GREAT LAKES STAKEHOLDERS FORUM ON FRESHWATER ECOSYSTEMS

Addressing the Drivers of Change for Freshwater Services in the Great Lakes Region

PROCEEDINGS

KIGALI, 21-22 FEBRUARY 2013

Organized with support from the John D. and Catherine T. MacArthur Foundation

MacArthur Foundation

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I. LIST OF ACCRONYMES

GLR:	Great Lakes Region
DRC:	Democratic Republic of Congo
LTA:	Lake Tanganyika Athority
LVBC:	Lake Victoria Basin Commission
LVFO:	Lake Victoria Fisheries Organization
RAMCEA:	Ramsar Centre for Eastern Africa
IUCN:	International Union for Conservation of Nature
ARCOS:	Albertine Rift Conservation Society
NBD:	Nile Basin Discourse
NBI:	Nile Basin Initiative
RNRA:	Rwanda Natural Resources Authority
KBA:	Key Biodiversity Area
IBA:	Important Bird Area
UNEP:	United Nations Environment Programme
CRAG:	Climate Resilient Altitudinal Gradients
CEPF:	Critical Ecosystem Partnership Fund
EPA :	Ethiopian Environmental Protection Agency
WWF:	World Wildlife Fund
WCS:	Wildlife Conservation Society
ABO:	Association Burundaise pour les Oiseaux
ACNR:	Association pour la Conservation de la Nature au Rwanda
PES:	Payment for Ecosystem Services
IWRM:	Integrated Water Resources Management
ILBM:	Integrated Lake Basin Management
ICRAF:	International Centre for Research in Agroforestry
WHO:	World Health Organization
UNICEF:	United Nations Children's Fund
MEEATU:	Ministère de l'Eau, Environnement, Aménagement du Territoire et Urbanisme
TAWIRI:	Tanzania Wildlife Research Institute
IRA:	Institute for Resources Assessment
INECN:	Institut National pour l'Environnement et la Conservation de la Nature
HN:	Horizon Nature

II. INTRODUCTION

In the framework of the project termed "*Stakeholders Engagement for Informed Decision-Making, Threats Mitigation and Sustainable Freshwater Services Management in the Great Lakes Region of East and Central Africa*"; the Albertine Rift Conservation Society, in collaboration with the Lake Tanganyika Authority (LTA), the Ramsar Centre for Eastern Africa (RAMCEA), Nile Basin Discourse (NBD), BirdLife International (Africa Partnership Secretariat) and International Union for Conservation of Nature through its Eastern and Southern Africa Regional Office (IUCN-ESARO), and with funding support from the John D. and Catherine T. MacArthur Foundation, have organized the Great Lakes Forum on Freshwater Ecosystems at Kigali, Rwanda on 21-22 February 2013.

The two-day meeting was aimed at providing a platform for developing an integrated and coordinated framework in which the threats affecting freshwater services in the region can be addressed. In addition, the meeting served as an inception workshop for this project and the launching pad for the new MacArthur Foundation's conservation strategy in the Great Lakes Region.

During the two days, representatives of governments, civil society and the private sector actors, as well as experts in freshwater services from all countries of the Great Lakes region exchanged on the status and trends in the freshwater ecosystems of the region, shared experiences on the initiatives already going on in addressing some of the threats, examined the impact the economic development is having on the freshwater ecosystems of the region and emitted recommendations on actions to address the drivers of change that is happening in these systems.

The present report outlines the major points discussed during this forum, the highlights and the recommendations that emerged from the meeting.

Part I of the report consists of the proceedings of the event (sessions) and second part looks at the discussions in groups. Finally, the Annex I comprises of the recommendations emitted at the end of the meeting, and Annex II and III consist of the list of participants as well as the agenda respectively.

III. ATTENDANCE

A total of 81 participants attended the forum, coming from 11 countries of the Great Lakes Region namely: Burundi (6), DRC (6), Ethiopia (1), Kenya (10), Malawi (1), Mozambique (1), Rwanda (23), South Sudan (2), Tanzania (3), Uganda (9), and Zambia (2). In addition, the forum was attended by representatives of some international organizations (8), private sector (6) and the media (2). (You can find the full list of participants in the Annex II of this report).

IV. PROCEEDINGS

1. OPENNING CEREMONY

a) Welcome Note

After all attendants have introduced themselves; Mr Gapusi Jean, ARCOS Board member, welcomed participants to the forum. He presented the background of the event and stressed on the expected outcomes from the meeting. "*This is one of the rare events where so many experts, from so varied backgrounds have gathered together to discuss the common challenges our freshwater ecosystems are facing*" he said, "*… and I am confident that we will leave this room with a clear roadmap of what actions need to be done to conserve these ecosystems and their valuable services"* he added.

b) Opening speech

The guest of honour at the meeting was Mr Dismas Bakundukize, Deputy Director General in charge of forestry at the Rwandan Natural Resources Authority (RNRA).
In his statement, he talked on the role of freshwater ecosystems in the region as hosts to very rich biodiversity, source of livelihoods to communities, and important to countries' development.

Taking the example of Rwanda, he recognized that significant efforts have been taken to achieve sound management of these ecosystems and their services but stressed that such efforts are not sufficient if they remain fragmented. "*Many freshwater ecosystems in the Great Lakes region are trans-boundary. This calls for coordinated effort since a mismanagement practice in one country affects the status of the resources in the other countries*". He said some steps have been taken in this direction such as the establishment of the Nile Basin Initiative and many lake basin commissions but stressed on the fact that the nowadays problems require a multi-stakeholder approach to be addressed and therefore a forum like this, encompassing not only policy makers but also civil society and private sector actors, is very appropriate especially when it comes at this time when we try to achieve integration in many domains.
He expressed his gratitude to the supporters of this forum and commended the effort of the organizers.

c) Official launch of the MacArthur Foundation's Great Lakes Conservation Strategy

The conservation strategy for the Great Lakes region of the East and Central Africa was developed by BirdLife International and partners in 2012 supported by the John D. and Catherine T. MacArthur Foundation.
Its development process consisted of a comprehensive consultation between all stakeholders to identify priority sites, threats and conservation strategies for biodiversity and ecosystem services in the region.
Its overall goal is to prevent or reduce biodiversity loss and ecosystem degradation, and to sustain ecosystem benefits for human well-being. It focuses on five watersheds within the Great Lakes region namely the Lake Victoria Basin, Upper Nile Basin, Lake Tanganyika Basin, Lake Malawi/Nyasa Basin, and Lake Turkana/Omo Basin.
The strategy aims at:

1. Identify, document and prioritize those areas in the GLR where endangered species and the Ecosystem Services that are essential for human welfare are most at risk;
2. Identify the threats to these species and services and to understand the socioeconomic and global change contexts (including climate change) in which those threats have arisen and can be reduced;
3. Propose actions that will reduce the threats, enhance the prospects for the conservation of threatened species and sites, and ensure the continuation and improvement of ecosystem service delivery;
4. Explore new ways of thinking about landscape conservation that will provide resilience against global change, especially climate change; and
5. Identify and promote incentives at all levels to slow current trends of ecosystem degradation and service loss in the GLR and eventually reverse them.

This document will guide the Foundation's Conservation and Sustainable Development (CSD) program in the region for this coming 10 years period and all stakeholders are encouraged to refer to the document as well in the bid to achieve coordination and integration of all the efforts towards conservation and sustainable livelihoods in this very important region.

Ms Elisabeth Chadri handing the Great Lakes Conservation strategy document to the guest of honour

The official launching ceremony was led by Ms Elisabeth Chadri, Program Officer, Conservation and Sustainable Development at MacArthur Foundation. In her brief address, she outlined the background of the strategy and stressed on the fact that it builds on the Foundation's legacy in Albertine Rift. She went on to explain that this is but one component of the MacArthur Foundation's conservation strategy that focuses on 3 regions across the world, the Great Lakes Region of East and Central Africa being one of them.

She reminded that each of these regions has its own challenges and opportunities and that in the great Lakes region, the main drivers include high population densities, coupled with low percentage of natural habitats remaining.

Handing the document to the guest of honour, Ms Elisabeth told the audience that the text of the document is available to the public through the Foundation's website at www.macfound.org

2. OVERVIEW OF THE STATUS AND TRENDS OF WATERSHEDS, WETLANDS AND OTHER FRESHWATER SYSTEMS IN THE GREAT LAKES

a) On-going initiatives and Policy Framework in the GL Region: challenges and Opportunities

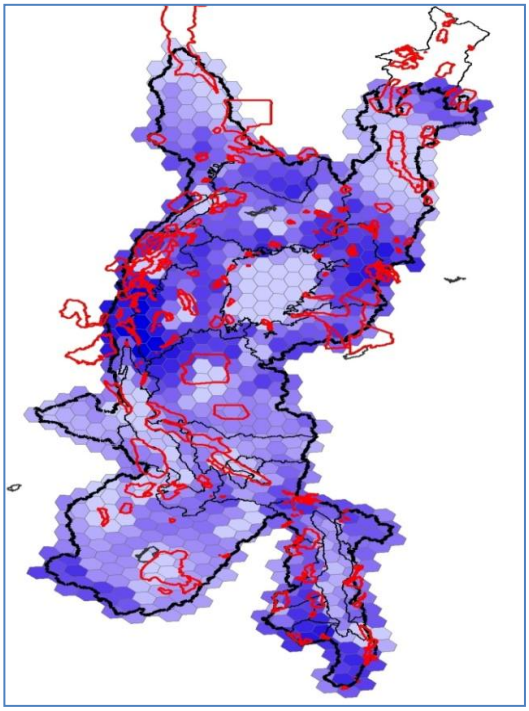
The presentation given by Dr Tom Waako who was representing the Nile Basin Initiative gave an overview of the cooperation on transboundary water resources in the region using the Nile Basin Initiative as an example.

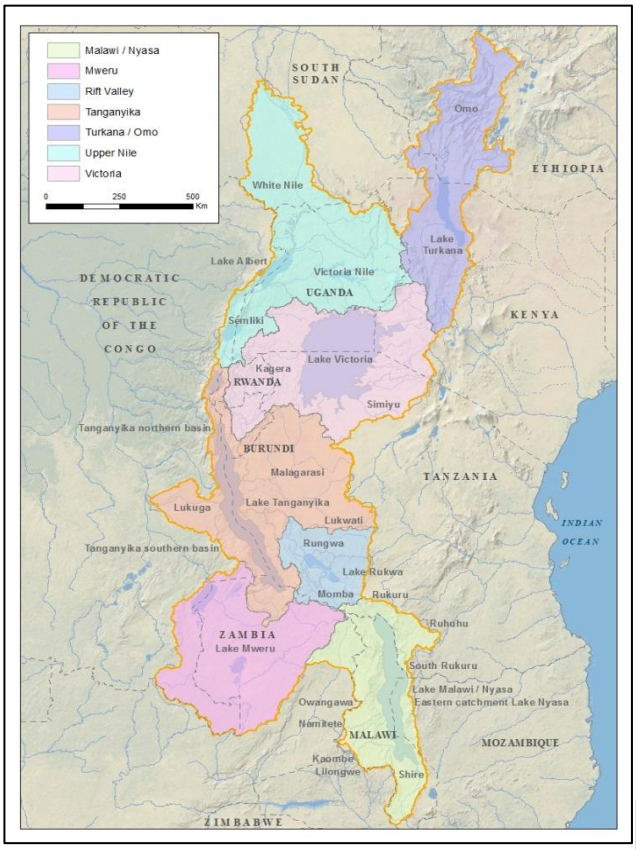
The Nile Basin Initiative is intergovernmental regional partnership established in 1999 with the vision to achieve sustainable socioeconomic development through the equitable utilization of, and benefit from, the common Nile Basin water resources.

The various projects under the initiative are implemented by the secretariat based in Entebbe through the shared vision program (SVP) and subsidiary action program (SAP).
Throughout the period of its existence and from experiences with the predecessors of the initiative such as the Hydromet (1967 - 1992) and TECCONILE (1992 -1999), many lessons were learnt in terms of better strategies to take in the management of transboundary water resources. Among which, some come out more prominently such as the fact that excessive "projectization" of activities without clear exit strategies cannot lead to longer-term impacts and outcomes. In addition, it was learned that highly participatory process ensures relevance to country needs and stakeholder buy-in.
Among the questions asked at the end of the presentation is included the concern over the inconsistency in managing the fishing bans over transboundary water bodies such as Lake Victoria where one country can impose the ban and the activity goes on in an adjacent country hampering the intended results.
To this, Dr Tom Waako explained that the mandate of NBI doesn't allow it to invade countries sovereignty but that they can advocate for harmonization of policies and fisheries management practices whenever appropriate and possible.
You can access the full presentation and the lessons learned at this link:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Tom%20Waako%2C%20NBI_Cooperation%20on%20transboundary%20water%20resources.pptx

b) Overview of GL Strategy: KBAs, Biodiversity and Protection Status in the Great Lakes Region

This presentation by Dr Ian Gordon from BirdLife looked at the Key Biodiversity Areas (KBAs) of the Great Lakes region as identified throughout the GL conservation strategy development process.





Terrestrial KBAs overlaid on freshwater service flow

He gave a brief overview of their priority levels, protection status and discussed the new concept of CRAGs.
The GL Region as defined in the Conservation Strategy for the Great Lakes Region of East and Central Africa is comprised of the five basins namely: Upper Nile, Omo/Turkana, Lake Victoria, Lake Tanganyika, and Lake Malawi or Nyasa.
The region overlaps the territories of the following 11 countries (North to South): Ethiopia, Sudan, Kenya, Uganda, Tanzania, Rwanda, Burundi, DRC, Zambia, Malawi, and Mozambique.
In the region, stakeholders identified 108 and 168 freshwater and terrestrial KBAs respectively, and these KBAs represent various degrees of conservation priority due to their biological importance (irreplaceability) and to which extent they are threatened (vulnerability).
One of the interesting facts on the distribution of the KBAs in the region is their spatial correlation with some main ecosystem services like freshwater services and biomass. This is good news since it implies that the conservation and management of ecosystems in these areas will be important not only for supporting the regional biodiversity, but also for ensuring that ecosystem function and downstream delivery services are not impacted.

The presentation by Dr Ian Gordon can be accessed on the following link:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Ian%20Gordon%2C%20BirdLife_KBAs%2C%20Biodiversity%20and%20Protection%20Status%20in%20the%20Great%20Lakes%20Region.pptx

Or you can download the full Great Lakes Conservation Strategy document here:
http://www.birdlife.org/community/wp-content/uploads/2013/02/AUTHORISED-GLR-STRATEGY.pdf

c) Drivers of change affecting watersheds, wetlands and freshwater systems in the GL Region

The presentation prepared by Dr Musonda Mumba from UNEP and presented by Dr John Owino looked at how some drivers of change like population pressure or climate change are affecting ecosystem services and benefits and the work of UNEP in the mitigation and/or adaptation to the effects of these drivers.
Dr John started by dividing the drivers of change into two broad categories: indirect drivers (population pressure, change in economic activity, socio-political factors, cultural factors, technological change, etc) and direct drivers (habitat change due overexploitation, invasive alien species, pollution, climate change, etc).
Taking Climate Change as an example and using mountain ecosystems as case study, he went on to show, using pictures comparison, the extent of change affecting these ecosystems throughout the last six decades.

Lastly, he explained the work of UNEP in this field of adaptation and insisted on the fact that they take an Ecosystem-based approach and their focal ecosystems include mountains, rivers, wetlands, drylands, and low-lying coastal zones.
Among the many questions that were asked following the presentation is included the concern over the lack of coordination and synergy between the interventions of various players involved in risk management (e.g. landslides in Uganda). To which, Dr John Owino replied that advocacy is needed to involve all stakeholders in order to address such long-standing issues that require long-term commitments.
The presentation by Dr Musonda Mumba/UNEP is downloadable here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Musonda%20Mumba%2C%20UNEP_Drivers%20of%20change%20in%20GL%20Region.pptx

d) Integrated Water Resources Management in Rwanda

The presentation by Mr Kabalisa Vincent de Paul, Head of the Department of Integrated Water Resources Department in the Rwandan Natural Resources Authority, outlined the status of water resources in Rwanda and effort the country, through its Natural Resources Authority, has deployed to manage sustainably these resources.
Rwanda's territory is divided between the Congo River basin (33%) and the River Nile basin (67%). The country considers water as central to its development and in terms of drinking water; the target is to go from 74% of population accessing safe water now to 100% in year 2017.
Apart from drinking water, the resources are used also in the production of electricity (330 hydropower plants), irrigation and livestock husbandry.
Rwanda having a net outflow, the management practices it undertakes internally affects water resources outside the country and regionally. Therefore, an integrated management approach has been adopted which seeks to go beyond political and/or thematic boundaries and rather focus on the river basins and bring together all stakeholders in the management and development of water, land and all other related resources.
As for now, much has been achieved mainly in providing an enabling environment by establishing a policy and legislative framework that support this paradigm.
The country now embarks on engaging in concrete on-ground actions that aim to materialize the scheme. These include various interventions in terms of land husbandry and combating lakes and rivers siltation.
At the end of this interesting presentation, some observations and comments were made and these include among others the idea that Rwanda should become part of Lake Tanganyika Authority since some of its waters are drained to the lake through Rusizi River and the fact that the country's water resources master plan should be put in place sooner than later since it is too risky to engage in so many initiatives affecting water without such a plan.
The questions asked included the non-consideration of the many on-farm fishing projects going on in Rwanda while they affect water usage and the water recycling issue.
To this, Mr Kabalisa replied that since the country has opted for the integrated approach, all these aspects are included in the management plans in place.
The full presentation by Mr Kabalisa can be downloaded here:

https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Kabalisa%20Vincent%20de%20Paul%2C%20RNRA_IWRM%20in%20Rwanda.pptx

3. EXPERIENCE SHARING IN THE GL REGION: REGIONAL INITIATIVES

a) CEPF: Eastern Afromontane Hotspot

This presentation by Pierre François Simon CARRET, Advisor to the Executive Director of the Critical Ecosystem Partnership Fund (CEPF), looked at the overview of the eastern Afromontane hotspot and the CEPF program in this region.

The eastern Afromontane hotspots is one of the 34 hotspots worldwide and one of the seven hotspots in Africa. It stretches over a curving arc of widely, scattered but biogeographically similar mountains from Saudi Arabia to Mozambique and Zimbabwe covering an area of more than 1 million square kilometres and running over a distance of more than 7,000 kilometres.

Pierre François Simon CARRET, speaking during the forum

Globally, any region to qualify as a hotspot has to meet these two criteria namely: containing at least 1,500 species of vascular plants as endemics and having lost at least 70 percent of its original habitat.

In this regards, the eastern Afromontane hotspot staggeringly exceeds the criteria by presenting a highly level of endemicity and its natural habitats being extremely threatened. In fact, the hotspot hosts 1,300 bird species (of which 157 are endemics), 500 Mammal species (of which 100 are endemic), 350 species of reptiles (of which 90 species are endemic), 323 amphibian species (of which more than 100 are endemic), and this adding to the less understood freshwater taxa and more new species being discovered in the region.

All 15 countries of the region, with the exception of Saudi Arabia, are poor. Therefore, there is a strong drive to invest in large development projects which are threatening to put even more pressure on these sensitive and biologically important sites. The CEPF investment strategy in the Eastern Afromontane Hotspot thus focuses on six priority corridors and 3 additional sites in the region and strives to enable civil society to have a more prominent role in driving this development in a biodiversity-friendly direction.

Currently, $400 Million-worth of grants have been issued and though this may seem a big achievement, one has to keep in mind that the amount represents less than 1% of the total development aid received by the countries in this region.

Among the questions asked after the presentation, the most bulk concerned the Fund's grant making procedures and guidelines such as whether the private sector actors are eligible or whether nature-based community organizations can access their funds.

To these, Pierre directed the audience to CEPF grant making section in their documentation especially under eligibility section.
You can read more about the Eastern Afromontane Hotspot and the CEPF's grant making on their website at:
http://www.cepf.net/where_we_work/regions/africa/eastern_afromontane/Pages/default.aspx

b) Mountain Partnership and Africa Water Towers Initiative

This presentation by Ms Rosalaura Romeo, Program Officer at the Mountain Partnership Secretariat – FAO, looked at the Mountain Partnership Programme in promoting Africa mountains agenda.
On 20th February 2013, representatives of the Mountain Partnership from Africa met in Kigali in a meeting with the theme: Enhancing the mountain partnership in Africa for Sustainable Development in African Water Towers. The aim of the meeting was to promote the sustainable development of the African mountains and Water Towers and continue building an African agenda and a strong Mountain Partnership constituency on sustainable development of mountain ecosystems while also contributing to the climate change and water discussions.
Two main outcomes were reached at the meeting namely the selection of the African Mountain Partnership Champions Committee and the identification of priority areas for action under the African Water Towers Initiative scheme.
During the presentation, Ms Rosalaura also explained the Mountain Partnership programme and structure to participants who are not conversant with the institution's operations.

c) Wetlands in the Great Lakes region of Eastern & Central Africa

This presentation by Ms Lucy Iyango, Assistant Commissioner for Wetlands, in Uganda's Ministry of Water and Environment, looked at the status of wetlands in great lakes region and assessed their importance, challenges and conservation/opportunities. It also presented the background of the Ramsar Centre for Eastern Africa (RAMCEA) and its role in supporting the Eastern African Contracting Parties, Non-contracting parties and other institutions and stakeholders to improve their capacity to implement the Convention.

Wetlands in the Great lakes Region perform unique invaluable ecosystem functions. They provide habitats for unique aquatic biodiversity, store carbon, constitute a gene pool for research and are a reservoir of our cultural heritage.
In addition, wetlands in this region constitute a major source of communities' livelihood and thus contribute to national development.
Despite this big importance attached to wetlands in the region, many gaps are still observed in their management and these range from lack of wetland sector-specific laws and proper enforcement to inadequate scientific knowledge to guide decision making.
The Ramsar Centre for Eastern Africa was founded in 2009 with the mission to strengthen institutions and coordinate wetland management through resource mobilization and experience sharing.

So far, the centre has successfully conducted a capacity needs assessment for 5 contracting parties, has held a regional collaboration meeting for administrative authorities and national focal points, and has participatorly developed the RAMCEA strategic framework 2011-2020.
Currently, the centre's secretariat operates through the Wetlands Management Department in the Ministry of Water and Environment, Uganda.
During the discussion that followed the presentation, one of the issues that came out prominently consists of the integration of the management of wetlands and their upstream sections.
To this, Ms Lucy replied that they follow a "framework management plan" that supports, among others, research to spot the impact of various interventions on such connected systems.
The presentation by Ms Lucy Iyango can be downloaded here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Lucy%20Iyango%2C%20RAMCEA_Enhancing%20Wetland%20Conservation%20in%20the%20GLR.ppt

d) Climate Resilient Altitudinal Gradients (CRAGs)

This presentation by Dr Julius Arinaitwe, Regional Director for BirdLife International-Africa Partnership, looked at the concept of Climate Resilient Altitudinal Gradients; the origin of the concept, its application and advantages. In addition, the presentation looked at the link of the concept with Great Lakes Conservation strategy whose development was facilitated by BirdLife and supported by MacArthur.
In the last 30 years, conservation in our region has been species and/or site based. This is highlighted by the many KBAs (e.g. IBAs) and flagship species (e.g. Gorillas) that have guided many conservation actors' effort during this period.
The recent shift in the conservation strategy across the region stemmed from the need to better integrate ecosystem services and human welfare in the outcomes of conservation actions. Moreover, a landscape approach is needed to better address the increasingly intense pressures faced by the GLR from global change and rapidly growing human populations accompanied by accelerating economic development.
More particularly for this MacArthur-supported strategy which focused on freshwater ecosystems, it was found that many of the freshwater KBAs in question were large indeed, sometimes contained whole terrestrial KBAs and necessarily required a landscape approach to be conserved effectively. Thus the idea of CRAGs was born, a new conservation paradigm that focuses on multi-scale landscape units characterized by high biodiversity and ecosystem service values with an altitudinal range of 1,000 meters or more.
By doing so, integrated watershed management is easily achieved and the impact of factors like climate change is cared for seamlessly since the approach gives space for climate change resilient KBA buffer zone management.

By the purpose of the GLR strategy, a set of criteria has been defined for the selection of CRAGs[1] and some 7 CRAGs have been initially designated pending further refinement to ensure inclusion of highest priority KBAs within the catchment and exclude areas that have little added value.
Furthermore, possible initial actions to be carried out in the framework of CRAGs have been identified and these include, ecosystem services valuation, climate change modelling, link ecosystem services to livelihoods, etc.
To wrap up, it must be noted this concept of CRAGs has been developed in relation to the Great Lakes Region. Therefore it remains to be confirmed whether it can be applied to other regions as well especially in mountainous areas like the Andes, etc.
You can access the full presentation by Julius here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Julius%20Arinaitwe%2C%20BirdLife%20International_Climate%20Resilient%20Altitudinal%20Gradients.ppt

e) Transboundary Ecosystem-Based Management of Fisheries and Oil Governance Project

This presentation was given by Ms Christine Lain, DRC Country Adivisor for IUCN NL. It consisted of the transboundary project IUCN NL is implementing to contribute to the restoration and valuation of the highly valuable areas in the Western Albertine Rift Valley. The project aims to empower local communities to influence governments and regional bodies to respect human, social, economic and environmental needs and rights. Its specific objectives include bringing local communities together and help them take a pro-active role regarding the management and utilization of natural resources within and across borders for the common good and establishing a coalition of civil society actors in the extractive sector, ensuring oil security, social peace and protecting the region's biodiversity and ecosystems to ensure a sustainable development.
In its first phase, the interventions will consist of the introduction of an ecosystem based fishery management approach in Lake Edward and the creation of a participatory transboundary oil governance observatory in the African Great Lakes.
Though the project is still at its initial stages of implementation, a lot is expected to come out of this interventions including the sustainable management of natural resources and ecosystem services, improvement of people's livelihoods and their empowerment to influence government and regional bodies to appreciate their needs and aspirations, and the restoration and valuation of highly valuable areas in the Albertine rift valley.
At the end of the presentation, the questions asked consisted mainly on the issue of coordination of the interventions of many players involved in this area and working to address the same issue. Moreover, it was estimated that the engagement of governments and decision-makers would break the status-quo of having so many players in this area but still no tangible change realized.

[1] You can check for a full list of criteria of CRAGs in the full strategy document, pp 203

To these, Ms Christine replied that part of the intervention will consist of empowering local civil society actors to be able to engage their governments and she expressed her belief that following this approach, tangible shift will be achieved.
You can access the full presentation here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Christine%20Lain%2C%20IUCN_Transboundary%20Program.pptx

f) Lake Tanganyika Basin: Status, Challenges and Opportunities

As its title indicates it, this presentation by Mr Gabriel Hakizimana, Director of Environment at Lake Tanganyika Authority, looked at the Lake Tanganyika and its basin and gave a summarized description of its status, challenges and description.
In addition, a brief overview of the regional integrated management and development programme carried out by the Lake Tanganyika Authority was given along with its main achievements so far and current issues.
Shared by four countries: Burundi (8% of surface area), the Democratic Republic of Congo (45%), Tanzania (41%) and Zambia (6%); Lake Tanganyika is very is notable for its diverse fauna and flora.

Altitude (surface)	**773 m**
Surface area	32,600 km^2
Volume	19 000 km^3
Maximum depth	1,470 m
Average depth	570 m
Drainage area	223,000 km2
Population density in drainage area	45/km^2
Length of lake	670 km
Length of shoreline	1,900 km
pH	8.6 – 9.2

Basic information about Lake Tanganyika

In fact, the Lake is home to more than 2,000 plant and animal species; and about 600 of these species exist nowhere else in the world outside the lake's watershed. The lake is the second deepest in the world (1,470 m) and the world's second by volume (19,000 Km^3).
Despite this interesting profile, the lake and its biodiversity are facing many challenges ranging from over-exploitation of the biological resources to climate change passing through pollution, siltation, and invasive species.
Nevertheless, the basin abounds with opportunities for development and these include, among others, tourism, electric power production, transport, etc.

Beginning in the 1990s, the idea of cooperation and collaboration between the four Lake Tanganyika riparian countries for sustainable management of Lake Tanganyika and its basin was entertained. From then on, several studies aimed at understanding the basin's natural resource base with a focus to study biological production and potential of fisheries in Lake Tanganyika were conducted which culminated in the elaboration of four important documents: the Fisheries Framework Management (FFMP), Transboundary Diagnostic Analysis (TDA), the draft Strategic Action Programme (SAP) and the draft Convention on the Sustainable Management of Lake Tanganyika. Finally, the Lake Tanganyika Regional Integrated Management and Development Programme (LTRIMDP) was developed as a mechanism for implementation of the Convention, SAP, and FFMP.

It is in a bid to coordinate projects under this initiative that the Lake Tanganyika Authority (LTA) was established. The institutional framework of LTA consists of the Conference of Ministers from the four countries (each country represented by its minister of environment), a management committee comprising of 4 people from each country and the Secretariat.

So far, many activities have been successfully achieved including the conduction of several thematic surveys, the establishment of the secretariat, the holding of regular meetings of ministers and management committee (5 times so far), workshops and trainings on climate change, etc.

At the end of the presentation, questions asked consisted among others need to include all countries in the Lake's catchment (e.g. Rwanda) and not the riparian countries only. To this, Mr Gabriel replied the initiative started looking at the riparian countries only but given the integrated approach they have adopted, they look forward for the upstream countries to join in as well.

The presentation by Gabriel Hakizimana can be accessed here: https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Gabriel%20Hakizimana%2C%20LTA_Lake%20Tanganyika%20Basin.ppt

g) Lake Victoria Basin: Status, Challenges and Opportunities

This presentation by Telly Eugene Muramira, Deputy Executive Secretary at Lake Victoria Basin Commission, looked at the Lake Victoria and its basin, its background, challenges and opportunities in the basin and the response by the Lake Victoria Commission.

Lake Victoria is the largest among the African Great Lakes (68,870 Km2).

The lake straddles three countries: Tanzania (49%), Uganda (45 %) and Kenya (6%). Its basin spans large parts of these countries and beyond (large parts of Rwanda and Burundi as well), an area totalling 180,950 Km2 of surface and inhabited by over 40 Millions of people.
The Lake Victoria basin region is very rich in various natural resources. The lake itself is very rich in fisheries and its vastness gives it a lead role as a key player in the interstate trade, communication and transport which together contribute greatly in the overall development of the region.

Country	**Lake surface area**		**Catchment area**	**Lake shoreline**		
	Km2	%	Km2	%	Km2	%
Tanzania	33,756	49	79,570	44	1,150	33
Uganda	31,001	45	28,857	15.9	1,750	50
Kenya	4,113	6	38,913	21.5	550	17
Rwanda			20,550	11.4	-	
Burundi			13,060	7.2	-	
Total			180,950		3,450	
Total population: 40 million						

Lake Victoria Basin characteristics

Despite this huge potential, the lake and basin face many challenges, some of which have gone unabated for many years now. These include among others: widespread poverty and social deprivation, poor land tenure and land use patterns, riverbank and lakeshore degradation, pollution and extreme de-oxygenation, high rates of deforestation and the ensuing siltation, eutrophication and water hyacinth, etc.
In a bid to take stock on the many opportunities that the region presents, the Lake Victoria Basin Commission, formerly known as the Lake Victoria Development Programme, was established as a mechanism for coordinating the various interventions on the Lake and its Basin; and serving as a centre for promotion of investments and information sharing among the various stakeholders. Its mandate is to promote equitable economic growth, measures aimed at eradicating poverty, sustainable utilisation and management of natural resources, environment protection and compliance on safety of navigation.
Lake Victoria Basin Commission develops and implements various projects through which its objectives are achieved. The projects are very diverse in nature and scope. As an example of this, more than 7 projects are currently running and their goals range from reducing HIV and AIDS risks and vulnerabilities for mobile populations within the Lake Victoria Basin to improving maritime safety and security on the lake.
One of the projects comes out prominently here. This is the Lake Victoria Environmental Management Project (LVEMP) whose environmental objectives are to improve collaborative management of the trans-boundary natural resources of Lake Victoria basin for the shared benefits of the East African Community partner states; and to reduce environmental degradation to improve the livelihoods of communities which depend on the natural resources of the basin.

In course of its existence, many experiences were gained and lessons learned. To be noted now is the fact that a concerted and well coordinated leadership is needed if the economic growth and social transformation we seek in this region is to be achieved.
The presentation by Telly Eugene can be accessed here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Telly%20Eugene%2C%20LVBC_Lake%20Victoria%20basin.ppt

h) Lake Nyasa/Malawi Basin: Status, Challenges and Opportunities

This presentation by Mr Hyde Sibande, Principal Hydrologist at the Ministry of Water Development and Irrigation, Malawi, looked at Lake Malawi, its fisheries and its biodiversity.
Lake Malawi, Nyasa or Niassa is the southernmost lake of the African Great Rift Valley. Its surface is at 474.9 metres of altitude and it covers an area of 29,600 km2. The lake is bordered by Tanzania, Malawi and Mozambique. It is drained by the river Shire which assumes the lake's outlet to River Zambezi.
The lake's catchment totals an area of about 100,500 km^2, 7% of which is in Mozambique, 25% in Tanzania, and 68% in Malawi.
The average annual rainfall in the catchment is 996 mm and to slightly higher precipitations in the Tanzanian side of the catchment, Tanzania contributes 52% of the total of inflow to the lake. The lake's Largest tributary is river Ruhuhu contributing approximately 20% of annual river inflow. Other major rivers include south and north Rukuru, Bua, Linthipe, Songwe, and Kiwira.
Lake Malawi hosts over 800 species of fish, 90% of which are endemic. Approximately 15% of the total global freshwater species of fish are found in this lake alone and indeed, the lake is reportedly the habitat of more species of fish than any other body of freshwater in the world.
Though fish catches have remained relatively stable, catches of a number of larger and more economically valuable species have declined considerably. The large fish species include Chambo (Oreochromis), catfish (Bargus and Bathyclarias), Mpasa (Opsaridium microlepis) and Ntchila (Labeo mesops).

Chambo (Oreochromis), one of the large fish threatened by over-fishing in Lake Malawi.

Most of these species are declining mainly due to over-fishing (e.g Chambo & catfish) and/or river and nearshore habitat degradation (e.g. Mpasa & Ntchila).
The threats this lake is facing derive from high population pressure in some parts, the newly introduced water hyacinth, disharmonized catchment management policies across the riparian countries, deforestation and poor agricultural practices resulting and lake and rivers siltation, etc.

Above all, the most challenge the lake faces is an excessive fluctuation of its water levels. In fact, based on continuous record starting in 1896, the lake has known periods of such low water levels that no outflow was recorded for a period of over 22 years (1915-1937). Afterward, the lake has been recovering culminating in the high record of 477.24 m.a.s.l[2] in 1980. Unfortunately, trends have recently been towards decline since 1991 due the persistent droughts that have been prevalent in the basin.

To try to keep the level within acceptable range, a barrage on Shire was constructed in 1965 by the government of Malawi and is being upgraded soon. However, it is apparent that such projects can be done jointly and thus the need to have a Joint Basin Authority becomes very clear. In addition, fundamental research is needed to determine which acceptable range of levels is supported by the lake's ecosystem.

You can access the presentation by Hyde Sibande here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Hyde%20Sibande%2C%20Malawi_Lake%20Malawi%20Basin.ppt

i) Upper Nile Basin: Status, Challenges and Opportunities

This presentation by Minasona Lero Peter, Director for Wildlife Management and National Parks in the Ministry of Wildlife Conservation and Tourism, South Soudan, looked at upper-Nile basin. Its highlight features, status, challenges and opportunities.

Listed No 522 under the WWF's freshwater of the world catalogue, the upper Nile basin is situated mainly in Sudan with smaller areas in the Democratic Republic of Congo, Uganda, and Ethiopia. The basin encompasses Lake Albert and White Nile sub-basins and the vast swamps of the Sudd constitute the primary feature of this region.

Stating the importance of the region as related to freshwater biodiversity, Holland and Darwall, 2011 reads: *The freshwaters of the Upper Nile Basin host five crabs, 60 molluscs, 103 fish and 227 odonates (dragonflies/damselflies), making up 4%, 10%, 4% and 32% respectively of the known species totals for Africa. Of these, one crab, four molluscs, eight fish and two odonates are globally threatened.*

In addition, the region is a critical movement corridor for African Eurasian bird migrations and an important northern limit of the elephant range.

Opportunities in the region range from the high potential for oil extraction and electricity generation to very diverse tourism prospects passing by very prolific fisheries and fertile lands for agriculture.

Some of the challenges the basin faces stem from the unusual low population densities observed in this part of the great lakes region. This combined to frequent tribal conflicts and cattle rustlings gives free way to serious environmental crimes such as poaching. Pollution from oil extraction and invasive species are also part of the environmental problem in this area.

In short, it is very apparent that this basin if very potentially apt to develop quickly when its innumerable oil, fisheries and tourism wealth are considered.

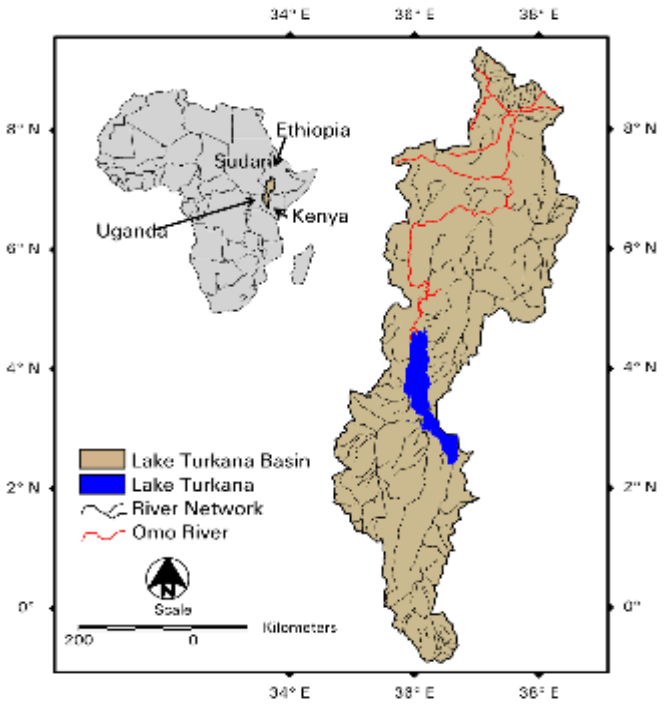
[2] Meters above mean sea level

However, there is need for a transboundary cooperation in order address more effectively the threats that are affecting its ecosystems.
The presentation by Minasona Peter can be accessed here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Minasona%20Peter%2C%20South%20Soudan_Upper%20Nile%20Basin.pptx

j) The Turkana/Omo Basin: Status, Challenges and Opportunities

This presentation by William Oweke Ojwang, a senior researcher at Kenya Marine and Fisheries Research Institute (KMFRI), was combined with another one on River Omo basin by Sean Avery due to absence of William over travel issues. It intended to give an overview of Lake Turkana and its basin looking at its status, recent evolution, threats and an outline of various on-going or planned interventions to respond to these threats.
Lake Turkana, located in Arid and Semi Arid Land (ASAL) area of north western Kenya is a unique ecosystem and the world's largest desert lake.
A "Cradle of Mankind" the site was declared a UNESCO World Heritage in 1997.

Surface area	6,750 km^2
Catchment area	130,860 km^2
Volume	203.6 km^3
Maximum depth	109 m
Mean depth	30.2 m
Residence time	12.5 years
Evaporation	2,300 mm/yr
Evapotranspiration	2,500 mm/yr



The lake region is one of the least developed in the country characterized by extreme aridity, low rainfall and abject poverty levels. River Omo, with its source in the central Ethiopian plateau contributes more than 90 % of freshwater influx into the lake. Other rivers including Turkwel and Kerio are seasonal.
Although the lake is semi saline and unsuitable for agricultural activities, it is home to at least 60 species of fish, world's largest remaining population of Nile crocodile and an endemic Turkana mud turtle (Pelusios broadleyi) among other components of biodiversity.

The challenges faced by the lake, especially the development of its fisheries include the remoteness of the area and frequent conflicts which translates into high post harvest losses and inaccessibility to high end market.

The ongoing climate change is also believed to have many effects including: lake level changes beyond normal variability, increased salinity levels, increased temperatures and low oxygen levels as well as the newly suspected increase of parasites loads in fishes. All these lead to declining lake productivity for fisheries but also disturb the lake's ecosystem function as a whole.

The Lake Turkana riparian communities are basically pastoralists but due to frequent droughts and frequent pasture right conflicts; they are slowly resorting to fishing as an alternative source of livelihood. The lake has considerable fisheries resources and socioeconomic potential that if well nurtured and managed could contribute considerably to national food security, employment and general well being of communities.
Ironically Lake Turkana, which is the largest lake wholly in Kenya, has for a long time generated the least interest and attention as compared to the other Great Lakes of Africa.
This is however bound to change as recent developments in the region which include cascading construction of dams and irrigation projects along River Omo; the umbilical cord of Lake Turkana, as well as oil discovery and ongoing exploration are believed to make the region a new hub for regional development.
Amidst many concerns that these large-scale projects are likely to have adverse impacts on long term viability of ecosystem benefits and therefore only exacerbate the condition of the local communities, the construction of African largest wind power plant in the area attests to the fact that the region is potential for many other environmental-friendly prospects as well.
You can access the presentation by William Ojwang here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/William%20O%27jwang%2C%20KMFRI_Lake%20Turkana%20Basin.pptx

k) Malagarasi River Basin: threats and opportunities for wetlands conservation

This presentation by Elias Bizuru, Head of Biology Department at National University of Rwanda, aimed at highlighting the ecological and socio-economic importance of river Malagalasi and share experience from the study that was conducted by Burundi Nature Action to assess the pollution of the SOSUMO sugar cane factory and the role played by the Papyrus vegetation to mitigate the pollution of water.
With a basin area of 130,000 square kilometres (50,000 sq mi), the Malagarasi has the largest watershed of all of the rivers flowing into Lake Tanganyika. In its middle stages, the river traverses the Muyobozi-Malagarasi wetland system which is a designated Rasmsar site since 2000.
Malagalasi river basin and its wetlands accommodate a very rich animal and plants diversity. More than 20 fish species are found in the river among which 7 are on the IUCN red list.

In addition, very rare mammals like the rare Sitatunga (*Tragelaphus spekii*), big and endangered reptiles like the Nile crocodile (*Crocodilus niloticus*) and very rare birds' species like the Shoebill, waterbirds and migratory species are also found in the area.
The Malagarasi river basin presents a big potential for tourism (beautiful waterfalls, hotsprings, and spectacular cliffs like the Nyakazu rift. However, many threats are felt by the river and its ecosystem and these include uncontrolled resources use and water pollution from various sources.
One of the findings from the study by Burundi Nature Action is the fact that the water of the river is highly polluted by heavy metals like Chromium and Lead from the materials dumped by the SOSUMO sugar cane factory and indeed some of these materials are highly hazardous.
You can access the presentation by Dr Bizuru Elias here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Elias%20Bizuru%2C%20NUR_Malagarasi%20River%20Basin.ppt

4. ECONOMIC DEVELOPMENT, ENVIRONMENTAL CHANGE AND THEIR IMPACT ON FRESHWATER ECOSYSTEMS

a) Fisheries of Lake Victoria: Current Status and Management Challenges

This presentation by Dr Oliva C. Mkumbo, Senior Scientist at Lake Victoria Fisheries Organization, looked at the status and trends of fisheries of Lake Victoria and the challenges to their sustainability.
Lake Victoria Fisheries Organization is an East Africa Community institution with the objective to foster cooperation among the contracting parties by harmonizing national measures, developing and, adopting conservation and management measures for the sustainable utilization of living resources of Lake Victoria.
Lake Victoria fisheries are by far the most important freshwater fisheries on the African continent. In fact, with around 1 million ton catch, the fishery supports more than 200,000 direct fishers and about 4 million people in the Lake Basin who indirectly depend on the fisheries for their daily livelihoods.

3 most commercially important fishes in Lake Victoria: up-down → Nile Perch, Tilapia and Dagaa

Currently, the fishery consists mainly of 3 commercially important fishes in their order of commercial importance: Nile perch (*Lates niloticus*), Tilapia (*Oreochromis niloticus*), Dagaa (*Rastrineobola argentea*).
The value of the fishery at beach level in 2011 was estimated at US $ 550 million with the Nile perch accounting for 68% of this value. The latter was introduced in the mid 1950s and spread all over the lake by the early 1960's and blamed to have adversely affected the biodiversity and thus the ecosystem stability. Now, the Nile perch stock and catches are reducing and there is an indication that the endemic haplochromine species are on the rise again. However, questions linger as to why not the same species composition is being restored as before the introduction of the Nile Perch.
Currently, the main drivers of change in the fisheries are still debatable and two scenarios are suspected: increasing fishing pressure or environmental driven changes (e.g. Eutrophication).
Whatever emerges as the cause, the solution is an ecosystem fisheries management approach and this is what the Lake Victoria Fisheries Organization is trying to do.
Among the many question that followed the presentation were included the concern over use of dynamite and poisons as fishing techniques, proliferation of hotel resorts around the lake and their impact as well the governments' response to the threats mentioned. To these, Ms Oliva said that the use of dyanamite as a fishing technique is not so widespread but that that use of poisons surely poses a real threat to the lake and its ecosystem and therefore needs to be addressed. On the governments' response, she assured that there is strong political will to address the challenges and indeed some projects in this direction have already kicked in like the one led by NBD to try to restore the lake and its catchment.
You can access the presentation by Oliva Mkumbo here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Oliva%20C.Mkumbo%2C%20LVFO_Fisheries%20of%20Lake%20Victoria.ppt

b) Threats from invasive species in the Great Lakes Region

The talk by Leo Niskanen, on behalf of the IUCN Global Invasive Species Initiative, aimed to outline the threats from invasive species in the freshwater ecosystems of the African great lakes region. It gave a brief overview of the invasion theory in general and looked at how this applies to this region. Finally, examples were given and recommendations for action were drawn.
Biological invasions are caused by species that are introduced to an area or ecosystem (where they were not previously indigenous) in which they establish, become naturalised, spread and cause damage to biodiversity and/or peoples' livelihoods.
Once established in an invasion, the species can be called an "invasive species".
Damage caused by invasive species can result in reduction (or even extinction) of populations of native species of animals and plants, of agricultural species, of ecosystem goods and services and of human development and infrastructure. This damage is caused through competition, predation, parasitism, exclusion of needed resources such as space, water, food, light and movement.
All biological invasions result from the introduction of a species. The path that the offending species used to start an invasion is termed the "Invasion Pathway".

Studying and understanding pathways is a way of both predicting new invasions and of preventing the alien species from entering a susceptible area, ecosystem, country or region.
The most common invasion pathways are the so-called "four Ts" (Trade, Transport, Travel and Tourism). All these paths are relevant to the Great Lakes Region and are increasing in volume and speed as the years go by thus, assisting in the spread of potentially invasive species.
In addition to the "usual pathways of invasion" there are several pathways of invasion specific to water dominated ecosystems and habitats. These are:

- Movement of fishers and their equipment and boats;
- Intentional "enrichment" of fisheries with alien species;
- Imports of species for aquaculture (and the diseases and parasites of the species and strains involved);
- Collection and rejection of species for the aquarium trade;
- Researchers and their travels.

So far, the most notorious freshwater invasive plant in the region is the water hyacinth (*Eichhornia crassipes*).

Water hyacinth infestation in major lakes of the Great Lakes Region

Other notorious aquatic invasive species in the region include the Mimosa pigra plant, two subspecies of Oreochromis niloticus (O. n. niloticus and O. n. eduardianus) and the freshwater crayfish which have escaped from aquaculture.
It is imperative that we learn the extent and nature of biological invasions in the Great Lakes region in order to be aware of the threats to biodiversity and to take action to prevent and manage invasions. Information about invasions should be shared between lake and catchment management agencies and the countries of the reason to limit the damage and help each other to monitor and manage pathways of invasion.
There is a range of control and management options, including low-cost nature based methods for dealing with invasive species that can be effective, but again there is a major gap in awareness and a number of misconceptions surrounding control and management which need to be addressed.

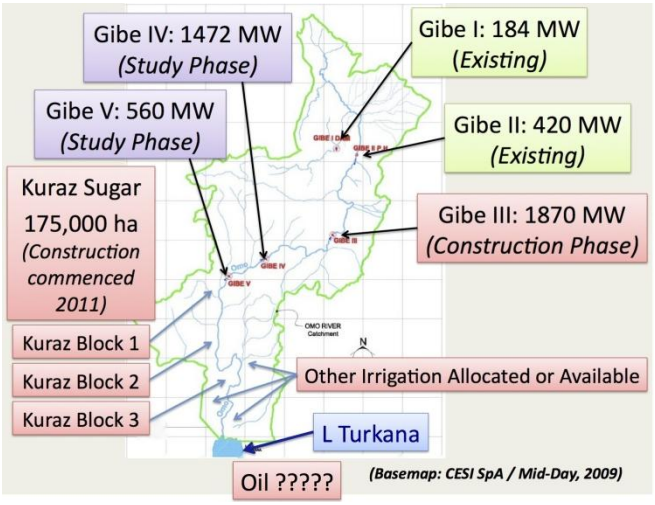
Finally, Conservation and development projects should be aware of the threat to Great Lakes Region's biodiversity from invasive species and build in awareness and/or monitoring components to establish their presence and risks of damage to their conservation and management targets.
The observations made at the end of the presentation included the fact that alien species can be intentionally introduced in some ecosystems for good cause (to improve fisheries for instance). To this, Mr Leo recommended caution on moving to single-species management type even if it may look to give good immediate results. It may turn out badly down the line and there is no way to go back.
To the question as to whether there is anyone conducting a project on invasive species control in the region, Mr Leo said that there are scattered efforts here and there but that it requires a more coordinated effort and trans-boundary initiatives to achieve a long-term impact.

You can download the full presentation by Leo Niskanen here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Leo%20Niskanen%2C%20IUCN_Threats%20from%20invasive%20species.ppt
You may also wish to read the report on invasive plants affecting Lake Tanganyika produced by IUCN in collaboration with LTA and others here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Guide%20to%20some%20invasive%20plants%20affecting%20Lake%20Tanganyika.pdf

c) Lake Turkana/River Omo basin: Dams and freshwater services. Case study: river Omo

This presentation by Sean Avery, a chartered civil, water engineer and environmentalist, looked at the Lake Turkana basin, its status and recent evolution. A case study of the large-scale hydropower production and irrigation projects planned in the lower Omo and their impact on the hydrology of the lake, its fisheries and ecology in general as well on local populations' livelihoods was presented.
The case study was based on the recent study Avery has conducted on Lake Turkana in northern Kenya, looking the lake's hydrology and its ecological dependence on Ethiopia's Omo River.
Lake Turkana is the world's largest desert lake. Its interesting floodplains' ecology exists in semi-saline waters, with nutrient inflows heavily dependent upon one single river, the Omo River, which provides 90% of the lake's fresh water inflow. Lake Turkana is a closed basin, its water level controlled by relentless evaporation. The entire annual Omo river flow inflow is evaporated, with its moisture blown by strong winds towards South Sudan.
The lake is becoming progressively more saline, although salts are being removed through various processes. Lake Turkana and the Lower Omo valley provide a fascinating insight into recent climate change and human evolution. The region was humid 10,000 years ago and the lake water level was an extraordinary 100 metres higher, extending 100 kilometres north into Ethiopia.
From here it overflowed west, into the drainage basin of the Nile, into South Sudan. The lake's present-day aquatic population evolved from its former Nile hydraulic linkage.

The area has since entered an arid phase, with pastoralism emerging as a very successful arid zone livelihood. In recent years, the pastoral livelihood balance has been upset by external human interventions that included land tenure policy changes, border conflicts, and external support mechanisms in health and food. The consequent burgeoning population cannot be supported by traditional livelihoods, with widening poverty gaps and food aid becoming "an institutionalised drought coping mechanism". Ethiopia's Omo Basin conveys 14% of Ethiopia's annual runoff. The Basin's integrated development master plan identified huge hydropower and irrigation development potential achievable through harnessing the Omo River's significant water resources. The development engineering is in progress. Gibe III's 243 metre high dam will generate 1,870 MW of hydropower, thereby contributing to Ethiopia's goal to become a regional power generation hub, supplying electricity to neighbouring countries. In addition, Gibe III will regulate river flows, and in so doing will increase the reliable low flows in the river, and will control floods. This modified flow regime will enable large-scale commercial irrigation development in the Lower Omo. In 2011, the Ethiopian Government commenced its Kuraz sugar development project. This 175,000 hectare project is being developed on lands largely excised from national parks and on lands traditionally utilised by indigenous people for agro-pastoralism. The Kuraz development area is huge, being equivalent to the entire irrigated area of Kenya. The Lower Omo is semi-arid, so the evapotranspiration rates are very high. Inefficient irrigation practises will in effect be "hanging the water out to dry".



Omo-Gibe hydropower cascade and downstream irrigation

Lake Turkana's fisheries ecology will inevitably be altered by developments in Ethiopia's Omo Basin.

Through regulating flows, the Gibe III dam will change forever the natural flood cycles upon which the ecology and local people have always depended. Over 30% of the lake's Omo inflow will be abstracted for irrigation and the lake level will drop up to 20 metres, and there will be potential pollution consequences. The lake biomass volume will reduce, as will the dependant fisheries, the diversity of which depends on natural hydrological variability and nutrient supply.

The Omo Basin Master Plan (financed by the African Development Bank) did not include consultations with Kenyan stakeholders. The threats to Lake Turkana's fisheries were dismissed as the fisheries were "declining anyway". The World Bank stated that "there was no significant use of the lake waters" and that it should be possible to obtain "noobjection" from the Kenya Government to developments in the Omo Basin in exchange for benefit sharing.

But what benefits will accrue to the local people? There are international media reports that indigenous people are being displaced from their traditional lands. Have commercial sugar plantations been proven to be the most appropriate solution to the food security challenges the local people face? There are no ESIA studies yet released for the sugar developments yet these projects are progressing apace. This is a concern. Will the economic benefits of power generation and sugar production justify the destruction of Lake Turkana's fisheries? And how will recent oil finds affect the socio-economic and environmental dynamics of the area?
These and many other questions about ongoing developments in the Turkana basin remain to be answered. The world's largest desert lake is facing major ecological transition, thereby affecting many people. This presents trans-boundary challenges. Changes to the lake's ecology and fisheries will directly impact Kenya. Scientific studies are needed to properly understand what will happen, to monitor, and to develop effective adaptive measures.
You can read Dr Sean' paper here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Sean%20Avery_Dams%20%26%20Irrigation%20Development%20in%20Ethiopia%E2%80%99s%20Omo%20Basin.pdf

d) Oil and Gas exploration and Freshwater Ecosystems in the Albertine Rift

This presentation by Thomas Otim, Conservation Manager at WWF Uganda, looked at trends in oil and gas exploration in the region and used the Uganda case study to highlight the relationship of the developments in oil sector and the environment in general and freshwater ecosystem in particular.
International oil companies have intensified their search for oil and gas in Africa. In Uganda for instance, about 40% of the Albertine Graben has been evaluated and 3.5 billion barrels of oil equivalent has been discovered.
Given the high biodiversity importance of this region and the vulnerability of its local people whose livelihoods depend directly on nature and therefore risk being disturbed; many concerns are now being felt among many circles of what is termed "Social and Environmental Traps!.
To manage these potential impacts effectively, the government and other stakeholders have managed to put in place some management tools and processes. These include, among others, effective policies and legislations, strong institutions, equitable participation, good governance; transparency and accountability …
All in all, three messages are to be taken from the Uganda's short experience so far with oil development. These are:

- Petroleum development will magnify existing environmental challenges more than introduce new ones.
- There are limited preparations to manage environmental impacts over the long term.
- There is a precedent in managing environment and natural resources.

Read the full presentation by Thomas Otim here:

https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Thomas%20Otim%2C%20WWF%20Uganda_Oil%20and%20gas%20exploration%20and%20freshwater%20ecosystems%20in%20the%20Albertine%20Rift.ppt

e) Role of Private Sector Actors in Environmental Sustainability: Case Study- Biodiversity baseline surveying in the Albertine Rift, Uganda

This talk by Alan Blakemore of Tullow Oil presented a case study of a biodiversity baseline that Tullow Oil has recently commissioned to be conducted to:

- Establish the biodiversity context, to assist with development planning by providing early identification of potential constraints;
- Identify the potential implications if development is proposed in certain areas (e.g. detailed surveys, mitigation measures, long-term monitoring), and
- Inform the assessment of biodiversity impacts beyond the project boundary, including cumulative impacts.

The study is to be done in two phases, the first desk study consisting of performing a gap analysis to review the legal and policy framework in place and gather data from existing sources on various topics ranging from species occurrence to land cover change.
The second phase consists of field surveys to fill in the gaps identified in the first phase and perform ground-truthing of existing data.
As for today, the first phase has just been concluded and among the most notable results one can include the fact that several habitats both within and outside protected areas are candidates for critical habitat designation and the concern over threatened remnant natural habitats from population growth outside protected areas.
One of the challenges faced during the study was the fact the boundary of the study area doesn't necessary follow natural features; hence ecosystems and biodiversity are therefore not constrained by this boundary.
From the short discussion that ensued the presentation, Tullow Oil was praised for this plausible initiative and was advised to collaborate with institutions like WWF which already detain much data (satellite images for instance) which will enable them to cover the mentioned data gaps for the study.

The presentation by Alan Blakemore can be accessed here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Alan%20Blakemore%2CTullow%20Uganda_Biodiversity%20Baseline%20Survey%20in%20Albertine%20Graben.pptx

5. INTEGRATING COMMUNITY NEEDS IN WATER RESOURCE MANAGEMENT

a) Civil society engagement and advocacy

The joint presentation by Ms Jacquline Ntukamazina from ARCOS and Dr Malikwisha Meni of NBD aimed at giving an overview of the effort led by the civil society groups in the Great Lakes region as related to the conservation of freshwater ecosystems and promotion of their services.

Generally-speaking, the Civil Society in the great lakes region is active and dynamic. Many actors are involved some at international level (e.g. IUCN, WWF, WCS, Birdlife, etc), some others at regional level (e.g. NBD, ARCOS, etc) and many more at local level (e.g. Nature Uganda, ABO, ACNR, Horizon Nature, etc)

The areas of activities many of these actors are involved in are mainly advocacy, capacity building, information exchange and sharing and awareness-raising on emerging issues like climate change, oil and gas exploration and pollution.

Achievements so far are many. The main ones are in terms of promoting market-based incentives (e.g. PES schemes), poverty alleviation (e.g through income generating activities), and influence policy at national and regional levels.

This high level of achievement has been reached despite many challenges that the civil society groups are faced with in the region; some of these are specific to the region but some others are driven by global economic and political processes. These include among others: funds availability constrained by today's global economic crisis, limited human resources, long registration procedures, differing and sometimes constraining legal frameworks regulating the operations of the civil society actors …

For an even more effective involvement of the civil society in our region, some recommendations are to be noted. The most prominent among these is an increased collaboration between all stakeholders so as to achieve synergy between different interventions and avoid duplication.

Presenters during this session also highlighted some of the specific achievements of ARCOS and NBD in particular and many of the questions that followed the presentations were recurrent on the fundraising and duplication issues. To these, it was recommended that more effort is put in developing projects as collaboratively as possible. This is good both for fundraising and for synergy.

b) Watershed degradation and sustainable agriculture

This presentation by Athanase Mukuralinda, ICRAF Rwanda Country Representative, looked at a case study of the project that was conducted in Rwanda to restore Lake Karago catchment.

The small lake and its basin in north-western Rwanda has known a history of an excessive degradation due to deforestation of Gishwati forest. This, combined with big population numbers that were settled in the area and the ensuing extensive agriculture on steep slopes, and with poor soil management; the result was spectacular soil erosion which filled the lake with sediments, disturbing both its biodiversity and its water quality and quantity.

Deforestation, heavy rains, steep slopes, poor soil management led to a scenario like this

The intervention by ICRAF aimed at protecting hill slopes with trees, river banks with bamboos and sensitize farmer populations on better agricultural practices to curb soil erosion which this heavy-rains and sensitive soils area is subject to.

The lesson from this successful project is that community participation and an integrated approach taking into account upstream and downstream processes is a prerequisite in restoration of such complex systems like a catchment.

One burning question that was asked after the presentation is whether the selection of bamboo for river banks protection was a participatory process because experiences elsewhere show that local farming communities don't like bamboo since it attracts birds and the latter destroy their crops.

To this, Mr Athanase replied that the process was indeed participatory and these concerns were not yet experienced in the area.

You can read the presentation by Athanase Mukuralinda in its entirety here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Athanase%20Mukuralinda%2C%20ICRAF_Watershed%20Degradation%20and%20Sustainable%20%20Agriculture.pptx

c) Women and Water Resources Management

This presentation by Ms Chantal Shalukoma, the coordinator of Horizon Nature, a Congolese NGO working with women around the forests ecosystems in lowland and highland of the Kivu Province in Eastern DRC, aimed to share the experiences of Horizon Nature in empowering women to participate more actively in water resources management at community level.

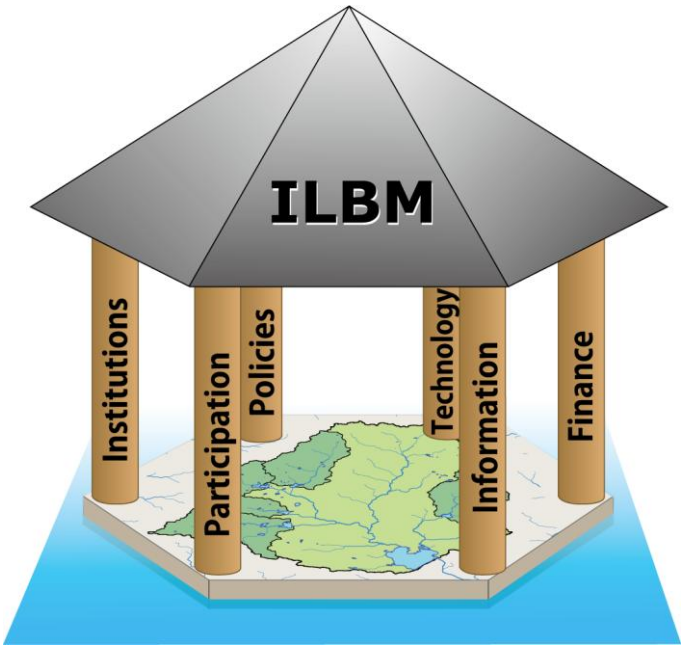
Women are important actresses in natural resources management. As relating specifically to water, the role and participation of women is recognized in all major documents related to water resources management.
The objectives of the Millennium for the development recognize that best water services reduce work of the women, improve their health and the care to the children.
In addition, accessibility to water increases intimacy in families and decreases the risks women and girls are subjected to when trying to get water from far away.
Unfortunately, in sub-Saharan Africa, only 46% of the rural populations have access to safe drinking water (UNICEF, WHO, 2008). In DRC, with average 68 billion of population, only 10% have access to electricity and less than 25% have an access to safe water (RENADHOC, 14 February 2013, RFI).
In light of this, Horizon Nature has embarked on a long program to address the challenges that are getting in way for women to fully play their role in development in general and water resources management in particular.
Specific interventions include among others promoting rain water harvesting, disseminate improved cooking stoves to households, sensitize the general population on the good fresh water management practices, and provide women with alternative income generating activities.
One of the persisting challenges in the region include persistent insecurity and continued deforestation. These are hampering women's full realization in playing their role as game makers in sustainable water resources management.
One of the questions asked after the presentation concerned the studies that were conducted in many communities across Africa and came to the conclusion that women sometimes prefer going distances to fetch water and/or fuelwood as a way of socializing. To this, Ms Chantal made it clear that the situation now in eastern DRC of permanent insecurity and recurrent cases of women being sexually assaulted sets a totally different backstage to the scenario. "This is an impossible trade off" she said. "No one can expose herself at the risk of collective rape for the sake of socialization".
The presentation by Dr Chantal Shalukoma can be accessed here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Chantal%20Shalukoma%2C%20HN_Women%20and%20Water%20Resources%20Management.ppt

d) Role of CSOs in the Integrated Lake Basin Management

The presentation by Godfrey Ogonda, Deputy Director of OSIENALA (Friends of Lake Victoria), aimed at sharing the organization's experience of their involvement as a civil society actor in the integrated Lake Basin Management.
OSIENALA is involved in many projects in Lake Victoria basin but one of these termed: Community Based Strategies for the Management of Environment and Resources within Lake Victoria (COSMER-LAV) is noted here.
This project was initially implemented in only the riparian countries of Lake Victoria but in its phase II and III, the activities have been extended to cover all countries of the basin.

From the experiences and lessons drawn from the exercise of this project, OSIENALA in collaboration with the International Lake Environment Committee of Japan are proposing the Integrated Lake Basin Management (ILBM) platform for the Lake Victoria Basin.

In fact, the operationalization of IWRM principle has not been easy, particularly for those having to deal with on-the ground basin management challenges facing lakes and other lentic water bodies. The reason for this deficiency is that most, if not all, the lake basin management stakeholders are not in a position to play a role in influencing most IWRM integration needs.



ILBM is based on 6 pillars, among them "participation" of all benefactors is crucial since it determines the long-term sustainability of the ILBM process

While ILBM is also based on an integrated approach, it focuses on the on-the-ground governance improvement rather than the governance improvement at a higher level of policy making at the national government level. The justification of ILBM is that it takes an "integration by necessity" approach as compared to IWRM which takes more an "integration by design" approach.

To sum up, it is now clear that our freshwater ecosystems are facing real threats. To be addressed, adaptive management practices are needed and practical tools like this Integrated Lake Victoria Management platform can provide a solution to this challenge.

Some of the observations made after the presentation consisted of the general understanding that ferrocement tanks in households promote proliferation of mosquitoes and local people don't adhere easily to the use of human feces as a fertilizer. Yet, these two were part of the COSMER-LAV project. How did OSIENALA confront these issues?

To this question, Mr Godfrey responded that the former concern was never raised during the project implementation and the latter was addressed through continuous awareness raising campaigns that were part of the project as well.

The presentation by Dr Godfrey Ogonda can be downloaded here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Godfrey%20Ogonda%2C%20OSIENALA_Integrated%20Lake%20Basin%20Management.pptx

e) Freshwater Services and community benefits in the GL Region: status, challenges and opportunities

This presentation was given by Aventino Kasangaki, the biodiversity monitoring programme manager at ARCOS, and aimed at sharing ARCOS's experiences in freshwater ecosystem services promotion and community benefits in the Albertine Rift region.

Freshwater ecosystems in the Albertine rift are very diverse. They include rivers like Semliki, Rusizi, Malagalasi and Akagera. In addition the region is sprinkled with many lakes, big and small, to which you add many important wetlands like the ones of Rugezi, Akagera and Kamiranzovu (Rwanda).

These ecosystems perform a plethora of services that benefit both the local communities who depend on them for their livelihoods and wellbeing and the countries' economies. They include: fish, water for domestic and industrial use, irrigation, watering livestock; hydropower generation, ecotourism based on aquatic ecosystems, NTFPs-mostly from wetlands, etc.

Currently, these services are threatened by the prevailing over resource use in the region to which is added the habitat degradation and invasive species, just to name a few.

To address these challenges, ARCOS has been active in trying to promote the understanding of these freshwater ecosystem services and their trends and develop collaboratively with stakeholders programs to ensure their sustainability.

One of the projects in this framework was termed GreVirES aimed at mapping and quantifying ecosystem services in the Greater Virunga landscape. Models were also developed of these services likely future trend under various development scenarios. Moreover, stakeholders were brought together to reflect on good policies and actions that may be taken to ensure their evolution is in good direction.

Another project termed ESLOC is now being implemented in Echuya, Mukura and Kibira-Rusizi landscapes to promote market-based mechanisms to incentivise conservation initiatives. Stakeholders in all these landscape identified Payment for Water Services as one of the schemes that may be initiated to promote sustainable of water provision service from the ecosystems.

ARCOS is now in a process to quantify these and other services and pilot some of the PES schemes that were identified.

From the presentation, the audience wanted to know the potential buyers for the various PES schemes that were identified. To this, Aventino said that for each service and in each landscape different potential buyers were identified as well but the most recurrent on the list include water bottling companies as far as payment for water services is concerned.

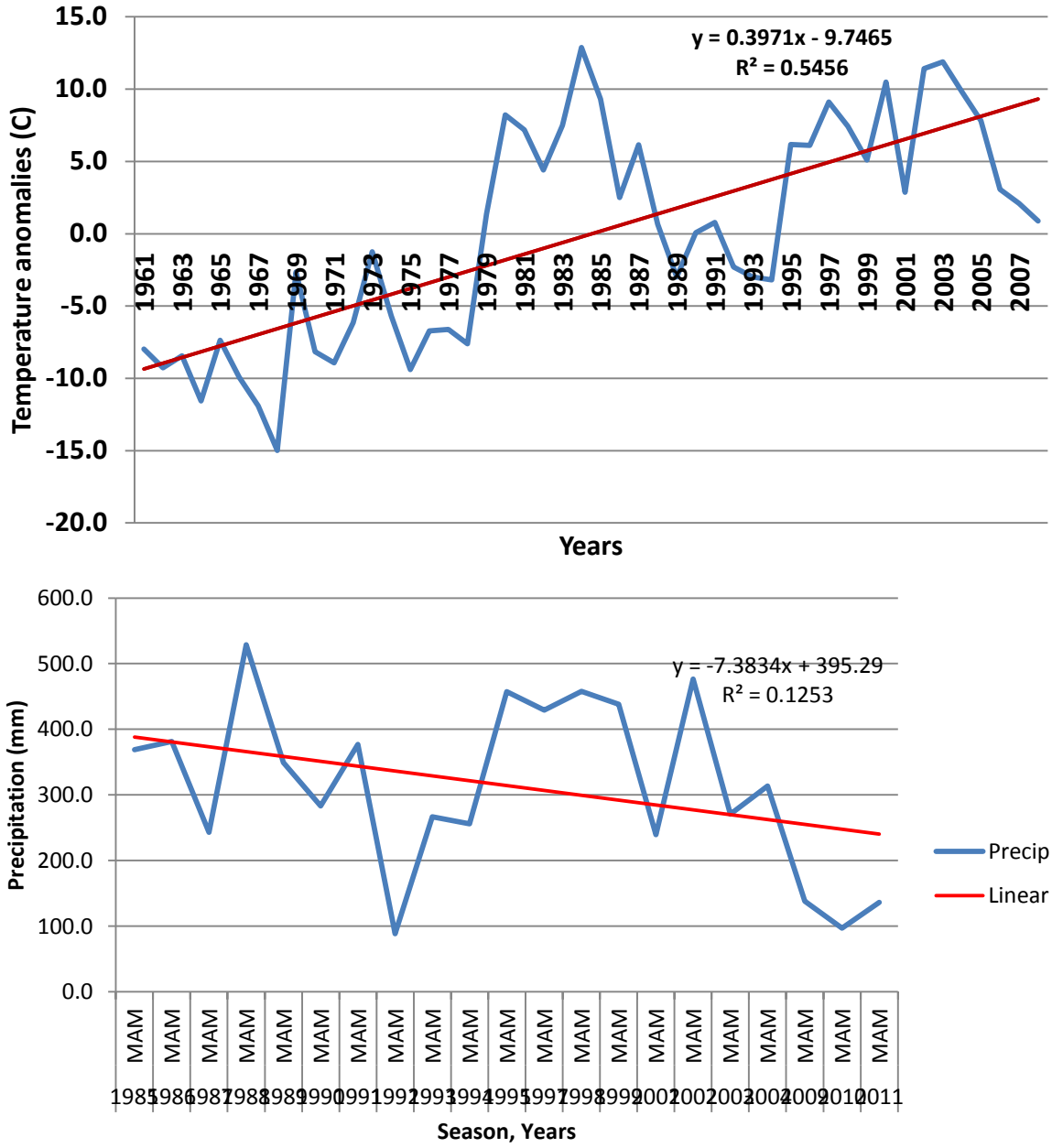
The presentation by Dr Aventino Kasangaki is downloadable here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Aventino%20Kasangaki%2C%20ARCOS_Freshwater%20Ecosystem%20Services%20and%20Community%20Benefits.pptx

f) Climate Change Adaptation: challenges and opportunities

Through a series of pictures, data and graphs depicting the evolution of the climate in some areas of the Lake Victoria basin, Amos Majule tried to show the evidence of climate change in our region. At the end, he presented a set of mitigation and adaptation measures that can be applied to address the adverse effects of this phenomenon.

Climate change in the Tanzanian part of Lake Victoria basin is seen through gradually increasing mean annual temperatures over the last 30 years and a decreasing total annual precipitations over the same period.

Taking a example of the graphs representing data from the Mwanza station below, the trend is unmistakably clear indeed.



One of the on-ground impacts of this reduced precipitation is the increasing depth to access ground water and reduction of recharge of groundwater resources. The study conducted by IRA showed that in Mwanza, the local water table has increased from 1.5 m in 1970s to 20m and more to date.

There are also other human-induced factors that come in to aggravate the effects of climate change. In fact, the expansion of wetland farming, the cultivation near river banks, the increasing livestock numbers, the increased exploitation of forest wood products and many more factors contribute to make the impact of climate feel more painfully to communities and to the region's ecosystems in general.

To mitigate these effects, sound forest management practices and strengthened regional collaboration and linkages for effective utilization of shared water and other resources is the key. Moreover, the heavy water-demanding sectors such as agriculture and energy sector also have to be well managed.

One of the questions asked at the end of the presentation concerned the evidence of correlation between precipitation and water table level. Some say the lowering of the local water table is due to excessive water abstraction for various purposes and not linked directly to the decrease of precipitation.

To this, Mr Amos said the protocol used in the study was so comprehensive they are confident the data and the information are accurate.

You can access the presentation by Pr Amos Majule here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Amos%20Majule%2C%20IRA_Climate%20change%20adaptation.ppt

V. WORKING GROUPS

Participants were allocated into 5 thematic groups and each group analyse the issue at hand and come up with recommendations on the way forward.

One more group was tasked to formulate the general recommendations.

During the report-back plenary session, all recommendations that were agreed upon were compounded into one document with the title: Great Lakes Regional Forum on Freshwater Ecosystems – Participants recommendations

In the document; stakeholders, inter alia, recognized that the development issues currently affecting the region seriously impact the poor and vulnerable rural populations who depend on the natural resources for their livelihoods. They also emphasized the need for trans-boundary collaboration and networking in implementing conservation activities within the Great Lakes region.

One of the things they committed to is to regularly hold the "Great Lakes Regional Forum on Freshwater Ecosystems" and request the Albertine Rift Conservation Society to look for resources in the future for holding the same event regularly.

The full text of the document is set out below under Annex I.

The document can also be accessed here:
https://dl.dropbox.com/u/98500120/GL%20Forum_Presentations/Recommendations_AR_Reg_Forum-eng.pdf

VI. CLOSING SESSION

1. Closing remarks from ARCOS

In his closing remarks, the Executive Director of ARCOS – Dr Sam Kanyamibwa – thanked all participants for their dedication and enthusiasm which led to very engaging and fruitful discussions during the meeting.

He expressed ARCOS and its partners commitment to look for ways to institutionalize this Great Lakes Stakeholders Forum on Freshwater Ecosytems since it has proven a good platform to look at the threats affecting these ecosystems in a wholistic and pragmatic ways. "*I am looking forward to having an event like this every year"* He said, "*It is possible when looking at the interest on your faces and I am personally convinced that a multi-stakeholders dialogue like this would achieve a lot in terms advocacy, collaboration and interventions harmonization all in a bid to achieve the conservation of freshwater ecosystems and promotion of their services*"

He finally addressed his special thanks to MacArthur foundation for their interest in the region and their history-long support to conservation interventions in the region.

2. Vote of thanks by participants

One person per each major lake basin was given a floor to express his/her feelings as the forum was drawing close the end.

In general, all noted the necessity of such dialogue and addressed their special thanks to the organizers, supporters, and contributors.

The following are the excerpts from the speeches in verbatim:

Telly Eugene Muramira: "*I thank the supporters of this event, especially the private sector actors who committed their time and therefore their "money" to be with us. Inyange is thanked doubly for having given us the water for refreshment!"*

Gabriel Hakizimana: "*Thanks to the hotel for the services and to the organizers for their endeavour to make this happen on such a tight budget*".

Minasona Lero Peter: "*Thanks to the organizers and the supporters especially the MacArthur Foundation. I congratulate the team which worked to make this happen. It is seen that it's true some of the challenges are common to all basins but some specific challenges are also affecting specific ecosystems. The example is the specificity of the upper Nile basin which has the lowest population density in the region: I would like to see MacArthur and other actors give such focused, specific focus to such specific areas*".

Lake Malawi: George Mbewe: "*I am happy you included Malawi. This is a good opportunity for the basin to catch up in the regional integration*"

Sean Avery: "*I appreciated this opportunity to share about my passion. My father has been working in the area since 1930s and here I am now still working in the area. This is so long time that I now feel the region is part of me. Therefore, it has been a privilege for me to be able to talk my mind and my heart to the audience with such large scope*".

3. Official closing by guest of honour

In his closing address, Mr Bakundukize Dismas, Interim Deputy Director General in charge of Forestry in Rwandan Natural Resources Authority, reiterated his full satisfaction in the success of the forum.

He said: "*this being the first forum ever for freshwater ecosystem and freshwater services in the region, I am confident that the precedent it has set will provide a sufficient initial momentum for the setting of an adequate regional platform on which many threats affecting our freshwater ecosystems and their services*".

He went on to reaffirm the full commitment of the Rwandan Government to cooperate as much as possible in the appropriate regional structures especially these ones that are aimed at managing effectively valuable resources such as water.

VII. ANNEXES

Annex I: Great Lakes Regional Forum on Freshwater Ecosystems - Participants Recommendations

We, representatives from governments, civil society and the private sector, having met in Kigali on 21st- 22nd February 2013 at the Great Lakes Regional Forum on Freshwater Ecosystems organized by the Albertine Rift Conservation Society (ARCOS) in collaboration with partners,

Realizing that the Great Lakes region is important for various biological and ecological processes, community livelihoods and the economic development of the Great Lakes countries,

Noting that in spite of governments' efforts and initiatives and many actors in development and conservation operating in the Great Lakes region, the impact remains unrealized and scattered,

Concerned with the effects of environment related conflicts, poorly implemented development activities and control of resources and the impacts of the overuse of nature resources as well as lack of enough capacity in natural resources management,

Observing that most of the natural resources in the Great Lakes region are contiguous and trans-boundary in nature yet their management is mostly localized and limited to national and small scale regional boundaries,

Realizing with concern that different existing policies in the region have been developed in isolation and as a result, contradict and counteract effective environmental management,

Concerned with limited corporate social responsibility in the Great Lakes region and the desire of some companies to promote sustainable practices in the region,

Observing that various and diverse efforts invested into community development and capacity building are creating united impact on the ground,

Noting with concern the adverse effects of climate change on biodiversity and the weak capacity of poor communities to cope with these effects,

Noting with concern that various conservation and development issues currently affecting the region seriously impact the poor and vulnerable rural populations who depend on the natural resources for their livelihoods,

Appreciating the role of civil society, the private sector and communities in conservation, community development and awareness and government efforts to involve civil society in sustainable development,

Emphasizing the need for trans-boundary collaboration and networking in implementing conservation activities within the Great Lakes region,

Realizing the need for concerted effort to realize sustainable development for the good of both biodiversity and people,

Hereby declare and commit ourselves to:

4. Hold regularly the “Great Lakes Regional Forum on Freshwater Ecosystems” and request the Albertine Rift Conservation Society to look for resources in the future for holding the same event regularly;
5. Advocate for the harmonization of policies for holistic management of freshwater ecosystems in the Great Lakes region;
6. Advocate for sustainable practices and development investments integrating community livelihoods needs and preservation of biodiversity.
7. Involve community participation (especially women and youth) in freshwater ecosystem management at all levels of decision-making;
8. Call upon different development partners to support the implementation of Great Lakes initiatives to promote freshwater services in the region;
9. Promote research and information sharing within the Great Lakes region through joint projects;
10. Request ARCOS to develop a communication strategy for better sharing the information on the status of freshwater ecosystems of the Great Lakes region as well as challenges, activities, best practices and opportunities to upkeep their services;
11. Put in place an advocacy strategy and entertain a capacity building programme of the civil society for sustainable management of freshwater ecosystem within the great lakes region;
12. Request ARCOS to explore the establishment of sub-fora to discuss from time to time emerging issues (such as climate change) affecting the Great Lakes freshwater services;
13. Liaise with the private sector to pool together private sector resources for environmental safeguards and promote Corporate Social Responsibility;
14. Encourage local innovative financing systems to provide alternative livelihood options to communities and promote energy efficient technologies;
15. Appreciate the warm welcome and the hospitality extended to participants and the support received from the government of Rwanda.

Annex II: List of participants to the Great Lakes Forum on Freshwater Ecosystems

No	Name	Organization/Country	e-mail
South Soudan			
1	Jamus Olum Joseph	Norwegian People's Aid/ South_Soudan	jamusj@npaid.org
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Uganda			
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Burundi			
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DRC			
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Annex III: Great Lakes Stakeholders Forum on Freshwater Ecosystems - Programme

DAY 1: Thursday 21st Feb 2013			
Time	**Topic**	**Activity**	**Speaker**
8:30-09:00	**ARRIVALS AND WELCOME COFFEE**		
09:00-09:10	**Opening Session, Launch of Great Lakes Strategy and Stakeholders Engagement Project (Chair: ARCOS)**	Video: Living Waters, Our Future	ARCOS and Partners
09:10-09:20		General Introduction and Self-introduction for all the participants	Dr Sam Kanyamibwa, Executive Director ARCOS
09:20-09:30		General Welcome remarks from ARCOS Board	Mr Jean Gapusi, Board, Member
09:30-10:00		Meeting Opening Statement by Guest of Honour	Hon Stanislas Kamanzi, Minister for Natural Resources, Rwanda
10:00-10:20		MacArthur Great Lakes Strategy: Overview and Official Launch of Strategy and Project	Guest of Honour + Mrs Elizabeth Chadri, MacArthur Representative
10:20-10:30		Group Photo with Guest of Honour	All
10:30-11:00	**COFFEE/TEA BREAK**		**ALL**
11:00-11:30	**General overview of the status and trends of watersheds, wetlands and other freshwater systems in the Great Lakes Region (Chair: LTA).**	Cooperative management, governance and policy framework of transboundary water resources	Dr Tom Waako, (representing NBI Executive Director)
11:30-11:55		State of the GLR: Biodiversity, Institutional Context and Economic Importance	Dr Ian Gordon, BirdLife International, Africa Secretariat
11:55-12:20		Drivers of change affecting watersheds, wetlands and freshwater systems in the GL Region	Dr Musonda Mumba, UNEP (presentation b John Owino IUCN)
12:20-12:45		Integrated Water Resources Management in Rwanda.	Vincent de Paul Kabalisa, Deputy Director General, RNRA
12:45-13:00		Questions and Discussions	All
13:00-14:00	**LUNCH BREAK**		**All**
14:00-14:20	**Experience Sharing in the GL Region: Regional initiatives (Chair: IUCN)**	CEPF: Eastern Afromontane Hotspot	Pierre Carret, CEPF Adviser
14:20-14:40		Mountain Partnership (MP) and Eastern Africa Water Towers Initiative	Rosalaura Romeo, Senior Programme Officer, MP Secretariat

14:40-15:00		Wetlands in the Great Lakes region of Eastern & Central Afric (Ramsar Centre for Eastern Africa	Lucy Iyango, RAMCEA & Assistant Commissioner for Wetlands, Uganda
15:00-15:20		Climate Resilient Altitudinal Gradients (CRAGs)	Dr Julius Arinaitwe, Director for Africa, BirdLife International,
15:20-15:40		Transboundary Ecosystem Based Management of Fisheries and Oil Governance Project	Christine Lain. DRC Country Advisor Ecosystem Alliance, NC- IUCN
15:40-16:00	**COFFEE/TEA BREAK**		**All**
16:00-16:20	**Experience Sharing in the GL Region: Regional initiatives (RAMCEA.)**	Lake Tanganyika Basin: Status, Challenges and Opportunities	Gabriel Hakizimana, Environment, Lake Tanganyika Authority (LTA)
16:20-16:40		Lake Victoria Basin: Status, Challenges and Opportunities	Telly Muramira, Secretary, Lake Victoria Basin Commission
16:40-17:00		Lake Nyasa/Malawi Basin: Status, Challenges and Opportunities	Mr Hyde Sibande, Ministry of Irrigation and Water Development
17:00-17:20		Upper Nile Basin: Status, Challenges and Opportunities	Minasona Lero Peter, Min Wildlife, South Sudan
17:20-17:40		The Turkana/Omo Basin: Status, Challenges and Opportunities	J. Ameha Assefa, EPA (Ethiopia) and Dr William Ojwang, KMFRI, Kenya
17:40-18:00		Malagarasi River Basin: threats and opportunities for wetlands conservation	Dr Elias Bizuru, Head, Biology Department and MSC Program, NUR
18:00-18:20		Questions and Discussions	All
18:20-18:30		Day 1 Conclusions and Day 2 Plan	Facilitator
19:00		CEPF & MacArthur Grant Launch Event and Cocktail	J. Paul Ntungane & Michel Ndengera
DAY 2: Friday 22nd Feb 2013			
08:00-8:10		Review of day 1 and introduction to day 2	Facilitator
8:10-08:30	**Theme 2: Economic Development, Environmental Change and their impact on**	Fisheries of Lake Victoria: Current Status and Management Challenges	Dr Oliva Mkumbo, Lake Victoria Fisheries Organisation
08:30-08:50		Threats from invasive species in the Great Lakes Region	Leo Niskanen, IUCN ESARO
08:50-09:10		Major dams, hydropower & irrigation schemes: Impact on river basin ecohydrology- a regional case study	Dr. Sean Avery

09:10-09:30	**Freshwater Ecosystems (BirdLife International)**	Oil and Gas exploration and Freshwater Ecosystems in the Albertine Rift	Thomas Otim, WWF-Country Programme Office Uganda Office
09:30- 09-50		Role of Private Sector Actors in Environmental Sustainability: Case Study- Biodiversity baseline surveying in the Albertine Rift, Uganda	Alan Blakemore, Development Environmental Manager - Uganda Tullow Oil PLC
09:50-10:20		General Questions and Discussions	All
10:20-10:40	**COFFEE/TEA BREAK**		**All**
10:40-11:00	**Theme 3: Integrating community needs in Water Resource Management (NBI)**	Civil society engagement and advocacy	Jacquline Ntukamazina (ARCOS) & Dr Malikwisha Meni (NBD)
11:00-11:20		Watershed degradation and sustainable agriculture	Dr Athanase Mukurarinda, ICRAF Rwanda Reppresentative
11:20-11:40		Women and Water Resources Management	Dr Chantal Shalukoma, Director, Horizons Nature, DRC
11:40-12:00		Community Sustainable fishing practices in Lake Victoria	Dr Godfrey Ogonda, Program Director, OSIENALA, Kisumu
12:00-12:20	**Theme 4: Emerging issues: Ecosystem Services and Climate Change (LVBC)**	Freshwater Services and community benefits in the GL Region: status, challenges and opportunities	Claudien N, Philbert N. & A. Kasangaki ARCOS
12:20-12:40		Climate Change Adaptation: challenges and opportunities	Dr Amos Majule, IRA, University of Dar es Salaam, TZ
12:40-13:00		General Questions and Discussions	All
13:00-14:00	**LUNCH BREAK**		**All**
14:00-15:40	**Recommendations for Action to address drivers of change in the Great Lakes Region (Chair: NBD)**	Thematic Working Groups - 1: Policy, Legal Framework & Development Drivers - 2. Networking, Communications and Advocacy - 3. Community Development and Livelihoods - 4: Climate Change Adaptation and Resilience	All
15:40-16:00	**COFFEE/TEA BREAK**		
16:00-17:00	**Recommend. (cont.)**	Working Groups Report Back	**Rapporteurs**
17:00-17:10	**Final Conclusions and Closing Session**	General Conclusions and Way Forward	**ARCOS**
17:10-17:20		Vote of Thanks	**Lake Basin Representatives**
17:20-17:30		Meeting Closing	**Gov of Rwanda Representative**
18:00-19:00	**FAIRWELL DINNER**		**All**

Group Photo

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