ADAPTATION FUND

# REGIONAL PROJECT/PROGRAMME PROPOSAL

## PART I: PROJECT/PROGRAMME INFORMATION

| | |
|---|---|
| Title of Project/Programme: | Adapting to Climate Change in Lake Victoria Basin |
| Countries: | Burundi, Kenya, Rwanda, Tanzania and Uganda |
| Thematic Focal Area[1]: | Transboundary water management |
| Type of Implementing Entity: | MIE |
| Implementing Entity: | United Nations Environment Programme (UNEP) |
| Executing Entities: | Lake Victoria Basin Commission (LVBC) |
| Amount of Financing Requested: | US$5,000,000 |

## Project / Programme Background and Context:

*Provide brief information on the problem the proposed project/programme is aiming to solve, including both the regional and the country perspective. Outline the economic social, development and environmental context in which the project would operate in those countries.*

*Project Overview*

Climate change in the Lake Victoria Basin (LVB) – a water catchment that occurs in Burundi, Kenya, Rwanda, Tanzania and Uganda – has resulted in increased mean annual temperatures and increased variability in rainfall patterns. Climate change projections predict that mean annual temperatures will continue to increase and that variability in rainfall patterns will be exacerbated. Projected climate change will result in a number of negative effects within the LVB, including a decrease in water quality and availability[2] for a number of uses, including *inter alia:* i) domestic; ii) agricultural; iii) industrial and commercial; and iv) cultural. The negative effects of climate change disproportionately affect marginalised and rural communities within the LVB by reducing the productivity of agriculture and wetlands and the abundance of fish in Lake Victoria and its tributaries. In addition, the projected effects of climate change are likely to negatively impact economic sectors within the LVB that depend on water resources, such as hydropower facilities and commercial fisheries. Therefore, to reduce the impact of climate change on local communities and water-dependent economic sectors within the LVB, the project will increase climate resilience in the LVB at both a regional and local level. The project objective will be achieved through five outcomes, namely: i) strengthened institutional capacity to integrate climate resilience into transboundary

[1] Thematic areas are: Food security; Disaster risk reduction and early warning systems; Transboundary water management; Innovation in adaptation finance.
[2] Collaborative research between the LVBC and the USAID EA-funded PREPARED project found that climate change is affecting both aquatic and terrestrial water resources within the LVB.

water catchment management; ii) improved delivery of accurate and timely climate information – with an emphasis on transboundary water catchment management – to regional and national policymakers, technical officers and local communities; iii) climate change adaptation technologies, including water harvesting techniques, climate-smart agriculture and EbA, transferred to communities to reduce their vulnerability to climate change; iv) regional resilience to climate change promoted through innovative, community-based projects; and v) improved knowledge management frameworks for the collection and maintenance of regional knowledge in transboundary water catchment management and climate change adaptation practices.

*Geographical context*

The LVB is contained within the southern section of the Nile River Basin (NRB), between the Eastern and Western Rift Valleys. The LVB catchment area is ~195,000 km$^2$ and contains Lake Victoria, the world's second largest freshwater lake, which has a surface area of ~69,000 km$^2$, a mean depth of ~40 m and contains ~2,750 km$^3$ of water[3]. Lake Victoria extends into three countries, namely Kenya, Tanzania and Uganda, while the LVB extends further to include Burundi and Rwanda (Figure 1).

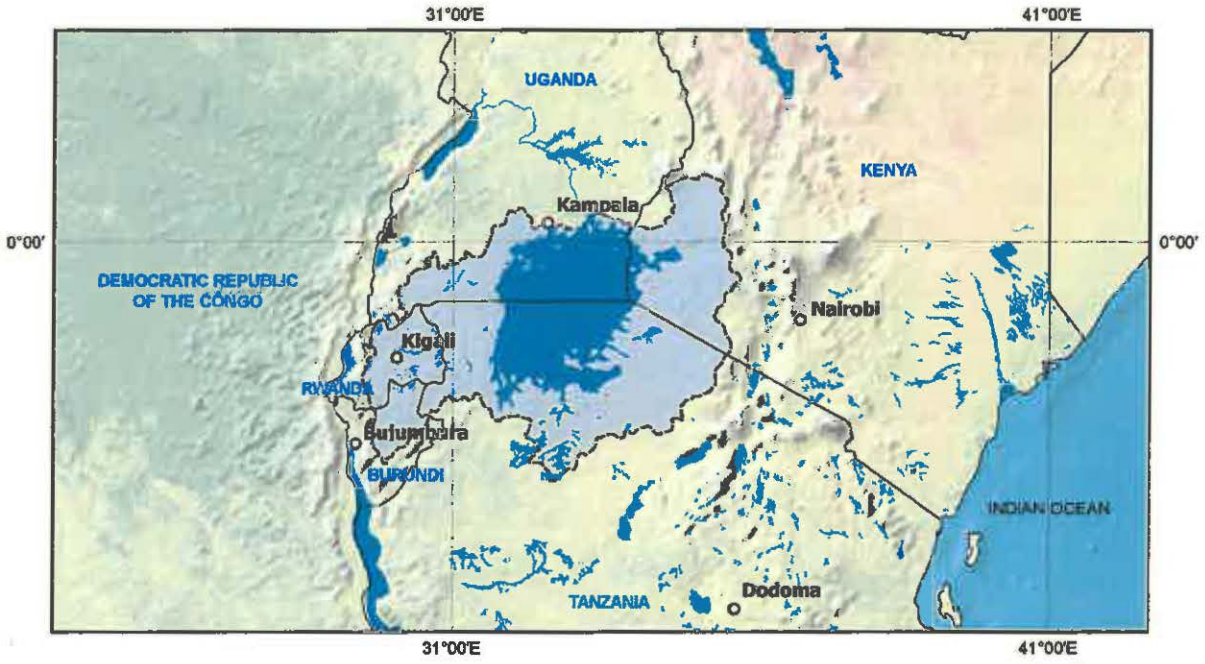


**Figure 1.** Map of the Lake Victoria Basin (light blue with dashed outline), which contains Lake Victoria (dark blue) and overlaps with Burundi, Kenya, Rwanda, Tanzania and Uganda. The capital city of each LVB country is indicated with a white circle.

Approximately 20% of Lake Victoria's water inflow is contributed by rivers in 17 sub-basin catchments, with the remaining ~80% of water inflow being provided by

[3] UNEP. 2006. Lake Victoria Basin environment outlook: environment and development. UNEP, Nairobi.

rainfall. The two largest sub-basins in the LVB – Kagera and Nzoia – provide ~48% of total water inflow from sub-basin catchments[4]. A number of smaller tributaries – from Uganda in particular – enter the lake through swamps or wetlands. The combined area of swamps and wetlands in the LVB is ~2,600 km$^2$.[2, 5]. Large rivers within the LVB include *inter alia*: i) Bukora and Katonga (originating in Uganda); ii) Nzoia, Sio, Mara, Yala, Awach, Gucha, Migori and Sondu (originating in Kenya); and iii) Mori, Simiyu, Grumeti, Mbalageti, Magogo-Moame (originating in Tanzania).

The LVB contains three broad ecoregions, namely the: i) Victorian Basin Forest-Savanna Mosaic in the north and west; ii) Southern Acacia Commiphora bushlands and thickets in the east and southeast; and iii) Central Zambezian Miombo Woodlands in the southwest[6]. There is considerable variation in rainfall volumes in the LVB, from approximately 1,200 mm/year in the north to 2,000 mm/year in the southwest to 3,000 mm/year in the Rwenzori Mountains in the west[7].

**Table 1.** Size and percentage values of the LVB countries' overlap with Lake Victoria's surface area, Lake Victoria's shoreline and the Lake Victoria Basin's surface area[8].

| Country | Lake Victoria surface area | | Lave Victoria shoreline | | Lake Victoria Basin surface area | |
|---|---|---|---|---|---|---|
| | km$^2$ | % | km | % | km$^2$ | % |
| Burundi | 4,110 | 6 | 550 | 16 | 38,910 | 22 |
| Kenya | 33,750 | 49 | 1,150 | 33 | 79,570 | 44 |
| Rwanda | 31,000 | 45 | 1,750 | 51 | 28,850 | 16 |
| Tanzania | 0 | 0 | 0 | 0 | 20,550 | 11 |
| Uganda | 0 | 0 | 0 | 0 | 13,060 | 7 |
| **Total** | **68,860** | | **3,450** | | **180,940** | |

*Socioeconomic context*

The combined population of the LVB is ~30 million people, with an average population density of ~165 people/km$^2$ and a maximum population density of ~1,200 people/km$^2$ (in Kenya)[9]. The population is growing at ~3% annually[10], with an average life expectancy

[4] Of the total water inflow to Lake Victoria from sub-basin catchments, Nzoia provides ~33% and Kagera provides ~15%: Brown, E. & Sutcliffe, J.V. 2013. The water balance of Lake Kyoga, Uganda. Hydrological Sciences 58: 342–353.
[5] Brown, S., Brinson, M.M. & Lugo, A.E. 1979. Structure and function of riparian wetlands. *General technical report, WO-US Department of Agriculture, Forest Service.*
[6] Saundry, P. & Fund, W. 2012. Lake Victoria. The Encyclopaedia of Earth. Available at: http://www.eoearth.org/view/article/154134/.
[7] Abtew, W. & Melesse, A.M. 2014. The Nile River Basin. In: A.M. Melesse et al. (eds.), The Nile River Basin. Springer, Basel.
[8] Shepherd, K., Walsh, M., Mugo, F., Ong, C., Hansen, T.S., Swallow, B., Awiti, A., Hai, M., Nyantika, D., Ombao, D., Grunder, M., Mbote, F. & Mungai, D., 2000. Improved land management in the Lake Victoria Basin: linking land and lake, research and extension, catchment and lake basin. International Centre for Research in Agroforestry, Nairobi.
[9] Oekstra, D. & Corbett, J. 1995. Sustainable agricultural growth for highlands of East and Central Africa: prospects to 2020. Paper presented at: The Ecoregions of the Developing World: a Lens for Assessing Food, Agriculture and the Environment to the Year 2020.

of ~45 for men and ~48 for women[11]. Livelihood activities undertaken in the LVB, include *inter alia*: i) fishing[12]; ii) farming; iii) bee-keeping; iii) trading; and iv) mining[13,14]. Agriculture in the LVB is comprised of both small-scale and commercial farming and includes both subsistence[15] and cash crops[16].

Livelihoods in the LVB are largely underpinned by natural resources. For example, between 1988 and 2002, the sudden increase in the Nile perch population correlated to localised increases of the human population by as much as 150% in Mwanza and Shinyanga (Tanzania)[17]. At national levels, the exploitation of the LVB's natural resources contributes a considerable proportion of national GDPs. In Kenya, for example, ~22% of GDP is attributed to the economic activities supported by natural resources[18]. Regionally, the fisheries sector[19] supports the livelihoods of ~3 million people[20], with annual catch yields of ~500,000–750,000 tonnes – an equivalent of ~US$300–400 million, of which ~US$250 million represents export values[21,22].

**Table 2.** Selected socioeconomic indicators for the five LVB countries[23].

| Country | Population size | No. of households | Average household size (# people) | Literacy rate (% people aged 15–24) | Population below the poverty line (%) |
|---|---|---|---|---|---|
| Burundi | 10,160,000 | 1,549,000 | 5 | 89 | 66 |
| Kenya | 14,740,000 | 3,165,000 | 4.6 | 82 | 39 |
| Rwanda | 11,780,000 | 2,353,000 | 4 | 82 | 45 |
| Tanzania | 9,150,000 | 1,581,150 | 5.7 | 86 | 41 |
| Uganda | 17,345,000 | 3,337,000 | 5.3 | 84 | 34 |

Lake Victoria facilitates regional transportation with major transport routes connecting the towns of Musoma, Mwanza, Bukoba (Tanzania), Port Bell, Jinja (Uganda) and

[10] Awange, J. & Ong'ang'a, O. 2006. Lake Victoria: Ecology, Resources, Environment. Springer, Berlin.
[11] Lake Victoria Basin Commission. 2007. Regional transboundary diagnostic analysis of the Lake Victoria Basin. East African Community, Kisumu.
[12] Fishing is the primary livelihood activity ~3 million people within the LVB.
[13] Mining activities predominantly target sand and gold, although a number of other minerals are mined across the LVB.
[14] UNEP. 2006. Lake Victoria Basin environment outlook: environment and development. UNEP, Nairobi.
[15] For example maize, bananas, cassava, sorghum, millet, rice and sweet potatoes.
[16] For example, coffee, cotton and sugar cane.
[17] UNEP. 2006. Lake Victoria Basin environment outlook: environment and development. UNEP, Nairobi.
[18] UNEP. 2006. Lake Victoria Basin environment outlook: environment and development. UNEP, Nairobi.
[19] This includes both commercial fishing, artisanal fishing and fish processing.
[20] Njiru, M., Sitoki, L., Nyamweya, C., Jembe, T., Aura, C., Waithaka, E. & Masese, F. 2012. Habitat degradation in Lake Victoria fisheries. Advances in Environmental Research: 27, 1–34.
[21] Uganda Coalition for Sustainable Development. 2007. Voicing out Lake Victoria concerns to the CHOGM and CPF. Uganda Coalition for Sustainable Development, Kampala.
[22] East African Community. 2006. Special report on the declining of water levels in Lake Victoria. East African Community, Arusha.
[23] The World Bank. World development indicators. Available at: http://data.worldbank.org/

Kisumu (Kenya)[24]. In addition, Lake Victoria is the primary water source used to generate electricity through hydropower stations in the LVB. All five LVB countries rely on hydropower for a percentage of their total electricity consumption, specifically: i) ~95% in Burundi; ii) ~50% in Kenya; iii) ~5% in Rwanda; iv) ~50% in Tanzania; and v) ~20% in Rwanda[25]. Although growth in the hydropower sector in the LVB has been promising, recent declines in water volume in Lake Victoria, coupled with environmental concerns – such as the negative effect of hydropower dams on papyrus wetlands[26] – have resulted in re-evaluations of the regional potential of hydropower in the LVB[27].

*Environmental context*

The LVB has a considerable diversity of natural resources, including fertile soils, forests, minerals, fish, wildlife and an extensive network of rivers and wetlands[28]. Selected features of natural resources within the LVB include:

- The soils within the LVB are generally fertile and include *inter alia*: i) Ferrasols; ii) Vertisols; iii) Acrisols; iv) Nitosols; and v) Cambisols[29].
- Forests in the LVB provide a range of goods and services, including timber for furniture and building and habitat for a variety of flora and fauna, including elephant (*Loxodonta africana*) and 60 species of frog[30].
- Wetlands produce goods, such as: i) raw material for handicrafts and fuel; ii) support for fisheries, grazing, agriculture and outdoor recreation; and iii) habitat for wildlife[31]. In addition, wetlands within the LVB provide ecosystem services, including buffering the negative effects of excess nutrient loads and sedimentation by absorbing nutrients such as nitrogen and phosphorous.
- LVB has rich mineral deposits including *inter alia* gold and diamonds.

As a result of unsustainable use of natural resources, a number of negative environmental effects have resulted. Specifically:

- Agricultural practices such as clear-cutting of vegetation has resulted in **soil erosion**. As topsoil erodes, rainfall carries it into tributaries and Lake Victoria itself, increasing the concentration of nutrients in the water[32], nitrogen in particular[33]. As a result of this nutrient runoff into Lake Victoria, the concentration of algae in 2006 was

[24] East African Community. 2006. Special report on the declining of water levels in Lake Victoria. East African Community, Arusha.
[25] The World Bank. Energy and mining data. Available at: http://data.worldbank.org/topic/energy-and-mining.
[26] Kiwango, Y.A. & Wolanski, E. 2008. Papyrus wetlands, nutrients balance, fisheries collapse, food security and Lake Victoria level decline in 2000–2006. Wetlands Ecology and Management: 16, 89–96.
[27] Lubovich, K. 2009. Cooperation and competition: managing transboundary water resources in the Lake Victoria Region, Working Paper No. 5. USAID, Washington D.C.
[28] UNEP. 2006. Lake Victoria Basin environment outlook: environment and development. UNEP, Nairobi.
[29] Kulinda, K.A.A. 2006. Social and policy framework: context of people and livelihood. UNEP, Nairobi.
[30] UNEP. 2006. Lake Victoria Basin environment outlook: environment and development. UNEP, Nairobi.
[31] Kulinda, K.A.A. 2006. Social and policy framework: context of people and livelihood. UNEP, Nairobi.
[32] Machiwa, P.K. 2002. Water quality management and sustainability: The experience of Lake Victoria Environmental Management Project: paper presented at the WaterNet/WAFRSA Symposium, Dar es Salaam.
[33] Kiwango, Y.A. & Wolanski, E. 2008. Papyrus wetlands, nutrients balance, fisheries collapse, food security, and Lake Victoria level decline in 2000–2006. Wetlands Ecology Management, 16: 89–96.

~400% greater compared to the 1960s[34]. The negative consequences of this algal growth are anoxic water conditions and increased fish mortality.

- Widespread and ongoing **deforestation** has reduced the coverage of forests and the availability of associated goods – such as timber – and services – such as preventing soil erosion and providing habitat for wildlife species – within the LVB[35]. Deforestation is undertaken largely to provide woodfuel and timber. For example, in Lupeta (Tanzania) 97% of households use woodfuel for cooking and 53% of households use woodfuel exclusively for cooking[36].
- Across the LVB, **wetlands have been severely degraded**[37] as a result of *inter alia:* i) intensive cultivation of crops such as sugar cane, sweet potatoes and yams in shallow wetlands[38]; ii) excavation of sand and clay for brickworks; iii) the invasion of water hyacinth; and iv) the disposal of waste and wastewater.
- **Mining and mineral extraction** has resulted in a considerable number of negative environmental effects, including *inter alia*: i) large-scale deforestation to provide mining infrastructure; ii) soil degradation as top soil is covered by gravel and sub-soils during mining operations; and iii) contamination of ground and surface water with heavy metals, such as mercury[39].
- **Fish abundance in the LVB has declined** as a result of: i) intensive fishing efforts; ii) changes in Lake Victoria's hydrology[40]; iii) anthropogenic pollution; and iv) the invasion of exotic species[41]. Indeed, commercial fishing efforts are showing decreased catch yields, despite intensified fishing efforts – indicated by an increased number of fisherpeople, boats, nets and hooks – and improved fisheries' management[42].
- **Water quality** in the LVB has been reduced by the eutrophication associated with the persistent and widespread occurrence of the water hyacinth (*Eichhornia crassipes*)[43]. In addition, the water hyacinth obstructs water transport, decreases oxygen content in the water of the LVB, impairs fishing efforts and reduces fish density. The collective economic losses caused by water hyacinth in the LVB were estimated at ~US$6–10 million in 2000[44]. In addition, water quality is reduced as a result of anthropogenic pollution, both in urban centres (through the discharge of

[34] The Global International Waters Assessment. 2006. East African Rift Valley lakes. GIWA Regional Assessment, 47.
[35] Kulinda, K.A.A. 2006. Social and policy framework: context of people and livelihood. UNEP, Nairobi.
[36] Preston, K.M. 2012. Fuelwood collection and consumption: a case study in Lupeta, Tanzania. MSc Thesis, Michigan Technological University.
[37] In Uganda, it is estimated that ~75% of wetlands have been affected by anthropogenic activities and that ~15% of wetlands are severely degraded, see: Kayombo, S. & Jorgensen, S.E. 2006. Lake Victoria: experience and lessons learned brief. International Lake Environment Committee, Kusatsu.
[38] Kayombo, S. & Jorgensen, S.E. 2006. Lake Victoria: experience and lessons learned brief. International Lake Environment Committee, Kusatsu.
[39] Kulinda, K.A.A. 2006. Social and policy framework: context of people and livelihood. UNEP, Nairobi.
[40] As a result of both reduced water volumes and the invasion of the water hyacinth.
[41] Lake Victoria Fisheries Organisation. 2008. State of fish stocks. LVFO, Jinja.
[42] Lake Victoria Fisheries Organisation. 2008. State of fish stocks. LVFO, Jinja.
[43] Eutrophication occurs in lakes and other slow-moving water bodies when excess nutrient loads, especially from nitrogen and phosphorus, stimulate excessive plant growth. As the plants bloom and then eventually die, the decomposing material reduces dissolved oxygen in the water creating anoxic zones that can be fatal to other lake organisms.
[44] The World Bank. 2000. The inspection panel investigation report. Kenya: Lake Victoria Environmental Management Project and The World Bank, Washington D.C.

untreated industrial effluent) and in rural areas (through agricultural activities and human and animal waste[45]).

- In addition to reduced water quality, **water abundance** has decreased in the LVB as a result of both anthropogenic and climate-related factors. Specifically, both increasing mean annual temperature – which increases the rate of evapotranspiration over the lake's large surface area – and decreased rainfall volumes have been identified as the primary climate-related factors contributing to reduced water abundance in the LVB[46].

*Climate change context*

Past and current climate change

Over the last four decades, considerable climatic changes have occurred in the **LVB**. For example, the volume of summer monsoon rainfall declined across much of East Africa[47]. Reduced summer monsoon rainfall volume has corresponded with a decrease in mean annual rainfall[48], an increase in annual temperatures and an increase in the frequency of natural disasters such as floods and droughts[49]. A comparison of temperature data from 1950–2000 with temperature daya from 2001–2005 shows that maximum temperatures have increased by an average of 1°C[50]. Country-specific climate changes are detailed below.

In **Burundi**, the mean annual temperature have increased between 0.7 and 0.9°C since 1930. There has been on overall decrease in annual precipitation, with the long wet season ending sooner and the short wet season starting later. However, within this overall decrease in rainfall volume, there is notable variation. For example, rainfall volume in the rainy season (October–May) has increased since 1951 at a rate of 3.3 mm per month, per decade[51] and observations from 1999-2006 show a shortening

[45] The Agreed Curve states that Uganda may release an amount of water equal to the natural discharge of the lake to the White Nile, which should maintain the natural hydrological balance of the lake system. For further information, see: Kiwango, Y.A. & Wolanski, E. 2008. Papyrus wetlands, nutrients balance, fisheries collapse, food security, and Lake Victoria level decline in 2000–2006. Wetlands Ecology Management, 16: 89–96.

[46] Awange, J.L., Ogalo, L. Bae, K-H., Were, P., Omondi, P., Omute, P. & Omullo, M. 2008. Falling Lake Victoria water levels: Is climate a contributing factor? Climatic Change 89: 281–297.

[47] IPCC. 2014. Climate change 2014: synthesis report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva.

[48] Donald Anthony Mwiturubani. Monograph 170: Chapter 4. *Climate change and access to water resources in the Lake Victoria Basin.* Available at: http://mercury.ethz.ch/serviceengine/Files/ISN/117761/ichaptersection_singledocument/ee7c3713-e87b-44e8-8d98-6b9492dc1ce1/en/Pages+from+Mono170-5.pdf.

[49] Gotenberg University, School of Economics and Commercial Law. 2007. Environmental Policy brief for the Lake Victoria Basin. Gotenberg University, Gotenberg. Available at: http://www.vub.ac.be/klimostoolkit/sites/default/files/documents/env_policy_brief_lake_victoria.pdf.

[50] ICPAC, Kenya & SEI, United Kingdom. 2009. Economics of climate change: Kenya, Rwanda and Burundi. DFID, London.

[51] Burundi dashboard. Available at: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=BDI&ThisTab=ClimateBaseline.

of the rainy season coupled with an extension of the dry season in north-eastern Burundi[52]

Since the 1960s, the mean annual temperature in **Kenya** has increased by 1°C, at an average rate of 0.21°C per decade – an increase that has been most rapid in March–May (0.29°C per decade) and slowest in June-September (0.19°C per decade)[53]. Although variability in rainfall patterns have been recorded across Kenya, overall trends indicate a neutral or decreasing trend, which reflects the recorded decline in rainfall volume during the long rainy season[54].

Although climate data for **Rwanda** are scarce, some trends have been recorded, for example: i) between 1971 and 2009, the mean annual temperature increased by 1.2°C; ii) mean annual rainfall volumes decreased by 80 mm between and 1961 and 2006; and iii) the length of the rainy seasons (March–May and September–November) decreased[55].

Similar to Kenya and Rwanda, the mean annual temperature in **Tanzania** has increased by ~1°C since 1960, with the largest increases occurring in January and February. While mean annual rainfall in Tanzania has decreased since 1960 by 2.8 mm per month per decade, variation in rainfall patterns has increased, for example a significant increase of 11 mm per decade in the volume of rainfall events of 5 days or less (March–May) [56].

Mean annual temperatures in **Uganda**, between 1951 and 1980, have increased by 0.5–1.2°C for minimum temperatures and 0.6–0.9°C for maximum temperatures. There has been considerable variation in rainfall patterns in Uganda, particularly in the last two decades, for example: i) the onset and cessation of rainfall seasons have become more erratic; ii) rainfall events have produced greater volumes; and iii) the frequency of drought events has increased[57]. Despite this increase in rainfall variation, there has been no significant change in average annual rainfall over the last 60 years[58].

Future climate change

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[52] ICPAC, Kenya & SEI, United Kingdom. 2009. Economics of climate change: Kenya, Rwanda and Burundi. DFID, London.
[53] Kenya dashboard. Available at: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=KEN&ThisTab=ClimateBaseline.
[54] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security. Available at: http://www.ugandacoalition.or.ug/sites/default/files/Lake%20Victoria%20CC%20Readness%20brief%20No.%203%20English_0.pdf.
[55] Rwanda dashboard. Available at: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=RWA&ThisTab=ClimateBaseline.
[56] Tanzania dashboard. Available at: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=TZA&ThisTab=ClimateBaseline
[57] Uganda experienced seven droughts in a period of ten years from 1991–2000.
[58] USAID. 2013. Uganda climate change vulnerability assessment report. Available at: http://community.eldis.org/.5b9bfce3/ARCC-Uganda%20VA-Report.pdf.

The projected changes in climate in the **LVB** include an increase in mean annual temperature of 0.2–0.5°C per decade in the 21st century. This increase in temperature is expected to cause an increase of 5–20% in the volume of annual rainfall in wet months (December–February) and a decrease of 5–10% in the volume of annual rainfall in the dry months (June–August). Furthermore, changes in rainfall patterns are expected to be largely unpredictable, with prolonged periods of both drought and intense rainfall[59].

In **Burundi**, mean annual rainfall is expected to increase by 3–10%, with increases in rainfall volume in November–March of more than 25% and decreases in rainfall in May–October of 4–16%. The mean annual temperature in Burundi is expected to increase by 0.4°C per decade, with an overall increase of 2.3°C by 2050[60].

By the year 2060, the average annual temperature in **Kenya** is expected to increase by 1–2.8°C. Projections of future rainfall indicate a consistent increase in annual rainfall volume, with the largest predicted increases – 3–49 mm per month – occurring between October and May[61].

In **Rwanda**, climate projections show an increase in mean annual temperature of 1.3–1.9°C by 2050, and an increase of 2.3-3.3°C by 2100. In addition, mean annual rainfall is expected to increase, but with current data limitations, it is not feasible to predict the magnitude of this increase[62].

The mean annual temperature in **Tanzania** is predicted to increase by 1–2.7°C by 2060 and by 1.5–4.5°C by 2090, with an increased occurrence and duration of heatwaves. The mean annual rainfall in Tanzania is predicted to increase, as well as the variation in rainfall patterns. Specifically, an increase in the frequency of both intense rainfall events and drought periods is predicted[63].

In **Uganda**, the mean annual temperature is expected to increase by 1.5°C by 2020 and by up to 4.3°C by 2080. Increased variability in rainfall patterns is expected, but these changes cannot be predicted with certainty. In general, a change in the frequency of extreme climate events, such as heatwaves, droughts, floods and storms is expected. In addition, Uganda's mean annual rainfall is expected to increase, although the

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[59] Mwiturubani, D.A. 2010. Climate change and access to water resources in the Lake Victoria Basin. Institute for Security Studies: Monograph 170. 63–79. Available at: http://mercury.ethz.ch/serviceengine/Files/ISN/117761/ichaptersection_singledocument/ee7c3713-e87b-44e8-8d98-6b9492dc1ce1/en/Pages+from+Mono170-5.pdf.

[60] ICPAC, Kenya & SEI, United Kingdom. 2009. Economics of climate change: Kenya, Rwanda and Burundi. DFID, London.

[61] Kenya risk screening overview: climate change knowledge portal. Available at: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=KEN&ThisTab=RiskOverview.

[62] Rwanda Risk screening overview: climate change knowledge portal. Available at: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=RWA&ThisTab=RiskOverview.

[63] Tanzania Risk screening overview: climate change knowledge portal. Available at: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=TZA&ThisTab=RiskOverview.

distribution of these increases across Uganda will not be uniform and will vary according to the distribution of intense rainfall events[64].

Past and current effects of climate change

While changes in climate have varied at national levels across the LVB, the negative effects associated with these changes in climate have been consistent at a regional level. Specifically, as a result of reduced rainfall volume and increased variation in rainfall patterns, the volume of water in Lake Victoria has decreased[65]. In Burundi, reduced rainfall volume and increased annual temperatures have resulted in a drying trend and desertification in the low-lying, peripheral areas[66]. In Kenya, the increased unpredictability and intensity of rainfall events[67] has increased the frequency of flooding events[68]. Across the LVB, a number of prolonged drought events have occurred, specifically in 1983/1984, 1991/1992, 1995/1996, 2004/2005, all of which have resulted in famine[69].

Climate change has negatively affected the agricultural sector. Firstly, temporal and spatial variability in rainfall have resulted in a decrease in agricultural productivity in the LVB. This decrease in productivity is widespread[70] as rain-fed agriculture is practiced by 60% of the population in the LVB and contributes ~40% to national GDPs[71]. Secondly, increased annual temperatures have resulted in heat stress in livestock, which reduces growth rates, reproductive rates, milk production, wool production as well as the health

[64] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security. Available at: http://www.ugandacoalition.or.ug/sites/default/files/Lake%20Victoria%20CC%20Readness%20brief%20No.%203%20English_0.pdf.

[65] Mwiturubani, D.A. 2010. Climate change and access to water resources in the Lake Victoria Basin. Institute for Security Studies: Monograph 170. 63–79. Available at: http://mercury.ethz.ch/serviceengine/Files/ISN/117761/ichaptersection_singledocument/ee7c3713-e87b-44e8-8d98-6b9492dc1ce1/en/Pages+from+Mono170-5.pdf.

[66] Netherlands Commission for Environmental Assessment – Dutch Sustainability Unit: Climate Change Profile: Burundi. Available at: http://api.commissiemer.nl/docs/os/i71/i7152/climate_change_profile_burundi.pdf.

[67] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security. Available at: http://www.ugandacoalition.or.ug/sites/default/files/Lake%20Victoria%20CC%20Readness%20brief%20No.%203%20English_0.pdf.

[68] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security. Available at: http://www.ugandacoalition.or.ug/sites/default/files/Lake%20Victoria%20CC%20Readness%20brief%20No.%203%20English_0.pdf.

[69] Awange, J.L., Aluoch, J., Ogallo, L.A., Omulo, M. & Omondi, P. 2007. Frequency and severity of drought in the Lake Victoria region (Kenya) and its effects on food security. Climate Research: 33, 135–142.

[70] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security.

[71] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security.

and welfare of livestock animals[72]. Therefore, climate change is contributing to food insecurity in the LVB and increasing the vulnerability people whose livelihoods are underpinned by agriculture.

The fisheries sector in the LVB has been adversely affected by the changes in distribution and/or quantity of freshwater resources. While a number of factors have contributed to these changes, reduced rainfall has exacerbated the decline in fish populations. In Uganda, for example, the annual catch of Nile perch has decreased by ~26% during the 2005-2011 period (94,903 to 70,061 tonnes). The catch of tilapia is also reported to have decreased by 34% over the same period (29,450 to 19,350 tonnes)[73].

Climate variability has resulted in fluctuations in the volume of water in Lake Victoria. These fluctuations have adversely affected the generating capacity of hydropower facilities and infrastructure within the LVB. For example, in 2002 and 2004, the declining volume of water in Lake Victoria coupled with an increasing demand for electricity led to several power shortages and blackouts in Kampala (Uganda)[74].

Future effects of climate change

As a result of the predicted increase the frequency of intense rainfall events, flooding is expected to occur, particularly in low-lying areas of the LVB. The frequency of droughts is also predicted to increase, by 40–60% in Burundi, for example[75]. Floods are expected to increase in frequency and magnitude in the low-lying areas. As ~80% of Lake Victoria's water volume is provided by direct rainfall, the predicted spatial variation in rainfall patterns will result in changes in water availability[76].

A predicted decline of 50–150 mm in rainfall volume per season in the LVB, coupled with increased variability in rainfall patterns, is expected to reduce the productivity of farming – for example a ~10% reduction of total grain production in East Africa by 2080[77] is predicted. In addition, the increased frequency and severity of extreme weather events is expected to increase livestock mortality[78]. Therefore, under the future

[72] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security.
[73] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security.
[74] Hepworth, N. & Goulden, M., 2008, Climate Change in Uganda: understanding the implications and appraising the response. LTS International, Edinburgh.
[75] Burundi Risk screening overview: climate change knowledge portal. Available at: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=BDI&ThisTab=RiskOverview.
[76] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security.
[77] Mwiturubani, D.A. 2010. Climate change and access to water resources in the Lake Victoria Basin. Institute for Security Studies: Monograph 170. 63–79.
[78] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security.

conditions of climate change, regional food insecurity will be exacerbated and vulnerability of local communities within the LVB to climate change will be increased as livelihoods underpinned by agriculture become increasingly marginal.

Because livelihoods and several national sectors within the LVB are reliant on natural resources, climate change may indirectly result in negative socioeconomic effects. To illustrate this point, reduced water availability across the LVB may provoke conflict as competition for water increases. Specifically:

- At the household level, water is used in very specific activities such as farming and household chores largely undertaken by women. As the local communities within the LVB adopt a patriarchal system, potential conflicts may lead to women being disproportionately affected by having to walk longer distances daily to access water.
- At the community level, the influx of people from areas of water scarcity to areas of water abundance may lead to conflicts between different communities. Such inter-community conflict may require involvement from district or national-level government institutions.
- At the national/transboundary level, the decisions taken to manage water resources will have upstream and downstream consequences. Decisions taken in self-interest by one country – for example draining Lake Victoria to increase hydropower generation – that is detrimental to a neighbouring country might provoke an international dispute and reduce the likelihood of cooperation in regional resource management initiatives[79].

Problem to be addressed by the project

The problem to be addressed by the project is that climate change is inadequately integrated into regional transboundary water catchment management within the LVB. This is increasing the vulnerability of communities within the LVB. This problem is expected to intensify under the conditions of future climate change, specifically increasing variability in rainfall patterns and increasing mean annual temperatures. To address this problem, the project will focus on overcoming a number of specific challenges, namely:

- Institutional capacity to include climate change adaptation into plans, strategies and policies for transboundary water management and to development initiatives is limited.
- The delivery of climate information, including information from EWS to policy and decision-makers, in the LVB is limited and therefore the effectiveness of long-term planning in transboundary water management is reduced.
- Livelihoods of local communities within the LVB are not climate resilient and therefore these communities are vulnerable to the effects of climate change, particularly to the reduced water quality and availability.

[79] Mwiturubani, D.A. 2010. Climate change and access to water resources in the Lake Victoria Basin. Institute for Security Studies: Monograph 170. 63–79.

- Technical capacity within local communities to implement activities that promote climate change adaptation is limited.
- Sharing of knowledge within the LVB on climate change adaptation and transboundary water catchment management is limited.

## Project / Programme Objectives:

The overall objective of this project is to "reduce vulnerability to the negative effects of climate change in the five Lake Victoria Basin countries, namely Burundi, Kenya, Rwanda, Tanzania and Uganda, by building climate resilience". To achieve this goal, five project outcomes are proposed:

1. Strengthened institutional capacity to integrate climate resilience into transboundary water catchment management.
2. Improved delivery of accurate and timely climate information – with an emphasis on transboundary water catchment management – to regional and national policymakers, technical officers and local communities.
3. Climate change adaptation technologies transferred to communities to reduce their vulnerability to climate change.
4. Regional resilience to climate change promoted through innovative, community-based projects.
5. Improved knowledge management frameworks for the collection and maintenance of regional knowledge in transboundary water catchment management and climate change adaptation practices.

## Project / Programme Components and Financing:

| Project Components | Expected Outcomes | Expected Outputs | Indicative activities | Countries | Amount (US$) |
|---|---|---|---|---|---|
| 1. Regional management of a transboundary water catchment | 1. Strengthened institutional capacity to integrate climate resilience into transboundary water catchment management. | 1.1. Transboundary institutional framework established that promotes a climate-resilient approach to water catchment management.<br><br>*This framework will propose the most effective method to ensure the flow of information between the following:*<br>• *Projects and* | 1.1.1. Conduct needs assessment within regional and national institutions to identify capacity gaps to plan and implement transboundary water catchment management.<br><br>1.1.2. Establish the LVBC Climate Change Unit (CCU) in regional meetings in collaboration with national ministries mandated to address climate change. | Burundi, Kenya, Rwanda, Tanzania and Uganda | 540,000 |

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| | | *organisations collecting climate data within the LVB.*<br>• *Regional climate information platforms.*<br>• *Experts and technical staff responsible for water catchment management and climate change adaptation.*<br>• *Regional policy and decision-makers.*<br>• *National policy and decision-makers.* | 1.1.3. Undertake regional capacity-building exercises in water catchment management in the context of climate change in organisations including *inter alia* the: i) LVBC Climate Change Unit; ii) EAC Climate Change Technical Working Group; iii) EAC Climate Change Unit; and iv) Lake Victoria Region Local Authority Cooperation. | | |
| | | | 1.1.4. Undertake national capacity-building exercises in water catchment management in the context of climate change in relevant national ministries – for example the Ministry of Water, Environment, Lands and Urban Planning (Burundi), the Ministry of Environment, Water and Natural Resources (Kenya) and the Ministry of Lands, Environment, Forestry, Water and Mines (Rwanda) – that interface with regional organisations identified in Activity 1.1.1. | | |
| | | | 1.1.5. Develop a strategic framework for transboundary water catchment management – with a focus on the Mara River and Kagera sub-basins and Mount Elgon – during regional workshops. This will be done in collaboration with relevant existing institutions, for example the Mara River Basin Transboundary Water Resources Forum. | | |
| | | 1.2. Training provided to government | 1.2.1. Develop training material on climate | | |

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| | | ministries and agencies, civil society and the private sector to address climate change-related challenges in transboundary water catchment management. | change adaptation and water catchment management. | | |
| | | | 1.2.2. Provide training on climate change adaptation and water catchment management at the regional level to national government representatives. | | |
| | | | 1.2.3. Provide training on climate change, climate change adaptation and water management at national workshops which will include civil society, NGOs and the private sector. | | |
| | | 1.3. Institutional coordination mechanism to promote climate change adaptation in regional policy- and decision-making established. | 1.3.1. Compile a review of international best practice in transboundary water catchment management. | | |
| | | | 1.3.2. Develop a LVB-specific action plan to improve the regional coordination of transboundary water catchment management. | | |
| | | | 1.3.3. Implement a LVB-specific action plan to improve regional coordination of transboundary water catchment management. | | |
| 2. Climate information and decision--making | 2. Improved delivery of accurate and timely climate information – with an emphasis on transboundary water catchment management – to regional and national policymakers, technical officers and local communities. | 2.1. Stocktake of end-to-end EWS and climate-monitoring initiatives to identify gaps between the recording of climate data to the delivery of tailored climate forecasts. | 2.1.1. Review of current climate-monitoring initiatives and EWS in the LVB, with an emphasis on transboundary water catchment management. | Burundi, Kenya, Rwanda, Tanzania and Uganda | 800,000 |
| | | | 2.1.2. Identify opportunities identified for complementarity with current climate-monitoring initiatives and regional organisations such as ICPAC, FEWSNET, RCMRD and the LVBC | | |

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| | | | Climate Change Unit. | | |
| | | | 2.1.3. Compile report developed, based on Activities 2.1.1 and 2.1.2, to guide the activities under Output 2.2. | | |
| | | 2.2. Information platform developed to deliver climate information to be used in seasonal and long-term planning | 2.2.1. Assess linkages between processed climate information and decision-making to ensure that the delivered climate information is embedded into regional and national decision-making processes. | | |
| | | | 2.2.2. Tailor a LVB-specific platform for climate information, guided by the EAC Climate Change Working Group and in collaboration with regional initiatives such as the PREPARED Climate Change Adaptation Forum and existing global data sources such as the NOAH CFS v2 weather model. | | |
| | | | 2.2.3. Collect climate information generated across the LVB, using the report developed under Activity 2.1.3. | | |
| | | | 2.2.4. Synthesise, process and generate climate information according to the needs of stakeholders targeted in Output 2.3. | | |
| | | 2.3. Climate information and forecasts delivered to national policymakers, LVBC technical officers and local communities in tailored media/information products to guide both operational and long-term | 2.3.1. Deliver climate information for long-term planning to policy and decision-makers in regional organisations as well as technical staff in national ministries within the LVB through presentations, technical reports, policy briefs etc. | | |

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| | | strategic planning. | 2.3.2. Deliver operational climate information for seasonal planning to policy and decision-makers as well as technical staff in national ministries within the LVB through the developed platform (Activity 2.2.2), as well as operational reports and briefs. | | |
| | | | 2.3.3. Hold local community meetings and workshops to deliver climate information in locally relevant and accessible formats. | | |
| | | | 2.3.4. Capacity building and training for relevant organisations ensuring a proper understanding and dissemination of the climate information delivered through the information platform. | | |
| 3. Climate change adaptation in vulnerable communities | 3. Climate change adaptation technologies transferred to communities to reduce their vulnerability to climate change. | 3.1. Project intervention sites identified. | 3.1.1. Apply findings of the PREPARED Vulnerability Assessment to identify potential project intervention sites, with a particular focus on the water quality and accessibility. | Burundi, Kenya, Rwanda, Tanzania and Uganda | 1,700,000 |
| | | | 3.1.2. Conduct baseline survey to select project interventions sites from the potential sites identified in Activity 3.1.1. | | |
| | | | 3.1.3. Undertake participatory mapping with communities in the project sites to identify specific areas for on-the-ground activities. | | |
| | | 3.2. Extension officers and local communities trained on water conservation, climate-smart agriculture and | 3.2.1. Train extension officers and local community members on water conservation practices, climate-smart agricultural techniques and EbA activities. | | |

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| | | EbA. | 3.2.2. Provide seedlings and equipment to local communities to implement water conservation practices, climate-smart agricultural techniques and EbA activities. | | |
| | | | 3.2.3. Plan water conservation practices, climate-smart agricultural techniques and EbA activities with local communities, using maps developed in Activity 3.1.3. | | |
| | | 3.3. Climate change adaptation practices demonstrated at selected project intervention sites. | 3.3.1. Implement water conservation practices, for example the construction of micro-scale water harvesting infrastructure. | | |
| | | | 3.3.2. Implement climate-smart agricultural techniques, for example by introducing drought-tolerant crops with early maturation. | | |
| | | | 3.3.3. Implement EbA activities, for example homegardens and agroforestry. | | |
| 4. Small grants programme | 4. Regional resilience to climate change promoted through innovative, community-based projects. | 4.1. Small-scale projects funded to promote innovative approaches to climate change adaptation. | 4.1.1. Develop selection criteria and invite project proponents to submit proposals through national networks. | Burundi, Kenya, Rwanda, Tanzania and Uganda (all LVB countries) | 850,000 |
| | | | 4.1.2. Review of project proposal and selection of successful project proponents. | | |
| | | | 4.1.3. Implement innovative water management projects through project proponents. | | |
| | | | 4.1.4. Provide regular technical assistance to small-scale projects, including field site visits. | | |
| | | | 4.1.5. Undertake monitoring and evaluation of small-scale projects to provide information for | | |

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| | | | Output 4.2. | | |
| | | 4.2. Upscaling of innovative approaches promoted through community-based organisations and district-level agencies. | 4.2.1. Synthesise results of small-scale projects. | | |
| | | | 4.2.2. Hold awareness-raising campaign in local communities to showcase the results of successful projects. | | |
| | | | 4.2.3. Identify community organisations and district-level government offices through which to promote the upscaling of successful practices to the national and regional level. | | |
| 5. Knowledge management and learning | 5. Improved knowledge management frameworks for the collection and maintenance of regional knowledge in transboundary water catchment management and climate change adaptation practices. | 5.1. A forum established to promote the collaboration of research initiatives across the Lake Victoria Basin, with a focus on adaptation to climate change. | 5.1.1. Hold regional workshops with researchers and technical experts to plan interdisciplinary research projects on climate change adaptation and water catchment management. | Burundi, Kenya, Rwanda, Tanzania and Uganda (all LVB countries) | 318,489 |
| | | | 5.1.2. Hold regional workshops with private sector initiatives vulnerable to climate change and climate change adaptation researchers to share current knowledge and plan future research based on the needs of stakeholders. | | |
| | | 5.2. Awareness-raising campaign to share lessons learned with stakeholders, ranging from policy- and decision-makers to vulnerable communities in the Lake Victoria Basin. | 5.2.1. Produce awareness-raising materials on water management and climate change adaptation. | | |
| | | | 5.2.2. Undertake awareness-raising campaigns for vulnerable communities to share lessons on water management and climate change adaptation. | | |
| | | | 5.2.3. Hold workshops for policy and decision-makers in national | | |

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| | | | ministries and regional organisations to raise awareness on transboundary water management in the context of climate change and lessons learned from adaptation interventions implemented under Component 3. | | |
| | | 5.3. Regional public-private partnership agreements developed to promote climate-resilient management of natural resources. | 5.3.1. Hold workshops with regional, non-government stakeholders focused on the climate-resilient management natural resources, including *inter alia* IUCN, WWF, VIA Agroforestry and Lake Victoria Fisheries Organization. | | |
| | | | 5.3.2. Promote the development of knowledge-sharing agreements between regional, non-governmental stakeholders, such as Global Adaptation Network (GAN), Africa Adaptation Knowledge Network (AAKnet) and the UNFCCC Nairobi Work Programme. | | |
| 6. Project/Programme Execution cost (9.5%) | | | | | 399,806 |
| 7. Total Project/Programme Cost | | | | | 4,608,295 |
| 8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) | | | | | 391,705 |
| **Amount of Financing Requested** | | | | | **5,000,000** |

## Projected Calendar:

*Indicate the dates of the following milestones for the proposed project/programme*

| Milestone | Expected Dates |
|---|---|
| Start of Project/Programme Implementation | January, 2017 |
| Mid-term Review (if planned) | June, 2018 |
| Project/Programme Closing | December, 2019 |
| Terminal Evaluation | September, 2019 |

## PART II: PROJECT / PROGRAMME JUSTIFICATION

A. *Describe the project / programme components, particularly focusing on the concrete adaptation activities, how these activities would contribute to climate resilience, and how they would build added value through the regional approach, compared to implementing similar activities in each country individually. For the case of a programme, show how the combination of individual projects would contribute to the overall increase in resilience.*

To achieve its objective, the project will focus both on strengthening regional coordination across the LVB and on implementing on-the-ground adaptation activities in sites that will be selected during the development of the full project proposal. The project will include five components, the details of which are provided below.

**Component 1: Regional management of a transboundary water catchment**

**Outcome 1: Strengthened institutional capacity to integrate climate resilience into transboundary water catchment management.**

**Output 1.1:** Transboundary institutional framework established that promotes a climate-resilient approach to water catchment management.

To improve regional coordination in transboundary water catchment management and climate change adaptation, a transboundary institutional framework will be established. This institutional framework will propose the most effective flow of information between *inter alia*: i) projects and organisations collecting climate data within the LVB; ii) regional climate information platforms; iii) experts and technical staff responsible for water catchment management and climate change adaptation; iv) regional policy- and decision-makers; and v) national policy- and decision-makers.

Indicative activities to be implemented under Output 1.1 are:

1.1.1. Conduct needs assessment within regional and national institutions to identify gaps in capacity to plan and implement transboundary water catchment management.

1.1.2. Establish the LVBC Climate Change Unit (CCU) through regional meetings that include national ministries mandated to address climate change.

1.1.3. Undertake regional capacity building exercises in water catchment management in the context of climate change in organisations including *inter alia*

the: i) LVBC Climate Change Unit; ii) EAC Climate Change Technical Working Group; iii) EAC Climate Change Unit; and iv) Lake Victoria Regional Local Authority Cooperation.

1.1.4. Undertake national capacity building exercises in water catchment management in the context of climate change in relevant national ministries – for example the Ministry of Water, Environment, Lands and Urban Planning (Burundi), the Ministry of Environment, Water and Natural Resources (Kenya) and the Ministry of Lands, Environment, Forestry, Water and Mines (Rwanda) – that interface with regional organisations identified in Activity 1.1.1.

1.1.5. Develop a strategic framework for transboundary water catchment management during regional workshops. This will be done in collaboration with relevant institutions, for example the Mara River Basin Transboundary Water Resources Forum. While applicable across the LVB, the strategic framework will focus on the Mara River and Kagera sub-basins and Mount Elgon.

**Output 1.2:** Training provided to government ministries and agencies, civil society and the private sector to address climate change related challenges in transboundary water catchment management.

The success of the transboundary institutional framework developed under Output 1.1 will depend on adequate knowledge and capacity within regional and national institutions within the LVB to undertake transboundary water management and climate change adaptation. Therefore, the focus of Output 1.2 will be on providing training to a range of regional and national organisations within the LVB.

Indicative activities to be implemented under Output 1.2 are:

1.2.1. Develop training material on climate change adaptation and water catchment management.

1.2.2. Provide training on climate change adaptation and water catchment management at the regional level to national government representatives.

1.2.3. Provide training on climate change, climate change adaptation and water management at national workshops which will include civil society, NGOs and the private sector.

**Output 1.3:** Institutional coordination mechanism to promote climate change adaptation in regional policy- and decision-making established.

To ensure that the transboundary institutional framework developed under Output 1.1 becomes operational, an action plan will developed which will prescribe clear

objectives for each regional and national organisation included in the transboundary institutional framework.

Indicative activities to be implemented under Output 1.3 are:

1.3.1. Compile a review of international best practice in transboundary water catchment management.

1.3.2. Develop a LVB-specific action plan to improve the regional coordination of transboundary water catchment management.

1.3.3. Implement a LVB-specific action plan to improve regional coordination of transboundary water catchment management.

**Component 2: Climate information and decision-making**

**Outcome 2: Improved delivery of accurate and timely climate information – with an emphasis on transboundary water catchment management – to regional and national policymakers, technical officers and local communities.**

**Output 2.1:** Stocktake of end-to-end EWS and climate-monitoring initiatives to identify gaps between the recording of climate data to the delivery of tailored climate forecasts.

With the large geographical area of the LVB, a number of EWS and climate-monitoring initiatives are likely to be active. Therefore, to ensure that the project builds on existing initiatives and avoids duplication of efforts, a stocktake of EWS and climate-monitoring initiatives will be undertaken and opportunities identified for collaboration.

Indicative activities to be implemented under Output 2.1 are:

2.1.1. Review current climate-monitoring initiatives and EWS in the LVB, with an emphasis on transboundary water catchment management.

2.1.2. Identify opportunities for complementarity with current climate monitoring initiatives and regional organisations such as ICPAC, FEWSNET, RCMRD and the LVBC Climate Change Unit.

2.1.3. Compile report, based on Activities 2.1.1 and 2.1.2, to guide the activities under Output 2.2.

**Output 2.2:** Information platform developed to deliver climate information to be used in seasonal and long-term planning.

Guided by the stocktake of Output 2.1, climate information will be collected through a central platform developed/strengthened by the project. This platform will allow for the development and updating of seasonal and long-term climate information used for operational planning (seasons) and long-term strategic planning (decades). The outputs from the climate information platform will be climate forecasts tailored to the needs of end-users, for example subsistence farmers, fishing communities and technical staff from hydropower facilities. The climate information platform will also operational water management needs of the LVBC for: i) climate monitoring and seasonal forecasting, for example to support agricultural drought management; and ii) long-term climate information for catchment management planning.

Indicative activities to be implemented under Output 2.2 are:

2.2.1. Assess linkages between processed climate information and decision-making to ensure that the delivered climate information is embedded into regional and national decision-making processes.

2.2.2. Tailor a LVB-specific platform to collect climate data, guided by the EAC Climate Change Working Group and in collaboration with regional initiatives such as the PREPARED Climate Change Adaptation Forum and existing global data sources such as the NOAH CFS v2 weather model.

2.2.3. Collect climate information generated across the LVB, using the report developed under Activity 2.1.3.

2.2.4. Synthesise, process and generate climate information according to the needs of stakeholders targeted in Output 2.3.

**Output 2.3:** Climate information and forecasts delivered to national policymakers, LVBC technical officers and local communities in tailored media/information products to guide both operational and long-term strategic planning.

To complement the tailoring of climate forecasts in Output 2.2, the most effective medium for reaching end-users will be identified through consultations undertaken in Output 2.1. Climate forecasts will then be delivered to end-users in appropriate media and with the appropriate frequency.

Indicative activities to be implemented under Output 2.3 are:

2.3.1. Deliver climate information for long-term planning to policy and decision-makers in regional organisations as well as technical staff in national ministries within the LVB through presentations, technical reports, policy briefs, etc.

2.3.2. Deliver operational climate information for seasonal planning to policy and decision-makers as well as technical staff in national ministries within the LVB through the developed platform, as well as operational reports and briefs

2.3.3. Hold local community meetings and workshops to deliver climate information in locally relevant and accessible formats.

2.3.4. Capacity building and training for relevant organisations ensuring a proper understanding and dissemination of the climate information delivered through the information platform.

**Component 3: Climate change adaptation in vulnerable communities**

**Outcome 3: Climate change adaptation technologies transferred to communities to reduce their vulnerability to climate change.**

**Output 3.1:** Project intervention sites identified.

To ensure that the project's on-the-ground interventions are implemented in accessible sites, where local communities are vulnerable to the effects of climate change – specifically reduced water quality and availability – potential sites will be identified using a climate change Vulnerability Assessment undertaken under PREPARED. This Vulnerability Assessment will be used to ensure the project activities are undertaken in climate change hotspots. Within project sites, the most appropriate areas for on-the-ground interventions will be identified through participatory mapping. Specific project sites might include *inter alia* Rwegura River (Burundi), Chohoha Lake (Burundi and Rwanda), Yala Swamp (Kenya), Mara River Basin (Kenya and Tanzania), Nyabugogo Swamp (Rwanda), Mwanza Gulf (Tanzania), Sango Bay (Tanzania and Uganda) and Lake Nabugabo (Uganda).

Indicative activities to be implemented under Output 3.1 are:

3.1.1. Apply findings of the PREPARED Vulnerability Assessment to identify potential project intervention sites, with a particular focus on the water quality and accessibility.

3.1.2. Conduct baseline survey to select project interventions sites from the potential sites identified in Activity 3.1.1.

3.1.3. Undertake participatory mapping with communities in the project sites to identify specific areas for on the ground activities.

**Output 3.2:** Extension officers and local communities trained on water conservation, climate-smart agriculture and EbA.

To promote local ownership of project interventions and to increase local-level technical capacity, extensions officers and local community members – including women and vulnerable groups – will be trained and equipped to undertake: i) water conservation practices; ii) climate-smart agricultural techniques; and iii) EbA activities.

Indicative activities to be implemented under Output 3.2 are:

3.2.1. Train extension officers and local community members on water conservation practices, climate-smart agricultural techniques and EbA activities.

3.2.2. Provide seedlings and equipment to local communities to implement water conservation practices, climate-smart agricultural techniques and EbA activities.

3.2.3. Plan water conservation practices, climate-smart agricultural techniques and EbA activities with local communities, using maps developed in Activity 3.1.3.

**Output 3.3:** Water conservation, climate-smart agriculture and EbA demonstrated at selected project intervention sites.

Once appropriate sites have been identified and mapped in a participatory process under Output 3.1 and training has been provided under Output 3.2, on-the-ground adaptation interventions will be implemented, including water conservation practices, climate-smart agricultural techniques and EbA activities. These on-the-ground interventions will reduce the vulnerability of communities within the selected project sites to the negative effects of climate change. Lessons learned from these adaptation interventions will be shared at a regional level under Component 5. In addition, regional and long-term research initiatives promoted under Component 5 will be encouraged to include adaptation interventions in Component 3 as sources of data.

Indicative activities to be implemented under Output 3.3 are:

3.3.1. Implement water conservation practices, for example the construction of micro-scale water harvesting infrastructure.

3.3.2. Implement climate-smart agricultural techniques, for example by introducing drought-tolerant crops with early maturation.

3.3.3. Implement EbA activities, for example homegardens and agroforestry.

**Component 4: Small grants programme**

**Outcome 4: Regional resilience to climate change promoted through innovative, community-based projects.**

**Output 4.1:** Small-scale projects funded to promote innovative approaches to climate change adaptation.

To promote innovative and community-based approaches to water management and conservation, a small grants programme will be implemented. Grant applicants will be selected using a fair and transparent process. Technical guidance will be provided to project proponents to increase the likelihood of each project's success and to increase the technical capacity of project proponents. Selection criteria of project proponents will prioritise climate hotspots including *inter alia* Rwegura River (Burundi), Chohoha Lake (Burundi and Rwanda), Yala Swamp (Kenya), Mara River Basin (Kenya and Tanzania), Nyabugogo Swamp (Rwanda), Mwanza Gulf (Tanzania), Sango Bay (Tanzania and Uganda) and Lake Nabugabo (Uganda).

Indicative activities to be implemented under Output 4.1 are:

4.1.1. Develop selection criteria and invite project proponents to submit proposals through national networks.

4.1.2. Review of project proposal and selection of successful project proponents.

4.1.3. Implement innovative water management projects through project proponents.

4.1.4. Provide regular technical assistance to small-scale projects, including field site visits.

4.1.5. Undertake monitoring and evaluation of small-scale projects to provide information for Output 4.3.

**Output 4.2:** Community-based awareness campaign to promote upscaling of successful practices, using evidence generated from small-scale projects.

Under Output 4.1, the benefits of community-based projects will accrue at a local level. To promote regional resilience, strong emphasis will be placed on monitoring the results of each project, and then sharing lessons learnt with local communities and district and national-level government to promote the upscaling of successful projects to both national and regional levels.

Indicative activities to be implemented under Output 4.2 are:

4.2.1. Synthesise results of small-scale projects.

4.2.2. Hold awareness-raising campaign in local communities to showcase the results of successful projects.

4.2.3. Identify community organisations and district-level government offices through which to promote the upscaling of successful practices.

**Component 5: Knowledge management and learning**

**Outcome 5: Improved knowledge management frameworks for the collection and maintenance of regional knowledge in transboundary water catchment management and climate change adaptation practices.**

**Output 5.1:** A forum established to promote the collaboration of research initiatives across the Lake Victoria Basin, with a focus on adaptation to climate change.

To promote the coordination between researchers, technical experts and policy and decision-makers, a research forum with a focus on transboundary water management and climate change adaptation will be established. This research forum will be established in collaboration with regional institutions including *inter alia* the EAC's CCTWG and the Inter-University Council for East Africa. By supporting collaborative research efforts, the project's interventions can increase the evidence base to leverage funds to address climate change adaptation and transboundary water management. Research initiatives promoted through the regional research forum will be encouraged to include adaptation interventions in Component 3 as sources of data.

Indicative activities to be implemented under Output 5.1 are:

5.1.1. Hold regional workshops with researchers and technical experts to plan interdisciplinary research projects on climate change adaptation and water catchment management.

5.1.2. Hold regional workshops with private sector initiatives vulnerable to climate change and climate change adaptation researchers to share current knowledge and plan future research based on the needs of stakeholders.

**Output 5.2:** Awareness-raising campaign to share lessons learned with stakeholders, ranging from policy and decision-makers to vulnerable communities in the Lake Victoria Basin.

The sharing of knowledge and project results will be targeted towards vulnerable communities within the LVB as well as policy and decision-makers in national ministries and regional organisations. The lessons learned and results from on-the-ground adaptation activities under Component 3 will be included to ensure that local-level interventions are shared at a regional level.

Indicative activities to be implemented under Output 5.2 are:

5.2.1. Produce awareness-raising materials on water management and climate change adaption.

5.2.2. Undertake awareness-raising campaigns for vulnerable communities to share lessons on water management and climate change adaptation.

5.2.3. Hold workshops for policy and decision-makers in national ministries and regional organisations to raise awareness on transboundary water management in the context of climate change in addition to lessons learned from local-level adaptation interventions implemented under Component 3.

**Output 5.3:** Regional public-private partnership agreements developed to promote climate resilient management of natural resources.

The project will promote knowledge-sharing agreements between regional, non-government stakeholders – including the private sector – focused on the climate-resilient management of natural resources.

Indicative activities to be implemented under Output 5.3 are:

5.3.1. Hold workshops with regional, non-government stakeholders focused on the climate resilient management natural resources, including *inter alia* IUCN, WWF, VIA Agroforestry and Lake Victoria Fisheries Organization.

5.3.2. Support the development knowledge-sharing agreements between regional, non-government stakeholders, including *inter alia* the Global Adaptation Network (GAN), Africa Adaptation Knowledge Network (AAKnet) and the UNFCCC Nairobi Work Programme.

***B.*** *Describe how the project /programme would promote new and innovative solutions to climate change adaptation, such as new approaches, technologies and mechanisms.*

Under Component 3, project site selection will be undertaken based on PREPARED's Vulnerability Assessment. Project sites will include communities that are vulnerable to the effects of climate change, particularly reduced water availability. These target communities will also have limited adaptive capacity as a result of limited access to technology and limited knowledge of climate-resilient practices. Therefore, the implementation of adaptation interventions – including water conservation practices[80], climate-smart agricultural techniques[81] and EbA

[80] Examples of water conservation practices include *inter alia*: i) micro-scale water harvesting infrastructure; ii) diversion ditches and cut-off drains; and iii) mulching.

activities[82] – will be innovative within a local context. By promoting alternative livelihoods based on sustainable natural resource use, EbA in particular will represent an innovative livelihood strategy for local communities.

Under Component 4, the SGP will promote the implementation of innovative adaptation interventions. Specifically, one of the criteria used to select project proponents will be the innovativeness of the proposed project. In addition, the SGP is well-suited to foster innovative approaches for two reasons. Firstly, the local scale and moderate budget (<US$100,000) of SGP projects provides a relatively low-risk opportunity to trial new and innovative approaches to adaptation. Secondly, innovative projects that are successful can be upscaled through Output 4.2 and Component 5, thereby promoting an innovative approach to adaptation at a regional level.

Under Component 5, a research forum will be established to promote LVB-wide collaboration between research initiatives with a specific focus on adaptation to climate change and water catchment management. Academic institutions as well as technical experts in climate change adaption will be included as participants. This forum will provide opportunities for researchers to plan interdisciplinary research projects, co-author scientific publications and establish links with policy and decision-makers. Within the LVB, a research forum focused on climate change adaptation will be innovative. An encouraging proof-of-concept was demonstrated in South Africa[83]. Specifically, a period of intense collaborative research – which illustrated the economic benefit of ecosystem services – resulted in publications[84] that motivated for the leveraging of finance to restoration programmes at a national scale. A similar approach will be followed under Component 5, with the goal of using research outputs to leverage finance for climate change adaption and the management of transboundary water catchments.

C. *Describe how the project / programme would provide economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme would avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.*

[81] Examples of climate-smart agricultural techniques include *inter alia*: i) including climate forecasts in medium-term planning; and ii) adopting drought-tolerant and early maturing plant varieties and animal breeds.
[82] Examples of EbA activities include *inter alia*: i) homegardens; and ii) agroforestry.
[83] For example, the Working for Water Programme. For further information, see: https://www.environment.gov.za/projectsprogrammes/wfw.
[84] The publication of several high-profile scientific articles provided a platform from which ecosystem management initiatives could be implemented. Examples of these scientific articles are:

- van Wilgen, B., Cowling, R.M. & Burgers, C.J. 1996. Valuation of ecosystem services. BioScience: 46, 184–189.
- van Wilgen, B., Le Maitre, D.C. & Cowling, R.M. 1998. Ecosystem services, efficiency, sustainability and equity: South Africa's Working for Water Programme. Trends in Ecology and Evolution: 13, 378.

*Economic benefits*

Agricultural activities – and the consequent clearing of vegetation – within the LVB are negatively affecting the livelihoods of subsistence fisherfolk. Specifically, runoff from soil erosion increases the concentration of nutrients – for example nitrogen and phosphorous – in Lake Victoria and its tributaries[85]. This increased nutrient load increases the intensity of eutrophication, which has favoured the Nile perch (*Lates niloticus*) to the detriment of a number of tilapia species. Rural communities preferentially eat tilapia and it provides a relatively inexpensive source of protein. Therefore, vegetation clearing for agriculture and the resultant soil erosion is indirectly impacting the livelihoods of rural communities in the LVB. By improving reducing soil erosion through EbA activities[86] that promote soil stabilisation and ecosystem recovery, the recovery of tilapia populations will be promoted and the livelihoods of rural communities will be strengthened.

Of the total land area of the LVB, ~45% is already under cultivation[87] and subsistence agriculture underpins the livelihoods of ~80% of the region's population[88]. Climate change, specifically increasing mean annual temperatures and the increased frequency and intensity of floods and droughts is expected to impact negatively on the agricultural sector. These negative impacts of climate change on agriculture include *inter alia*: i) reduced crop yields; ii) reduced reproductive rates in livestock; and ii) reduced wool and milk yields[89]. By training local communities and extension officers (Component 3) in climate-smart agricultural techniques[90] and providing the required equipment, the economic benefits of agriculture under the conditions of climate change will increase in the short term. In addition, as compared to the baseline scenario, the economic benefits of agriculture will be sustainable in the medium to long term.

Water in the LVB underpins a number of economic activities, including transport[91], hydropower[92] and fisheries[93]. Climate change in the LVB – for example increased variability in rainfall patterns and an increased frequency in floods and droughts – will impact negatively on these economic activities. These negative impacts of climate change will be exacerbated without accurate and complete climate forecasts.

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[85] Machiwa, P.K. 2002. Water quality management and sustainability: The experience of Lake Victoria Environmental Management Project: paper presented at the WaterNet/WAFRSA Symposium, Dar es Salaam.
[86] Examples of EbA activities include *inter alia*: i) homegardens; and ii) agroforestry.
[87] Machiwa, P.K. 2002. Water quality management and sustainability: The experience of Lake Victoria Environmental Management Project Paper presented at the WaterNet/WAFRSA Symposium, Dar es Salaam.
[88] The Global International Waters Assessment. 2006. East African Rift Valley lakes. GIWA Regional Assessment, 47.
[89] East African Sustainability Watch Network. 2014. Lake Victoria climate change readiness brief, No.3: progress and level of implantation of the East African Community climate change policy commitments in the Lake Victoria Basin with respect to agriculture, nutrition and food security.
[90] Examples of climate-smart agricultural techniques include *inter alia*: i) including climate forecasts in medium-term planning; and ii) adopting drought-tolerant and early maturing plant varieties and animal breeds.
[91] Lake Victoria facilitates regional transportation with major transport routes connecting the towns of Musoma, Mwanza, Bukoba (Tanzania), Port Bell, Jinja (Uganda) and Kisumu (Kenya).
[92] The World Bank. Energy and mining data. Available at: http://data.worldbank.org/topic/energy-and-mining.
[93] Njiru, M., Sitoki, L., Nyamweya, C., Jembe, T., Aura, C., Waithaka, E. & Masese, F. 2012. Habitat degradation in Lake Victoria fisheries. Advances in Environmental Research: 27, 1–34.

By improving the delivery of climate information (Component 2) and promoting regional coordination (Component 1), the project activities will allow economic sectors to undertake medium- and long-term planning and therefore limit the negative impacts of climate change on water resources, as compared to the baseline scenario.

*Social benefits*

Under Component 1, capacity-building activities undertaken in regional and national organisations will include a module on gender sensitivity[94]. This training will promote the inclusion of gender-sensitive considerations in regional and national policies and strategies.

Women and vulnerable groups will be prioritised in the selection of project sites (Output 3.1) to ensure that benefits accruing from on-the-ground activities are directly accessible. Training activities provided (Output 3.2) to local communities on the implementation of on-the-ground adaptation interventions will target both women and vulnerable groups to both promote skills development and diversify livelihood opportunities.

Under Component 4, grants will be awarded to projects that are designed and implemented in local communities. By providing access to both resources and technical expertise, the project activities will up-skill members of local communities. In addition, Output 4.2 – the community-based awareness campaign to promote upscaling of successful practices using evidence generated from small-scale project – will provide an opportunity for local communities to expand their projects and generate benefits at a larger scale.

*Environmental benefits*

Activities included under Component 1 will: i) strengthen the institutional framework guiding transboundary water management; and ii) increase regional and national capacity to manage transboundary water catchments, with a particular focus on climate change. Through improved institutional coordination, the project's activities will improve the regional planning and management of transboundary water catchments, resulting in regional environmental benefits including *inter alia* increased water quality and availability.

Current agricultural practices in the LVB are resulting in a number of negative side-effects. For example, the runoff resulting from soil erosion increases the concentration of nutrients such as nitrogen and phosphorous in Lake Victoria and its tributaries[95]. This increased nutrient load has both reduced water quality and result in eutrophication. Under the future conditions of climate change, specifically an

[94] If relevant, considerations of indigenous peoples and vulnerable groups will be included in this training module.
[95] Machiwa, P.K. 2002. Water quality management and sustainability: The experience of Lake Victoria Environmental Management Project: paper presented at the WaterNet/WAFRSA Symposium, Dar es Salaam.

increase in the frequency of intense rainfall events, soil erosion will be exacerbated. Through the introduction of EbA activities, such as agroforestry[96] and homegardens[97] (Component 3), topsoil will be stabilised and conserved. Improved conservation of topsoil will ensure that nutrient runoff is reduced and water quality in Lake Victoria and its tributaries will increase as compared to the baseline scenario.

Future climate change trends are predicted to include i) an increase in the frequency and intensity of drought events; and ii) an increase in mean annual temperature. Both increased drought and increased temperature will reduce water availability for local communities. Currently, local communities in the LVB do not have adequate equipment and expertise to conserve water. Therefore, under the future conditions of climate change, local communities are likely to draw increasing amounts of water from Lake Victoria and its tributaries to compensate for reduced water availability. Reduced water volume in Lake Victoria and its tributaries will have a number of negative environmental consequences, including reduced habitat availability for aquatic flora and fauna By providing equipment and training for water conservation practices (Outputs 3.2 and 3.3), the project activities will reduce the need for local communities to draw water from Lake Victoria and its tributaries. Therefore, under the future conditions of climate change, the negative environmental effects associated from drawing water from Lake Victoria and its tributaries will be reduced as compared to baseline scenario.

For details on how the project will adhere to the Environment and Social Policy of the Adaptation Fund, please see Section L.

D. *Describe or provide an analysis of the cost-effectiveness of the proposed project / programme and explain how the regional approach would support cost-effectiveness.*

The project's activities under Component 1 will promote improved coordination between regional institutions responsible for transboundary water management and climate change adaptation in the LVB, for example: i) LVBC Climate Change Unit; ii) EAC Climate Change Technical Working Group; iii) EAC Climate Change Unit; and iv) Lake Victoria Region Local Authority Cooperation. Specifically, the project's investment will be used to increase the effectiveness of already-existing institutions in the LVB, for example by i) undertaking capacity-building exercises in water catchment management and climate change adaptation; and ii) developing a strategic framework for transboundary water catchment management. Therefore, the benefit of the interventions in Component 1 will be disproportionately large, relative to the project's investment.

[96] Agroforestry is an approach to land-use, in which trees are grown around or among crops. By including a diversity of species, agroforestry can result in increased productivity, increased economic benefits and enhanced ecosystem goods and services, as compared to conventional agriculture.

[97] Homegardens are household-level plantations in which a variety of endemic and agricultural species are maintained to provide economic, cultural and medicinal benefits. Each homegarden is unique and is adapted according to its owners' knowledge and requirements.

The cost-effectiveness of the project's on-the-ground adaptation interventions (Component 3) will be greatly enhanced by the EbA approach. A growing scientific literature suggests that EbA measures result in a greater ratio of benefit:cost compared to the implementation of hard infrastructure. For example, an economic analysis of the restoration and rehabilitation of grasslands and woodlands – from a number of studies occurring across different sites – estimates internal rates of return of 20–60% and benefit:cost ratios of up to 35:1[98] for grasslands. An example of the cost-effectiveness of the EbA approach also emerged from an economic analysis undertaken in Lami, Fiji[99]. This analysis included assessments of the costs and benefits of three approaches to watershed management, namely: i) EbA measures only; ii) hard infrastructure interventions only; and iii) a hybrid approach applying both EbA measures and hard infrastructure interventions. The analysis demonstrated that EbA watershed management options are at least twice as cost-effective as hard infrastructure engineering options, i.e. a benefit:cost ratio of US$19.50:1 for EbA compared to US$9:1 for hard infrastructure. The cost-effectiveness of the EbA approach is expected to benefit the project through the implementation of EbA activities in project sites.

Under Component 5, a forum will be established which will include researchers, academics and technical experts specialising in climate change adaptation and water catchment management. This forum will promote collaborative research and opportunities for knowledge-sharing. In addition, emphasis will be placed on communicating research findings to: i) policy and decision-makers in the LVB; and ii) stakeholders from economic sectors affected by climate change. By coordinating the efforts of experts already engaged in research and facilitating communication with policy- and decision-makers, the project's investment will accrue a disproportionately large benefit for water catchment management in the LVB under the conditions of climate change.

**E.** *Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist. If applicable, please refer to relevant regional plans and strategies where they exist.*

Selected regional and national plans, strategies and development goals with which the project is aligned are presented in the table below. Alignment is indicated at component level, but this will be further detailed during the development of the full project proposal.

[98] De Groot, R.S., Blignaut, J., van der Ploeg, S., Aronson, J., Elmqvist, T. & Farley, J. 2013. Benefits of investing in ecosystem restoration. Conservation Biology 27: 1286-1293.

[99] Rao, N.S., Carruthers, T.J.B., Anderson, P., Sivo, L., Saxby, T.A., Durbin, T., Jungblut, V., Hills, T. & Chape, S. 2013. An economic analysis of ecosystem-based adaptation and engineering options for climate change adaptation in Lami Town, Republic of the Fiji Islands. A technical report by the Secretariat of the Pacific Regional Environment Programme. Apia, Samoa.

| NATIONAL | |
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| **National Adaptation Programmes of Action (NAPA)** | |
| Burundi | **NAPA (2007)**<br><br>Component 2 of the project is aligned with:<br>• NAPA Priority 1, namely the "improvement of seasonal early warning climate forecasts"; and<br>• NAPA Priority 11, which focuses on climate change education. |
| Kenya | N/A |
| Rwanda | **NAPA (2006)**<br><br>Component 2 of the project is aligned with:<br>• NAPA Priority 2, namely "Mastering hydro "meteorological information and early warning systems to control extreme phenomena due to climate change". |
| Tanzania | **NAPA (2006)**<br><br>Components 3 and 4 of the project are aligned with:<br>• NAPA Priority 4, which focuses on climate change adaptation through participatory reforestation and includes awareness on climate change adaptation through community participatory efforts. |
| Uganda | **NAPA (2007)**<br><br>Components 1 and 5 of the project are aligned with:<br>• NAPA priority 9, namely "climate change and development planning", under which proposed activities include *inter alia* reviewing existing governing policies to include climate change considerations and awareness-raising on the impacts of climate change with the relevant decision-makers and planners.<br><br>Component 2 of the project is aligned with:<br>• NAPA priority 3, which focuses on strengthening meteorological services. |
| **National development goals** | |
| Burundi | N/A |
| Kenya | **Vision 2030**<br><br>The Vision focuses on the development of an all-inclusive and cross-sectoral plan to create a globally competitive and prosperous nation with a high quality of life for all citizens by 2030. The vision is implemented in successive five-year plans. In the Vision, the need to improve the national capacity to address climate change is recognized. Therefore, specifically through Components 1 and 3, the project will be strongly aligned with the Vision. |
| Rwanda | **Vision 2020**<br><br>The Vision provides a framework for Rwanda's socioeconomic development. The objective of the Vision is to transform Rwanda into a middle-income country by 2020. Barriers identified in the vision include *inter alia*: i) diminishing agricultural productivity; and ii) limited institutional capacity. Therefore, the project will be strongly aligned with the Vision under Components 1 and 3. |
| Tanzania | **Vision 2025** |

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| | The objective of the Vision is to build a globally-competitive and resilient economy and to increase the quality of life for all citizens. The Vision proposes transforming Tanzania from a LDC to a middle-income country by 2025. Realising the vision will create the enabling environment for socio-economic development in Tanzania. The barriers identified to achieving the Vision's objective include limitation in good governance. Therefore, through Component 1, the interventions of the project are strongly aligned with the Vision. |
| Uganda | **Vision 2040**<br><br>The Vision proposes a transition from a predominantly low-income to a competitive upper middle-income country within 30 years. To achieve the Vision, Uganda has to increase its GDP 30 times by 2040. One of the challenges that needs to be overcome before the Vision can be successful is the inadequate management of the environment and the adverse effects of climate change, which has resulted in limited implementation of adaptation and mitigation interventions. As part of the Vision, sectoral and cross-sectoral interventions will be developed and implemented to address the negative effects of climate change. Through Components 1, 2 and 3, the project will be strongly aligned with the Vision. |
| **Poverty reduction strategies** | |
| Burundi | **Poverty Reduction Strategy (2009)**<br><br>The Poverty Reduction Strategy was developed to promote macro-economic restructuring and growth. Under Component 1, the project will strengthen the capacity of the government institutions to address the effects of climate, in particular those adversely affecting water resources within the LVB. Under Component 3, interventions will be implemented to decrease the vulnerability of local communities to the effects of climate change and in particular, will strengthen local livelihoods under the future conditions of climate change. |
| Kenya | **Poverty Reduction Strategy (2004)**<br><br>Under this strategy, economic growth and job creation were prioritised as a means of reducing poverty. The strategy focuses on several thematic areas including economic, social and political. Several means of achieving the goals of the Poverty Reduction Strategy have been proposed, including: i) fight poverty and income inequality; ii) set goals of structural transformation of Kenya's economy towards higher productivity; and iii) improve public infrastructure, in particular the transport network and electricity supply. In particular, through Components 1, 2 and 3, the project is aligned with the Poverty Reduction Strategy. |
| Rwanda | **Poverty Reduction Strategy (2013)**<br><br>The Poverty Reduction Strategy aims to accelerate Rwanda's economic growth and decrease the incidence of poverty within the country. The Poverty Reduction Strategy includes a strong focus including climate change considerations at a national level and across all sectors to build a green economy and in particular, recognises that climate change adaptation and mitigation measures are to be included in the urbanisation process. The pillars identified to support the effective implementation of the strategy are: i) economic transformation; ii) rural development; iii) productivity and youth employment; iv) accountable governance. Therefore, through Components 1, 3 and 4, the project is aligned with the Poverty Reduction Strategy. |
| Tanzania | **National Strategy for Growth and Reduction of Poverty (2011)** |

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| | The objective of the National Strategy for Growth and Reduction of Poverty is to increase the economic growth and productivity to reduce poverty through the: i) efficient use and development of factors of production (including human capital); and ii) strengthening and establishing well-functioning institutions and markets. The National Strategy for Growth and Reduction of Poverty also recognises that to promote food and nutrition security in Tanzania, crops and livestock need to be made resilient to the future effects of climate change. The project is therefore aligned with the National Strategy for Growth and Reduction of Poverty through the interventions of Component 3. |
| Uganda | **Poverty Reduction Strategy (2010)**<br><br>The Poverty Reduction Strategy recognises the need to build the capacity of government authorities to identify the vulnerabilities to climate change and thereafter develop appropriate adaptation and mitigation measures. The barriers to reducing poverty include *inter alia*: i) weak public sector management and administration; ii) inadequate financing and financial services; iii) poor human resources; and iv) poor physical infrastructure. Through Component 1 and Component 5, the project is aligned with the Poverty Reduction Strategy. |
| **Country Strategy Papers** | |
| Burundi | **Country Strategy Paper (2012-2016)**<br><br>The objectives outlined in the Country Strategy Paper are to increase economic growth and decrease the prevalence of poverty. The country's strategic framework comprises the strengthening of state institutions and infrastructure improvement. Through Components 1, 2 and 5, the project will improve institutional coordination and decision-making and is therefore aligned with the Country Strategy Paper. |
| Kenya | **Country Strategy Paper (2014-2018)**<br><br>The objective of the Country Strategy Paper is to address Kenya's overarching strategic challenge in achieving economic growth. One of the main weaknesses identified in the Country Strategy Paper is its vulnerability to climate change. Therefore, through Components 1, 3 and 4, the project will be aligned with the Country Strategy Paper. |
| Rwanda | **Country Strategy Paper (2012-2016)**<br><br>The Country Strategy Paper aims to enable Rwanda to its development vision for 2020. The pillars of the strategy include infrastructure development, enterprise and institutional development. National weaknesses identified in the Country Strategy Paper include: i) slow structural transformation; ii) limited infrastructure; iii) limited private sector development; and iv) high incidence of poverty and unemployment. In addition, the Country Strategy Paper notes an urgent need for environmental protection including climate-proofing existing infrastructure and sustainable natural resource management. Therefore, through Components 3 and 4, the project is aligned with the Country Strategy Paper. |
| Tanzania | **Country Strategy Paper (2011-2015)**<br><br>The Country Strategy Paper promotes the creation of an enabling environment to realise the 2025 national development vision. In collaboration with the Norwegian Government, the Tanzanian Government is developing a climate change adaptation and mitigation plan to address the effects of rising temperatures, recurrent droughts, desertification and reduced water volume in lakes. Therefore, through Components 2, 3 and 4, the project is aligned with Country Strategy Paper. |

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| Uganda | **Country Strategy Paper (2010-2015)**<br><br>By promoting the achievement of sustainable development goals through economic growth, the Country Strategy Paper outlines an approach to alleviate poverty. The approach outlined in the Country Strategy Paper includes the protection and sustainable use of water resources to avoid any potential conflicts and to reduce vulnerability to climate change. The sustainable use of water resources is to be achieved through the decentralisation of capacities within the government and adequate financing. Therefore, through Components 1, 3 and 4, the project is aligned with the Country Strategy Paper. |
| **REGIONAL** | |
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| **Sustainable Development Goals** (Kenya, Uganda and Tanzania) | The Sustainable Development Goals (SDG) take a broad approach on environmental sustainability and have been adopted by Kenya, Uganda and Tanzania. The project will contribute to the following SDGs:<br>• SDG 5 – Achieve gender equality and empower all women and girls, by promoting gender equity throughout the project and targeting women in specific project activities.<br>• SDG 6 – Ensure availability and sustainable management of water and sanitation for all, by implementing EbA interventions in project sites within the LVB.<br>• SDG 13 – Take urgent action to combat climate change and its impacts, specifically:<br>o 13.1. Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters through Components 1 and 2; and<br>o 13.2. Integrate climate change measures into national policies, strategies and planning through Components 1 and 2.<br>• 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 through the implementation of EbA and other adaptation practices. |
| **4th East African Community Development Strategy** (Burundi, Kenya, Rwanda, Uganda and Tanzania) | The 4th East African Community Development Strategy (EACDS) outlines broad strategic goals of the EAC as well as specific targets to promote infrastructure development and economic growth. Some of the major challenges to achieving the goals of the EACDS include *inter alia:* i) inadequate infrastructure; ii) institutional limitations; iii) inadequate national level capacities to implement regional policies. In addition, the EACDS includes an emphasis on reducing or mitigating the negative effects of climate change on agriculture and food security are. Therefore, through Components 1, 2 and 3, the project is aligned with the EACDS. |
| **Nile Basin Cooperative Framework** (Burundi, DRC, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, The Sudan, Tanzania and Uganda) | This framework was established under the Nile Basin Initiative (NBI) and is a partnership between ten riparian states including Burundi, DRC, Eqypt, Ethiopia, Kenya, Rwanda, South Sudan, The Sudan, Tanzania and Uganda. The framework promotes the sustainable use of natural resources within the Nile River Basin, including under the conditions of future climate change. Therefore, |

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| | by strengthening the regional coordination of transboundary water management (Component 1), the project is aligned with the NBI. |
| **Strategic Action Plan for the Lake Victoria Basin** (Kenya, Uganda, Tanzania, Burundi and Rwanda) | The objective of the Strategic Actions Plan (SAP) for the LVB is to promote integrated management and sustainable development within the LVB. It provides a regional framework with a set of national and regional actions to achieve the objective by the partner states. Several principles underpin the plan, including *inter alia*: i) sustainable development whereby the all activities implemented and decisions made must support the rational utilisation of resources and preserve the rights of future generations to a viable environment; ii) an integrated approach to development and environmental planning. 18 Key Transboundary Issues (KTIs) were identified in the SAP, including *inter alia:* i) climate change and water balance; ii) fisheries; iii) conflicting and inadequate policies, laws, law enforcement and institutional frameworks on natural resource management and utilisation; iii) inefficient and poor land use, exploitation of natural resources and spatial planning; iv) inadequate environmental governance and community involvement; and v) institutional management structures. A strategy has been developed to address each of the KTIs identified in the SAP. Therefore, through Components 1, 3 and 4, the project will be aligned with the SAP. |

F. *Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.*

The project is aligned with the requirements of the 2013 Environment and Social Policy of the Adaptation Fund (see Section L). In addition to complementing the efforts of the LVBC to improve regional transboundary water catchment management, the project will increase regional resilience to climate change in the LVB. As the Adaptation Fund-accredited Implementing Agency, UNEP, together with LVBC and relevant national partners. will ensure that the project follows procedures outlined in the Environment and Social Policy of the Adaptation Fund. This includes the requirement that project activities funded by the Adaptation Fund reflect local circumstances and needs and draw upon national actors and capabilities.
In addition, the project's activities will be validated by national project partners, including *inter alia:*

- Ministry of Water, Environment, Lands and Urban Planning (Burundi);
- Ministry of Environment, Water and Natural Resources (Kenya);
- Ministry of Lands, Environment, Forestry, Water and Mines (Rwanda);
- The Office of the Vice President (Tanzania); and
- The Aid Liaison Department (Uganda).

The national project partners will be consulted during the development of the full project proposal to ensure that all project activities comply with relevant national standards. If required, Environmental Impact Assessments of the project's on-the-ground activities will be undertaken. Appraisal of the project activities will be based

on a detailed quality programming checklist to ensure that necessary safeguards are addressed and incorporated into the project design.

G. *Describe if there is duplication of project / programme with other funding sources, if any.*

The project will complement current projects within the LVB. In particular, three projects have been identified with which the proposed project will be complementary. Brief outlines of these projects are provided below. Preliminary discussions were held with the teams of current projects during the development of the Pre-Concept Note and this Concept Note. Furthermore, during the development of the full project proposal, the team of the proposed project will work closely with projects listed below – as well as other relevant initiatives – to identify the best possible opportunities for enhancing complementarity and minimising duplication of efforts.

The **Lake Victoria Region Water and Sanitation Initiative II** (LVWATSAN II, 2009–present; total budget of US$29 million) aims to "make a substantial and rapid contribution to the achievement of internationally agreed water and sanitation goals in secondary towns in the Lake Victoria region in East Africa." Specific objectives of LVWATSAN II include: i) promote pro-poor water and sanitation investments in the secondary urban centres in the Lake Victoria Region; ii) facilitate realization of upstream water sector reforms at the local level in the participating urban centres; and iii) reduce the environmental impact of urbanization in the Lake Victoria Basin. The proposed project will be complementary by focusing specifically on the regional management of water resources (Component 1) and by implementing activities to promote improved water quality and accessibility in rural areas (Component 3). In addition, the proposed project will improve transboundary water management with a specific focus on the current and future effects of climate change – a consideration that is not central to the objectives of the LVWATSAN II project.

The two main objectives of the **Lake Victoria Environmental Management Programme II** (LVEMP II, 2009–2017; total budget of US$254 million) are to: i) improve the collaborative management of trans-boundary natural resources of the LVB among the Partner States; and ii) improve environmental management of targeted pollution hot-spots and selected degraded sub-catchments for the benefit of communities who depend on the natural resources of LVB. The proposed project will have a stronger focus on water management in the LVB compared with LVEMP II. During the development of the full project proposal – and through frequent consultations with the project team of LVEMP II – the proposed project will identify opportunities to build on and complement the mechanisms established by LVEMP II. Specifically, the proposed project will be complementary by promoting improved natural resource management (LVEMP II's objective) through enhanced regional management of transboundary water catchments.

The **Planning for Resilience in East Africa through Policy, Adaptation, Research and Economic Development** (PREPARED, 2012–2016; total budget of

US$40 million) aims to "strengthen the resilience and sustainability of East Africa economies, transboundary and freshwater ecosystems and communities." One of PREPARED's main objectives is to improve climate change adaptation technical capacity, policy leadership and action readiness of regional institutions. By improving the accuracy and delivery of climate information (Component 2), the proposed project's activities will both complement PREPARED and support increased effectiveness in regional policy and decision-making. In addition, the proposed project will build on the work of PREPARED by selecting project sites – for both Components 3 and 4 – based on the Vulnerability Assessment developed under PREPARED. During the development of the full project proposal, close consultation with the PREPARED project will be undertaken to further identify opportunities for complementarity.

**H.** *If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.*

The project's knowledge management will consist of three outputs.

Under Output 5.1, a research forum will be established to promote LVB-wide collaboration between research initiatives with a specific focus on adaptation to climate change and water catchment management. Academic institutions, including the Inter-University Council for East Africa, as well as technical experts in climate change adaption will be included as participants. This forum will provide opportunities for researchers to plan interdisciplinary research projects, co-author scientific publications and establish links with policy and decision-makers to share the results of their research.

Under Output 5.2, awareness-raising campaigns will be held to share knowledge on climate change adaptation and transboundary water management with regional and national policy and decision-makers as well as local communities within the LVB.

Under Output 5.3, knowledge sharing will be promoted between regional non-government stakeholders – such as IUCN, WWF, VIA Agroforestry and Lake Victoria Fisheries Organization – focused on natural resource management. In particular, emphasis will be placed on sharing information related to climate change adaptation and transboundary water catchment management.

**I.** *Describe the consultative process, including the list of stakeholders consulted, undertaken during project / programme preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.*

The project's Executing Entity, the LVBC, was consulted through the iterative process of refining the project design. As a regional organisation, the LVBC is comprised of national representatives of the five LVB countries. Therefore, the LVBC is well-positioned to ensure that the project design is tailored to local requirements,

benefits vulnerable groups and includes gender considerations. In addition, a number of organisations and initiatives were contacted during the development of both the Pre-Concept Note and the Concept Note. The stakeholders consulted to date and those that will be consulted during the development of the full project proposal are listed below.

| Stakeholder | Brief description |
|---|---|
| Lake Victoria Basin Commission (LVBC) | Regional mechanism for coordinating the various interventions on the Lake and its Basin; and serving as a centre for promotion of investments and information sharing among the various stakeholders. The commission envisages a broad partnership of the local communities around the Lake, the East African Community and its Partner States as well as the development partners. |
| East African Community (EAC) | Regional intergovernmental organisation of Burundi, Kenya, Rwanda, Tanzania Uganda. The Vision of the EAC is a prosperous, competitive, secure, stable and politically united East Africa. This Mission of the EAC is to widen and deepen economic, political, social and cultural integration in order to improve the quality of life of the people of East Africa through increased competitiveness, value-added production, trade and investments. |
| Nile Basin Initiative (NBI) | Regional inter-governmental partnership led by 10 Nile riparian countries, namely Burundi, DR Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, The Sudan, Tanzania and Uganda. Eritrea participates as an observer. NBI provides riparian countries with the only all- inclusive regional platform for multi stakeholder dialogue, information sharing as well as joint planning and management of water and related resources in the Nile Basin. |
| Community organisations and representatives | After the selection of potential project sites, community organisations and representatives will identified and consulted during the baseline study. Once final project sites are selected, community organisations and representatives will be integrally involved in both participatory mapping and implementing adaptation interventions. |
| Vulnerable/marginalised groups, including gender considerations | Vulnerable/marginalised groups will be identified during the baseline study. Once final project sites have been selected, the vulnerable/marginalised groups will be consulted and their inclusion in participatory mapping, training and implementation of adaptation interventions will be prioritised. |
| Ministry of Water, Environment, Lands and Urban Planning, Burundi | The Ministry oversees the sustainable use and development of water, energy and mineral resources. |
| Ministry of Environment, Water and Natural Resources, Kenya | The Vision of the Ministry is to ensure that water resources are available and accessible to all. The Mission of the Ministry is to contribute to national development by promoting and supporting integrated water resource management to enhance water availability and accessibility. |
| National Environment Management Authority, Kenya | The Mission of the National Environment Management Authority is to ensure a clean, healthy, and sustainable environment in Kenya through supervision and coordination of all matters relating to the environment. |
| Ministry of Lands, Environment, Forestry, Water and Mines, Rwanda | The Ministry oversees the sustainable use and development of natural resources within Rwanda, including forests, lands, water and minerals. |

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| Rwanda Environment Management Authority | The Vision of Rwanda Environment Management Authority is that all sectors of Rwandan society will value and undertake sound environmental management and rational use of natural resources in order to contribute to the national aspirations for sustainable development. The Mission of the Rwanda Environment Management Authority is to promote and ensure the protection of the environment and sustainable management of natural resources through decentralized structures of governance and seek national position to emerging global issues with a view to enhancing the well-being of the Rwandan people. |
| Ministry of Water and Irrigation, Tanzania | The Vision of the Ministry is to ensure sustainable management and development of water resources for social and economic benefits. The Mission of the Ministry is ensure that water resources are developed and managed sustainably in collaboration with all stakeholders. |
| Ministry of Water and Environment, Uganda | The Ministry has the responsibility for setting national policies and standards, managing and regulating water resources and determining priorities for water development and management. It also monitors and evaluates sector development programmes to keep track of their performance, efficiency and effectiveness in service delivery. |
| Intergovernmental Authority on Development: Climate Predictions and Applications Center (IGAD ICPAC) | The Vision of IGAD ICPAC is to become a viable regional centre of excellence in climate prediction and applications for climate risk management, environmental management, and sustainable development. The Mission of IGAD ICPAC is to provide timely climate early warning information to enable the region cope with various risks associated with extreme climate variability and change, specifically for poverty alleviation, environmental management and sustainable development. |
| Lake Victoria Region Water and Sanitation Initiative (LVWATSAN) | LVWATSAN's overall objective is to make a substantial and rapid contribution to the achievement of internationally agreed water and sanitation goals in secondary towns in the Lake Victoria region in East Africa. |
| The Lake Victoria Environmental Management Project Phase II (LVEMP II) | LVEMP II is transboundary project designed to achieve two development/global environmental objectives. Firstly, the project aims to improve collaborative management of the transboundary natural resources of the Lake Victoria Basin among the Partner States. Secondly, the project aims to improve the environmental management of targeted pollution hotspots and selected degraded sub-catchments for the benefit of communities who depend on the natural resources of Lake Victoria Basin. |
| Planning for Resilience in East Africa through Policy, Adaptation, Research and Economic Development (PREPARED) | PREPARED's overall objective is to strengthen the resilience and sustainability of East Africa economies, transboundary and freshwater ecosystems and communities. This objective will be achieved using two approaches, namely: i) improving climate change adaptation technical capacity, policy leadership and action readiness of regional institutions; and ii) strengthening resilient and sustainable management of biologically significant trans-boundary freshwater ecosystems in the EAC region. |
| UNEP-DHI | UNEP-DHI is a centre of expertise dedicated to improving the management, development and use of freshwater resources from the local to the global level. |
| Inter-University Council for East Africa (IUCEA) | IUCEA has three main objectives, namely: i) facilitate networking among universities in East Africa, and with universities outside the region; ii) provide a forum for discussion on a wide range of academic and other matters relating to higher education in East Africa; and iii) facilitate maintenance of internationally comparable education standards in East |

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| | Africa so as to promote the region's competitiveness in higher education. |

*J. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.*

**Component 1: Regional management of a transboundary water catchment**

*Baseline scenario (without AF resources)*

The LVBC is mandated to support partnerships between local communities in the LVB with the East African Community (EAC) and development partners. The focal areas of the LVBC relevant to the project include *inter alia:* i) coordination of the policies and laws applicable to Lake Victoria and its catchment area; ii) environmental management of Lake Victoria; iii) management and conservation of aquatic resources; and iv) economic activities, including the development of fishing, industry, agriculture and tourism. To achieve its mandate the LVBC coordinates activities and shares information with a number of EAC ministries and development organisations. Therefore, the LVBC has established a number of partnerships with governments and development agencies within the EAC and[100] as well as undertaken activities including *inter alia*: i) building capacity within the Lake Victoria Development Programme (LVDP, 2001)[101]; and ii) supporting the development of a MoU between the Republics and Burundi and Rwanda and the EAC in 2007. Despite the noteworthy work of the LVBC, climate change considerations have not been thoroughly incorporated into coordinating mechanisms, particularly with regards to transboundary water catchment management. Therefore, the mainstreaming of climate change adaptation in plans, strategies and policies in the LVB has been limited. Without incorporating climate change considerations into regional frameworks water resources within the LVB will be increasingly affected by future climate change, including increased mean annual temperatures and increased frequency and intensity of droughts.

*Additionality (with AF resources)*

AF resources will be used to both: i) strengthen the institutional framework guiding transboundary water management; and ii) to increase regional and national capacity to manage transboundary water catchments, with a particular focus on climate change. At a regional level, organisations to be targeted by the project interventions will include the: i) LVBC Climate Change Unit; ii) EAC Climate Change Technical Working Group; iii) EAC Climate Change Unit; and iv) Lake Victoria Regional Local Authority Cooperation. At a national level, organisations to be addressed by the project will include the: i) Ministry of Water, Environment, Lands and Urban Planning

[100] For example, the World Bank, WWF, International Union for the Conservation of Nature and the International Centre for Research in Agroforestry.
[101] For further information on the LVDP, see: http://www.eac.int/index.php?option=com_content&id=43&Itemid=120&limitstart=1

(Burundi); ii) Ministry of Environment, Water and Natural Resources (Kenya); iii) Ministry of Lands, Environment, Forestry, Water and Mines (Rwanda); iv) Office of the Vice President (Tanzania); and v) Aid Liaison Department (Uganda). Through improved institutional coordination, AF resources will improve the regional planning and management of transboundary water catchments under the future conditions of climate change.

**Component 2: Climate information and decision-making**

*Baseline scenario (without AF resources)*

Owing to the influence of rainfall on water volume within the LVB, accessing accurate and timely climate information has been identified[102] as critical service to: i) improve the safety of local fishing community[103]; and ii) allow for long-term planning to improve resilience to climate change in sectors such as agriculture, hydropower and water management. Therefore, there are a number of current EWS and climate-monitoring projects and initiatives in the LVB, including *inter alia:* i) Adaptation to Climate Change-induced Water Stress in the Nile Basin (2010)[104]; ii) Developing a Methodology, Using Tools and Decision Support Systems, to Incorporate Floods and Droughts into IWRM in Transboundary Basins (2014)[105]; and iii) the International Strategy for Disaster Reduction: Platform for the Promotion of Early Warning (2006)[106]. While it is encouraging that a number of different climate-monitoring initiatives are active in the LVB, limited coordination between these initiatives limits the opportunities for knowledge sharing. In particular, the assimilation of climate information from different initiatives and the inclusion of this information into regional strategies and policies is currently inadequate. This limited coordination prevents the effective use of climate information to support local fishing community[107] and important economic sectors – such as agriculture, hydropower and water management – to adapt to climate change.

*Additionality (with AF resources)*

AF resources will be used to improve the collection and delivery of climate information in the LVB. Specifically, the project's activities will develop a platform for

[102] Climate Modeling Laboratory. 2011. Enhancing safety of navigation and efficient exploitation of natural resources over Lake Victoria and its basin by strengthening meteorological services on the lake. Department of Marine, Earth, and Atmospheric Sciences. Raleigh, USA.

[103] Between 3,000 and 5,000 deaths occur annually on Lake Victoria as a result of navigation incidents caused by strong winds and waves.

[104] For further information on the project Adapting to climate change induced water stress in the Nile River Basin, see: http://www.unep.org/climatechange/adaptation/EbA/NileRiverBasin/tabid/29584/Default.aspx

[105] For further information on the project Developing a Methodology, Using Tools and Decision Support Systems, to Incorporate Floods and Droughts into IWRM in Transboundary Basins, see: http://www.iwa-network.org/project/floods-and-droughts-management-tools

[106] For further information on the International Strategy for Disaster Reduction: Platform for the Promotion of Early Warning, see: http://www.unisdr.org/2006/ppew/

[107] Between 3,000 and 5,000 deaths occur annually on Lake Victoria as a result of navigation incidents caused by strong winds and waves.

the collection of climate data across the LVB, guided by the EAC's CCTWG. This regional climate information will be analysed and tailored to the requirements of end-users in the LVB, including regional and national policy and decision-makers, technical staff in national ministries and local communities. By improving the accuracy and delivery of climate information, AF resources will be used to improve seasonal and long-term planning for transboundary water management and climate change adaptation in the LVB, thereby increasing the adaptive capacity of fishing communities and the resilience of important economic sectors such as agriculture, hydropower and water management.

**Component 3: Climate change adaptation in vulnerable communities**

*Baseline scenario (without AF resources)*

Local communities in the Lake Victoria Basin are vulnerable to climate change, including increased frequency and intensity of droughts and an increased variability in rainfall patterns (see Project / Programme Background and Context for further details). In particular, vulnerable communities[108] are exposed to several negative effects of climate change, including *inter alia*: i) reduced farming productivity; ii) reduced livestock productivity; iii) decreased availability of fish; and iv) reduced water quality and availability. These negative effects are expected to worsen under the future conditions of climate change.

*Additionality (with AF resources)*

AF resources will be used to implement on-the-ground activities to promote adaptation to climate change. Specifically, a vulnerability assessment will be undertaken to identify potential project sites in which communities are particularly vulnerable to the effects of climate change. Three distinct categories of adaptation interventions will be implemented at these sites, namely: i) water conservation practices, including rainwater harvesting; ii) climate-smart agriculture; and iii) EbA activities. Water conservation practices – for example, micro-scale water harvesting infrastructure – will increase water availability to local communities and reduce their vulnerability to future droughts. Climate-smart agriculture – for example, adopting drought-tolerant and early maturing plant varieties – will maintain agricultural productivity under the conditions of increased mean annual temperatures and increased frequency and intensity of droughts. EbA activities, for example agroforestry and home gardens, will promote: i) soil stabilisation and ecosystem recovery; and ii) diversified livelihood opportunities. Therefore, through on-the-ground adaptation activities, the AF resources will increase the adaptive capacity of local communities within the LVB.

**Component 4: Small grants programme**

[108] In areas including *inter alia* Rwegura River (Burundi), Chohoha Lake (Burundi and Rwanda), Yala Swamp (Kenya), Mara River Basin (Kenya and Tanzania), Nyabugogo Swamp (Rwanda), Mwanza Gulf (Tanzania), Sango Bay (Tanzania and Uganda) and Lake Nabugabo (Uganda).

*Baseline scenario (without AF resources)*

Local communities in the LVB are vulnerable to the negative effects of climate change, in particular reduced water availability. In addition, there is limited funding, equipment and technical expertise for local communities to implement water harvesting and conservation practices. Under the future conditions of climate change – specifically increased mean annual temperatures and increased frequency and intensity of droughts – water availability for local communities will be further reduced, thus compromising the livelihoods[109] and well-being of community members.

*Additionality (with AF resources)*

AF resources will be used to implement a Small Grants Programme (SGP). Criteria for selecting project proponents will focus on each project's efforts to: i) increase water conservation and management; ii) adopt an innovative and gender-sensitive approach to adaptation; and iii) design and implement the project activities within a local community. The AF resources will also support the provision of technical guidance and oversight. In addition to being a cost-effective approach to innovation (see Section B), the SGP will provide benefits that accrue from community-based initiatives, including *inter alia*: i) local ownership of project design and implementation; ii) inclusion of traditional knowledge and techniques; and iii) site-specific knowledge of the environmental and socio-political environment. To promote climate change adaptation a regional level, successful projects will be upscaled through community organisations and district-level agencies. Therefore, AF resources will promote innovative approaches to climate change adaptation and reduce the vulnerability of local communities within the LVB to the effects of climate change.

**Component 5: Knowledge management and learning**

*Baseline scenario (without AF resources)*

Within the LVB, there are currently a number of projects and initiatives that address climate change adaptation and the management of transboundary water catchments. These project and initiatives generate knowledge, both in the form of quantitative data and qualitative information. Collectively, the knowledge generated from these projects and initiatives represents a valuable resource for: i) technical staff in national government agencies; and ii) regional and national policy and decision-makers. However, there is currently limited sharing and storage of this knowledge as a result of limited institutional coordination. Therefore, interventions focused on climate change adaptation and transboundary water catchment management are planned using a limited evidence-base. Consequently, the effectiveness of these interventions is compromised

[109] For example, agriculture,

*Additionality (with AF resources)*

The AF resources will be used to strengthen knowledge management frameworks at a regional level within the LVB. To ensure that knowledge on climate change adaptation and transboundary water catchment management is shared effectively, the project interventions will promote the coordination of knowledge-generating initiatives across the LVB. By improving knowledge sharing and access, the AF resources will increase the evidence-base available for future initiatives that aim to promote climate change adaptation and improve transboundary water catchment management. By having access to an improved evidence-base, these future initiatives will increase adaptive capacity across the LVB.

**K.** *Describe how the sustainability of the project / programme outcomes has been taken into account when designing the project / programme.*

The project's sustainability will be supported by: i) emphasising the active participation of relevant regional[110], national[111] and community[112] stakeholders in decision-making and implementation of the project's activities; ii) strengthening the institutional and technical capacity at regional, national and community levels to ensure that stakeholders have adequate knowledge and skill to maintain the benefits of the project's restoration interventions; and iii) raising the awareness of water conservation practices, climate-smart agricultural techniques and EbA activities at a local level.

Under Component 1, the LVBC CCU will be established and a strategic framework for transboundary water catchment management will be developed. By involving national ministries in the establishment of the LVBC CCU and promoting a collaborative approach to developing the strategic framework for transboundary water catchment management, the project's activities will ensure that institutional capacity is strengthened according to regional requirements. Therefore, regional support for both the strategic framework and the CCU will be promoted, thereby increasing the sustainability of the project's activities.

Under Component 4, successful project proponents will be selected through a fair and transparent process. This transparency will promote community acceptance of the selection process and increase local support for successful applicants. By following a community-based approach, the SGP projects will be implemented at a local level and benefits will accrue directly to surrounding communities. Therefore, local communities will be incentivised to maintain SGP activities beyond the project implementation period to generate benefits that accrue from SGP activities in the long term. By increasing the technical capacity of successful project proponents –

[110] Regional stakeholders will include *inter alia*: i) EAC Climate Change Technical Working Group; ii) EAC Climate Change Unit; and iii) Lake Victoria Region Local Authority Cooperation.
[111] National stakeholders will include *inter alia:* the Ministry of Water, Environment, Lands and Urban Planning (Burundi); and ii) the Ministry of Environment, Water and Natural Resources (Kenya).
[112] Community-level stakeholders will include community leaders and participants in the project activities to be implemented under Component 3.

through increased access to resources and technical expertise – the SGP will enable project proponents to oversee future, related initiatives.

The research forum established under Component 5 will see regional collaboration in research initiatives focused on climate change adaptation and water management. In addition to promoting research outputs, the forum will partner with institutions such as the EAC's CCTWG and Inter-University Council for East Africa. By supporting the development of long-term research partnerships and aligning research priorities with established regional institutions, the sustainability project activities under Component will be promoted.

L. *Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.*

| **Checklist of environmental and social principles** | **No further assessment required for compliance** | **Potential impacts and risks – further assessment and management required for compliance** |
|---|---|---|
| *Compliance with the Law* | x | Risk: **Low**<br>Potential impact: **High**<br><br>The final project design will be compliant with all relevant regional and national laws. To ensure this, during the development of the full project proposal, both regional and national stakeholders will be consulted to ensure that all relevant legal requirements are met. |
| *Access and Equity* | x | Risk: **Low**<br>Potential impact: **Low**<br><br>The project design will ensure that project activities **will** not reduce or prevent communities at project sites from accessing basic health services, clean water and sanitation, energy, education, housing, safe and decent working conditions and land rights. |
| *Marginalized and Vulnerable Groups* | x | Risk: **Moderate**<br>Potential impact: **Moderate/High**<br><br>Without extensive consultation with marginal/vulnerable groups at the project sites, it is probable that project activities will exclude these marginal/vulnerable groups, therefore preventing these groups from accessing benefits – both in terms of resources and training.<br><br>During the development of the full project proposal – wherever possible – marginal/vulnerable groups are will be consulted in the design of on-the-ground activities. |

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| | | Specifically, a transparent selection process will be undertaken which will comprise extensive and thorough consultation with the local communities and national authorities. In addition, the project design will ensure that benefits accruing from the project interventions – including the technology transfer, awareness-raising activities and infrastructure – reach relevant marginalized and vulnerable groups. Therefore, the project will ensure that the adaptive capacity of marginalized and vulnerable groups is enhanced. |
| *Human Rights* | x | Risk: **Low**<br>Potential impact: **Moderate/High**<br><br>To ensure that project interventions respect and adhere to the requirements of all relevant conventions on human rights, national and regional specialists will be consulted during the development of the full project proposal. |
| *Gender Equity and Women's Empowerment* | x | Risk: **Moderate**<br>Potential impact: **Moderate/High**<br><br>Without extensive consultation with women at the project sites and in planning for training and capacity-building activities, it is probable that the project will inadequately include women in both design and implementation of the project. This inadequate inclusion of women would be compounded as the negative effects are expected to be experienced disproportionately by women compared to men.<br><br>The project design will therefore ensure that gender considerations are included in all project interventions, with a specific focus on activities on the ground (Components 3 and 4). In particular, all consultative and participatory processes will strive to include a representative sample of the larger community. During the development of the full proposal, gender experts, NGOs and local community organisations will be consulted to ensure that the project follows best-practice guidelines. |
| *Core Labour Rights* | x | Risk: **Low**<br>Potential impact: **Moderate/High**<br><br>Core labour rights will be respected and considered in the project design and implementation. In particular, national and regional stakeholders will be involved in the design of project activities to ensure that labour legislation is adhered to, |
| *Indigenous Peoples* | x | Risk: **Moderate**<br>Potential impact: **Moderate/High** |

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| | | Without extensive consultation with indigenous peoples at the project sites and in planning for training and capacity-building activities, it is probable that the project will inadequately include indigenous peoples in the design and implementation of the project.<br><br>Therefore, the project's on-the-ground interventions will ensure that indigenous peoples benefit from the project's activities and that, where relevant, they are included in community consultation and participatory planning activities. |
| *Involuntary Resettlement* | x | Risk: **Low**<br>Potential impact: **High**<br><br>The project design does not include involuntary resettlement. |
| *Protection of Natural Habitats* | x | Risk: **Low**<br>Potential impact: **High**<br><br>By implementing water conservation practices, climate-smart techniques and EbA activities, the project will promote improved management of natural habitats. The downstream effects of these activities will include enhanced ecosystem functioning within protected areas. |
| *Conservation of Biological Diversity* | x | Risk: **Low**<br>Potential impact: **High**<br><br>Without careful planning and mapping of project sites, on-the-ground adaptation interventions might adversely impact on local biodiversity.<br><br>Therefore, during the process of site selection, a baseline assessment will be undertaken to assess site-specific risks to biodiversity. Final project sites will then be mapped using a participatory approach – which will include district authorities – to ensure that the project's activities do not result in the significant loss of biological diversity or the introduction of known invasive species. |
| *Climate Change* | x | Risk: **Low**<br>Potential impact: **High**<br><br>The project will contribute to climate change adaptation efforts in the LVB.<br><br>Through Component 2, the project is designed to improve the delivery of climate information to regional and national policy and decision-makers. Through this improved delivery of information and the enhanced regional coordination included in Component 1, the project will address climate |

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| | | change adaptation planning at a regional level.<br><br>Through Components 3 and 4, the project is designed to i) transfer technology to promote climate change adaptation to local communities, specifically water conservation practices, climate-smart techniques and EbA activities; and ii) promote the development of innovative, community-based projects to increase resilience to climate change. Therefore, the project will enhance the local-level capacity of local communities to adapt to climate change. |
| *Pollution Prevention and Resource Efficiency* | x | Risk: **Low**<br>Potential impact: **High**<br><br>The project activities will result in minimal pollution. Rather, project design will ensure that all applicable international standards are met for maximizing material resource use and minimizing the production of wastes, and the release of pollutants. Where unforeseen risks are identified, regional and national experts will be consulted. |
| *Public Health* | x | Risk: **Low**<br>Potential impact: **High**<br><br>The project design will ensure that public health is not negatively affected by the project's activities. Indeed, through Component 3, reduced nutrient runoff into Lake Victoria and its tributaries will increase water quality and improve public health. |
| *Physical and Cultural Heritage* | x | Risk: **Low**<br>Potential impact: **Moderate/High**<br><br>Without thorough site selection, it is possible that the on-the-ground project interventions will negatively affect physical and cultural heritage.<br><br>Through a baseline assessment and participatory mapping – which will include local communities and district-level authorities – the likelihood of physical cultural heritage being affected will be minimised. If potential conflicts are identified during the development of the full project proposal, experts in regional and national culture and heritage will be consulted to ensure that the project design adheres to best-practice guidelines. |
| *Lands and Soil Conservation* | x | Risk: **Low**<br>Potential impact: **Moderate/High**<br><br>The project will promote the conservation of soil and land resources. Specifically, through the implementation of EbA activities in Component 3 – including agroforestry – soil |

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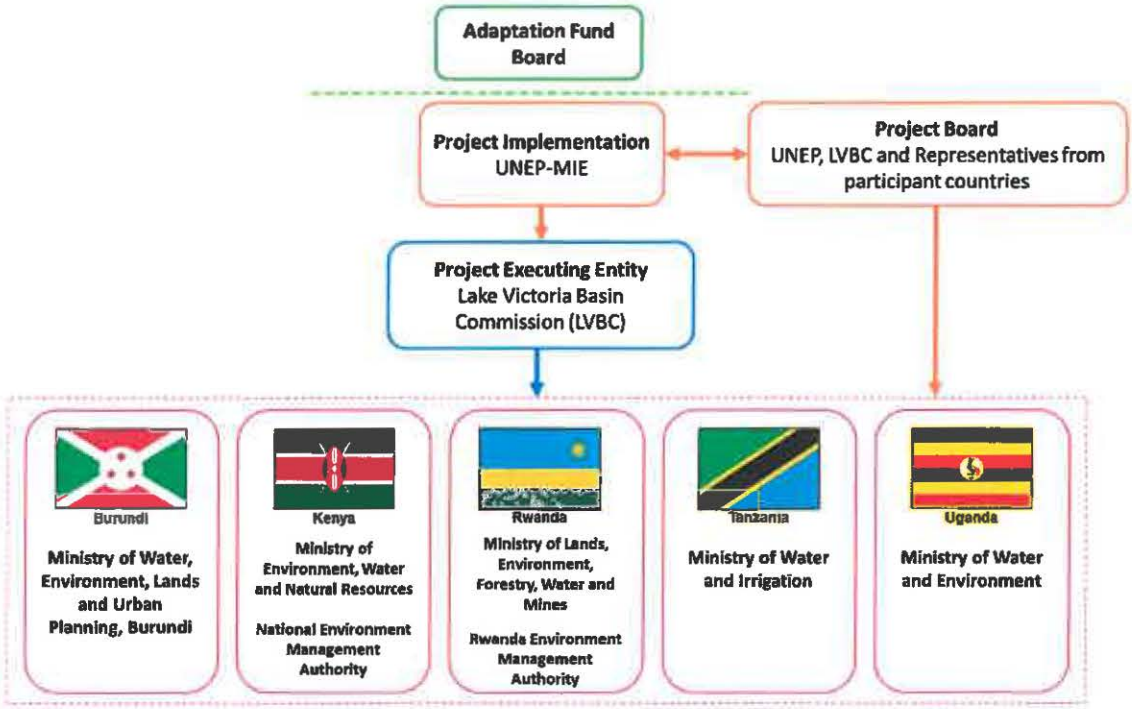
| | | stability will be increased, the runoff of nutrients from topsoil will be reduced and the fertility of soil at project sites will be increased. |

## PART III: IMPLEMENTATION ARRANGEMENTS

The project will be executed by a consortium of partners coordinated by the LVBC. UNEP will provide oversight and guidance and will be responsible for monitoring and evaluating the project's implementation. It is envisaged that the LVBC will establish a Project Management Unit (PMU), which will be responsible for implementing the project components and activities. The PMU will also be responsible for the day-to-day coordination of the project and for promoting and facilitating stakeholder engagement. It is envisaged that the LVBC will liaise with the national ministries responsible for water resources management and the environment as well as the directorate for international waters in all EAC Partner States. The LVBC will also work closely with Kenya's National Environment Management Authority (NEMA) and Rwanda Environment Management Authority (REMA) as co-executors at a national level.

A diagrammatic representation of a potential implementation modality is presented below. The implementation arrangements will be detailed during the development of the full project proposal.



## PART IV: ENDORSEMENT BY GOVERNMENTS AND CERTIFICATION BY THE IMPLEMENTING ENTITY

**A. Record of endorsement on behalf of the government**[113] *Provide the name and position of the government official and indicate date of endorsement for each country participating in the proposed project / programme. Add more lines as necessary. The endorsement letters should be attached as an annex to the project/programme proposal. Please attach the endorsement letters with this template; add as many participating governments if a regional project/programme:*

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| **Burundi:** *Mr. Anicet Nkurikiye, Adviser to the Minister Ministry of Water, Environment, Lands & Urban Planning* | Date: *August, 18th 2015* |
| **Kenya:** *Dr. Richard Lesiyampe, MBS.Principal Secretary, Ministry of Environment, Water & Natural Resources* | Date: *July, 29th 2015* |
| **Rwanda:** *Fatima Mukarubibi, Permanent Secretary, Ministry of Lands, Environment, Forestry, Water & Mines* | Date: *July, 30th 2015* |
| **Tanzania:** *Ms. Angelina Madete, Deputy Permanent Secretary, Vice-Presidents Office* | Date: *August, 28th 2015* |
| **Uganda:** *Mrs Joyce Kamanyire Ruhweeza, Ag. Assistant Commissioner – Aid Liaison Department* | Date: *August, 27th 2015* |

**B. Implementing Entity certification** *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

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| I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme. | |
| *Mette L. Wilkie* Mette L. Wilkie<br>Director, Division of Environmental and Policy Implementation (DEPI) | |
| Date: January, 11, 2016 | Tel. and email:+254 20 7624782 & Mette.Wilkie@unep.org |
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6. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.