes is evaluated from the beneficiary point of view;
- Risks to the beneficiaries are frequently monitored.

- c. **Development Partner/ Senior Supplier:** Individuals or groups representing the interests of the parties concerned that provide funding and/or technical expertise to the project. The Development Partner/Senior supplier is: UNDP. The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. As a Senior Supplier, UNDP do not perform execution services which are the functions that will be performed by NBI as the executing agency of the project (UNDP terminology: Implementing Partner). UNDP do not hire/appoint project staff, do not handle project procurement functions, and do not handle M&E activities, except providing oversight to those activities, according to the GEF Financial Procedures Agreements.

Specific Responsibilities (as part of the above responsibilities for the Project Board)

- Make sure that progress towards the outputs remains consistent from the supplier perspective;
- Promote and maintain focus on the expected project output(s) from the point of view of supplier management;
- Ensure that the supplier resources required for the project are made available;
- Contribute supplier opinions on Project Board decisions on whether to implement recommendations on proposed changes;
- Arbitrate on, and ensure resolution of, any supplier priority or resource conflicts.

- d. **Project Assurance:** UNDP performs the quality assurance role and supports the Project Board and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. UNDP provides a three – tier oversight services involving the UNDP Country Offices and UNDP at regional and headquarters levels. Project assurance is totally independent of the Project Management function. The project assurance role will be provided by the UNDP-GEF Regional Technical Advisor (RTA) on Water and Oceans from the UNDP Istanbul Regional Hub. Additional quality assurance will be provided by UNDP CO staff particularly the Team Leader for Environment, Climate and Disaster Resilience, relevant UNDP Programme Officers and Associates at the Regional and leading Country Office

247 Project Technical Lead: The Project Technical Lead has the authority to run the project on a day-to-day basis on behalf of the Project Board within the constraints laid down by the Board. The Project Technical Lead is responsible for day-to-day management and decision-making for the project. The Project Technical Lead's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

248 The Implementing Partner appoints the Project Technical Lead, who should be different from the Implementing Partner's representative in the Project Board.

249 Specific responsibilities include:

- Provide direction and guidance to project team(s)/ responsible party (ies);
- Liaise with the Project Board to assure the overall direction and integrity of the project;

- Identify and obtain any support and advice required for the management, planning and control of the project;
- Responsible for project administration;
- Plan the activities of the project and monitor progress against the project results framework and the approved annual workplan;
- Mobilize personnel, goods and services, training and micro-capital grants to initiative activities, including drafting terms of reference and work specifications, and overseeing all contractors' work;
- Monitor events as determined in the project monitoring schedule plan/timetable, and update the plan as required;
- Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments or reimbursement using the fund authorization and certificate of expenditures;
- Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
- Be responsible for preparing and submitting financial reports to UNDP on a quarterly basis;
- Manage and monitor the project risks initially identified and submit new risks to the project board for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log;
- Capture lessons learned during project implementation;
- Prepare the annual workplan for the following year; and update the Atlas Project Management module if external access is made available.
- Prepare the GEF PIR and submit the final report to the Project Board;
- Based on the GEF PIR and the Project Board review, prepare the AWP for the following year.
- Ensure the mid-term review process is undertaken as per the UNDP guidance, and submit the final MTR report to the Project Board.
- Identify follow-on actions and submit them for consideration to the Project Board;
- Ensure the terminal evaluation process is undertaken as per the UNDP guidance, and submit the final TE report to the Project Board;

250 National focal point institutions: For each participating country, the focal point institutions (relevant departments of ministries responsible for water affairs) have been involved in the project design. The stakeholder circle from these institutions and other relevant sector ministries will be involved in the project execution right from the inception phase. The primary objective is to ensure country ownership of the project and its results and contribute towards the sustainability beyond completion of the project.

251 National project focal person: There will be at least seven national project focal persons, one for each project country. In most cases this person is from a government Ministry or other institutions (e.g. the academia, research institutions). In some cases, there may two national focal person per participating country (e.g. in case where the country is dealing with two shared aquifers). The role of the national focal person is:

- Serve as liaison between the Project secretariat based at NBI and national bodies and national stakeholders as necessary
- Reach out to the potential stakeholders and partners to encourage participation and contribution to the project
- Ensures the member state country contribute to the project undertakings (data sharing, facilitation of meetings workshop, trainings etc.)
- Identify and liaise with ongoing national projects so as to create synergy, sharing information and build partnerships

252 Project extensions: The UNDP-GEF Executive Coordinator must approve all project extension requests. Note that all extensions incur costs and the GEF project budget cannot be increased. A single extension may be granted on an exceptional basis and only if the following conditions are met: one extension only for a project for a maximum of six months; the project management costs during the extension period must remain within the originally approved amount, and any increase in PMC costs will be covered by non-GEF resources; the UNDP Country Office oversight costs during the extension period must be covered by non-GEF resources.

IX. FINANCIAL PLANNING AND MANAGEMENT

253 The total cost of the project is USD 33,179,452. This is financed through a GEF grant of USD 5,329,452 to be administered by UNDP and USD 27,850,000 in parallel co-financing. UNDP, as the GEF Implementing Agency, is responsible for the execution of the GEF resources and the cash co-financing transferred to UNDP bank account only.

254 Confirmed co-financing: The actual realization of project co-financing will be monitored during the *mid-term review* and terminal evaluation process and will be reported to the GEF. Co-financing will be used for the following project activities/outputs:

Co-financing source	Co-financing type	Co-financing amount	Planned Co-financing Activities/Outputs	Risks	Risk Mitigation Measures
Government of Burundi	In kind	2,000,000	Staff time, data, office spaces, liaising with national project partners, communications	Medium – Maintaining government interest on project	Ensure through the project management that the project stays within the planed workplan, objectives
Government of Ethiopia	In kind	2,000,000	Staff time, data, office spaces, liaising with national project partners, communications	Medium – Maintaining government interest on project	Ensure through the project management that the project stays within the planed workplan, objectives
Government of Kenya	In kind	2,000,000	Staff time, data, office spaces, liaising with national project partners, communications	Medium – Maintaining government interest on project	Ensure through the project management that the project stays within the planed workplan, objectives
Government of Rwanda	In kind	2,000,000	Staff time, data, office spaces, liaising with national project partners, communications	Medium – Maintaining government interest on project	Ensure through the project management that the project stays within the planed workplan, objectives
Government of Sudan	In kind	3,000,000	Staff time, data, office spaces, liaising with national project partners, communications	Medium – Maintaining government	Ensure through the project management

				interest on project	that the project stays within the planed workplan, objectives
Government of Tanzania	In kind	2,000,000	Staff time, data, office spaces, liaising with national project partners, communications	Medium – Maintaining government interest on project	Ensure through the project management that the project stays within the planed workplan, objectives
Government of Uganda	In kind	3,000,000	Staff time, data, office spaces, liaising with national project partners, communications	Medium – Maintaining government interest on project	Ensure through the project management that the project stays within the planed workplan, objectives
UNDP	In kind	350,000	Shared information, staff time, PSC membership	Low	Partner
NBI	In kind	3,000,000	Technical oversight of activities, technical assistance and training in groundwater governance and management, national and international institutional reforms and updates, pilot coordination, training materials; office space; staff times.	Low	Implementing partner
GIZ-EU-BMZ	in kind	8,500,000	Data sharing, running projects (e.g environmental flow project, modelling wetlands project) which complement the current project	Low	Partner

255 Budget Revision and Tolerance: As per UNDP requirements outlined in the UNDP POPP, the project board will agree on a budget tolerance level for each plan under the overall annual work plan allowing the Project Technical Lead to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the Project Board. Should the following deviations occur, the Project Technical Lead and UNDP Country Office will seek the approval of the UNDP-GEF team to ensure accurate reporting to the GEF: a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more; b) Introduction of new budget items/or components that exceed 5% of original GEF allocation.

256 Any over expenditure incurred beyond the available GEF grant amount will be absorbed by non-GEF resources (e.g. UNDP TRAC or cash co-financing).

- 257 Audit: The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies on IGO implemented projects. Audit cycle and process must be discussed during the Inception workshop.
- 258 Project Closure: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP.⁸ All costs incurred to close the project must be included in the project closure budget and reported as final project commitments presented to the Project Board during the final project review. The only costs a project may incur following the final project review are those included in the project closure budget.
- 259 Operational completion: The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review Project Board meeting. **Operational closure must happen with 3 months of posting the TE report to the UNDP ERC.** The Implementing Partner through a Project Board decision will notify the UNDP Country Office when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP.
- 260 Transfer or disposal of assets: In consultation with the Implementing Partner and other parties of the project, UNDP programme manager (UNDP Resident Representative) is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the project board following UNDP rules and regulations. Assets may be transferred to the government for project activities managed by a national institution at any time during the life of a project. In all cases of transfer, a transfer document must be prepared and kept on file⁹. The transfer should be done before Project Management Unit complete their assignments.
- 261 Financial completion: The project will be financially closed when the following conditions have been met: a) The project is operationally completed or has been cancelled; b) The Implementing Partner has reported all financial transactions to UNDP; c) UNDP has closed the accounts for the project; d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).
- 262 The project will be financially completed within **6 months** of operational closure or after the date of cancellation. Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the UNDP-GEF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.
- 263 Refund to GEF: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the BPPS/GEF Directorate in New York. No action is required by the UNDP Country Office on the actual refund from UNDP project to the GEF Trustee.

⁸ see <https://info.undp.org/global/popp/ppm/Pages/Closing-a-Project.aspx>

⁹ See https://popp.undp.org/_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PPM_Project%20Management_Closing.docx&action=default.

WORK PLAN

0118810	Atlas Primary Output Project ID:	00115472
Enhancing Conjunctive Management of Surface and Groundwater Resources in Selected Transboundary Aquifers: Case Study for Selected Shared Groundwater Bodies in the Nile Basin		
GA10		
Enhancing Conjunctive Management of Surface and Groundwater Resources in Selected Transboundary Aquifers: Case Study for Selected Shared Groundwater Bodies in the Nile Basin		
783		
Nile Basin Initiative (NBI)		

Responsible Party/Atlas Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	See Budget Note:
NBI	62000	GEF	71200	International Consultants	41,287	81,287	81,287	82,787	5644	292,292	1
			71300	Local Consultants	40,000	90,000	90,000	95,000	0	315,000	2
			72100	Contractual services	0	50,000	50,000	50,000	0	150,000	3
			71600	Travel	16,396	68,792	51,327	51,327	17,466	205,307	4
			75700	Trainings/workshops	0	69,900	34,950	34,950	0	139,800	5
			72200	Equipment and furniture	0	52,500	31,500	0	0	84,000	6
			72500	Office supplies	3,000	0	0	0	0	3,000	7
			74500	Miscellaneous expenses	1,042	1,042	1,042	1,042	0	4,168	8
				sub-total GEF	101,725	413,521	340,106	315,106	23,109	1,193,568	
NBI	62000	GEF	71200	International Consultants	5,663	5,663	73,913	73,913	2,830	161,982	9
			71300	Local Consultants	0	0	78,750	78,750	0	157,500	10
			71600	Travel	0	0	46,125	46,125	0	92,250	11
			75700	Trainings/workshops	0	0	85,559	85,559	0	171,118	12
			72500	Office supplies	3,000	1,000	1000	2937	0	7,937	13
			74500	Miscellaneous expenses	2,000	2,000	2,000	2,000	0	8,000	14

GEF Component/Atlas Activity	Responsible Party/Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	See Budget Note:
resources conjunctive use					sub-total GEF	10,663	8,663	287,347	289,284	2,830	598,787	
COMPONENT 3: Targeted pilot projects to explore conjunctive use of surface and groundwaters, and links to biodiversity conservation and climate change adaptation	NBI	62000	GEF	71200	International Consultants	23,813	130,313	87,063	79,571	11,906	332,666	15
				71300	Local Consultants	0	45,000	22,500	22,500	0	90,000	16
				72100	Contractual services	43,036	804,776	423,906	208,725	0	1,480,443	17
				71600	Travel	8,468	20,740	20,740	20,946	5,397	76,291	18
				72600	Grants	0	42,000	42,000	21,000	0	105,000	19
				72200	Equipment and furniture	0	180,000	180,000	0	0	360,000	20
				75700	Trainings/workshops	26,000	26,000	26,000	26,000	0	104,000	21
				74500	Miscellaneous expenses	3,246	2,000	2,000	2,000	0	9,246	22
					sub-total GEF	104,563	1,250,829	804,209	380,742	17,304	2,557,646	
COMPONENT 4: Further strengthening capacity to address groundwater issues at the national and regional levels	NBI	62000	GEF	71200	International Consultants	4,031	9,281	9,281	4,031	2,016	28,640	23
				71300	Local Consultants	0	8,750	8,750	0	0	17,500	24
				72100	Contractual services	0	50,000	50,000	50,000	0	150,000	25
				71600	Travel	4,507	4,506	4,506	4,506	0	18,025	26
				75700	Trainings/workshops	51,994	51,994	51,994	49,978	0	205,960	27
				72200	Equipment and furniture	1,649	1,500	1,500	1,500	0	6,149	28
									sub-total GEF	62,181	126,031	126,031
COMPONENT 5: Communication and awareness raising including Knowledge management M and E	NBI	62000	GEF	71200	International Consultants	2,831	2,831	2,831	2,831	1,416	12,740	29
				71300	Local Consultants	12,500	12,500	12,500	12,500	0	50,000	30
				72100	Contractual services	0	26,666	26,667	26,667	0	80,000	31
				71600	Travel	4,151	4,151	4,151	4,151	0	16,604	32
				75700	Trainings/workshops	15,000	15,000	15,000	15,000	0	60,000	33
				72500	Office supplies	8,018	8,018	18,018	18,018	18,584	70,656	34
				74500	Miscellaneous expenses	3,200	2,194	2,000	2,000	0	9,394	35

GEF Component/Atlas Activity	Responsible Party/Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	See Budget Note:
					sub-total GEF	45,700	71,360	81,167	81,167	20,000	299,394	
Project management unit	NBI	62000	GEF	71800	Contractual Services- Imp Partner	51,041	51,041	24,000	24,000	24,000	174,082	36
				71600	Travel	10,500	13,800	14,500	9,118	7,500	55,418	37
				72500	Office supplies	5,283	5,000	6,000	4,000	4,000	24,283	38
					sub-total	66,824	69,841	44,500	37,118	35,500	253,783	
					PROJECT TOTAL	391,656	1,940,245	1,683,360	1,213,432	100,759	5,329,452	

Budget notes

Budget note number	Comments
1	Three international consultants for the three aquifer areas each contributing 45 days/aquifer for SADA consultancy, three international consultants provide input for 70days/aquifer for the modeling work, and pro rata allocation for cost of the project technical lead. International consultant daily rate of 700 USD. [700*3*45 +700*3*70 + 50,792 = 292,292 USD]
2	Fourteen national consultants (seven physical science, seven social science) input of 60 days each @ 250 USD/day for SADA work, and Seven national consultants (physical sciences) input of 60 days each at 250 USD/day for modelling work [14*60*250 + 7*60*250=315,000 USD]
3	Contractual service for database development company (cost including database development and populating the database with the data that shall be collected under SADA and Modelling works)
4	Five international consultants (three SADA, two Modelling) travel to the region three times over the project time, international ticket fee of 1,500 USD each/travel, plus daily travel allowance rate of 175 USD for 10 days stay during each visit, plus 21 national consultants (14 SADA, 7 Modelling) travel allowance of 75 USD for 10 days stay in the field and a total of three field visits, plus vehicle rental for a total of 210 field work days in the three aquifers at 150 USD/day including fuel [5*1,500*3 + 5*175*30 + 21 *75*30 +210*150*3= 190,500] plus additional 14,807 USD to be used Monitoring of indicators in project results framework by the PMU
5	Two local aquifer area workshop each for component 1 in each aquifer country (14 total local workshop) for 20 participants per workshop at ~ 33,600 USD total; plus two national workshop each for component 1 (14 national workshop) for 20 participants each at ~ 39,200 USD total, two regional workshops (@NBI) at ~67,000 USD total for 20 participants, including regional travel air-ticket [33,600+39,200+67,000= 139,800 USD]
6	Computers + water well monitoring devices, servers + external hard drives to be purchased locally for the geodatabase hosting and populating data approximate fee ~ 84,000 USD (12,000 USD/country)
7	Office supplies at NBI (papers, stationary etc)
8	Miscellaneous expenses ~ 4,168 USD/component 1
9	Three international consultants input of 65 days each per aquifer area for assisting aquifer countries with action plan development at 700 USD/day and and pro rata allocation for cost of the project technical lead. [3*65*700 + 25,482 = 161,982 USD]

Budget note number	Comments
10	Fourteen national consultants (2 per country, 7 physical science, 7 social science) each contributing 45 days at rate of 250 USD/day [14*45*250=157,500 USD]
11	Travel tickets for three international consultants @1,500 USD/flight, three travel per int consultant (9*1500) + three international consultants daily allowance @175 USD and total of 30 days over project life time (3*30*175) + fourteen national consultants (seven physical and seven social) field data collection field allowance @ 75 USD/day for a total of 30 days each in the field (=14*75*30) + field vehicle rental for a total of 210 field days in all aquifer areas and countries at 150 USD/day including fuel (150*210) [9*1,500 + 3*30*175 + 14*75*30 + 150*210 =92,250 USD]
12	Two local aquifer area workshop each for component 2 in each country (14 total local workshop) for 20 participants per workshop at~33,600 USD/workshop + two national workshops each for each country (14 total national workshop) at ~39,200 USD + 3 regional workshops for 22 participants at 68,000 USD [33,600+39,200+68,000=140,800 USD] plus additional 30,318 USD for inception workshop as required by M and E
13	Office supplies at NBI for component II activities
14	Miscellaneous expenses ~ 8,000 USD/component 2
15	Four international consultants each with 60 days per pilot project (assisting the members states in designing, the pilots, appraising the pilot projects and helping integrate the learnings into to ongoing programs [4*60*700=168,000 USD] plus additional fees of 20,000 for audit expert over a period of four years as per the M and E requirement, and additional 25,000 for Independent Mid-term Review (MTR) and management response as per the M and E requirement, and pro rata allocation for cost of the project technical lead.
16	Four national consultants input of 90 days each per pilot at rate of 250/day [4* 90* 250 = 90,000 USD]. These will mainly cover studies related to statutory requirements and requirements, ESMP/ESIA, and other FPIC requirements, among others
17	Contractual service- company. The budget is tentatively allocated as 600,000 USD for MAR; 508,843 USD for water fund; and 371,600 USD for RS monitoring. Exact allocation will be done once the project design is fully developed
18	Three international air ticket for four international consultants (12*1,500) + field allowance for 30 field days per pilot for four international consultants at rate of 175/day (30*175*4) + field allowance for national consultants at rate of 75/day for total of 30 field days per pilot (4*30*75) + car rental for a total of 120 field days for the four pilots at 150 USD/day including fuel (120*150) [12*1,500 + 4*30*175 + 4*30*75 +120*150 = 66,600 USD] plus additional fee of 10,291 USD for updating GEF tracking tool by PMU
19	Grant for civil society, non-governmental partners in other regional institutions (6,000 USD/country for year 2 and 3; 3,000 USD/year/country for year 4) – to help them to facilitate the piloting works, e.g. through mobilization of community, fulfilling hardware needs etc. The selection and implementation of all grants will be done in compliance with UNDP's Policy and Operational Guidance on Low-Value Grants.
20	Equipment and furniture such as field kits (~90,000 USD) plus laboratory reagents (~90,000 USD) plus groundwater monitoring devices (~ 90,000 USD) + remote sensing images (~90,000 USD), totaling 360,000 USD. Reimbursement will be made to the institution undertaking the pilots through NBI
21	One international/regional workshop each on the four pilot projects for 20 participants each at ~ 16,000 USD/workshop= 64,000 USD plus additional 40,000 USD for Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response as required by M and E
22	Miscellaneous expenses for component 3 ~ 9,246 USD
23	Three international consultants providing five days long training on three topics identified under component 4 at daily rate of 700 USD/day, and pro rata allocation for cost of the project technical lead. [3*700*5 + 18,140 = 28,640 USD]
24	Seven national consultants provide two trainings each with 5 days long on topics identified under component 4 at daily rate of 250 USD, two trainings per country [7*2*5*250 = 17,500 USD]
25	Contractual service for hosting visitor from the beneficiary country 5,357.142857 USD/visitor, 28 total visitors = 150,000 USD. Host institutions are supposed to be based in North (e.g. UNESCO IHE, other river basin commissions e.g. the Danube River Basin Commission etc.)
26	Three international consultants' international ticket (1,500*3 + field allowance of 175 USD for five days each (175*3*5) = 8,025 USD plus additional 10,000 USD for terminal

Budget note number	Comments
	GEF Tracking Tool to be updated as required by M and E
27	Seven national workshops for academics and government agencies each for about 20 beneficiaries workshop length of three days estimated at (total) 48,300 USD + travel allowance and ticket for 35 exchange visitors from within the beneficiary countries estimated at ~ 86,620 USD + three regional workshops on groundwater governance IW etc estimated at 71,040 USD. Total fee =205,960 USD
28	Equipment and furniture such as training materials, training manual preparation etc estimated at~ 6,149 USD
29	Pro rata budget to cover cost of Project Technical Lead [USD 12,740]
30	Lumpsum for consultants advising on packing of key messages and content preparation
31	Contract to hire companies example Video production company/ documentary production estimated at 75,000 USD and additional 5,000 for Translation of MTR and TE reports into English and per the M and E requirement
32	Lessons learned and knowledge generation activities by PMU as per M and E budget requirement
33	Project Board meetings/Project steering committee meetings as per the M and E requirement
34	Office supplies- printing materials, papers, CDs, internet, camera etc
35	Miscellaneous expenses for component 5
36	Contractual Services-Imp Partner. Project support costs for Procurement Assistant to be employed by NBI for first 2.5 years at USD 27,041 USD p.a, Finance and Admin Assistant to be mobilized on part time (on call) basis to support NBI finance team during critical periods at 12,000 USD p.a. and Services of Project Technical Lead covering project administration costs equivalent to 20% of the total cost (USD 60,000/year) with the rest covered under components 1 to 5.
37	Local or international travel fee for PMU for reconnaissance field visits to the aquifers areas for getting used to the project areas and filling baseline information gaps prior to inception, regular monitoring and coordination meetings between NBI Centers (Secretariat at Entebbe, NELSAP in Kigali and ENTRO in Addis Ababa) and for local travel expenses
38	Office supplies for PMU at NBI lumpsum

Summary of funds ¹¹

	Amount	Amount	Amount	Amount	Amount	Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
GEF	391,656	1,940,245	1,683,360	1,213,432	100,759	5,329,452
Government of Burundi	400,000	400,000	400,000	400,000	400,000	2,000,000
Government of Ethiopia	400,000	400,000	400,000	400,000	400,000	2,000,000
Government of Kenya	400,000	400,000	400,000	400,000	400,000	2,000,000

¹¹ Summary table should include all financing of all kinds: GEF financing, co-financing, cash, in-kind, etc...

Government of Rwanda	400,000	400,000	400,000	400,000	400,000	2,000,000
Government of Sudan	600,000	600,000	600,000	600,000	600,000	3,000,000
Government of the United Republic of Tanzania	400,000	400,000	400,000	400,000	400,000	2,000,000
Government of Uganda	600,000	600,000	600,000	600,000	600,000	3,000,000
UNDP	70,000	70,000	70,000	70,000	70,000	350,000
NBI	600,000	600,000	600,000	600,000	600,000	3,000,000
GIZ-BMZ-EU *	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000	8,500,000
TOTAL	5,961,656	7,510,245	7,253,360	6,783,432	5,670,759	33,179,452

* Co-financing letter from GIZ-BMZ-EU indicates support of 7 500 000 Euro; exchange rate 0.88235 was used for conversion to 8 500 000 USD

XI. LEGAL CONTEXT

264 This project forms part of an overall programmatic framework under which several separate associated country level activities will be implemented. When assistance and support services are provided from this Project to the associated country level activities, this document shall be the “Project Document” instrument referred to in: (i) the respective signed SBAs for the specific countries; or (ii) in the [Supplemental Provisions to the Project Document](#) attached to the Project Document in cases where the recipient country has not signed an SBAA with UNDP, attached hereto and forming an integral part hereof. All references in the SBAA to “Executing Agency” shall be deemed to refer to “Implementing Partner.”

265 This project will be executed by **Nile Basin Initiative** (“Implementing Partner”) in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

266 The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations or UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

XII. RISK MANAGEMENT

267 Consistent with the Article III of the SBAA [*or the Supplemental Provisions to the Project Document*], the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP’s property in the Implementing Partner’s custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:

- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- b) assume all risks and liabilities related to the Implementing Partner’s security, and the full implementation of the security plan.

268 UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner’s obligations under this Project Document and the Project Cooperation Agreement between UNDP and the Implementing Partner¹².

269 The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.

¹² Use bracketed text only when IP is an NGO/IGO

270 The Implementing Partner acknowledges and agrees that UNDP will not tolerate sexual harassment and sexual exploitation and abuse of anyone by the Implementing Partner, and each of its responsible parties, their respective sub-recipients and other entities involved in Project implementation, either as contractors or subcontractors and their personnel, and any individuals performing services for them under the Project Document.

(a) In the implementation of the activities under this Project Document, the Implementing Partner, and each of its sub-parties referred to above, shall comply with the standards of conduct set forth in the Secretary General's Bulletin ST/SGB/2003/13 of 9 October 2003, concerning "Special measures for protection from sexual exploitation and sexual abuse" ("SEA").

(b) Moreover, and without limitation to the application of other regulations, rules, policies and procedures bearing upon the performance of the activities under this Project Document, in the implementation of activities, the Implementing Partner, and each of its sub-parties referred to above, shall not engage in any form of sexual harassment ("SH"). SH is defined as any unwelcome conduct of a sexual nature that might reasonably be expected or be perceived to cause offense or humiliation, when such conduct interferes with work, is made a condition of employment or creates an intimidating, hostile or offensive work environment.

271 (a) In the performance of the activities under this Project Document, the Implementing Partner shall (with respect to its own activities), and shall require from its sub-parties referred to in paragraph 4 (with respect to their activities) that they, have minimum standards and procedures in place, or a plan to develop and/or improve such standards and procedures in order to be able to take effective preventive and investigative action. These should include: policies on sexual harassment and sexual exploitation and abuse; policies on whistleblowing/protection against retaliation; and complaints, disciplinary and investigative mechanisms. In line with this, the Implementing Partner will, and will require that such sub-parties will take all appropriate measures to:

- Prevent its employees, agents or any other persons engaged to perform any services under this Project Document, from engaging in SH or SEA;
- Offer employees and associated personnel training on prevention and response to SH and SEA, where the Implementing Partner and its sub-parties referred to in paragraph 4, have not put in place its own training regarding the prevention of SH and SEA, the Implementing Partner and such sub-parties may use the training material available at UNDP;
- Report and monitor allegations of SH and SEA of which the Implementing Partner and its sub-parties referred to in paragraph 4 have been informed or have otherwise become aware, and status thereof;
- Refer victims/survivors of SH and SEA to safe and confidential victim assistance; and
- Promptly and confidentially record and investigate any allegations credible enough to warrant an investigation of SH or SEA. The Implementing Partner shall advise UNDP of any such allegations received and investigations being conducted by itself or any of its sub-parties referred to in paragraph 4 with respect to their activities under the Project Document, and shall keep UNDP informed during the investigation by it or any of such sub-parties, to the extent that such notification (i) does not jeopardize the conduct of the investigation, including but not limited to the safety or security of persons, and/or (ii) is not in contravention of any laws applicable to it. Following the investigation, the Implementing Partner shall advise UNDP of any actions taken by it or any of the other entities further to the investigation.

272 b) The Implementing Partner shall establish that it has complied with the foregoing, to the satisfaction of UNDP, when requested by UNDP or any party acting on its behalf to provide such confirmation. Failure of the Implementing Partner, and each of its sub-parties referred to in paragraph 4, to comply of the foregoing, as determined by UNDP, shall be considered grounds for suspension or termination of the Project.

- 273 Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses>) and related Accountability Mechanism (<http://www.undp.org/secu-srm>).
- 274 The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.
- 275 As this project is overall High Risk, an Environmental and Social Impact Assessment (ESIA), leading to an Environmental and Social Management Plan (ESMP), will be carried out at the start of project implementation before the relevant activities can begin. Amongst other aspects, this work will expand the current Stakeholders Engagement Plan; update the Gender Action Plan; establish a project-level Grievance Redress Mechanism (GRM); and determine FPIC requirements.
- 276 All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.
- 277 The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using the UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.
- 278 The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.
- 279 In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP programmes and projects. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.
- 280 The Implementing Partner will promptly inform UNDP in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.
- 281 Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

- 282 UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement.
- 283 Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.
- 284 *Note:* The term “Project Document” as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with the Implementing Partner, responsible parties, subcontractors and sub-recipients.
- 285 Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.
- 286 Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.
- 287 The Implementing Partner shall ensure that all of its obligations set forth under this section entitled “Risk Management Standard Clauses” are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled “Risk Management” are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

XIII. MANDATORY ANNEXES

- A. Multiyear Workplan
- B. GEF Tracking Tool (s) at baseline – provided separately
- C. Terms of Reference for Project Board, Project Technical Lead, Chief Technical Advisor and other positions as appropriate
- D. UNDP Social and Environmental and Social Screening Template (SESP) - provided separately
- E. Stakeholder Engagement Plan – provided separately
- F. Gender Analysis and Action Plan - provided separately
- G. UNDP Risk Log – provided separately
- H. Co-financing letters – provided separately
- I. Results of the capacity assessment of the project implementing partner - provided separately

Annex A: Multi Year Work Plan

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Component 1: Furthering knowledge and understanding about availability of groundwater resources in the selected aquifers underlying watersheds in the sub-basins of the Eastern Nile and the Nile Equatorial Lakes.																		
Output 1.1: Shared aquifers diagnostic analysis reports for all selected shared aquifers	SADA report	NBI																
Activity 1.1.1. Establishing liaison with National Focal Institution and with National Focal Person and <u>verifying/updating the final list of all stakeholders in the stakeholders engagement plan</u>			x															
Activity 1.1.2. Recruiting national and international consultants who perform the production of SADA reports for the three shared aquifers			x															
Activity 1.1.3. Deploying national and international consultants to conduct of inventory of existing data, field data gathering and conduction of aquifer level consultation					x													
Activity 1.1.4. Desktop based and field data collection by national and international consultants factoring gender disaggregated data collection approaches						x	x	x	x	x	x							
Activity 1.1.5. Conduct of workshops/trainings. Conduct two aquifer level workshops in the aquifer area in each country (14 total aquifer area workshops) involving local stakeholders (farmers, pastoralists, etc). Conduct two national level workshops involving national and regional stakeholders (a total of 14 national workshops). Conduct two regional workshops (at NBI or at agreed up location). Gender balance has to be							x		x			x						

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
observed																		
Activity 1.1.6. Production (completion) of SADA report that encompass physical and socio-economic (including gender) aspect of the shared aquifers by national and international consultants											X							
Output 1.2. A regional groundwater knowledgebase for all shared aquifers	Regional harmonized geodatabase	NBI																
Activity 1.2.1. Identification and contracting of a local or an international firm for establishing geodatabase system					X	X												
Activity 1.2.2. Aquifer inventory and characterization, with the leadership of an international/local firm with experience on database development; (inventory to be performed in close collaboration and engagement with aquifer level, national and regional stakeholders and partners)							X	X	X	X	X	X	X					
Output 1.3. Water balance modelling of the selected aquifers with quantified: recharge, outflows	Aquifer model with Scenarios	NBI																
Activity 1.3.1. Identification and contracting of groundwater local and international consultants (modelers)					X	X												
Activity 1.3.2. Construction of conceptual and numerical groundwater model by team of national and international consultants (identification of consultants to be done in the first quarter).						X	X	X	X	X	X	X	X	X	X	X	X	X
Output 1.4: Projection of groundwater availability and use under climate change for selected aquifers		NBI																

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Activity 1.4.1. Running the numerical model under different socio economic and climate scenarios with year 2050 in the horizon (identification of consultants to be done in the first quarter) (same consultant conduction output 1.3 will be tasked for this activity) (Scenarios to be built will include socio economic aspect (including gender considerations).															X	X	X	X
Component 2: Development of action plans on groundwater resources governance, management, and protection for inclusion in national, sub-basin frameworks: – also including consideration of surface water/groundwater resources conjunctive use																		
Output 2.1. Regional Shared Aquifers Integrated Management Action Plan for strengthening cooperative management and utilization of the selected shared aquifers will be developed.	Monitoring guideline, manual and guides for SW GW	NBI																
Activity 2.1.1. Establishing liaison with National Focal Institution and with National Focal Person and <u>preparing/updating the final list of all stakeholders</u>	conjunctive use, institutional mechanism proposal,			X														
Activity 2.1.2. Recruiting national and international consultants who lead the production of action plan documents (manuals, guidelines) reports for the three shared aquifers	groundwater protection measures				X	X												
Activity 2.1.3. Deploying national and international consultants for conduction of inventory of existing data, field data gathering and conduction of aquifer level data collection						X	X											
Activity 2.1.4. Review for the updating of groundwater monitoring practices, surface water groundwater conjunctive use practices, current institutional arrangement at local and national levels pertaining to the shared aquifers and make an inventory of groundwater dependent aquatic ecosystem. [considering gender disaggregated data							X	X										

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
collection procedures]																		
Activity 2.1.5. Conduct of workshops/trainings (content to be delivered by consultants, coordination by NBI, National Focal Institutions and Nation Focal Person). Conduct two aquifer level workshops in the aquifer area in each country (14 total aquifer area workshops) involving local stakeholders (farmers, pastoralists, etc). Conduct two national level workshops involving national and regional stakeholders (a total of 14 national workshops). Conduct two regional workshops (at NBI or at agreed up location) involving the seven countries. [Observing gender balance in all the events]							X				X			X				X
Activity 2.1.6. Preparation of action plan document for improving groundwater monitoring, technical manuals and guides for conjunctive use of surface water and groundwater and recommendation of institutional mechanism. [consider including gender aspect in the action plans]														X	X	X	X	
Output 3.1: Technical guide on integration of groundwater aspects in NBI's subsidiary action programs for the selected sub-basins targeting key activities	Guidance manuals	NBI																
Activity 3.1.1. Identification of programs within the subsidiary action programs for integration of groundwater aspect by team of national and international consultants [same consultants hired under output 2.1 will be deployed for output 3.1]										X	X	X	X					
Activity 3.1.2. Preparation of technical guide for groundwater integration in NBI SAs by consultants hired under component 2														X	X	X	X	

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Component 3: Targeted pilot projects to explore conjunctive use of surface and ground waters, and links to biodiversity conservation and climate change adaptation																		
Output 4.1: Up to 5 pilots illustrating appropriate innovative techniques for sustainable conjunctive use of groundwater and surface water resources	Pilots on MAR, Use of Isotopes, Water fund, RS for monitoring	NBI																
Activity 4.1.1. Preparation stage activity- (collaboratively agreeing on the specific geography/site of the pilot actions (with thorough consultation of stakeholders) and agreeing on the final list of stakeholders. Identification of consultant providing technical backstopping will be done under this activity. Some pilots, especially the one on Managed Aquifer Recharge and the one on Water Fund will involve community level activities that may have potential impacts (positive or negative) impacts on Indigenous Peoples. A reconnaissance visit shall be carried out to all 3 aquifer areas during the inception phase. The purposes of the reconnaissance visit are a) to get a better acquaintance of the project areas b) to fill any gaps in the baseline situation for all the project components with particular emphasis on the socio-economic and environmental aspects, c) to visit the proposed pilot sites and conduct assess opportunities and challenges to be factored into detailed planning of the pilot actions, and d) to validate and update the list of stakeholders for the pilot actions. In addition, consultations shall be made with representatives on indigenous people in the aquifer areas that may be affected (positively or negatively) by pilot project activities and where necessary an Indigenous Peoples Plan shall be prepared for the relevant pilot project, including measures for FPIC (as needed), in event that the project activities are determined to have potential impacts (positive or negative) on indigenous peoples as				x														

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4				
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
per UNDP SES guidance and standards. The agreed measures will be incorporated in the pilot designs and their implementation will be monitored throughout the project implementation.)																			
Activity 4.1.2. Pilot detailed design activity- (Preparation of detailed design by the national and international consultants (specification of the pilot in terms specific objectives, goals, logistics need, scale of activity etc; preparation of detailed budget breakdown; preparation monitoring design; identification of instrumentation needs.In addition pilot level ESMP and ESIA shall be prepared at this stage including security assessments and other FPIC procedures. The designs will incorporate recommendations of the indigenous peoples plan as defined above. No risk-causing activities can start until the ESMP is in place)					X														
Activity 4.1.3. Pilot implementation activity (Undertaking pilot implementation as specified above with follow up technical support provided by the consultants and PMU)						X	X	X	X	X	X	X	X	X	X	X	X	X	
Activity 4.1.4. M and E activity- (NBI and the PMU assessment of progress and performance at mid-term to allow for any adaptive management changes)										X	X								
Activity 4.1.5. Capturing lessons learned- (Results and lessons learnt of pilot demonstrations will captured by the international consultants as by the contractors under this activity). [NB: the report will serve as input to output 5.1.]														X	X	X	X		
Output 5.1: Scaling up strategy of the pilots (use same consultants recruited under output 4.)	Piloting strategy for integration of pilots into operational IWRM	NBI																	
Activity 5.1.1: Developing sustainability plan by the consultants (hired under output 4.1) for pilot actions considering exist strategy continuity															X	X	X	X	
Activity 5.1.2: Identifying potential sites for replication within the upper Nile regions by the															X	X	X	X	

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4				
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
consultants and NBI																			
Activity 5.1.3. Identifying potential national and regional programs, processes, projects for upscaling by the consultants and NBI															X	X	X	X	
Activity 5.1.4: Preparation of upscaling strategy by the consultants hired under output 4.1 (lessons learned, results of activity 5.1.3, the strategy shall factor potential donors, local / national /regional /international partners, IWRM strategies)															X	X	X	X	
Component 4: Further strengthening capacity to address groundwater issues at the national and regional levels																			
Output 6.1. Relevant national agencies, academics and NBI/LVBC representatives receive training	Capacity building and training on specified contents	NBI																	
Activity 6.1.1. Identification of beneficiaries carried at national and regional level (including sex-disaggregated data collection and assessment) [Gender balance will be observed]				X	X														
Activity 6.1.2. Preparation of training material and modules for trainers, decision-makers, NGOs, water users (farmers, women’s groups) by national and international consultants.						X	X												
Activity 6.1.3. Training modules carried out at national and regional levels on a) Ground water assessment using ground based and remote sensing data sources, b) Hydrogeology and ground water recharge estimation, c) Ground water modelling, d) Aquifer mapping and e) Planning and implementing Managed Aquifer Recharge						X	X	X	X	X	X	X	X	X	X	X	X	X	X
Activity 6.1.4: Dissemination of training material and training outcomes by NBI PMU															X	X	X	X	
Output 7.1. Targeted knowledge exchange programs and processes, including South-	Number of exchange	NBI																	

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
South cooperation, visits, exchanges	visits																	
<i>Activity 7.1.1.</i> Identification of beneficiaries (gender balanced) carried at national and regional level, identification of host institutions within the Nile region and globally outside the Nile region					X	X	X	X										
<i>Activity 7.1.2.</i> Preparation exchange visit programs and plans. [Gender balance will be observed]					X	X	X	X	X	X	X	X						
<i>Activity 7.1.3.</i> Conduct exchange programs																		
Output 7.2. Targeted training at various administrative levels in groundwater governance and management, applying the recommendations contained in the Framework for Action on Groundwater Governance (GEF/FAO/UNESCO/WB/IAH).	Training on specified contents	NBI																
<i>Activity 7.2.1.</i> Identification of beneficiaries carried at national and regional level (including sex-disaggregated data collection and assessment)					X	X												
<i>Activity 7.2.2.</i> Preparation of training material and modules for trainers, decision-makers, NGOs, water users (farmers, women’s groups) by national and international consultants.							X	X	X	X								
<i>Activity 7.2.3.</i> Training modules carried out at national and regional levels on a) groundwater governance, b) conjunctive surface groundwater management and protection, c) water and gender for the promotion of gender equality and women empowerment, and on the collection of gender disaggregated data using the UNESCO WWAP Toolkit							X	X	X	X	X	X	X	X	X			
<i>Activity 7.2.3:</i> Dissemination of material and training outcomes by NBI PMU												X	X	X	X	X	X	X

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Component 5: Communications and awareness raising																		
Output 8.1. Up to 5 communication and awareness raising products generated and disseminated to national stakeholders through NBI communication platforms	Number of products communicated	NBI																
<i>Activity 8.1.1.</i> Identification of communication products from among the project component activities			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Activity 8.1.2.</i> Identification of knowledge dissemination platforms			X	X	X	X	X	X	X	X	X	X						
<i>Activity 8.1.3.</i> Preparation of knowledge materials in appropriate formats (websites, Facebook) (local or international consultants to be deployed for this activity).			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Activity 8.1.4:</i> Dissemination of knowledge material by PMU			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Output 8.2. A video documentary prepared by NBI to raise awareness on role of groundwater – surface water conjunctive use in integrated water resources management in selected sub-basins	Video	NBI																
<i>Activity 8.2.1.</i> Identification by PMU of topics for video documentary									X	X	X	X						
<i>Activity 8.2.2.</i> Preparation of contract document by PMU to recruit video production company (local or international)									X	X	X	X						
<i>Activity 8.2.3.</i> Preparation of video documentary by a local or international contractor												X	X	X	X	X	X	
Output 9.1: Information leaflets and guidance on groundwater issues prepared for different groups of stakeholders	Number of leaflets and guidance notes disseminated	NBI																

Output	Indicator	Responsible Party	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	to stakeholders																	
Project Management																		
Inception meeting, PSC, and final meeting			x				x				x				x			x
Mid-term GEF Tracking Tool updating										x	x							
Independent Mid Term Review (MRT)											x	x						
Terminal GEF Tracking Tool updating																	x	x

Annex B: GEF Tracking Tool at baseline (provided separately)

Annex C: Terms of Reference

Terms of Reference for the Project Board/Project Steering Committee

The Project Board (PB) (Project Steering Committee) will serve as the project's decision-making body. It will meet according to necessity, at least once each year, to review project progress, approve project work plans and approve major project deliverables. The PB (PCA) is responsible for providing the strategic guidance and oversight to project implementation to ensure that it meets the requirements of the approved Project Document and achieves the stated outcomes. The PB's role will include:

- Provide strategic guidance to project implementation;
- Ensure coordination between various donor funded and government funded projects and programmes;
- Ensure coordination with various government agencies and their participation in project activities;
- Approve annual project work plans and budgets, at the proposal of the Project Technical Lead;
- Approve any major changes in project plans or programmes;
- Oversee monitoring, evaluation and reporting in line with GEF requirements;
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project;
- Negotiate solutions between the project and any parties beyond the scope of the project;
- Ensure that UNDP Social and Environmental Safeguards Policy is applied throughout project implementation; and, address related grievances as necessary.

These terms of reference will be finalized during the Project Inception Workshop.

Terms of Reference for Key Project Staff

Project Technical Lead

(Full-time, project hired)

Background

The Project Technical Lead (PTL) has a dual role. Primarily the PTL is responsible to provide technical leadership during conceptualization, planning, design, and implementation of all project components (80 % of staff time). In addition to being the senior technical lead, the PTL will be responsible for the overall management of the Project, including the mobilisation of all project inputs, supervision over project staff, consultants and sub-contractors (20 % of staff time).

The PTL will be recruited by NBI from the Nile Basin region following UNDP procurement procedure, with input to the selection process from the Project partners. The position will be appointed by the NBI as the project implementing agency (i.e. in GEF terminology: GEF executing agency) and funded entirely from the Project.

The PTL will report to the PD in close consultation with the assigned UNDP Programme Manager for all of the Project's substantive and administrative issues. From the strategic point of view of the Project, the PTL will report on a periodic basis to the Project Board, based on the PD's instruction. Generally, the PTL will

support the PD who will be responsible for meeting NBI's obligations under the Project, under the IGO execution modality. The PTL will perform a liaison role with the government, UNDP and other UN agencies, CSOs and project partners, and maintain close collaboration with other donor agencies providing co-financing. The PTL will work closely with the Project Implementation Unit Coordinators.

Duties and Responsibilities

A. Technical execution of the project related duties:

- a) Provide technical expertise and oversight in the execution of the project components;
- b) Liaise with national focal point institutions in participating countries to source data on the shared aquifers;
- c) Provide guidance and technical oversight in the execution of the shared aquifer diagnostic analysis, including, quality control and validation of technical content of the study report, mobilization of stakeholder inputs from the participating countries;
- d) Provide technical oversight in the preparation of the aquifer water balance models and projection of groundwater availability in the selected aquifers under climate change and projected socio-economic scenarios;
- e) Supervise the creation of the Nile Basin groundwater knowledgebase that covers all collected data under the project – covering ground based as well as remote sensing based;
- f) Provide expertise and supervision in the preparation of shared aquifers integrated management action plans; present and defend the final actions plans to solicit their approval by participating countries;
- g) Working closely with NBI's technical staff, oversee the integration of groundwater data collected and model developed in the project into the Nile Basin Decision Support System (NB DSS)
- h) Plan, initiate, and oversee the development of the project website and its integration within the NBI integrated knowledge portal (IKP).
- i) Working closely with NBI's Subsidiary Action Programs (SAPs), identify key activities of the SAPs into which groundwater aspects need to be integrated; supervise the formulation of technical guide for integration of groundwater aspects into these activities of the SAPs;
- j) Provide technical oversight and expertise in the detailed design of pilot projects;
- k) Identify relevant regional and international experiences in areas of selected pilot projects and organize cross-learning events (exchange visits, workshops with invited speakers from other regions, etc) for relevant stakeholders from participating countries;
- l) Supervise the implementation of pilot projects;
- m) Prepare scaling-up and mainstreaming strategy to ensure the interventions in the pilot projects are taken up by government agencies in the participating countries;
- n) With the support of consultants as needed, carry out training needs assessment and supervise the preparation of training modules targeting various categories of stakeholders
- o) Supervise the preparation for and conduct of trainings through various channels/media
- p) Develop concept notes, policy briefs, factsheets and other write-ups to communicate key findings of the project with stakeholders in the participating countries and NBI governance;
- q) Prepare briefing materials and presentations to update NBI governance on project progress, findings and implications in integrated management and utilization of surface and groundwater resources in the Nile Basin;

- r) Oversee the preparation of communication products and effective use of communication channels to reach out to relevant stakeholders within the Nile Basin and beyond;
- s) Oversee the exchange and sharing of experiences and lessons learned with relevant community based integrated conservation and development projects nationally and internationally.
- t) Build partnership with relevant regional/international agencies (e.g. IGAD, the SADC Groundwater Management Institute, the International Groundwater Research Center) to enhance learning collaboration

B. Project management related duties

- a) Supervise and coordinate the work of all project staff, consultants and sub-contractors ensuring timing and quality of outputs.
- b) Plan the activities of the project and monitor progress against the approved work-plan.
- c) Develop terms of reference for and lead the procurement of consultants and service providers
- a) Coordinate all project inputs and ensure that they adhere to UNDP procedures for nationally executed projects.
- b) Coordinate the recruitment and selection of project personnel, consultants and sub-contracts, including drafting terms of reference and work specifications and overseeing all contractors' work.
- c) Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments, or reimbursement using the UNDP provided format.
- d) Prepare, revise and submit project work and financial plans, as required by Project Board and UNDP.
- e) Monitor financial resources and accounting to ensure accuracy and reliability of financial reports, submitted on a quarterly basis.
- f) Manage and monitor the project risks initially identified and submit new risks to the project board for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log.
- g) Liaise with UNDP, Project Board, relevant government agencies, and all project partners, including donor organisations and CSOs for effective coordination of all project activities.
- h) Facilitate administrative support to subcontractors and training activities supported by the Project.
- i) Oversee and ensure timely submission of the Inception Report, Project Implementation Report, Technical reports, quarterly financial reports, and other reports as may be required by UNDP, GEF and other oversight agencies.
- j) Disseminate project reports and respond to queries from concerned stakeholders.
- k) Report progress of project to the steering committees, and ensure the fulfilment of PSC directives.
- l) Assist community groups, municipalities, CSOs, staff, students and others with development of essential skills through training workshops and on the job training thereby increasing their institutional capabilities.
- m) Encourage staff, partners and consultants such that strategic, intentional and demonstrable efforts are made to actively include women in the project, including activity design and planning, budgeting, staff and consultant hiring, subcontracting, purchasing, formal community governance and advocacy, outreach to social organizations, training, participation in meetings; and access to program benefits.
- n) Assists and advises the Project Implementation Units responsible for activity implementation in the target sites.
- o) Carry regular, announced and unannounced inspections of all sites and the activities of the Project Implementation Units.

Required skills and expertise

- A university degree (MSc or PhD) in hydro-geology, groundwater management or closely related fields.
- At least 10 years of experience in groundwater management, groundwater exploration or development;
- At least 5 years of demonstrable project/programme management experience.
- At least 5 years of experience working with ministries, national or provincial institutions that are concerned with natural resource and/or environmental management.

Competencies

- Strong leadership, managerial and coordination skills, with a demonstrated ability to effectively coordinate the implementation of large multi-stakeholder projects, including financial and technical aspects.
- Ability to effectively manage technical and administrative teams, work with a wide range of stakeholders across various sectors and at all levels, to develop durable partnerships with collaborating agencies.
- Ability to administer budgets, train and work effectively with counterpart staff at all levels and with all groups involved in the project.
- Ability to coordinate and supervise multiple Project Implementation Units in their implementation of technical activities in partnership with a variety of subnational stakeholder groups, including community and government.
- Strong drafting, presentation and reporting skills.
- Strong communication skills, especially in timely and accurate responses to emails.
- Strong computer skills, in particular mastery of all applications of the MS Office package and internet search.
- Strong knowledge about the political and socio-economic context related to the Indonesian protected area system, biodiversity conservation and law enforcement at national and subnational levels.
- Excellent command of English and local languages.

Project Monitoring and Evaluation Officer

(Existing staff at NBI, NBI's in-kind contribution to the project; approximately 15 percent of staff time)

Under the overall supervision and guidance of the Project Technical Lead, the M&E Officer will have the responsibility for project monitoring and evaluation. The M&E Officer will work closely with the Communications Officer on knowledge management aspects of the project. Specific responsibilities will include:

- Monitor project progress and participate in the production of progress reports ensuring that they meet the necessary reporting requirements and standards;
- Ensure project's M&E meets the requirements of the Government, the UNDP Country Office, and UNDP-GEF; develop project-specific M&E tools as necessary;
- Oversee and ensure the implementation of the project's M&E plan, including periodic appraisal of the Project's Theory of Change and Results Framework with reference to actual and potential project progress and results;
- Oversee/develop/coordinate the implementation of the stakeholder engagement plan;
- Oversee and guide the design of surveys/ assessments commissioned for monitoring and evaluating project results;

- Facilitate mid-term and terminal evaluations of the project; including management responses;
- Facilitate annual reviews of the project and produce analytical reports from these annual reviews, including learning and other knowledge management products;
- Support project site M&E and learning missions;
- Visit project sites as and when required to appraise project progress on the ground and validate written progress reports.

The Project M& E Officer will be recruited based on the following qualifications

- Masters degree, preferably in the field of environmental or natural resources management;
- At least five years of relevant work experience preferably in a project management setting involving multi-lateral/ international funding agency. Previous experience with UN project will be a definite asset;
- Significant experience in collating, analyzing and writing up results for reporting purposes;
- Very good knowledge of results-based management and project cycle management, particularly with regards to M&E approach and methods. Formal training in RBM/ PCM will be a definite asset;
- Knowledge and working experience of the application of gender mainstreaming in international projects;
- Understanding of biodiversity conservation, law enforcement, sustainable livelihoods and associated issues;
- Very good inter-personal skills;
- Proficiency in computer application and information technology.
- Excellent language skills in English (writing, speaking and reading) and in local languages.

Project Gender Officer

(Existing staff (Communication and Stakeholder engagement specialist); NBI's in-kind contribution to the project; approximately 15 percent of staff time)

Under the overall supervision and guidance of the Project Technical Lead, the Gender Officer will have the responsibility for the implementation of the Gender Action Plan. The Gender Officer will work closely with the M&E Officer, Safeguards Officer and Communications Officers on related aspects of project implementation, reporting, monitoring, evaluation and communication. Specific responsibilities will include:

- Monitor progress in implementation of the project Gender Action Plan ensuring that targets are fully met and the reporting requirements are fulfilled;
- Oversee/develop/coordinate implementation of all gender-related work;
- Review the Gender Action Plan annually, and update and revise corresponding management plans as necessary;
- Work with the M&E officer and Safeguards Officer to ensure reporting, monitoring and evaluation fully address the gender issues of the project;

The Project Gender Officer will be recruited based on the following qualifications:

- Master's degree in gender studies, gender and development, environment, sustainable development or closely related area.

- Demonstrated understanding of issues related to gender and sustainable development; at least 5 years of practical working experience in gender mainstreaming, women’s empowerment and sustainable development in relevant Country/Region/Area of Work;
- Proven experience in gender issues in Country/Region/Area of Work
- Previous experience with UN projects will be a definite asset;
- Demonstrated understanding of the links between sustainable development, social and gender issues;
- Experience in gender responsive capacity building;
- Experience with project development and results-based management methodologies is highly desired/required;
- Excellent analytical, writing, advocacy, presentation, and communications skills.
- Excellent language skills in English (writing, speaking and reading) and in local languages.

Project Assistant

Under the guidance and supervision of the Project Technical Lead, the Project Assistant will carry out the following tasks:

- Assist the Project Technical Lead in day-to-day management and oversight of project activities;
- Assist the M&E officer in matters related to M&E and knowledge resources management;
- Assist in the preparation of progress reports;
- Ensure all project documentation (progress reports, consulting and other technical reports, minutes of meetings, etc.) are properly maintained in hard and electronic copies in an efficient and readily accessible filing system, for when required by PB, TAC, UNDP, project consultants and other PMU staff;
- Provide PMU-related administrative and logistical assistance.

The Project Assistant will be recruited based on the following qualifications:

- A Bachelors degree or an equivalent qualification;
- At least three years of work experience preferably in a project involving biodiversity conservation, natural resource management and/or sustainable livelihoods. Previous experience with UN project will be a definite asset;
- Very good inter-personal skills;
- Proficiency in the use of computer software applications especially MS Word and MS Excel.
- Excellent language skills in English (writing, speaking and reading) and in local languages

Project Accountant

(Existing staff at NBI; NBI’s in-kind contribution; approx. 20 percent of staff time)

Under the guidance and supervision of the Project Technical Lead, the Project Accountant will have the following specific responsibilities:

- Keep records of project funds and expenditures, and ensure all project-related financial documentation are well maintained and readily available when required by the Project Technical Lead;
- Review project expenditures and ensure that project funds are used in compliance with the Project Document and Gol financial rules and procedures;

- Validate and certify FACE forms before submission to UNDP;
- Provide necessary financial information as and when required for project management decisions;
- Provide necessary financial information during project audit(s);
- Review annual budgets and project expenditure reports, and notify the Project Technical Lead if there are any discrepancies or issues;
- Consolidate financial progress reports submitted by the responsible parties for implementation of project activities;
- Liaise and follow up with the responsible parties for implementation of project activities in matters related to project funds and financial progress reports.

The Project Accountant will be recruited based on the following qualifications:

- A Bachelors degree or an advanced diploma in accounting/ financial management;
- At least five years of relevant work experience preferably in a project management setting involving multi-lateral/ international funding agency. Previous experience with UN project will be a definite asset;
- Proficiency in the use of computer software applications particularly MS Excel;
- Excellent language skills in English (writing, speaking and reading) and in local languages.

Project Communications Officer

(Existing staff (Communication and Stakeholder engagement specialist);

NBI's in-kind contribution to the project; approximately 15 percent of staff time)

Under the overall supervision and guidance of the Project Technical Lead, the Communications Officer will have the responsibility for leading knowledge management outputs in Component 4 and developing the project communications strategy at the project outset and coordinating its implementation across all project components. The Communications Officer will work closely with the M&E Officer on knowledge management aspects of the project. Specific responsibilities will include:

- Develop a project communications strategy / plan, incorporate it with the annual work plans and update it annually in consultation with project stakeholders; coordinate its implementation
- Coordinate the implementation of knowledge management outputs of the project;
- Coordinate and oversee the implementation of public awareness activities across all project components;
- Facilitate the design and maintenance of the project website/webpages and ensure it is up-to-date and dynamic;
- Facilitate learning and sharing of knowledge and experiences relevant to the project;

The Project Communications Officer will be recruited based on the following qualifications:

- A Bachelors degree, preferably in the field of community development or natural resource / environmental management;
- A communications qualification (diploma, Bachelors degree)
- At least three years of relevant work experience of communications for project or programme implementation, ideally involving international donors. Previous experience with UN projects will be a definite asset;

- Previous experience in developing and implementing communications strategies for organizations or projects
- Strong professional working capacity to use information and communications technology, specifically including website design and desk top publishing software
- Understanding of illegal wildlife trade, biodiversity conservation, sustainable livelihoods and associated issues;
- Very good inter-personal skills
- Excellent language skills in English (writing, speaking and reading) and in local languages

Annex D: UNDP Social and Environmental Screening Procedure - provided separately

Annex E: Stakeholder Engagement Plan – provided separately

Annex F: Gender Analysis and Action Plan - provided separately

Annex G: UNDP Risk log - provided separately

Annex H: Co-financing letters- provided separately

Annex I: Results of the capacity assessment of the project implementing partner - provided separately