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Enhancing water resources management through inclusive green economy:

The case of Lake Victoria Basin

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Acronyms and abbreviations

ADB	Asian Development Bank
EAC	East African Community
ECA	Economic Commission for Africa
ECLAC	Economic Commission for Latin America and the Caribbean
ESCAP	Economic and Social Commission for Asia and the Pacific
GGKP	Green Growth Knowledge Platform
Kagera TAMP	Kagera Transboundary Agroecosystems Management Project
LVBC	Lake Victoria Basis Commission
LVEMP II	Lake Victoria Environmental Management Project phase II
LVFO	Lake Victoria Fisheries Organization
OECD	Organization for Economic Cooperation and Development
SIDA	Swedish International Development Cooperation Age
SMM	Sio-Malaba-Malakisi Transboundary Integrated Water Resources Management and Development Project
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNEP	United Nations Environment Programme

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Executive summary

Introduction and background

Lake Victoria in East Africa, the world's second largest lake, is endowed with abundant water and other natural resources. The lake is transboundary and of significance to its basin countries – which are also East African Community (EAC) partner States (Burundi, Kenya, Rwanda, Uganda and United Republic of Tanzania) – and basin communities because of its role in supporting valuable ecosystem services, livelihood systems and economic activities. The basin's natural resource endowments include water resources (the lake's estimated volume is 2,700 km^3); rivers, streams and wetlands; abundant and fertile land; natural forest resources; minerals; and wildlife, including a high annual fish yield estimated at more than $550 million. It also hosts the crested crane and the globally threatened *sitatunga* – a swamp dwelling antelope.

Notwithstanding its significance, the lake and the entire basin have undergone marked degradation and ecological changes over the past decades, mainly owing to human activities. Those changes have resulted in, among other things, declining water quantity and quality, proliferation of invasive species, and change in trophic diversity. In addition, the basin, as are the entire territories of the basin countries, is characterized by marked gender disparities, poor infrastructure with countries' indicator scores ranking at 10-20 per cent, and a low life expectancy of about 50. Although there are efforts to manage water resources in an integrated manner, especially following the establishment of the Lake Victoria Basin Commission, there is a need to explore new approaches that could further enhance outcomes. Such new approaches should promote more coherence among economic, social and environmental outcomes of water resources management.

The inclusive green economy concept promises a new economic growth pathway that is both ecologically benign and contributes to social equity and poverty eradication. Inclusive green economy underscores social equity or inclusion in the pursuance of a green economy or green growth. Green economy entails progress towards human development and improved human wellbeing, while preventing environmental harm, so that the natural capital that produces economic growth and sustains development is maintained. It is against this backdrop that the present report gives an assessment of how the application of inclusive green economy-related principles in selected projects of the Lake Victoria Basin has contributed to the sustainable management of its water resources.

Methodology

This report was informed by a study undertaken through a literature review and complemented by a questionnaire survey. Sources of literature reviewed include publications of United Nations agencies and the Lake Victoria Basin Commission, among other international development organizations. Articles from peer-reviewed journals were also reviewed. A four-day field visit to the Commission was made in March 2014, during which interviews were

undertaken with the Commission's heads of projects who also completed the questionnaire. In total, questionnaires were e-mailed to 24 professionals in water resource management-related disciplines in the basin. Nineteen (79 per cent) of questionnaires were completed, nine of which were from the heads or coordinators of the projects selected for the study.

Nine projects were assessed, five of which were transboundary. Two of the latter, the Mount Elgon Regional Ecosystem Conservation Programme in Kenya and Uganda, and the Lake Victoria Environmental Management Project phase II (LVEMP II) were being implemented by the Lake Victoria Basin. The Sio-Malaba-Malakisi Transboundary Integrated Water Resources Management and Development Project (SMM) in Kenya and Uganda was being undertaken by the *Equatorial Lakes Subsidiary Action Programme*, which is one of the two investment programmes of the Nile Basin Initiative. The other two were the Kagera Transboundary Agroecosystems Management Project (Kagera TAMP), implemented by the Food and Agricultural Organization of the United Nations; and the Mara River Basin Management Initiative in Kenya and the United Republic of Tanzania, which covered the transboundary Mara River by the World Wide Fund for Nature. The four non-transboundary projects, implemented by non-governmental organizations, are all in Kenya: the Dunga Wetland Alternative Livelihoods Project, the Mount Elgon Integrated Watershed Management Project, the River Nyando Wetland Resource Utility Optimization Project and the Yala Swamp Project.

East African Community and management of Lake Victoria Basin resources

Although basin countries have national management frameworks that govern the portions of the basin within their respective territories, basin-wide management is hugely influenced by a transboundary framework under the auspices of EAC, which seeks to harmonize national frameworks. The EAC framework includes the 1996 EAC Treaty; the 2003 Lake Victoria Protocol; the 2001 Convention for the Establishment of the Lake Victoria Fisheries Organization; and the 2006 Protocol on Environment and Natural Resources Management. In addition, the EAC Development Strategy sets out a priority programme to be implemented during a specified five-year period, such as the present one from 2011–2016.

Efforts to jointly manage the basin's resources started as early as the 1920s, but these were interrupted with the collapse of EAC in 1997. Renewed efforts culminated in the establishment of the first phase of LVEMP (through a 1994 tripartite agreement between Kenya, Uganda and United Republic of Tanzania) and the Lake Victoria Fisheries Organization (LVFO) in 1997. The signing of the EAC Treaty in 1996, following an EAC revival, provided the basis for establishing a body to manage the Lake Victoria Basin. Thus, the Lake Victoria Development Programme was established in 2001 under the auspices of EAC as a mechanism for coordinating the various interventions on the Lake and its basin; and to develop the basin into an economic growth zone. Following the signing of the Protocol for the Sustainable Management of the Lake Victoria Basin in 2003 (Lake Victoria Protocol), the Lake Victoria Development Programme became a full basin commission – the Lake Victoria Basin Commission – an apex institution of EAC for the Lake Victoria Basin.

At the national level, since the 1990s, basin countries have had water policies to guide water management. All these policies (Burundi, 2009; Kenya, 2012 draft; Rwanda, 2011; Uganda, 1999; and United Republic of Tanzania, 2002) are aimed at promoting optimal, sustainable and equitable development and use of water resources for the benefit of present and future generations. The policies include the Dublin Principles, which contain important elements of inclusive green economy for water resources management. The Water laws of the basin countries (Water Acts 2002 and 1995 – Kenya and Uganda, respectively; and the 2009 Water Resources Management Act of the United

Republic of Tanzania; Rwanda Law No. 62/2008; and Burundi Law No. 1/02 of 2012) provide for the protection, development, use and management of water. The laws provide for institutional frameworks and instruments for water resource management. However, progress in the implementation of water policies and laws has varied from country to country, with Kenya being the most progressive and Rwanda and Burundi lagging behind.

Inclusive green economy principles, approaches and practices in the selected projects

The assessment established that although the projects focused on conserving or restoring ecosystems so as to conserve the environment, watersheds or the lake itself, all had (to varying degrees) integrated inclusive green economy principles and approaches. In addition to water conservation and environmental interventions, they explicitly set out to tackle economic and social concerns. This approach helped to enhance the implementation and achievement of water resource management goals. Conceptualized as watershed conservation initiatives, livelihood interventions were also aimed at eradicating poverty, which is generally considered a cause and consequence of watershed and water resource degradation, mainly arising from a direct dependence on natural resources extraction.

Economic and social outcomes

Synergies among economic, social and environmental interests were harnessed under the projects through nature-based interventions that have enhanced environmental quality, prevented further degradation and provided alternative livelihoods and incomes. Interventions included tree planting, bee keeping, aquaculture and agroforestry. Agroforestry was employed to protect watersheds while enhancing agricultural productivity leading to high yields. For example, yields of maize, potato, beans and banana increased by 60 per cent, 50 per cent, 40 per cent and 80 per cent, respectively, under Kagera TAMP. The projects also promoted value addition to reduce post-harvest losses and to fetch higher market prices. The promotion of nature-based enterprises, including the use of payment for ecosystem goods and services to finance co-management through community participation was consistent with inclusive green economy principles.

In addition, social inclusion was further reinforced through affirmative actions that paid special attention to vulnerable groups, such as women and young people. The projects generated employment either directly, or through the provision of skills and opportunities for self-employment in green growth-related sectors such as ecotourism, sustainable farming and agroforestry. Furthermore, the larger transboundary projects promoted equity, fairness and justice among basin countries through basin-wide initiatives aimed at both conserving the lake and improving environmental quality and the livelihoods of the basin communities.

Environmental outcomes

The projects generated several environmental benefits while employing a number of good practices. The good practices covered the use of indigenous trees to rehabilitate degraded areas, using and improving indigenous technologies and practices such as terracing in Rwanda, and harnessing green and low cost technologies such as the hydro drum to pump water without electricity in Kericho, Kenya. Other technologies promoted were rainwater harvesting and flood control. Besides preventing further degradation of watersheds and water quality, respondents highlighted that interventions of various stakeholders had helped to increase water yields in reservoirs.

The projects were promoting and supporting water pollution control interventions through the promotion of cleaner production processes in industry, provision of sanitation facilities, pollution risk management and supporting navigation safety to prevent oil spills from boats and vessels on the lake. For example, SMM, through a solid waste management project for Malaba town in Kenya, provided 400 (100 litre) dustbins and a tractor trailer, which contributed to pollution reduction in the Malaba River.

Projects also promoted alternative sources of energy for cooking aimed at reducing degradation of catchments resulting from the cutting of trees for wood fuel; tree planting and agroforestry as a watershed management measure and to improve livelihoods; and restoration of degraded lands and ecosystems such as wetlands and forests. For example, LVEMP II supported community driven development projects or small-scale projects, such as the Rweru-Akagera wetland complex rehabilitation micro-project in Rwanda to implement restoration activities. Under the SMM, about 10,000 hectares have been rehabilitated through afforestation, agroforestry, and soil and water conservation structures.

Awareness creation, community participation and partnerships

The implementation of the projects created awareness, facilitated and promoted community participation and, in various ways, created partnerships with communities, Governments, civil society, the private sector were among the various project implementers. Identified good practices included engagement of communities and creation of associations as a means to leverage participation and financial resources; awareness creation through demonstrations; signing of voluntary agreements or memorandums of understanding with communities; promotion of cleaner production technologies as incentives; and establishment of an independent civil society organization – East African Sustainability Watch Network – as a watch dog project by LVEMP II. Projects also used evidence-based or demonstration-based approaches to create awareness and engender stakeholder buy-in. Partnerships provided means to leverage financial and other resources, knowledge, information and goodwill.

Strengthening institutional arrangements, policies and research

With regard to institutional strengthening and the promotion of policies for water resources management, LVEMP II made progress in harmonizing effluent standards for the Lake Victoria Basin, approved by the East African Legislative Assembly. At the time of the study, a water resource bill was scheduled to be approved by the Assembly. In addition, in 2012, the project developed a basin-wide sustainable land management strategy to promote sustainable land management practices. At the national level, in Kenya, the Effluent Discharge Control Plans - a "soft" approach adopted in 2007 to persuade industries to meet effluent discharge requirements - is a good practice that could be replicated in basin countries. Furthermore, SMM promoted joint planning and implementation of transboundary water resources management interventions of the Sio-Malaba-Malakisi sub-basin. However, none of the projects assessed had set-out to undertake or support research activities for generating new knowledge for water resource management.

Enabling measures

Enabling measures encourage the adoption of inclusive green economy principles and approaches. The following measures facilitated project implementation: leadership and political will at the national and basin levels; policies, laws, regulations and institutional arrangements in basin countries; financing; and capacity-building and awareness creation.

Challenges and opportunities

-Project implementation challenges were identified in basin countries and, even though the projects attempted to incorporate mitigation measures, the following challenges continued to impede implementation progress and outcomes: inadequate funding; inappropriate development activities in ecologically sensitive areas; weak law enforcement by government authorities; inconsistencies in some specific policies, laws and regulations; corruption, especially where government officials were involved; high poverty levels; and attitude challenges, which limited adoption of new approaches. Climate variability and change was also regarded as an important challenge that undermined the effectiveness of interventions.

However, many opportunities abound for enhancing inclusive green economy-based management of the Lake's water resources. These range from the basin's natural resource endowments; existence of policies and legal frameworks that incorporate elements of inclusive green economy; the support and management framework of EAC and its organs; indigenous practices and technologies that are useful in promoting inclusive green economy approaches in the basin; and national, regional and international non-governmental organizations working at the national and basin levels. Opportunities were also recognized in the substantial number of development partners supporting water resource management in the basin; and inclusive green economy-related assistance provided through international framework agreements and arrangements.

Conclusion and recommendations

The present report presents the findings of an assessment of the application of inclusive green economy principles and approaches in selected projects of the Lake Victoria Basin, and the extent to which this has contributed to the sustainable management of the basin's water resources. The assessment established that the projects, to varying degrees, integrated inclusive green economy principles and approaches. In addition to environmental interventions, the projects explicitly set out to tackle economic and social concerns. This approach greatly contributed to enhancing implementation and the achievement of water resource management goals.

To further promote inclusive green economy principles and approaches in water resource management in the Lake Victoria Basin, the following recommendations are given:

a) Develop an inclusive green economy strategy or framework for water resource management in the Lake Victoria Basin, under the Lake Victoria Basin Commission;
b) Improve the use of integrated assessment tools and methodologies in project design and implementation beyond environmental and social assessments that have been applied by the SMM project;
c) Scale-up present initiatives, especially good practices by local and central Governments, and the private sector through microfinancing;
d) Strengthen awareness creation and capacity-building to target all stakeholders, including local politicians, to engender more meaningful engagement;
e) Strengthen partnerships with the private sector to leverage investments and promote compliance;
f) Build strategic alliances with relevant local and international agencies to promote inclusive green economy approaches that foster sustainable water resources management;
g) Strengthen delivery on commitments through programme management processes that comply with the Paris Declaration on Aid Effectiveness, foster the timely release of funds and deter fraudulent practices.

1. Introduction

1.1 Background

Lake Victoria in East Africa, the world's second largest lake, is endowed with abundant water and other natural resources. The lake is transboundary and of significance to its basin countries, which are also EAC partner States, namely Burundi, Kenya, Rwanda, Uganda and the United Republic of Tanzania. The inhabitants of the Lake Victoria Basin – one of the world's most populated rural areas – mainly engage in agriculture. Its water resources support limited irrigation activity, while fishing is a key economic activity for inhabitants along its shores. The lake is a major source of water for neighbouring towns, it has tourism sites, serves as a reservoir for hydropower, and supports water transport. Thus, the Lake is vital to its basin communities and countries.

Notwithstanding its significance, the lake itself and the entire basin have undergone marked degradation and ecological changes mainly owing to human activities over the past decades. Those changes have resulted in, among other things, eutrophication, declining water quantity and quality, proliferation of invasive fauna and flora, and changes in trophic diversity (UNEP, 2006a). The basin, and the entire territories of basin countries, is characterized by marked gender disparities, poor infrastructure with countries' indicator scores ranking at 10-20 per cent (African Development Bank, 2013a), and a low life expectancy of about 50 (LVBC, 2013). Although there are efforts to manage water resources in an integrated manner, especially following the establishment of the Lake Victoria Basin Commission, there is a need to explore new approaches that could further enhance outcomes. Such approaches should promote more coherence among economic, social and environmental outcomes of water resource management, which permit the achievement of conservation and the social and economic aspirations of countries and their populations.

The inclusive green economy concept promises a new economic growth pathway that is both ecologically benign and contributes to social equity and poverty eradication. The paradigm, which underscores economic sustainability and emphasizes convergence among the three dimensions of sustainable development, focuses on harnessing synergy rather than trade-offs between economic and environmental objectives (UNDESA, UNEP and UNCTAD, 2011). Inclusive green economy has the potential to enhance water resource management by promoting interventions that optimally harness synergies among various dimensions. A green economy entails sustained economic growth, social equity and enhanced environmental quality, with the underlying aim of attaining the desired level of human development for present and future generations. Thus, transitioning to a green economy involves drifting away from systems that harm the earth's ecosystems and increase poverty (UNDESA, UNEP and UNCTAD, 2011) to focusing on economic growth to attain human wellbeing by sustainably using natural assets.

Various international organizations have defined green economy and green growth (box 1). However, all the definitions entail progress towards human development or improved human wellbeing while preventing environmental harm, so that the natural capital that produces economic growth and sustains development is maintained. The paradigm underscores economic sustainability and emphasizes the three dimensions

Box 1: Definitions of green economy and green growth by various international organizations

Green economy: an economy that results in improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities (UNEP, 2011a)

Green growth: means fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our wellbeing relies (OECD, 2011).

Green growth: economic progress that fosters environmentally sustainable, low carbon and socially inclusive development (ESCAP, ADB and UNEP, 2010).

Green growth: growth that is efficient in its use of natural resources, clean in that it minimizes pollution and environmental impacts, and resilient in that it accounts for natural hazards and the role of environmental management and natural capital in preventing physical disasters (World Bank, 2012)

Green growth: the promotion and maximization of opportunities from economic growth through building resilience and managing natural assets efficiently and sustainably, including enhancing agriculture productivity and promoting sustainable infrastructure (African Development Bank, 2013b)

Source: Adapted from the African Development Bank, 2013b.

of sustainable development – synergy rather than trade-offs among economic, social and environmental objectives – and seeks to enhance convergence with a focus on intergenerational equity (UNDESA, UNEP and UNCTAD, 2011).

While green economy has been recognized as vital in meeting the goals of sustainable development, including human development and low ecological impact (UNEP, 2011a and b; World Bank, 2012), green economy or growth cannot be presumed to be "inherently inclusive" (World Bank, 2012). Thus, an inclusive green economy provides a new level of mainstreaming green economy with more commitment to putting human and natural assets more appropriately at the centre of economic development, as well as ensuring inclusive and pro-poor growth (UNEP, 2011b). As a means of promoting inclusive green economy, several development agencies – including the Organization for Economic Cooperation and Development (OECD), the African Development Bank and ECA – have been advocating for a sectoral or step-wise approach through inclusive green growth (ECA and UNEP, 2012; African Development Bank, 2013b and ECA, 2015).

In the context of the production of the fifth edition of the Sustainable Development Report on Africa (SDRA-V), ECA (2015, p.2) advances the following working definition of inclusive green growth: economic growth that is inclusive and creates jobs, improves human welfare (including poverty reduction), is resource efficient and enhances environmental assets, thus contributing to sustainable development. Inclusive green growth necessitates an equitable growth path and a step-wise process that embraces all social groups, meeting the needs of the poor in society and the specific needs of different groups in impoverished communities, including inter-temporal welfare (UNDESA, UNEP

Box 2: Set of green economy principles identified in eight published documents in the lead up to the United Nations Conference on Sustainable Development (Rio+20)

Green economy is a means to achieving sustainable development. It should:

- Be resource and energy efficient and promote low carbon development
- Protect biodiversity and ecosystems, and respect planetary boundaries or ecological limits or scarcity
- Be equitable, fair and just – between and within countries and between generations
- Deliver poverty reduction, well being, livelihoods, social protection and access to essential services, and create decent work and green jobs
- Internalize externalities and measure progress beyond GDP using appropriate indicators/metrics
- Use integrated decision making, be inclusive, democratic, participatory, accountable, transparent, stable and improve governance and the rule of law.

Source: Adapted from UNDESA, 2012.

and UNCTAD, 2011). The approach provides the opportunity to document good practices and lessons that can inform the transition to an inclusive green economy.

Inclusive green economy principles and approaches have the potential to enhance water resource management by improving water resource use in the attainment of economic growth and social wellbeing (Chapple, 2008). This can be achieved by valuing water and associated ecosystems through the long-run services they provide and pricing externalities of resource-associated activities; creating and disseminating new and more environmentally sustainable technologies, goods and services; creating new livelihoods, income and jobs from related activities; and water use efficiency (GGKP, 2013). In addition to poverty reduction through the creation of new and diverse livelihoods or increased income (UNEP, 2011a; and United Nations, 2012), inclusive green economy principles and approaches (box 2) should facilitate the exploration of new and innovative opportunities for sustainable water resource management in transitioning to a green economy.

1.2 Justification

The transboundary nature of Lake Victoria Basin provides the setting for appreciation of both local, national and transboundary management dynamics, and their linkages. Furthermore, the lake's environs include rural and urban settlements and support a variety of social, economic and environmental uses. The lake has on its shores several urban settlements, the large ones being Kampala (Uganda), Kisumu (Kenya) and Mwanza (United Republic of Tanzania), which generate domestic waste and industrial effluent that are discharged into its waters, with little or no treatment. The lake supports hydropower generation, providing most of the electricity for Uganda through the Victoria Nile; and supports an estimated annual fish yield of about 800,000 tons, worth more than $550 million (at beach level) for local consumption, and an export value of $260 million (LVFO, 2013). It provides water for industry and cross-border transport, and raw materials for local communities. All of these are threatened by water resource management related challenges. The high population in the surrounding settlements, estimated at 35-40 million and growing at about 3 per cent (LVBC, 2013), has amply demonstrated the negative impacts of high population pressure on water resources.

Inclusive green economy principles and approaches could provide the opportunity to enhance the role of water resource management in fostering economic growth and human development, while conserving vital water resources and ecosystems. Understanding the benefits, challenges and opportunities of implementing inclusive green economy related principles and approaches in water management and documenting good practices and lessons, can guide the formulation and implementation of water management policies and programmes that improve livelihoods and ecosystem integrity, and support national long-term development initiatives. The present report was conceived against this backdrop.

1.3 Objectives

The overall objective of the study is to assess how the application of inclusive green economy related principles and approaches in selected projects of the Lake Victoria Basin has contributed to the sustainable management of its water resources.

The following are the specific objectives:

a) To assess the extent to which inclusive green economy principles and approaches have been applied in selected water resource management projects of the basin;
b) To identify good practices in the application of inclusive green economy principles and approaches to water resource management in the basin;
c) To explore the measures that could be applied in promoting inclusive green economy principles, approaches and practices in water resource management;
d) To examine the challenges and opportunities for integrating inclusive green economy principles and approaches into water resource management in the Lake Victoria Basin;
e) To proffer policy recommendations for enhancing the sustainable management of the basin's water resources based on the findings.

1.4 Scope of report

The present report assesses the application of inclusive green economy principles and approaches in the formulation and implementation of selected water resource management projects in the Lake Victoria

Basin through a literature review, a questionnaire survey, expert perspectives and documented case studies. It does not provide a detailed assessment of any specific project. Rather, it presents a synthesis of how inclusive green economy principles and approaches have been integrated in the design and outcomes of projects and highlights good practices. It focuses on the water management functions identified by Rees, Winpenny and Hall (2008). They include water management strategy, planning and policymaking; engagement with stakeholders; and water resource development, allocation and management at the community, national and basin levels.

1.5 Methodology and limitations

1.5.1 Methodology

The study entailed a literature review, complemented by a questionnaire survey. The literature review involved analysing a wide range of publications and documentation on green economy, inclusive green growth, sustainable development and water resource management in the Lake Victoria Basin, Africa and elsewhere. Sources of literature included publication by United Nations agencies; international development organizations such as the African Development Bank, the World Bank, the Organization for Economic Cooperation and Development and the East African Community, and the Lake Victoria Basin Commission. Articles from peer-reviewed journals were also consulted.

A four day field visit to the Lake Victoria Basin Commission was made in March 2014. During the field visit, briefing and face-to-face interviews were undertaken with the Commission's heads of projects who also completed questionnaires. In total, questionnaires were e-mailed to 24 professionals in water resource management related disciplines that were either heading, coordinating or supporting implementation of projects and related activities in the basin. Nineteen (79 per cent) questionnaires were returned, nine of which were from the heads or coordinators of the projects selected for the study. The questionnaire covered a range of issues related to economic, social and environmental outcomes and impacts, and the measures used for implementation. Specifically, the questionnaire sought to assess how these dimensions were integrated in the design, implementation, and outcomes of the interventions. It also sought feedback on the opportunities for scaling up or scaling out the interventions, implementation challenges and opportunities, good practices and lessons learned. Coding and content analysis of text from literature and questionnaires were undertaken to identify the aforementioned elements.

1.5.2 Limitations

The study was based on a review of literature and a questionnaire survey. The questionnaires targeted project implementers and not the communities. However, Internet sources of literature provided some community perspectives. In addition, a questionnaire was sent to the LVEMP II Civil Society Watch Project implemented by a civil society partnership as a "watch-dog" for the implementation of LVEMP II projects.

1.6 Outline of the report

Chapter 1 sets out the context in which the study was undertaken. It provides an overview of the water resource challenges in the Lake Victoria Basin, highlights the role of inclusive green economy principles and approaches in the sustainable management of water resources and the objectives of and methodology for the study. Chapter 2 provides an overview of the resource endowment and significance of the Lake Victoria Basin, the social and economic conditions of basis countries, and the framework for water resource management in the basin. It highlights the historical development of initiatives already in place and of frameworks for transboundary management by EAC; and presents an overview of national water policy and legal instruments. Chapter 3 analyses inclusive green economy principles and approaches of selected water resources or related projects in the basin. It looks at how the dimensions of sustainable development have been integrated in project design and implementation and the economic, social and environmental outcomes of this, and highlights good practices emanating from the implementation process and discusses the measures that facilitated implementation. Chapter 4 presents implementation challenges and opportunities. Conclusions and recommendations on the basis of the study are offered in chapter 5.

2. Lake Victoria Basin and management of its natural resources

2.1 Lake Victoria natural resources endowment and its significance

Lake Victoria is the largest lake in Africa, and is located in the upper reaches of the River Nile, in the East African Rift (see map). It is the world's largest tropical lake and the second largest freshwater lake, after Lake Superior in North America. The Lake Victoria Basin area is 251,000 km^2 of which about 69,000 km^2 is the lake's water surface area (Mwiturubani, 2010; UNEP, 2006b). The lake is transboundary and although it is shared by Kenya, Uganda and the United Republic of Tanzania, the basin includes Burundi and Rwanda. Details of the morphometric and hydro-climatological characteristics of Lake Victoria can be found in Awange and Ong'ang'a, 2006; Kayombo and Jorgensen 2006; and Khan and others, 2011.

The basin's natural resource endowments include water resources (the lake's estimated volume is 2,700 km^3); rivers, streams, and wetlands; abundant and fertile land; natural forest resources; minerals; and wildlife, including a high annual fish yield (LVBC, 2007 and Mwiturubani, 2010). It also hosts a diversity of habitats, birds and animals, including the crested crane and the globally threatened sitatunga – a swamp dwelling antelope (Lubovich, 2009). In addition, the basin's water ecosystems, including wetlands, provide other numerous goods and services to local populations, such as raw materials for handicraft, food, and medicines. For example, 31 of 132 plant species (macrophytes) recorded around Lake Victoria and surrounding wetlands were found to have a great economic value enthobotanically, for either medicinal or other domestic uses, while different unique plant species have been recorded around Nabugabo wetland, Uganda (Odada, Olago, and Ochola, 2006).

Source: Drakenberg, 2007.

The significance of the basin's resources cannot be overstated. It is 70–80 per cent agricultural (Kayombo and Jorgensen, 2006 and UNEP, 2006b), and while irrigated agriculture is limited, the basin's water resources support irrigation for the Ahero rice scheme and other crops (Nyando River). Fishing is a key economic activity for communities living on the shores, with an estimated fish catch value of more than $550 million at beach level and an export value of $260 million (LVFO, 2013). Tourism attractions are numerous in the basin, most of which are associated with water resources. Attractions include many shoreline islands that are a habitat for hippos, crocodiles, waterbucks, monkeys, monitor lizards, snakes and birds; as well as scenic areas for sport fishing and bird viewing (Awange and Ong'ang'a, 2006). There are also national parks such as Ruma and Impala, and cultural sites like the Ramogi Hill which is a pre-historic site regarded as the origin of the Luo in Kenya. In addition, the lake is the major source of water for urban centres including the economic and administrative capital of Uganda – Kampala, while the rivers and wetlands provide water for the rural population. Furthermore, Lake Victoria Basin is a major reservoir for hydroelectric power generation. There are also thermodynamically induced winds associated with the lake that support windmills. The lake facilitates water transport; formal terminals are in Kisumu (Kenya), Jinja (Uganda) and Musoma (United Republic of Tanzania). EAC partner States therefore consider Lake Victoria very crucial for the region's development.

2.2 Socioeconomic conditions of basin countries and sustainable management of natural resources

Notwithstanding the lake's natural resources endowment, basin countries are among the poorest in Africa, where an estimated poverty rate of 50 per cent was reported (UN-Habitat, 2008). The economies of riparian countries depend on subsistence rain-fed agriculture where about 60 per cent of the population are employed (Odada, Olago, and Ochola, 2006), with a low skills base and low levels of education and industrialization, which in 2010 contributed from about 14 per cent in Rwanda to 24.9 per cent in Uganda of gross domestic product (GDP) (EAC, 2011). GDP per capita (at current prices) of basin countries in 2012 ranged from $271.0 (Burundi) to $999.9 (Kenya), and averaged at $727.1 (EAC, 2013). Basin countries rely on natural resources, particularly rain-fed agricultural production that contributes about a third of combined GDP. They are also characterized by marked gender disparities, poor infrastructure and a low life expectancy of about 50 (LVBC, 2013).

In addition, land degradation, a decrease in rainfall attributed to climate change and increasing population pressure have been reported to cause a significant change in the basin's terrestrial and aquatic environment (UNEP, 2006a). Besides industrial and domestic wastewater discharge into the lake and the catchment's wetlands, forest cover and the general landscape are being degraded. Basin countries' high populations, estimated at 42.4 million (Bremner, and others, 2013) with an average annual growth rate of about 3 per cent (LVBC, 2013), has put greater pressure on the lake's water resources and its catchment. These changes have had impacts on the water resources, biodiversity and associated ecosystem services, thus affecting livelihoods. Fluctuating water levels have also been blamed for increasing shortages of hydropower supply in Uganda in recent years. Anthropogenic interventions, such as the introduction of non-native fish, and over-fishing have all taken a heavy toll on the lake's fishery, leading to a remarkable disappearance of an estimated 200 species from the original 400-500 species known in the 1960s (LVBC, 2007).

Recognizing that ecological problems in the basin do not respect national boundaries, riparian countries established the Lake Victoria Basin Commission under the EAC Treaty as a basin-wide framework to manage its resource. This is operationalized through the Protocol for the Sustainable Development of Lake Victoria Basin. The Commission undertakes a number of water resource management programmes covering environment, water, natural resources and development. Thus, both national policy frameworks and policies for transboundary partnership influence water resource management in the basin. These actions underscore the importance attached to the sustainable utilization and management of the basin's resources.

2.3 East African Community and management of Lake Victoria Basin resources

The five basin countries (Burundi, Kenya, Rwanda, Uganda and United Republic of Tanzania) have sovereignty over the basin's portions in their territories. However, attaining a more comprehensive and sustainable management would be more complicated without any coordinated efforts basin-wide, as gains in one territory could be easily cancelled by unsustainable practices in another. Thus, while national management frameworks and actions govern the portions of the basin within respective countries' territories, basin-wide management is hugely influenced by a transboundary framework under the auspices of EAC and relevant regional and international frameworks.

2.3.1 East African Community initiatives for the management of Lake Victoria Basin resources

Initiatives for social and economic development within the basin started as early as the 1920s (Muyodi, Bugenyi, and Hecky, 2009). However, any effort among the three countries sharing the lake to jointly manage its resources ceased following the collapse of the East African Community in 1977 (LVFO, 2001). In the absence of a joint regional framework, a subcommittee of the Committee for the Inland Fisheries of Africa, under the auspices of the Food and Agricultural Organization of the United Nations, was established for the management and development of the fisheries of Lake Victoria (Muyodi, Bugenyi, and Hecky, 2009). Furthermore, the recommendations of Agenda 21 following the Rio Summit of 1992 resulted in informal, and eventually formal, discussions about the joint management of the basin's shared ecosystem (EAC, 2004). This culminated into the establishment of the first phase of LVEMP through a tripartite agreement signed in 1994.

In the same year, a process was initiated to establish the Lake Victoria Fisheries Organization that became operational in 1997 following the entry into force of the Convention for the establishment of the Lake Victoria Fisheries Organization in 19961 (LVFO, 2001 and the EAC, 2004). This organization replaced the Subcommittee of the Committee for the Inland Fisheries of Africa. Furthermore, the signing of the EAC Treaty in 1996 following the revival of EAC (also in 1996) provided the basis for the establishment of a body to manage the Lake Victoria Basin. Thus, the Lake Victoria Development Programme was established in 2001 under the auspices of EAC as a mechanism for coordinating the various interventions on the lake and its basin; and to develop the basin into an economic growth zone.

The Lake Victoria Development Programme aimed at facilitating basin management through building partnerships among the local communities around the lake, the EAC and its partner States and development partners through measures such as: harmonization of policies and laws on the management of the environment in the lake and its catchment area; environmental management and conservation, including control of water hyacinth and fisheries; promotion of economic activities in the development of fisheries, industry, agriculture and tourism; and infrastructure development including water transport systems on and around the lake. The programme was designed to ensure the participation of local communities and the reduction of poverty through economic growth, investments and sustainable development practices that are cognizant of the environment. Following the signing of the Protocol for the Sustainable Management of the Lake Victoria Basin in 2003 (Lake Victoria Protocol), the programme became a full basin commission – the Lake Victoria Basin Commission – an apex institution of EAC for the basin. The EAC policy framework, which governs the management of water resources in the basin and the operations of the commission is summarized in box 3. It recognizes the need to sustainably exploit and manage water resources, which complements the principles of inclusive green economy.

In addition, the EAC Development Strategy sets out priority programmes to be implemented during a specified five-year period. The fourth strategy is from July 2011 to June 2016, which is aimed at implementing the EAC Treaty and achieving the vision of EAC, which is "to have a prosperous, competitive, secure and

1 The Convention for the establishment of the Lake Victoria Fisheries Organization was signed on 30 June 1994, entered into force on 24 May 1996, and was amended in 1998.

Box 3: East African Community policy framework for water resource management in the Lake Victoria Basin – inclusive green economy related provisions

East African Community Treaty, 1999

Recognizes that development activities may have adverse environmental impacts and result in natural resource depletion. It also recognizes that a clean and healthy environment is a prerequisite for sustainable development (article 111).

Requires the Partner States to cooperate in all issues of Environment and Natural Resource Management and to ensure sustainable utilization of shared natural resources (articles 111 and 114). The Treaty calls for partner States to harmonize, and to jointly develop and adopt water resources conservation and management policies, regulations, common environmental standards, and exchange information that ensure sustenance and preservation of ecosystems.

In addition, the Treaty spells out fundamental (article 6) and operational (article 7) principles which include "equitable distribution of benefits", and "people centred … cooperation" and provides for the establishment of a body for the management of Lake Victoria (article 114).

Lake Victoria Protocol, 2003

The Protocol covers sustainable development, management and equitable utilization of water and fisheries resources; considers natural asset based sectors, particularly sustainable agricultural (and land use) practices including irrigation, tourism and forestry resources; development and management of critical water ecosystems, especially wetlands, protection of the basin's environment and wild life conservation; economic growth through "promotion of trade, commerce and industrial development" and "promotion of development of infrastructure and energy"; elements of social inclusion specifically by integration of gender concerns in all basin activities and public participation in planning and decision-making (article 3). These elements are reiterated in the Protocol's principles, which include "water is a social and economic good and a finite resource" (article 4). By incorporating economic, social and environmental aspects of development, the Protocol provides a basis for promoting the use of inclusive green economy principles and approaches in the management of water resources in the basin.

The Protocol further provides for the creation of an enabling environment for the development and sustainable utilization and management of water resources, It calls for partner States to: cooperate in managing and utilizing water resources in the basin in a sustainable manner; enact and harmonize policies, laws, regulations and standards for the management of the basin; and established institutional framework with the Lake Victoria Basin Commission as the EAC body responsible for the management of the basin. The Protocol requires partner States to develop national laws and regulations requiring developers of projects to undertake an environmental impact assessment of planned activities likely to have a significant impact on the basin resources.

Convention for the Establishment of the Lake Victoria Fisheries Organization, 2001

The Convention establishes the Lake Victoria Fisheries Organization as a body responsible for the sustainable utilization of the living resources of the Lake and to develop and adopt conservation and management measures.

Protocol on Environment and Natural Resources Management, 2006

Its objectives include promoting sustainable development and sustainable utilization of the Partner States' environment and natural resources through prevention of harmful activities. The Protocol embodies principles of environment and natural resource management which Partners States are required to observe (Article 4). These include: poverty eradication and food security; sustainable development; public participation in the development of policies, plans, processes and activities; intergenerational and intra-generational equity; and gender equality. It also calls for the adoption of "Regional Environment Assessment Guidelines for Shared Ecosystems of East Africa" which requires each partner State to adhere to its provisions.

It also requires States to develop, harmonize and adopt common national policies, laws and programmes relating to the management and sustainable use of water resources and to utilize water resources, including shared water resources, in an equitable and rational manner.

The Protocol requires partners States to cooperate in the management of environmental or natural resources critical for water ecosystems and livelihoods..

Source: Compilation based on EAC (1999; 2001; 2003; 2006).

politically united East Africa" (EAC, 2011). It is aligned with the EAC mission, which 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 investment" (EAC, 2011). While the strategies have focused on widening and deepening economic integration, cross-cutting projects and programmes in sectors such as legal and judicial infrastructure, energy, social development and institutional development are being implemented (EAC, 2011). Such actions can incorporate inclusive green economy principles and approaches that foster the sustainable management of water resources.

The 2011–2016 strategy includes "sustainable utilization of regional resources for the benefits of all citizens, for example, Lake Victoria" as one of its priority strategies (EAC, 2011). It implicitly recognizes sectors through which inclusive green growth could be achieved in one of its priority objectives as "regional competitive and sustainable productive sectors", which it aims to develop and strengthen to support the regional and global integration process. These are agriculture (and food security); sustainable natural resource management, environmental conservation and mitigation of effects of climate change; and sufficient, reliable, affordable and environmentally friendly energy resources. Integrating inclusive green growth principles and approaches in the development of these sectors will greatly enhance the sustainability of the lake's water resources, which in turn will support the development of priority sectors.

2.4 National water instruments

2.4.1 National water policies

All the basin countries – United Republic of Tanzania (1991), Burundi and Rwanda (1992), and Kenya and Uganda (1999) – have in place national water (or/and sanitation) policies to guide the management of water. All of their present policies (Burundi, 2009; Kenya, 2012 draft; Rwanda, 2011; United Republic of Tanzania, 2002; Uganda, 1999) are aimed at promoting optimal, sustainable and equitable development and use of water resources for the benefit of present and future generations. Key policies include the Dublin Principles, thereby recognizing the importance of water ecosystem protection; social equity in the provision, use and management of water; and the economic role of water, all of which are important elements of inclusive green economy principles and approaches for water resource management. Thus, on the basis of these principles, the policies cover the subsectors of water resource management; provision of water services; and water for development. While the policies deal with water development and use efficiency for agriculture, energy (hydropower production), industry and environmental flows, the Kenya draft policy puts relatively less emphasis on water ecosystem services, particularly tourism, recreation and fisheries.

2.4.2 Water laws

The water laws of basin countries (Water Acts 2002 and 1995 – Kenya and Uganda, respectively; and the 2009 Water Resources Management Act of the United Republic of Tanzania, Law no. 62/2008 – Rwanda, and Law no. 1/02, 2012 – Burundi) provide for the protection, development, use and management of water. The Water Acts of Kenya and Tanzania have provisions that explicitly spell out "sustainable", with the United Republic of Tanzania Act recognizing "…sustainable management and development of water resources…" in its purpose. The laws provide for institutional frameworks and instruments for water resources management. Water resource management is also decentralized to lower level governments and local water user associations are provided for, thus allowing for the participation of local communities. In addition, the laws prioritize water use with domestic and agricultural uses as top priorities, while recognizing the right to water, especially for the poor. The water instruments, therefore, incorporate principles that provide an opportunity for promoting inclusive green economy in water resource management.

Progress in the implementation of water policies and laws, however, vary from country to country, with Kenya being the most progressive and Rwanda and Burundi lagging behind. For example, by 2007, the 1992 policy for Burundi had no detailed regulations or means of implementation. Furthermore, except for Kenya and the United Republic of Tanzania where some water users associations are well-known, these bodies are limited in the other countries, particularly in Burundi and Rwanda.

3. Inclusive green economy principles, approaches and practices in selected projects

3.1 Overview of the projects

The nine projects assessed are set out in table 1. Project documents defined their spatial scope by focusing on either a specific ecosystem such as a defined wetland, or on a specific catchment or subcatchment (watershed approach) such as the Mara River Basin Management Initiative. They were also designed and implemented in a country or at the transboundary level. Two of the latter, the Mount Elgon Regional Ecosystem Conservation Programme in Kenya and Uganda, and the Lake Victoria Environmental Management Project phase II (LVEMP II) were being implemented by the Lake Victoria Basin. The Sio-Malaba-Malakisi Transboundary Integrated Water Resources Management and Development Project (SMM) in Kenya and Uganda was being undertaken by the Equatorial Lakes Subsidiary Action Programme, which is one of the two investment programmes of the Nile Basin Initiative. The other two were the Kagera Transboundary Agroecosystems Management Project (Kagera TAMP), implemented by the Food and Agricultural Organization of the United Nations; and the Mara River Basin Management Initiative in Kenya and the United Republic of Tanzania, which covered the transboundary Mara River by the World Wide Fund for Nature. The four non-transboundary projects, implemented by non-governmental organizations, are all in Kenya: the Dunga Wetland Alternative Livelihoods Project, the Mount Elgon Integrated Watershed Management Project, the River Nyando Wetland Resource Utility Optimization Project and the Yala Swamp Project.

Although the focus of the projects centred on conserving or restoring ecosystems so as to protect the environment, watersheds or the lake itself, they all (at varying levels) integrated economic and social dimensions, in recognition of the importance of providing social and economic benefits for successful implementation. They also attempted to provide alternative livelihoods to reduce overdependence on environmental resources. Furthermore, the projects were triggered by environmental concerns arising from the unsustainable use of environmental and natural resources to meet social and economic needs, and from inadequate environmental protection during the execution of development activities. This echoed the complex cause-effect relationship between the three dimensions of sustainable development. The following sections assess how the projects integrate economic, social and environmental aspects of development and their interdependence.

3.2 Design and implementation of the projects

3.2.1 Project objectives

In defining the goals and objectives of water resource management, the projects recognized the imperative of integrating economic and social concerns and benefits in the expected outcomes (table 2). Explicitly spelled out economic and social concerns and outcomes included: the efficient use of specific natural resources, such as agricultural land (Dunga Wetland Alternative Livelihoods Project); the adoption of management practices that generated benefits for communities (Kagera TAMP); population prosperity and equity; securing livelihoods; and improving living conditions in the communities. SMM particularly focused on joint management of water resources for investment infrastructure aimed at improving living conditions.

Table 1: Nine projects reviewed

Project name	Main focus	Coverage	Lead implementing organization	Type of Lead implementing organization	Period
Kagera Transboundary Agroecosystems Management Project (TAMP)	Sustainable land management and restoration	Kagera River Basin (Burundi, Rwanda, Uganda and United Republic of Tanzania)	FAO	Intergovernmental	April 2010–February 2015
Lake Victoria Environmental Management Project phase II	Environmental management	Lake Victoria Basin wide	LVBC	Intergovernmental	2009–2013, extended by two years
Mount Elgon Regional Ecosystem Conservation Programme	Conservation of protected ecosystems	Mount Elgon conservation area (Kenya and Uganda)	LVBC	Intergovernmental	1 March to 31 November 2012
Mara River Basin Management Initiative		Mara River Basin (Kenya and United Rep. of Tanzania)	WWF	Non-governmental organization	August 2004–June 2017
Sio-Malaba-Malakisi Transboundary Integrated Water Resources Management and Development Project	Water development	Sio-Malaba-Malakisi sub-catchment (Kenya and Uganda)	Nile Basin Initiative	Intergovernmental	2005–2015
Dunga Wetland Alternative Livelihoods Project	Wetland conservation	Dunga Wetland (Kenya)	Econfinder, Kenya	Non-governmental organization	2011–2014
Mount Elgon Integrated Watershed Management Project	Watershed management	Mount Elgon conservation area (Kenya)	Vi -Agroforestry	Non-governmental organization	January 2011–March 2013
River Nyando Wetland Resource Utility Optimization Project	Wetland conservation	Nyando River Nasin (Kisumu East and Nyakach Districts, Kenya)	VIRED International	Non-governmental organization	2006–2012
Yala SWAMP Project	Wetland conservation	Yala Swamp Community (Kenya)	Econfinder, Kenya	Non-governmental organization	2010–2014

Abbreviations: FAO, Food and Agricultural Organization of the United Nations; LVBC, Lake Victoria Basin Commission; WWF, World Wide Fund for Nature.

Table 2: Project objectives

Project name	Objectives
Dunga Wetland Alternative Livelihoods Project	To ensure efficient use of land, environmental conservation and prevention of wetland encroachment to address human-hippopotamus conflict.
Kagera TAMP	To support the adoption of an integrated ecosystems approach for the management of land resources in the Kagera Basin to generate local, national and global benefits.
Lake Victoria Environmental Management Project phase II	To contribute to the EAC Vision and Strategy Framework for the Management of the Lake Victoria Basin – a prosperous population living in a healthy and sustainably managed environment providing equitable opportunities and benefits.
Mara River Basin Management Initiative	To secure sufficient and safe water for maintaining biodiversity and livelihoods of communities in the Mara-Serengeti Ecosystem.
Mount Elgon Integrated Watershed Management Project	To improve living conditions and resilience to the effects of climate change among communities in Mount Elgon water catchment area.
Mount Elgon Regional Ecosystem Conservation Programme	To support integrated ecosystem conservation and management for sustainable development and enhanced well-being of the people and their environment (MERECP, 2005).
River Nyando Wetland Resource Utility Optimization Project	To improve wetland conservation and rehabilitation and sustainable use of wetlands.
SMM Project	To establish a sustainable framework for the joint management of the water resources of the Sio-Malaba-Malakisi catchments, in order to prepare for sustainable development oriented investments to improve the living conditions of people and to protect the environment.
Yala SWAMP Project	To facilitate the sustainable use of the lake's resources while preserving the wetland's ability to deliver ecosystem goods and services.

3.2.2 Integration of inclusive green economy principles into water management functions and activities

The projects responded to various water management functions with varying specific intervention areas. They included conservation of vital ecosystems (especially wetlands), pollution prevention, protection of domestic water sources, restoration of degraded lands or ecosystems, water development, institutional capacity-building and promotion of water policy and regulation. Given that the communities surrounding the Lake Victoria Basin largely (70-80 per cent) engage in agriculture, the projects also promoted sustainable agricultural practices and agroforestry, including carbon sequestration, agrobiodiversity conservation and improved agricultural production.

All the projects' integrated activities aimed at improving the economic and social wellbeing of communities or regions. In addition to sustainable agricultural practices that aimed to improve food security and livelihoods, income-enhancing activities were incorporated in the project design and implementation for the following reasons:

a) These activities were perceived as necessary incentives for "marketing" projects to communities and for successful implementation. As one respondent noted, livelihood or income generating activities "…motivate them [communities] to conserve the wetland";
b) It is widely known that overdependence on environmental resources as a result of poverty is one of the main causes of resource degradation, therefore poverty eradication can reverse degradation trends. For example, the Dunga Wetland Alternative Livelihoods Project attributed the cause of human-wildlife conflict

to wetland encroachment as people sought more fertile land, thereby encroaching on wildlife habitats. Thus, confronting the problem required the provision of alternative livelihoods;

c) Some of the projects had been conceived to tackle poverty or promote economic and social development through water resources management and development or sustainable use of environmental resources in the basin. SMM aimed to stimulate sustainable development oriented investments to improve living conditions and promote environmental sustainability.

Inclusive green growth principles and approaches emphasize leveraging the interactions and independence of economic, social and environmental aspects in the management of water resources. The projects, to varying degrees, integrated all three dimensions of sustainable development – a tenet of inclusive green economy – by engaging communities or stakeholders in livelihood or economic activities that promoted environmental goals. These included nature-based income generating enterprises such as bee keeping (apiculture); commercial tree seedling nurseries; sustainable agricultural practices such as micro-irrigation techniques (tube wells); and promoting cleaner production practices among industry to increase energy and material use efficiency and minimize waste.

The projects involved various stakeholders with specific roles at various levels. Stakeholders included government agencies, both central and local, depending on the scale of operation of the project; non-governmental organizations; relevant international development agencies; research and academic institutions; and communities through groups or associations, or households in communities. There was collaboration among the projects, with smaller ones partnering with basin-wide projects, which also employed collaborative approaches.

3.3 Implementation outcomes and impacts

Inclusive green growth approaches to water resource management can be distinguished by the way in which projects (and their implementation processes and outcomes) harness synergies and minimize trade-offs among economic, social and environmental objectives to realize water resource management goals. The activities and their implementation should result in improved economic wellbeing (income and livelihoods), while at the same time improving the lives of the most socially vulnerable, promoting social equity, and conserving and enhancing water resources and the ecosystems that maintain or produce water. Integral to realizing these outcomes is creating an enabling environment (institutions and policies) for water resource management that recognizes the economic and social significance of water and the vital role of water ecosystems.

This section assesses how the implementation of the various projects has taken into consideration the aforementioned economic, social and environmental objectives. It also showcases good practices in the implementation process. Good practices were identified based on their actual or potential contribution to harnessing synergies among economic, social and environmental goals of water resource management, and promoting the application of inclusive green growth principles and approaches. These projects were also chosen based on their implementation design, sustainability and replicability.

3.3.1 Economic and social outcomes and impacts

The economic and social outcomes and impacts of project implementation covered nature-based enterprises in communities, and opportunities for employment and empowerment through training. The promotion of nature-based enterprises, including the use of ecosystem goods and services to finance co-management through community revolving funds, is a good practice consistent with inclusive green economy principles of harnessing synergies and investing in sectors that enhance natural capital.

All the projects incorporated initiatives or implementation approaches that provided work opportunities for communities. Some of these jobs were temporal and ended with or shortly after the projects. However, other projects promoted activities that fostered self-employment through skill-based training. For example, the Dunga Wetland Alternative Livelihoods Project provided some community members with artisanal skilled labour in the construction of the Eco-San toilets and tube wells for irrigation. A total of 12 artisans were

employed in the construction process, and six project staff were engaged in raising awareness of the project and were paid stipend allowances. The skills acquired will be put to use even after project completion, thereby promoting alternative livelihoods.

The projects also promoted nature-based enterprises that enabled communities to increase incomes, and engage in alternative livelihoods while conserving vital water ecosystems. The Dunga Wetland Alternative Livelihoods Project helped form a total of six ecotourism groups with an average of 15 members each. The groups made use of the swamp ecosystem for bird watching activities and recreation. The River Nyando Wetland Resource Utility Optimization Project delivered training and created awareness on ecotourism as an important means of spurring development in the area and the Lake Victoria Basin. The awareness that was created by the project provided opportunities for aggressive promotion of ecotourism in the Nyando River Wetland area and around the Lake Victoria Basin. The project also contributed to generating data on the potential for ecotourism in the project area to inform future ventures.

Some projects – particularly Kegera TAMP, the Dunga Wetland Alternative Livelihoods Project, and the Mount Elgon Regional Ecosystem Conservation Programme – innovatively used payments for ecosystems services to promote self-financing by communities. The Mount Elgon Regional Ecosystem Conservation Programme piloted a credit revolving fund to pay for ecosystem goods and services (box 4).

Besides providing employment, improved livelihoods, education and income to the local communities and Governments, wetland ecotourism is environmentally friendly and contributes to better understanding and protection of the local wetland and other lake resources. In the Nyando River wetlands, ecotourism enhanced the participation of communities in the conservation of 167 species of avifauna (birds) that are on the East African Red Data List of birds. They include the papyrus yellow warbler (chloropeta gracilirostris), the papyrus gonolek (laniarius mufumbiri), the papyrus canary (serinus koliensis), carruthers' cisticola (cisticola carruthersi) and the white-winged warbler (bradypterus carpalis) (Raburu, Okeyo-Owuor and Kwena, 2012). While ecotourism was being promoted by small-scale projects and was in a preliminary stage of development, vast opportunities exist for its expansion, especially if the larger transboundary projects became involved in its promotion.

Designed to provide seedlings for afforestation and agroforestry, tree seedling nurseries were promoted by projects as a business enterprise, especially for young people. For example youth and women groups under the Yala SWAMP Project and groups developed through the community driven development initiatives of LVEMP II engaged in the production of tree seedlings for the project and for income generation. These enterprises had the potential to outlive project lifespans because communities develop the required skills and reap benefits, and continue to supporting various conservation efforts in the basin.

All the projects assessed promoted improved agricultural practices that conserved the environment while enhancing productivity. The Kagera TAMP particularly focused on addressing the causes of land degradation through more productive and sustainable resource management practices. Through engagement in sustainable land management activities, communities under Kagera TAMP realized a significant increase in agricultural production (crop and livestock). For example, maize, potato, beans and banana yields increased by 60 per cent, 50 per cent, 40 per cent and 80 per cent, respectively. They utilized animal manure from livestock production (dairy, piggery, goat, and fishery), which in turn utilized crop residues. The communities earned incomes through the sale of animal products such as milk.

The Vi-Agroforestry's Mount Elgon Integrated Watershed Management Project helped realize further improvements in agricultural productivity. This was achieved through the adoption of farming techniques that conserved water resources – over 3,000 of 6,900 households involved in the project have reported over 50 per cent increases in income. Overall, 5,000 households of the 6,900 involved in the project reported that they attained food security. Improved agricultural practices employed by the projects included the use of cross-slope terraces across the hillsides to control soil erosion by digging contour ditches; use animal residues as manure for soil fertility management; plant various fodder species on the "fanya juu" progressive terraces; use crop residues to feed livestock; plant trees in soil erosion prone areas; construct anti-erosion ditches,

Box 4: Mount Elgon Regional Ecosystem Conservation Programme – innovative financing: co-management of protected watersheds through credit revolving funds for payment of ecosystem goods and services

The Mount Elgon Regional Ecosystem Conservation Programme was implemented from March to November 2012 as a pilot activity to demonstrate benefit sharing and co-management models of ecosystem and biodiversity conservation around protected areas of the Lake Victoria Basin. The project involved putting in place revolving funds that created opportunities for payment of ecosystem goods and services for improved livelihoods, thus demonstrating the links between livelihood improvement and climate change mitigation and adaptation; and strengthening appropriate institutions in support of the transboundary ecosystem approach. The project was mainly funded by the Governments of Norway and Sweden.

Stakeholders included protected area management institutions from Kenya and Uganda, and local governments of counties and districts adjacent to the protected areas that had interest in community livelihood improvement and in climate change adaptation and mitigation. They were involved in developing and implementing livelihood interventions, forest rehabilitation and transboundary natural resource management activities. Local and relevant international non-governmental organizations provided synergy, especially with regard to livelihood interventions.

A few subdistrict level communities in hotspot target areas, largely the rural poor, were involved through over 30 community-based organizations, as were women and youth groups using memorandums of understanding for credit revolving funds. The memorandums spelt out benefits and responsibilities. They were required to police illegal activities inside the protected areas. The credit revolving funds effectively provided financial credits at lower rates where there was no access to banking services. The microfinance institutions that had just penetrated the area resulted in negative experiences, with assets being repossessed for loan recovery attributed to high interest rates. The credit revolving funds management was more in tune with members' needs, more lenient, and credits could be processed within a shorter duration compared to banks. About 10,000 households benefited from the credit revolving funds.

The co-management promoted cooperation among communities for wider welfare. For example, the Cheptais Community Forest Association of -Kenya loaned 99 per cent of their funds to one of its constituent community-based organizations, the Chemtai Women's Group. The Kachebut Elgon Farmer's Association of Uganda provided loans to members of its constituent community-based organizations.

Technical support provided to the credit revolving funds in terms of training and mentoring were very empowering, particularly with regard to microcredit management. This ignited a desire among many community-based organizations for a future transition to credit and cooperative societies, suggesting future increases in membership and improvements on the management of credit revolving funds. The funds had already prompted the formation of other community-based organizations (not funded by the Mount Elgon Regional Ecosystem Conservation Programme) that adopted the credit revolving funds as one of their activities. In addition to financial management, capacity-building covered enterprise development, agro-forestry and nursery operations.

The credit revolving funds were established using funds from payments for undertaking programme activities. Funds also supported income-generating activities that enhanced household income and assets. For example, 20 beneficiary groups each received a grant of $10,000 as credit revolving funds to support their livelihood activities. Programme activities included forest rehabilitation and plantation for livelihood improvement.

As a result of this co-management, indigenous long-rotation crops (40+ years) species, which grow naturally in the ecosystem, were planteda. They are expected to support regeneration even with average survival rates. Forest restoration is being done in areas degraded through encroachment and fire.

Moreover, trees will sequester carbon with sharing of carbon benefits expected from this co-management. The sharing arrangement was not specified. There was, however, an unwritten understanding that this would be done once REDD+[b] systems had been fully developed under the national REDD strategies. By using integrated economic, social and environmental aspects, the model demonstrated that inclusive green economy approaches supported by innovative funding could facilitate water resources management.

[a]These include *cordia africana, maesopsis eminii, prunus africanum, olea welwistchii, antiaris toxicaria, markhamia lutea, khaya anthotheca* and *milicia excelsa, dombeya goetzenii, juniperus procera, podocarpus spp,* and *syzgium guinesse.*

[b]An enhanced version of the mechanism called REDD, reducing emissions from deforestation and forest degradation in developing countries.

Source: Mount Elgon Regional Ecosystem Conservation Programme, 2005; and completed questionnaire, 2014.

grass strip planting, mulch and farm trees; and develop water harvesting techniques. For example, the LVEMP II supported the Land Husbandry and the Water Harvesting (LWH) project in Mubuga, Rwanda in establishing a 200 hectare area (of 700 hectares planned) of radical terracing (improved bench terraces) with associated sustainable land management interventions, such as silt traps. These practices harnessed synergies and minimized the cost of trade-offs between conservation of vital water ecosystems and agriculture to improve the livelihoods of vulnerable small holder farmers.

Realizing the increasing demand for fish amidst declining capture fisheries in Lake Victoria, its rivers, satellite lakes and associated wetlands, some of the projects (Dunga Wetland Alternative Livelihoods Project, LVEMP II, the River Nyando Wetland Resource Utility Optimization Project, SMM and the Yala SWAMP Project) supported aquaculture to provide alternative livelihoods and reduce pressure on declining fish stocks. The Yala SWAMP Project supported seven women groups in four locations in successfully establishing functional fish ponds to supplement declining stocks in Lake Kanyaboli (Kenya) and contributed to increasing income. Moreover, in targeting communities living along wetlands and depending on capture fisheries for food and sale, the River Nyando Wetland Resource Utility Optimization Project introduced aquaculture in group fishers and schools as a new initiative. Aquaculture in schools was introduced through their environmental management clubs. This initiative was started with three schools and grew to 25, with one of the schools realizing a harvest level of 3,000 fish. The project helped to convince people that fish farming was a viable profitable activity and an alternative to capture fisheries. SMM also supported the establishment of community fish ponds in Bunyide, Bunyadeti and Budimo communities, which benefitted about 2,250 people.

Value-addition to commodities has been acknowledged as a necessary step to structural transformation and poverty eradication in Africa. Some of the projects introduced, or were promoting, value addition to commodities from agriculture or ecosystem goods traded by communities. The LVEMP II worked with beach management units to provide better fish (especially "mukene") storage facilities; improve fish production, packaging and marketing; as well as improving fish processing and adding value to the fish. Methods introduced by the project to improve fish handling included fish transfer from fishing to collection boats, wooden beach landing racks and floating barges at fish landing sites facilities, kiln and drying racks and improved hygiene facilities. Furthermore, the River Nyando Wetland Resource Utility Optimization Project supported communities in improving the value of wetland products, which together with other environmentally friendly organic farm products were sold in project show rooms at local markets. The Kagera TAMP project also supported the adoption of post-harvest and handling technologies, particularly among communities in Burundi.

Water development includes putting in place infrastructure that enables the sustainable use of water to meet economic and social needs, and infrastructure for control or prevention of water-related hazards and disasters. SMM focused particularly on promoting investment in water development projects, such as multipurpose water storage infrastructure and integrated watershed management. The project engaged in small-scale initiatives for developing water resources utilization and pollution-prevention infrastructure in its areas of operation, thus benefitting communities. These included pollution control and solid waste management in Kenya in the Uganda border towns of Malaba and Busia benefiting over 500,000 town dwellers; and the Mella and Angurai water supply projects where over 10,000 people in Teso district (Kenya) benefited (Nile Basin Initiative, 2011). In implementing infrastructure investments, environmental and social assessments were undertaken in line with the legal requirements of Kenya, Uganda and the World Bank Environmental and Social Safeguards. Where necessary, resettlement action plans were also developed.

SMM also undertook feasibility studies to construct multi-purpose dam reservoirs within the sub-basin, such as for the Maira dam project. Through SMM, the Government of Uganda was, in May 2014, reported to have secured $44.7 million from the Cooperation in International Waters for Africa of the World Bank and the Swedish International Development Cooperation Agency (Sida) for the construction of a 11.8 million cubic milliliters multipurpose dam in the project area (Odeke, 2014). When completed, the reservoir is expected to support irrigated agriculture; generate hydroelectric power; support livestock development, domestic water supply, flood control, drought mitigation and aquaculture; and help restore some degraded catchment areas.

The other projects that implemented water development activities at smaller scales owing to their small nature or focus were the River Nyando Wetland Resource Utility Optimization Project, the Dunga Wetland Alternative Livelihoods Project, the Yala SWAMP Project, Kagera TAMP and LVEMP II. The River Nyando Wetland Resource Utility Optimization Project supported the opening of blocked drainage canals for flood abatement, construction of flood water harvesting pans, and building of water protection bunds around local schools and clinics. The project and the Yala SWAMP Project, LVEMP II (through community driven developments projects) and the Dunga Wetland Alternative Livelihoods Project support small-scale water provision infrastructure, including the establishment of water points. Through the construction of "Charco" dams, LVEMP II improved the provision of water for domestic and livestock uses, thereby contributing to improved sanitation and productivity of livestock. The Dunga Wetland Project, in addition to micro flood protection efforts, promoted small-scale irrigation technologies such as tube wells.

3.3.2 Environmental outcomes and impacts

The projects generated several environmental benefits while employing a number of good practices presented in this section. The good practices covered the use of indigenous trees to rehabilitate degraded areas, using and improving indigenous technologies or practices such as terracing in Rwanda, harnessing green and low cost technologies such as the hydro drum to pump water in a village without electricity in Kericho (Kenya), rainwater harvesting and flood control.

Although it was beyond the scope of the study to provide scientific accounts of improvements in water yields arising from watershed management interventions of the projects, the following statements from respondents are worth highlighting:

- *"The availability of a reliable water source through the interventions of the Dunga Wetland Alternative Livelihoods Project resulted in the rehabilitation of 15 household farms."*
- *"Water sources have been used for irrigation, which contributed to food security and alternative livelihoods for fishing communities experiencing declining fish stocks."*
- *"Water is available in the Mara River Basin for various uses such as agriculture, domestic, livestock, wildlife, fishing and mining."*

Besides preventing further degradation of watersheds and water quality, interventions of various stakeholders have helped increase water yields in reservoirs.

The projects also promoted and supported water pollution control interventions. Point source pollution prevention and control was one of the four components of LVEMP II. Among the strategies employed by the project to control and prevent water pollution, especially in littoral zones of the lake, was the promotion of cleaner production processes in industry. The other approaches included supporting rehabilitation and improvements of wastewater treatment facilities. These included provision of sanitation facilities, pollution risks management and supporting navigation safety to prevent oil spills from boats and vessels on the lake. All the other projects addressed pollution by planting trees to prevent sedimentation, protecting wetlands for their buffering function, promoting the use of organic manure to reduce the application of agrochemicals, and through awareness campaigns on the impacts of agrochemical use. The Kagera TAMP project tackled pollution from agricultural fields through sustainable land management practices. The Mara River Basin Management Initiative addressed water quality, especially artisanal and Barrick Gold mines and agricultural chemicals from tobacco farms, as well as siltation in the Mara River. Through spring protection measures, such as planting trees to stabilize soils and providing separate access points for animals and humans, the project reduced pollution of drinking water sources. In addition, a solid waste management project for Malaba town (Kenya) provided 400 (100litre) dustbins and a tractor trailer which contributed to pollution reduction in the Malaba River.

The projects promoted alternative sources of energy for cooking aimed at reducing degradation of catchments resulting from cutting of trees for wood fuel. Through community driven development projects, the LVEMP II promoted the use of biogas produced from animal waste among some communities in Maswa district (Tanzania), which allowed them to save trees. Planting of trees for firewood was promoted alongside energy (wood) saving cooking stoves by all the projects. For example, a training of 40 trainers each representing a Farmer Field School by the Kagera TAMP project was

reported to have resulted in a 50 per cent reduction in wood fuel used by beneficiary families. This was in addition to about $6 monthly savings from wood fuel costs, reduced cooking time and a drop in indoor air pollution (Kagera TAMP, 2014).

Tree planting was promoted by the projects as a watershed management measure not only to provide vegetation cover but also, in some cases, as a commercial activity and for meeting domestic wood needs such as for firewood. The Mount Elgon Integrated Watershed Management Project permitted households to reduce reliance on forest resources by planting early maturing trees that can yield products over a shorter period of time, thereby reducing pressure on forests as sources of fire wood and timber, and helped resolve conflict with forest conservation authorities. One respondent noted that, as a consequence, farmers were valuing their land more and were engaged in forest conservation schemes. Another observed that trees planted along the Mara River and its tributaries helped protect river banks and reduced siltation.

In the Mara River Basin, the trees planted as part of the Mara River Basin Management Initiative (such as in Kwisaro and Mara Sibora villages) were being harvested for sale. Through the Mount Elgon Regional Ecosystem Conservation Programme project, communities in the Mount Elgon conservation area established woodlots in private/household land, which served as boundaries between the protected area and community interfaces. Bamboo plantations were used by the River Nyando Wetland Resource Utility Optimization Project and Kagera TAMP project as buffers for wetlands and river bank protection. Planting of trees contributed to watershed protection directly and indirectly by providing alternative wood fuel to naturally growing forests, as well as contributing to climate change mitigation through carbon sequestration.

Agroforestry was promoted as a sustainable land management measure to protect watersheds and as a means to improve agricultural productivity and livelihoods. Through farmer adoption of agroforestry promoted by the Mount Elgon Integrated Watershed Management Project, farm tree cover increased. The Mount Elgon Regional Ecosystem Conservation Programme in particular promoted the use of indigenous tree species in farms. The benefits of agroforestry in the basin included restoration of degraded riverbanks, declining incidences of soil erosion and improvements in income and food security. Communities practising agroforestry promoted by Kagera TAMP through FFS reported benefits such as improved nutrition and diversified income generating opportunities (Kagera TAMP, 2014).

Restoration of degraded lands and ecosystems, such as wetlands and forests, was an important function of watershed management. The projects incorporated this among their activities alongside those designed to prevent further degradation. The Mount Elgon Regional Ecosystem Conservation Programme, through Participatory Benefit Sharing Agreements (PBSAs) signed with communities, undertook restoration of degraded forest areas in reserves by planting indigenous tree species. LVEMP II supported community driven development or small-scale projects to implement restoration activities (box 5). Through the River Nyando Wetland Resource Utility Optimization Project, the Dunga Wetland Alternative Livelihoods Project and the Yala SWAMP Project, the communities engaged in rehabilitation and restoration of some degraded wetlands, including setting aside areas for rehabilitation and planting of papyrus and other wetland vegetation to hasten recovery. Under the SMM, about 10,000 hectares were rehabilitated through afforestation, agroforestry, and soil and water conservation structures. Wetland restoration in lower SMM catchments and riverbank protection and restoration were also undertaken. Kegera TAMP and the Mount Elgon Integrated Watershed Management Project also engaged in restoration of degraded lands, including through planting of vegetation (trees and grass); and employing sustainable land management practices for soil erosion control, restoration of vegetation cover, biodiversity conservation, and protection of buffer zones in critical fragile ecosystems areas.

Box 4: Mount Elgon Regional Ecosystem Conservation Programme – innovative financing: co-management of protected watersheds through credit revolving funds for payment of ecosystem goods and services

The Mount Elgon Regional Ecosystem Conservation Programme was implemented from March to November 2012 as a pilot activity to demonstrate benefit sharing and co-management models of ecosystem and biodiversity conservation around protected areas of the Lake Victoria Basin. The project involved putting in place revolving funds that created opportunities for payment of ecosystem goods and services for improved livelihoods, thus demonstrating the links between livelihood improvement and climate change mitigation and adaptation; and strengthening appropriate institutions in support of the transboundary ecosystem approach. The project was mainly funded by the Governments of Norway and Sweden.

Stakeholders included protected area management institutions from Kenya and Uganda, and local governments of counties and districts adjacent to the protected areas that had interest in community livelihood improvement and in climate change adaptation and mitigation. They were involved in developing and implementing livelihood interventions, forest rehabilitation and transboundary natural resource management activities. Local and relevant international non-governmental organizations provided synergy, especially with regard to livelihood interventions.

A few subdistrict level communities in hotspot target areas, largely the rural poor, were involved through over 30 community-based organizations, as were women and youth groups using memorandums of understanding for credit revolving funds. The memorandums spelt out benefits and responsibilities. They were required to police illegal activities inside the protected areas. The credit revolving funds effectively provided financial credits at lower rates where there was no access to banking services. The microfinance institutions that had just penetrated the area resulted in negative experiences, with assets being repossessed for loan recovery attributed to high interest rates. The credit revolving funds management was more in tune with members' needs, more lenient, and credits could be processed within a shorter duration compared to banks. About 10,000 households benefited from the credit revolving funds.

The co-management promoted cooperation among communities for wider welfare. For example, the Cheptais Community Forest Association of -Kenya loaned 99 per cent of their funds to one of its constituent community-based organizations, the Chemtai Women's Group. The Kachebut Elgon Farmer's Association of Uganda provided loans to members of its constituent community-based organizations.

Technical support provided to the credit revolving funds in terms of training and mentoring were very empowering, particularly with regard to microcredit management. This ignited a desire among many community-based organizations for a future transition to credit and cooperative societies, suggesting future increases in membership and improvements on the management of credit revolving funds. The funds had already prompted the formation of other community-based organizations (not funded by the Mount Elgon Regional Ecosystem Conservation Programme) that adopted the credit revolving funds as one of their activities. In addition to financial management, capacity-building covered enterprise development, agro-forestry and nursery operations.

The credit revolving funds were established using funds from payments for undertaking programme activities. Funds also supported income-generating activities that enhanced household income and assets. For example, 20 beneficiary groups each received a grant of $10,000 as credit revolving funds to support their livelihood activities. Programme activities included forest rehabilitation and plantation for livelihood improvement.

As a result of this co-management, indigenous long-rotation crops (40+ years) species, which grow naturally in the ecosystem, were planteda. They are expected to support regeneration even with average survival rates. Forest restoration is being done in areas degraded through encroachment and fire.

Moreover, trees will sequester carbon with sharing of carbon benefits expected from this co-management. The sharing arrangement was not specified. There was, however, an unwritten understanding that this would be done once REDD+[b] systems had been fully developed under the national REDD strategies. By using integrated economic, social and environmental aspects, the model demonstrated that inclusive green economy approaches supported by innovative funding could facilitate water resources management.

[a]These include *cordia africana, maesopsis eminii, prunus africanum, olea welwistchii, antiaris toxicaria, markhamia lutea, khaya anthotheca* and *milicia excelsa, dombeya goetzenii, juniperus procera, podocarpus spp,* and *syzgium guinesse.*

[b]An enhanced version of the mechanism called REDD, reducing emissions from deforestation and forest degradation in developing countries.

Source: Mount Elgon Regional Ecosystem Conservation Programme, 2005; and completed questionnaire, 2014.

Box 5: Ecosystem restoration: Rweru-Akagera wetland complex rehabilitation micro-project

The Rweru-Akagera wetland complex rehabilitation project planned for 2013-2015 is a LVEMP II (RWF 200,000 million) micro-project was aimed at protecting the Rweru-Akagera wetland complex against the devastating effects of erosion resulting from various human activities. This goal was to be achieved through rehabilitation and protection of about 210 hectares of the wetland and identifying and stabilizing 20 meter band areas. Activities were based on a management plan prepared and adopted jointly by the Ngoma and Bugesera districts (decentralized governments) and the Rwanda Environmental Management Authority (central agency).

Stakeholders included the Ministry of Local Government which is interested in community driven development for livelihood improvements; the Rwanda Natural Resources Authority and the Rwanda Agriculture Board concerned with restoration of wetlands and riparian vegetation, rehabilitation of hillside areas for production and conservation and livelihood improvement; the Ministry of Infrastructure concerned with planning of sewerage systems and wastewater treatment facilities; and the Ministry of Trade and Industry that promotes cleaner production technologies. The Lake Victoria Basin Commission championed LVB management through harmonization of regional policies (water and fishery policies and standards); and communities with various, economic, social and environmental interest.

As at the beginning of 2014, 163 hectares of buffer zone had been demarcated. About 41hectares had been protected by radical (improved bench) terraces, 136 hectares of lakeshores had been rehabilitated and demarcated at 50 metres from Rweru-AKagera wetland complex by trenches about 68 kilometres long. An estimated 17,232 m3 of water hyacinth had also been removed (eradicated) from 81 hectares of Rweru lake (shared by Burundi and Rwanda). A new innovative approach of converting the water hyacinth into composite manure and weaving of handcrafts had emerged. LVEMP II had assisted community members to remove, pile and decompose the water hyacinth into the environmentally friendly manure. Vidya and Girish (2014) reported that water hyacinth (eichhornia crassipes) can be used as a good source of compost material after treating wheat with compost derived from the weed. Integrated pest management had also been employed to reduce the use of pesticides, in order to increase use of organic fertilizers and agricultural yield. Trees had also been planted in the buffer zone 10 metres alongside rivers and 50 metres along lakes to prevent silting and solid waste deposition into lakes. As a result of all this, the quality and quantity of fish stock in intervention areas had increased due to reduced contamination.

The project mainstreamed gender concerns, and women participation in project activities was up to 60 per cent, achieved through community groups, with women heading some committees. In addition, 70 per cent of the beneficiaries were youth committees providing paid labour. Using the national poverty line as a criterion for selection of beneficiaries, the poor were economically empowered through the intervention. Good practices, such as water conservation, and sustainable land management, such as radical terraces, were also contributing to improved crop yields with social and economic benefits for the poor.

Furthermore, the project directly employed more than 2,000 local people. Through project support, livelihood sources had been diversified, as people purchased goats, pigs and cows from their wage salaries. Some 1,878 (53 per cent women) beneficiaries who were cultivating the land had been identified. Through local microfinance institutions (SACCO), savings were being made by beneficiaries.

Implementation was facilitated through management plans, stakeholder engagement, financing and capacity-building. About 45 local leaders and community representatives have been trained in integrated water management activities.

Source: LVEMP II – Rwanda, 2013; and completed questionnaires, 2014.

3.3.3 Awareness creation, community participation and partnerships

The implementation of the projects created awareness, facilitated and promoted community participation and, in various ways, created partnerships with communities, Governments and civil society and the private sector and between the various project implementers. Partnerships provided means to leverage financial and other resources, knowledge, information and goodwill. This section presents the following good practices: engaging communities and creating associations as a means to leverage participation and resources; creating awareness through demonstrations; entering into voluntary agreements or memorandums of understanding with communities; promoting cleaner production technologies as incentives; and establishing an independent civil society organization as a watch dog project.

3.3.3.1 Awareness creation

The projects employed various approaches to create awareness. They included training, role play, participation in relevant commemorative days (such as wetlands and environment days), and sensitization through groups or association meetings. Communities were also engaged in local media discussions (radio and television shows),

Box 6: Evidence-based training and demonstrations improved stakeholder engagement in basin projects

A Kagera TAMP Newsletter edition included an ancient Chinese Proverb extracted from a FFS session: "I hear… and I forget; I see… and I remember; I do… and I understand" (Kagera TAMP, 2014). The reflection of this proverb in the project's Newsletter underscores the value it attached to demonstration as a means to train and create awareness. The project achieves these through FFS where members were trained as trainers and testified about benefits of sustainable land management practices.

Other projects also employed demonstrations and testimonies to create awareness on benefits of interventions. The River Nyando Wetland Resource Utility Optimization Project used the annual wetlands day celebrations to mobilize communities to display and promote wetland projects, and exchange views about good practices. The LVEMP II initially used willing industries to apply, and testify the benefits of cleaner production technologies. These approaches eased the scaling up/out of project interventions.

Source: Kagera TAMP, 2014; and completed questionnaires, 2014.

workshops and exchange visits to facilitate learning and create awareness. Through FFS, Kagera TAMP used a peer-to-peer sensitization approach. Projects also used evidence-based or demonstration-based approaches to create awareness and engender stakeholder buy-in (box 6).

Community awareness was vital in realizing project outcomes and its crucial role became more apparent where it was not adequately applied. For example, one respondent commented that "*community awareness enhanced the rational exploitation of fisheries resources through the use of legal fishing nets"***.** However, incidents that suggested limitations in awareness creation among all groups of stakeholders by some of the projects were cited. Upstream residents incited by local politicians clashed with their downstream counterparts causing suspension of a feasibility study for Bulusambu (irrigation) dam project in eastern Uganda (Elunya, 2013). The upstream communities perceived that the dam was to be located in their area; while the beneficiaries were downstream.

3.3.3.2 Participation of and partnership with the communities

All the projects partnered with communities through associations or community-based organizations – community-based organizations, using voluntary agreements or memoranda of understanding that defined roles, responsibilities and benefits. The larger projects (LVEMP II, Kagera TAMP, the Mount Elgon Regional Ecosystem Conservation Programme, SMM, the Mount Elgon Integrated Watershed Management Project and the Mara River Basin Management Initiative) only utilized associations, while the smaller projects (the Dunga Wetland Alternative Livelihoods Project, the River Nyando Wetland Resource Utility Optimization Project, and the Yala SWAMP Project) also included individual-level participation. The associations and community-based organizations included water catchments or village environmental committees, water resource user associations, youth and women groups, forest user associations, ecotourism groups, papyrus harvesters and farmer associations.

Participation of communities through member-based organizations was a vital engine in creating community awareness, which was crucial in facilitating the dissemination of knowledge and project implementation. Engagement of communities through community associations facilitated mobilization of members and resources, and gave them the opportunity to influence strategic direction and outcomes of projects. Through associations, communities were already "self-mobilized" to address issues of common interest. Having appreciated the results of the project, they provided a "launching pad" for scaling out to other community members. Project implementers generally considered community engagement as an important means of engendering buy-in and participation. It also "…created an inclusive approach to environmental protection and… a sense of ownership of the activities by the communities", according to one respondent.

The projects encouraged the formulation of community associations to facilitate their participation in project implementation, and as a means of fostering future community engagement in water and other resource management. The River Nyando Wetland Resource Utility Optimization Project promoted the formation of community-based wetland groups along the Nyando wetlands and provided them with support to implement

selected components of the project. LVEMP II also promoted the formulation and operation of beach management units and used community driven developments to involve communities (box 7).

labour. Through FFS, Kagera TAMP used trained members as trainers. Youth groups provided labour in rehabilitating eroded lands under the LVEMP II community driven developments projects.

Box 7: Lake Victoria Environment Management Project phase II: increasing natural resource regeneration and reducing pressure on fisheries and wetland resources through a community driven development approach

LVEMP II adopted a community-driven development approach aimed at increasing natural resources regeneration and reducing pressure on fisheries and wetland resources. Community-driven development included supporting income generation and alternative livelihoods that promote environmentally sustainable practices and benefit the poor, and low-cost private sector developments that helped reduce post-harvest losses of agricultural and fisheries products. The project was being implemented in all five basin countries. Selected subcatchments included Simiyu Catchment (United Republic of Tanzania), Nyando Catchment (Kenya), Katonga Catchment (Uganda) as the first part (APL1), and in tributaries of Kagera River (Burundi and Rwanda) as the second part (APL2) of the LVEMP.

Community driven development projects were engaged in, among other activities, agroforestry and cattle rearing that promotes zero grazing. Through the projects, communities could construct "charco" dams used for water harvesting for humans and for watering animals. Those projects also included: bee keeping, with up to about 80 beehives in a project; and water supply, that use a hydraulic ram (an old technology) to pump water. Other projects consisted of youth groups that addressed gulley erosions where gullies were as deep as 10 meters; and at the beach for fish processing to prevent losses, and fisher communities were encouraged to plant trees including fruit trees for themselves and the communities. There was also aquaculture; sustainable use of wetlands, including vegetable growing and tree planting; biogas projects that used animal waste in Maswa district enabling them to save trees.

The activities of community driven developments projects were determined by the communities to address specific environmental problems and also supported livelihoods. These could be formed by communities including fisher folks, youth and women groups where each group must include up to 50 per cent women. The groups were given grants, and although some raised 20 per cent of cost, others got 100 per cent financial support. Those that involved local governments were sometimes supported by the district authorities. There were more than 400 community driven developments projects across the basin. Capacity-building, training in book keeping and procurement was mandatory and each national government appointed an non-governmental organization to monitor, evaluate and audit the projects. Some were involved in hyacinth removal. Some low-cost technology being applied included pumping water where for example, a community in west Kericho (Kenya) was planning to integrate hydro-drum with electricity pump. In Rwanda, local communities had their own terracing specifications that they adhered to.

Source: Compiled from completed questionnaires, 2014.

The stages of the project cycle where communities were engaged varied with project size. While smaller projects claimed community perspectives were directly sought and integrated during project design, the larger projects specifically referred to community engagement during implementation, monitoring and evaluation. The large projects engaged communities in the design of specific interventions in their community during implementation.

Communities' contributions to projects included perspectives on design and implementation of interventions, providing labour, materials, and in some cases even financial resources. For example, all projects promoted tree planting and communities provided

3.3.3.3 Partnership with Governments

All projects partnered with Government. The smaller projects mostly partnered with local government or decentralized water institutions while relevant central Government ministries or agencies were key partners in the larger projects. Governments influenced the alignment of the large projects with national development priorities, specifically poverty eradication, and provided financial and in-kind contributions. For instance, LVEMP II, was mainstreamed into Government programmes. Governments, paid the salaries of some employees, and through loans, provided funding for investments under the SMM project and provided financial support to some community associations/ community-based organizations. The small scale projects also received Government support through relevant programmes/ministries and local authorities. In general, endorsement by Government institutions was crucial.

3.3.3.4 Partnership with the private sector and civil society

The projects also engaged the private sector and civil society. LVEMP II in particular, innovatively incentivized industries to reduce point source pollution through cleaner production (box 8). An independent civil society watch project (box 9) implemented by a civil society network was monitoring and advocating for effective implementation of LVEMP II.

3.3.4 Strengthening institutional arrangements, policies and research

Important outcomes of project implementation was institutional strengthening and the promotion of policies for water resources management.

Box 8: Lake Victoria Environment Management Project phase II Cleaner production project: an innovative persuasion of industry to prevent water resource pollution

An initiative of LVEMP II, the (sub-) project was designed to reduce pollution of Lake Victoria by industries through Resource Efficient and Cleaner (RECP) technologies. It targeted a 35 per cent pollution reduction over a three-year period with at least 80 industries adopting cleaner production technologies. The project was being implemented in four basin countries, with corresponding national centres, and Cleaner Production Centres in Kenya, Rwanda, the United Republic of Tanzania, and Uganda in place to facilitate implementation. Partners included industries which funded own technologies; sector industry associations; ministries responsible for environment, water and natural resources (focal points); national environment management agencies/authorities; ministries responsible for industries; water resources management agencies; local governments and LVEMP II funders.

The project scouted industries, trained them initially, and then persuaded them to meet the costs. New industries were then persuaded, as they learned from successful ones, and were incentivized by savings that accrued from the application of cleaner production practices. Support activities included: training of trainers; developing RECP implementation plans and key performance targets and indicators; and technical assistance in developing effluent discharge control plans and environmental management systems. The measures employed to encourage cleaner production included: peer influence through success stories, water quality regulations, and information based tools such as manuals for case studies and trainings. In 2013, a Regional Cleaner Production Industry Award was launched as an incentive for businesses achieving highest pollution reduction levels.

The project was producing results and benefits across the board. Up to 189 industries had been geo-mapped with their pollution intensities represented in an interactive map, and baseline industry pollution established. An audit of 90 enterprises in Kenya by the Kenya Cleaner Production Centre showed that implementing cleaner production measures resulted in a 20 per cent average reduction in pollutants, energy and water use; with saving amounts of at least Kshs. 2-3 million ($23,000-$35,000) per year for medium enterprises, and greater than Kshs. 5 million $58,000) for large enterprises (http://www.cpkenya.org/). One respondent noted that "employees' salary has increased in most industries due to the saving from efficient water use." Established recycling plants were also providing employment. Reduced pollution levels in the rivers minimized communities-industry conflicts. In addition, recycling technologies helped to reduce greenhouse gas emissions.

Source: Kenya National Cleaner Production Centre, n.d.; and completed questionnaires, 2014.

Operating within the wider mandate of the Lake Victoria Basin Commission, LVEMP II and the Mount Elgon Regional Ecosystem Conservation Programme aimed to promote, among other measures, the harmonization of policies, legislation and regulatory standards for management of LVB resources. "Strengthening institutional capacity for managing shared water and fisheries resources" was one of the four components of LVEMP II. The project had made progress in harmonizing effluent standards for the LVB, which had been approved by the East African Legislative Assembly. As at the time of the study, a Water Resources Bill was scheduled to be approved by the assembly. In addition, the project in 2012 developed a basin-wide "sustainable land management strategy" to promote sustainable land management practices that reduce pollution loading into the lake.

Identified as a good practice, the Effluent Discharge Control Plans – a "soft" approach – was adopted by Kenya in 2007, to persuade industries to meet discharge requirements (box 10). The EDCP represented a good practice which could be replicated in the basin countries to encourage compliance with effluent discharge and other pollution standards.

Box 9: Lake Victoria Environment Management Project phase II Civil Society Watch Project

LVEMP II Civil Society Watch Project was being implemented by a Civil Society partnership: Uganda Coalition for Sustainable Development, [United Republic of] Tanzania Coalition for Sustainable Development, and Sustainable Environmental Development Watch Network, which were working as the East African Sustainability Watch Network in Kenya, Uganda, and United Republic of Tanzania.

The Project lobbied and advocated for realization of results based performance from LVEMP II and implementation of the East African Community Climate Change Policy. In relation to LVEMP II, it monitored national level interventions under Component 3 on watershed management focusing on conservation and livelihoods improvement. This was through regular documentation and sharing improvements in environmental and land management such as reduced soil erosion in three selected subcatchments (Rivers Nyando, Simiyu and Katonga in Kenya, United Nations of Tanzania and Uganda, respectively). It also documented household and community experiences and, other initiatives undertaken by the Partner states under LVEMP II and other projects. In addition, it was helping to enhance Civil Society awareness and skills in monitoring, and alternative documentation.

The project worked with: communities through exchange of information; the Lake Victoria Basin Commission; LVEMP II country implementing teams; Lake Victoria Fisheries Organization and the East African Legislative Assembly; non-governmental organizations, civil society organizations and the media. Platforms used included research for evidence; validation of findings, radio programmes, meetings and other forms of communication. In addition, LVEMP II had, with substantive input and support from the communities, drafted the LVEMP II Client Service Charter, for among other things, addressing the need for inclusive decision making. Arrangements were in place to operationalize a Freedom Phone facility to improve communication between National Project secretariats and communities in selected areas.

Findings were regularly documented in the form of a regular monthly "LVEMP II CS Watch E bulletin", the bi-annual bilingual (English and Kiswahili) East African Watchdog Newsletter, the Lake Victoria Climate Change Readiness Brief series, the Annual LVEMP II Civil Society Watch Livelihood Case Study series, and the LVEMP II Community driven developments Subprojects Watch series.

East African Sustainability Watch had been useful in providing information to communities as an independent platform to air their views, make proposals (and to learn about progress of LVEMP II. The goal was to scale up social and environmental dimensions of sustainable development that were often overlooked.

Source: Compiled from completed questionnaires, 2014.

Furthermore, SMM had promoted joint planning and implementation of transboundary water resources management interventions. In this regard, one of the respondents opined that "*for the first time, Kenya and Uganda now have a comprehensive set of watershed management interventions aimed at addressing jointly, the environmental degradation of the shared watersheds of the Sio-Malaba-Malakisi sub basin*." A common management framework for shared water resources was inevitable in the application of inclusive green economy approaches.

None of the projects assessed had set-out to undertake or support research activities for generating new knowledge for water resources management. LVEMP II, SMM-Project, Kagera TAMP and the River Nyando Wetland Resource Utility Optimization Project through VIRED International undertake studies related to their work themes, but had no research activities designed to generate new knowledge. However, the project had to a certain extent engaged in some research activities, particularly in the area of wetland management. Communities were supporting the project's research activities through data collection in the Nyando River Wetland. This was considered a first step towards a comprehensive research programme in the basin.

3.3.5 Enabling measures

Enabling measures encourage the adoption of inclusive green economy principles and approaches. Some of these have already been discussed as good practices, as they are necessary for creating conditions that could spur inclusive green growth practices in water resource management in the basin. The following enablers are worth underlining.

Leadership and political will. Political will was particularly important in the conceptualization and implementation of the Lake Victoria Basin Commission projects and SMM project as a framework for joint integrated management of water resources. Without political will, it would have been difficult for Governments to reach agreement on sharing catchment waters. The implementation of water policies and instruments could be further enhanced by this demonstrated political will.

Box 10: Effluent Discharge Control Plans: a participatory regulatory tool for enforcing compliance with effluent discharge standards in Kenya

To abate pollution due to discharge of untreated industrial effluent, Kenya's Water Resources Management Authority (WRMA), the lead agency in the management of water resources, used the Effluent Discharge Control Plans (EDCP) as a participatory regulatory tool for enforcing compliance. The use of EDCP was provided for in the Water Resources Management Rules 2007.

EDCP was a negotiated compliance to effluent discharge standards. Thus, based on the assessment, the discharger not meeting standards was guided on how to reduce the concentrations to targets agreed with authorities by consensus.

Before the ECDP, the mandatory approaches based on laws were not working because dischargers resorted to discharging during the night rather than daytime. Court prosecutions of offenders took long while pollution continued unabated. Moreover fines were negligible compared to the cost of constructing a treatment plant, while closure of production plants would result in lost revenues/income to government and employees. To encourage industries to establish treatment facilities, government introduced tax incentives. However, this was discontinued when companies abused it by importing other goods.

Using this ECDP, 23 dischargers in Lake Victoria Basin – South catchment of Kenya were implementing EDCPs, 10 of which were performing well. Dischargers that eventually reached the required standards were given discharge permits. The permits served as a motivation for ECDP because they were needed for their audits. Through this approach, some companies had established effluent treatment plants and had been adhering to effluent discharge requirements. .

Source: Government of Kenya, 2007; and completed questionnaires, 2014.

Policies, laws, regulations and institutional arrangements. Policies, laws, regulations, water sector development strategies and institutional arrangements in basin countries were generally supportive of project implementation. Basin countries have water policies and laws that cover various economic, social and environmental aspects of water resource management, as well as related watershed issues such as land and forestry management. With regard to infrastructure investments, environmental and social assessments were undertaken in Kenya and Uganda in line with the requirements of their respective environmental protection agencies and the World Bank Environmental and Social Safeguards. Both countries also developed resettlement action plans.

Financing. Financing was considered key to the successful implementation of projects. However, inadequate financing and inappropriate structuring of disbursements had in some cases affected project implementation. Although all projects were donor funded, partners and beneficiaries provided some contributions through co-funding and "in kind" arrangements. Under LVEMP II, community driven development groups were given grants; although some obtained 100 per cent financial support, many raised up to 20 per cent of cost. Kagera TAMP involved co-funding where Global Environment Facility funds complemented by Governments' in kind contributions through national programmes, supported by the Food and Agricultural Organization of the United Nations the as implementing agency, and TerrAfrica partners and beneficiaries. However, defaults in commitments and obligations were noted. It was probably for this reason that some projects adopted innovative ways of financing water resources management such as those discussed in the implementation section of the present report. The Lake Victoria Basin Commission also made proposals for the Lake Victoria Environmental Trust Funds to increase funding for the basin's resource management and development.

Capacity-building and awareness creation. Training and awareness raising formed an important component of project implementation, and helped galvanize stakeholder participation and technical support. Approaches in creating awareness included role play, participation in relevant commemorative days (such as wetlands and environment days), and sensitization through groups or association meetings. Awareness did not only help communities support implementation, but also built social cohesion and changed behaviour towards the adoption of practices and efficient use of water and associated resources among some community members.

4. Challenges and opportunities

4.1 Challenges

Project implementation challenges ranged from insufficient funding to environmental change and social and governance limitations in basin countries. Although the projects had attempted to incorporate mitigation measures, these continued to impede implementation progress and outcomes.

Inadequate funding. All the projects relied largely on donor funding which was inadequate to sustain long-term interventions required to result in significant improvements. The conditionalities imposed by donors posed further challenges. As one respondent put it; "donors have too many conditionalities that are not implementable and impede progress." In addition, the structuring of fund disbursement affected implementation of investment projects for water development. And where some of the projects involved co-funding with communities, or other partners, some commitments and obligations could not be met. This is a concern across Africa. The African Ministers' Council on Water (2012) reported that financing water resources management is generally poorly addressed and not well appreciated. A tendency to prioritize water supply over allocations for holistic water resources management is also common.

Inappropriate development activities in ecologically sensitive areas. Notwithstanding efforts to promote uses that were co-beneficial to both the environment and society in the basin, inappropriate practices and development interventions persist. Environmentally sensitive areas such as wetlands continued to be reclaimed for sugarcane and rice cultivation. This results in "increased pollution (agrochemical and industrial) load from upstream activities" as observed by a respondent. This challenge stemmed from individuals seeking to maximize personal gains, without due consideration to damage resulting from or cost of their actions that generate negative externalities that are shared by all (Hardin, 1968). Hardin's school of thought that the freedom exercised by the commoners resulted in resource degradation and eventually "tragedy (of the commons)" could apply to LVB water resources (Ogello, Obiero, and Munguti, 2013). The affected ecologically sensitive areas negatively impacted the production of beneficial ecosystem goods and services (EGS). And while all social groups were "guilty" of perpetuating damaging practices, in many cases, large-scale and irreversible single damages arose from investment projects. While such investments, as in Lutembe Bay wetland, accrued benefits to the economy in the short-term (Africa Conservation Foundation, 2008; and Abdallah, 2011), the gains hardly trickled down to the low-income group who were denied the lost environmental goods and services in both the short- and long-run. An inclusive green economy approach in water resources development and management could avert such situations.

Weak law enforcement by government authorities. Weak enforcement may be a result of several factors, but inadequate capacity of the basin's natural resources management authorities had been cited by project implementers. However, the use of by-laws developed by local institutions has helped to reduce the negative consequences of weak enforcement at the national level. Regional level projects were helping to build the capacity of the authorities through exchange visits and sharing of lessons learned. However, government leadership and political will and support to these authorities need to be strengthened.

Inconsistencies in some specific policies, laws and regulations. Inconsistencies in some specific policy issues among agencies, and laws and regulations among countries (for transboundary projects), were obstacles to smooth implementation of some activities. For instance, promoting the growing of eucalyptus trees was perceived differently by different government agencies (in Kenya). Also some countries lacked some critical supportive policies. For example, Kenya had not formulated a national Wetland policy. Efforts to harmonize policies for a unified cross-border action were being hampered by the lengthy process of persuasion and negotiation, coupled with the requirement to engage other arms of the EAC with mandates outside those covered by the Lake Victoria Basin Commission which made it difficult to accomplish effective harmonization of frameworks during the short time frame of the projects. Further, authorities faced difficulties in enforcing legal requirements among industries which failed to adhere to environmental requirements.

Corruption. In projects where government officials were involved, corruption had been observed, thus hampering implementation progress. For example, under LVEMP II, funds were frozen due to allegations of fraud in Uganda and the freeze affected implementation across the basin. The delay frustrated the poor subsistence farmers who largely depended on the project (Sustainable Environmental Development Watch Network, 2013). This could compromise community "buy-in" in future initiatives. In addition to constraining implementation, fraud and other forms of corruption placed an additional burden of "watching corrupt practices", and contributed to weak enforcement of laws and regulations.

High level of poverty in the basin. Most communities were poor and depend on environmental resources for their livelihoods. In some communities, poverty is aggravated by regular failure and low productivity of crops. The basins population was by 1995 reported to have been the poorest rural population in the world (UNEP, 2006a and b). Besides heavy dependence on direct use of environmental resources, when trapped by poverty, the poverty burden of seeking for basic needs to survive could engross the poorest, thus preventing them from venturing into activities that conserve water resources. More efforts are needed to engage them, including intensive awareness campaigns and provision of alternative livelihoods. This challenge also echoed the significance of inclusive green economy approaches which underscores using ecological resources sustainably to improve livelihoods including for the poorest.

Attitude challenge. Effective project implementation requires a change of attitude of beneficiaries to allow them to perceive things in a new way and adopt new approaches. Integrating inclusive green economy related approaches into water resources management requires systematically planning and implementing interventions. It also means introducing new approaches. However, some communities have difficulty adopting new approaches and practices. Where catchment management plans had been prepared and sustainable land management initiatives such as Kagera TAMP introduced, some communities had not fully adopted and implemented them. This had been attributed to lack of awareness and willingness to engage. In this regard, the projects encouraged attitudinal change through capacity building, sensitization, advocacy as well as co-management and the involvement of local authorities to mainstream new approaches in development plans.

Climate variability and change reducing effectiveness of interventions. *Improved sustainable land management practices to boost agricultural productivity and other watershed enhancing interventions such as tree planting had been affected by the increased frequency and severity of natural disasters such as floods and drought attributed to climate change.*

4.2 Opportunities

In order to promote inclusive green economy principles and approaches in water resources development and management, opportunities for investment in economic sectors that build on, and enhance the basin's water ecosystems, is fundamental. This should deliberately seek to address social and economic needs of the population, and reduce ecological impacts on the basin's water resources. Opportunities for such approaches in the Lake Victoria Basin include:

Natural resources endowments. The LVB is endowed with significant amounts of renewable energy sources, including hydropower, solar and wind. However, the contribution of renewable energy to total energy supply is currently very low, estimated at less than 1 per

cent (UNEP, 2006b). The development of this energy potential for industrial development and domestic uses will create employment and improve the living standards of the basin population.

Policies and legal frameworks that incorporate elements of inclusive green economy. Countries have put in place water policies and laws that uphold or incorporate the Dublin Principles of water management. The policies and laws emphasize protection of water ecosystems (watersheds), social equity in water services provision and the economic role of water in development. These can foster sustainable water resources development and management.

Support and management framework of the East African Community and its organs. Unique to the Lake Victoria Basin is its situation within a regional economic community, and more so, with all the Partner States sharing the Basin. Being embedded within a REC accords the basin a strategic positioning. This includes policy and institutional framework as well as resource mobilization. Provisions of the EAC Treaty, such as Articles 111&114, support sustainable management and utilization of water resources, including through planning, cooperation, partnerships and resource mobilization. By designating the LVB as a "Regional Economic Growth Zone" in 1997 and later establishing and mandating the Lake Victoria Basin Commission to spearhead water management in the basin, the EAC provides the opportunity for managing and investing in water resources sustainably. Alongside the Lake Victoria Basin Commission, EAC institutions including the East African Legislative Assembly, East African Chamber of Commerce, and the East African inter-University Council facilitate cooperation, joint identification and harmonization of interventions. These institutions also help in the mobilization and consolidation of resources. For example, as pointed out by a respondent, "the budgets of all the EAC institutions are approved by the East African Legislative Assembly which makes it easier to set priorities". In addition to the Lake Victoria Basin Commission commissioned projects, the commonalities created by the EAC facilitated other regional projects such as the Kagera TAMP.

Decentralization of governance and management of water resources. All the five Lake Victoria Basin countries have a decentralized systems of governance, and water resources management was decentralized to designated basins/catchment zones particularly in Kenya, Tanzania and Uganda. Using a river basin approach, Tanzania (in the early 1980s) and Kenya (in 2005) basins were divided into nine and six catchment areas respectively. In 2011, Uganda also established six catchment management zones. In all the three countries, these were responsible for water resources management in their areas of jurisdiction. Rwanda's water resources management subsector strategic plan (2011–2015) also proposed management at basin, subbasin and micro-catchment levels (Rwanda, Ministry of Natural Resources, 2011); however this was yet to be implemented fully. Decentralization provided the opportunity for easier direct interactions and engagement with communities than corresponding central agencies. Communities and experts can, through water resources management associations, easily engage in developing and implementing management plans for using water to address community social and economic aspirations while conserving watersheds.

Presence of active and willing stakeholders in the basin. From the regionally integrating body – the EAC, through state and non-state actors, to communities as well as development partners, the Lake Victoria Basin has willing and active stakeholders that could build a united front to promoting inclusive green growth approaches to water resources management.

Indigenous practices and technologies which can be used to promote an inclusive green economy in the basin. The basin communities had been engaged in indigenous practices and had been employing age-old technologies that promoted sustainable approaches. For example, according to one of the respondents, "Climate smart agriculture technologies are already being practiced by some of the communities and are therefore not new". Therefore, those that were easily replicable should be identified and adapted, to facilitate adoption by small holder farmers. The Kagera TAMP was leveraging traditionally practiced terraces in the hills of Rwanda, and should be emulated.

National, regional and international non-governmental organizations working at national and basin levels. There was an active civil society involvement in water resources management in the basin. They were engaged in direct interventions, and advocacy and monitoring water resources management efforts and activities of Governments in their jurisdictions. These included non-governmental organizations and community-based organizations such as: The East African Communities

Organization of Lake Victoria's Resources; and the Nile Basin Discourse. There was also community interest in Basin water resources. A survey by Gitau, Kasisira and Mganilwa (2010) found that 81 per cent of farmers were proud of Lake Victoria and attached high value to it. Community valuing of water resources and mobilization by governments and projects had enabled communities across countries in the basin to form water (resources) user associations at different levels, although this was more wide spread in Kenya. For example, the Mara River Water User's Association in Kenya promoted conservation, sustainable and efficient use of water in the Mara Catchment area, including assisting relevant authorities with water resources management and issuance of water use permits. Other community associations with interest in water and wetland issues included Ecotourism Groups, Farmers, and Papyrus Harvesters. They provided a foundation to build partnerships for enhanced implementation.

Development partners supporting water resources management in the basin. The Basin had a substantial number of development partners supporting various water resources management initiatives. Through a partnership agreement on the sustainable development of the Lake Victoria Basin signed by EAC and the governments of Sweden (through Sida), France, Norway (through the Norwegian Agency for Development Cooperation), the World Bank and the East African Development Bank in April 2001, a Partnership Fund was established to support implementation of agreed activities (Andersson and others, 2012). Finland joined the partnership in 2010. In June, 2013, at least fourteen development partners attended the 3rd LVB Donors' Conference, hosted by the Lake Victoria Basin Commission (New Vision, 2013). These included: the African Development Bank, the Embassies of Japan and Belgium, the Norwegian Agency for Development Cooperation, the United States Agency for International Development, the International Fund for Agricultural Development, the United Nations Environment Programme, the PACKARD Foundation, the World Meteorological Organization, the International Finance Corporation, the French Development Agency, the Department for International Development, the Food and Agricultural Organization of the United Nations, the European Union and the Netherlands Development Organization.

I***nclusive green economy related assistance provided through international framework agreements and arrangements.*** Further opportunities for financing water resources management and development existed in initiatives such as the African Development Bank's infrastructure finance, African Water Facility grants and Green Development Fund; the Global Environment Facility funding for sustainable management of natural resources; and the New Partnership for Africa's Development (NEPAD) – led TerrAfrica partnership. These provided opportunities for funding, and human and institutional capacity building. Further opportunities for attracting ecosystem management assistance were provided by international environmental agreements and platforms.

5. Conclusions and recommendations

5.1 Conclusions

This report set out to assess how the application of inclusive green economy principles in selected projects of the Lake Victoria Basin had contributed to the sustainable management of its water resources. It sought to assess the extent to which inclusive green economy principles and approaches had been applied in selected water resource management projects of the Basin, identified good practices, explored enabling measures for integration of inclusive green economy related policies and approaches; and to examine challenges and opportunities in that regard. The report was informed by a survey questionnaire survey of selected projects and available literature on the management of the Lake Victoria Basin resources.

The assessment established that the projects to varying degrees integrated inclusive green economy principles and approaches. In addition to environmental interventions, they explicitly set out to tackle economic and social concerns. This approach facilitated implementation and the achievement of water resources management goals. Conceptualized as watershed conservation initiatives, livelihood interventions were also aimed at eradicating poverty, which is generally considered a cause and consequence of watershed and water resources degradation, mainly arising from a direct dependence on natural resources extraction. The projects engaged communities in project implementation. Synergies among economic, social and environmental interests were harnessed through nature-based interventions that enhance environmental quality, prevent further degradation and provide alternative livelihoods and incomes. They included tree planting, bee keeping, aquaculture and agroforestry. Agroforestry was employed to protect watersheds while enhancing agricultural productivity. The projects also promoted value addition to reduce post-harvest losses, and to fetch higher market prices.

Social inclusion was further reinforced through affirmative actions that paid special attention to vulnerable groups such as women and youth groups. The projects generated employment either directly or through provision of skills and opportunities for self-employment in green growth related sectors such as eco-tourism, sustainable farming and agroforestry. Furthermore, the larger transboundary projects promote equity, fairness and justice among the basin countries through basin-wide initiatives aimed at both conserving the lake and improving environmental quality and livelihoods of the basin communities. This was facilitated through harmonized regulations and standards for water resources management such as water quality standards. Kenya and Uganda also undertook joint investment projects in water development.

Some of the projects embodied comprehensive interventions that ranged from pollution prevention, conservation of vital ecosystems, and restoration; to capacity building for the implementation of water resources management policies, regulations and standards. Complementary interventions included the improvement of land productivity, provision of alternatives to wood fuel, and the promotion of cleaner production. Implementation approaches sought to harness synergy, rather than trade-off among environmental, economic and social benefits.

The projects demonstrated that capacity building and awareness creation, use of watershed management plans, and harmonization of policies, laws, regulations and standards among basin countries were crucial. They showed that "soft" and participatory measures can be effective ways of achieving compliance with the "hard" regulations and standards. In addition, partnerships and collaboration were vital for mobilizing buy-in, financial and other resources needed to advance the implementation of inclusive green economy based water resources management.

However, continued reclamation of environmentally sensitive areas such as wetlands for sugarcane, rice cultivation and flower growing, involving large-scale investments have been challenges to implementation. Weak law enforcement, corruption and vested interests have contributed to the perpetuation of resource degrading and unsustainable activities. Other challenges that negatively impacted the effectiveness of interventions included: insufficient funding, high levels of poverty, slow attitudinal change, and climate variability and change.

Many opportunities abound for enhancing inclusive green economy based management of the Lake's water resources. These ranged from the Basin's natural resource endowment, existence of policies and legal frameworks that incorporated elements of inclusive green economy, the support and management framework of EAC and its organs, and partnerships among local, national level, basin level and international actors. Leveraging these opportunities call for concerted actions by all concerned.

A more detailed empirical based research would be required to establish how the integration of inclusive green economy principles and approaches could be enhanced through the adoption and application of integrated assessment tools and methodologies, and capacity development. Nonetheless, it is expected that the study findings will contribute to informing the development of an inclusive green economy framework for an integrated and sustainable management of Lake Victoria Basin. The following recommendations are considered pertinent.

5.2 Recommendations

- **An inclusive green economy strategy or framework for water resources management in the Lake Victoria Basin should be developed under the Lake Victoria Basin Commission.** The framework will need to identify strategic sectors where interventions could focus to synergistically meet the sustainable development priorities of basin countries, with emphasis on sustained economic growth, poverty eradication and ecological integrity of water resources. This should be informed and build on the rich experience of project implementation in the basin, and also draw from the findings of the present study.
- **The use assessment tools and methodologies in project design and implementation should be enhanced.** This should go beyond environmental and social assessments that have been applied by the SMM project and employ those that facilitate integrated assessments.
- **Initiatives, especially good practices such as ecotourism, should be scaled up and out.** Local governments should promote eco-based enterprises initiated by the projects. Private sector involvement should also be encouraged through micro-financing. Other good practices such as the Effluent Discharge Control Plans applied in Kenya, and cleaner production for industries should be out scaled in other basin countries.
- **Awareness creation and capacity-building should target all stakeholders,** including local politicians with disclosures on benefits and costs of interventions. This will ensure that all actors have the same level of information with regard to project outcomes and impacts so as to engender meaningful engagement in project design, implementation and monitoring.
- **Environmental and water management agencies should undertake continuous awareness campaigns** to inculcate a mindset that is open to adopting good practices initiated by either State or non-State actors. In addition, interventions should build on existing good indigenous practices and technologies to overcome the adoption challenge.

- **Large-scale projects such as LVEMP II and SMM should promote partnerships with the private sector in the development and implementation of significant investment projects, and in promoting compliance with water resource management objectives.** Relevant investment projects include those targeting renewable energy, aquaculture, eco-tourism and agro-processing. This would allow central and local governments to create the enabling environment for private sector partnership to flourish while the latter could bring in the much needed innovation and investments.
- **Strategic alliances should be built with relevant local and international agencies that seek to promote inclusive green economy to help leverage opportunities for international support,** including investments by foreign firms in areas aligned to the development needs and priorities of the basin. Strategic alliances could cover various groups of stakeholders including the public sector and private sector, development partners and civil society networks.
- **Programme process management should comply with the Paris Declaration on Aid Effectiveness.** This instrument, among other things, emphasizes partnership commitments on beneficiary ownership, alignment and harmonization of systems, processes and procedures, managing results and mutual accountability, among other things. This will contribute to improved honouring of commitments, timely release of funds and deter fraudulent practices.

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Annexes

Annex 1: List of study respondents

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Annex 2: Study questionnaire

United Nations
Economic Commission for Africa

ENHANCING WATER RESOURCES MANAGEMENT THROUGH INCLUSIVE GREEN GROWTH: THE CASE OF LAKE VICTORIA BASIN

SURVEY QUESTIONNAIRE

A. Introduction

International organizations have defined green growth and green economy variously (ESCAP, ADB and UNEP, 2010; UNEP, 2011a; OECD, 2011; and the World Bank, 2012; the African Development Bank, 2013b). However, all the definitions entail progress towards (or a state of) human development/improved human well-being while preventing, (or where) environmental harm (is prevented), so that the natural capital that actually produces economic growth and sustains development is maintained. The paradigm underscores economic sustainability and emphasizes the three dimensions of sustainable development, synergy rather than trade-offs between economic and environmental objectives, and seeks to enhance convergence with a focus on intergenerational equity (UNDESA, UNEP and UNCTAD, 2011). The green economy concept promises a new economic growth pathway that is, at the same times both ecologically benign and contributes to poverty reduction. Thus transitioning to a green economy involves drifting away from systems that harm the earth's ecosystems and increase poverty (UNDESA, UNEP and UNCTAD, 2011) to focusing on economic growth to attain human well-being by sustainably using natural assets.

While green economy has been recognized as vital in meeting the dual goals of sustainable development, which are human development and low ecological impact (UNEP, 2011a and b and World Bank, 2012), green growth cannot be presumed to be "inherently inclusive" (World Bank, 2012). Thus, inclusive green economy, provides a new level of mainstreaming green economy with more commitment to put human and natural assets values more appropriately at the centre of economic development as well as ensuring inclusive and pro-poor growth (UNEP, 2011b). As a means to promote inclusive green economy, several development agencies, including the Organization for Economic Cooperation and Development, the African Development Bank, and ECA are advocating for inclusive green growth (ECA and UNEP, 2012; African Development Bank, 2013b and ECA, 2015).

In the context of the production of the fifth issue of the Sustainable Development Report on Africa (SDRA-V), ECA (2015) advances the following working definition of inclusive green growth: "economic growth that is inclusive, creates jobs, improves human welfare (including poverty reduction), is resource efficient, enhances environmental assets, thus contributing to sustainable development." Inclusive green growth necessitates an equitable growth path and a step-wise process that embraces all social groups, meeting needs of the poor in society and specific needs of different groups of people in impoverished communities; including inter-temporal welfare (DESA, UNEP and UNCTAD, 2011). The approach provides the opportunity to document good practices and lessons learnt to inform the transition to a green economy.

Thus, inclusive green growth and inclusive green economy have the potential to enhance water resources management by improving water resource use in the attainment of economic growth and social well-being (Chapple, 2008). This can be achieved by valuing water and associated ecosystems for the long-run services they provide and pricing externalities of resource-associated activities; creation and dissemination of new and more environmentally sustainable technologies, goods, and

services; and creation of new livelihoods, income and jobs from related activities; and water use efficiency (GGKP, 2013). In addition to poverty reduction through the creation of new, diversification of, livelihoods or increased income (UNEP, 2011a; and United Nations, 2012), inclusive green growth and inclusive green economy should facilitate the exploration of new and innovative opportunities for the sustainable water management in the transition to a green economy.

This questionnaire is administered as part of the study to assess the current water management practices and how the application of inclusive green economy/growth principles and approaches in the formulation and implementation of programmes or projects in the Lake Victoria Basin could foster the sustainable utilization and management of water resources in the basin.

B Questions

I. Intervention (specific policy, plan, programme, strategy or project e.g LVEMP, or Pamoja Community watershed project)

1. Title and objectives of intervention:
   Title:
   Timeframe:

2. What are the objectives of the intervention identified?

_____

3. What outcomes are/were expected?

_____

II. Design and implementation strategy

4. Where is the intervention being implemented (e.g basin wide, country, specific districts, etc)?

_____

5. What aspects of water resources management or related issues does the intervention address (please list all)?

_____

6. Who was /is responsible for the design, implementation, monitoring and evaluation of the activity?

❒ Governments of riparian countries

❒ Riparian country (ies) where intervention is located

❒ Civil society/NGO

❒ Private Sector

❒ Community

7. Who are/ were the main stakeholders, and what are/were their interests in the activity?

_____

8. How are/ have stakeholders (been) involved in developing, implementing, monitoring and evaluating the activity (*explain for each stakeholder group involved*)?

_____

9. Does/did the design and implementation integrate the three dimensions of sustainable development (economic, social and environmental)?

❒ Yes ❒ No

b) Explain how the following have been integrated:

i) Economic dimension

_____

ii) Social dimension

_____

iii) Environmental dimension

_____

10. What enabling measures have been/were envisaged to facilitate the effective implementation of the interventions (see footnote)2?

_____

11. Which ones were successfully deployed and why"

_____

12. Which ones face (d) implementation difficulty and why?

_____

2 Enabling measures are mechanisms/instruments used to encourage inclusive green growth related practices and include market and non-market based approaches such as environmental fiscal reforms (taxes, subsidy, permit system), payment for ecosystem services, regulation, information based tools, sustainable public procurement, targeted public spending, investments, social protection, budget planning, and institutional frameworks.

III. Realized outcomes and impacts

13. List and explain benefits realized so far where possible giving facts in figures (number of people beneficiaries, no of jobs created, etc):

    a) Economic benefits/impacts (*e.g. contribution to GDP, value addition, sectoral growth - especially subsectors highly supported by water or water ecosystems such as agriculture, fisheries, hydropower or energy generation, etc*)

_____

    b) Social benefits/impacts (*e.g inclusiveness, job creation - in particular for the youth and vulnerable, reduction of poverty and inequalities - income and access to resources, new or alternative livelihoods created, empowerment of women and vulnerable groups*)

_____

    c) Environmental impacts (*e.g. resource-use efficiency, reduction in pollution, good environmental practices, environmental restoration*)

_____

14. How relevant/significant are the stated impacts to attaining the sustainable management of water in the Lake Victoria Basin

    a) Relevance/significance of economic impacts

_____

    b) Relevance/significance of social impacts

_____

    c) Relevance/significance of environmental impacts

_____

15. In your view, how cost-effective (delivering greater impact with lower costs) is the intervention?

    ❒ Overall benefits are much greater than overall cost, intervention is highly recommended

    ❒ Overall benefits are about equal overall cost, intervention may be recommended

    ❒ Overall benefits are about equal overall cost, intervention is not recommended

    ❒ Overall benefits are much lower than overall cost, intervention is not recommended

IV. Cross-cutting issues

16. Identify any innovative aspects of the intervention

_____

17. Explain new technologies or scientific applications (developed or transferred from elsewhere) used in the design or execution of activities.

_____

18. Explain the contribution of the intervention to the use and valorization of local resources, knowledge or technologies.

_____

19. How have climate change aspects been integrated in design and implementation of activities?

    c) Mitigation (e.g. reduction in GHG emission)

_____

    d) Adaptation (e.g adaptive capacity of population, flood control, etc)

_____

20) How has the design/implementation of the intervention addressed the special needs of the following groups?

    e) Women

_____

    f) The poor

_____

    g) Youth (specially their empowerment and employment).

_____

21. Explain how the design and implementation of intervention enhances water conservation, use efficiency or enhances sustainability in the following sectors:

    a) Agriculture

_____

    b) Forestry

_____

c) Fisheries

_____

h) Energy

_____

i) Industry

_____

j) Domestic water supply and use

_____

22. Have/were various stakeholders involved in:

a) The design: ❐ Yes ❐ No

b) Implementation ❐ Yes ❐ No

23. Which ones and how?

k) Government agencies

_____

j) Civil society

_____

m) Communities

_____

n) Others (e.g. funder)

_____

V. Sustainability, replicability and opportunity

24. What strategies are in place to ensure intervention activities continue beyond current implementation phase/ period?

_____

25. What strategies are in place to ensure intended or realized benefits continue to accrue over time.

_____

26. How could the activity be adapted to meet similar objectives in varying situations in the Lake Victoria Basin or elsewhere?

_____

27. Identify and explain opportunities that exist in the implementation area, water sector or related sectors, or in the lake Victoria Basin to advance, scale up or scale out the intervention or its elements (e.g. resources, examples of supportive policies, knowledge, technologies, etc, that can be leveraged)?

_____

VI. Challenges and lessons Learnt

28. Which specific lessons learnt from design/implementation of intervention would you recommend (explain each lesson):

    o) To be considered for success of future activities or other interventions

_____

    p) To be avoided if future activities or other interventions are to be successful

_____

29. What challenges have impeded the implementation of planned activities or full realization of intended outcomes?

_____

30. What measures are being/were undertaken to address challenges?

_____

Contact information on person completing the questionnaire.

Title (Dr./Mr./Mrs./Ms.)	
First Name	
Last Name	
Designation/Job Title	
Organization/Institution	
Address	
Telephone number	
Fax number	
Email address	
Website of organization/ institution	
Date of completion	

Thank you for taking time to complete this questionnaire

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