



RIVER BASIN

Stock Taking of Adaptation Activities in the Nile River Basin



Acronyms & abbreviations	4
1.0 Introduction	7
2.0 Literature review of stakeholders engaged in climate change adaptation in the Nile River Basin	9
2.1 Institutional profiles	9
2.2 Continental level	9
2.2.1 African Union (AU)	9
2.2.2 New Partnership for Africa's Development (NEPAD)	10
2.2.3 The African Ministerial Council on Water (AMCOW)	10
2.2.4 The African Ministerial Conference on the Environment (AMCEN)	11
2.2.5 The Joint International Development Research Centre (IDRC)	11
2.2.6 Pan African Parliament	11
2.3 Sub-regional level	12
2.3.1 Intergovernmental Authority on Development (IGAD)	12
2.3.2 East African Community (EAC)	13
2.3.2 Common Market for Eastern & Southern Africa (COMESA)	13
2.3.3 United Nations Economic Commission for Africa (UNECA)	13
2.3.4 Lake Victoria Basin Commission (LVBC)	14
2.4 Framework for transboundary management of the Nile River Basin	14
2.4.1 Evolution of cooperation in the Nile River Basin	14
2.4.2 Bilateral cooperation	14
2.4.3 Regional cooperation in the Nile River Basin	15
2.4.4 Current legal framework for managing the Nile River Basin	17
2.4.5 Institutional arrangements	18
2.4.6 Climate change & the Nile River Basin	18
2.4.7 Policy development & knowledge management	19
2.4.8 Capacity-building & awareness-raising	19
2.4.9 Transboundary level interventions in the Nile River Basin	20
2.5 National level	25
2.5.1 Framework for climate change adaptation at the national level	25
2.5.2 Adaptation to climate change as part of national water strategies	26
2.5.3 Additional stakeholders in climate change adaptation at national level	32
2.6 Development partners	33
2.6.1 International cooperating partners	33
2.6.2 United Nations agencies	35
2.7 Non-states actors	37
2.7.1 International NGOs	37
2.7.2 National NGOs (development)	38
2.8 Academic & research institutions	40
2.9 Institutions working in the Nile	41
2.9.1 National research institutions	41
2.9.2 National research institutes	41
2.9.3 Regional research NGOs	43
2.9.4 Other research institutions	44
2.9.5 Dual institutions	45
3.0 Network organizations & associations	49
3.1 Partnerships/networks	49
3.2 Research partnerships/networks	50
3.3 International research institutions	51
4.0 Available databases & bibliography pertinent to the Nile River Basin	52
4.1 Bibliography on the Nile research	53

Annexes	54
Annex 1 – Overview of project in the Nile River Basin initiative	54
1. Summary of the SVP project portfolio	55
2. ENSAP projects portfolio	56
3. ELSAP project portfolio	57
Annex 2: Climate change related programmes, initiatives & projects at the national level	58
Annex 3: Inventory of academic & research institutions working in the Nile River Basin	65
Annex 4: Programs & projects of institutions working in the Nile River Basin	67
Table 1: ASARECA-SWMnet ongoing projects	67
Table 2: IFPRI ongoing programs	67
Table 3: ILRI ongoing projects	68
Table 4: IWMI-NBEA projects	68
Table 5: WorldFish Center ongoing programs	69
Table 6: FAO Nile ongoing projects	69
Table 7: IAEA ongoing projects	70
Annex 5: National water-related research institutions in Nile riparian countries	70
Annex 6: Research topic pertinent to NBI projects	71

Acknowledgements

The support provided by UNEP, NBI and various partners towards the preparation of this document is gratefully acknowledged. Special thanks go to Ms. Wanjiru Gathira (consultant) who consolidated this document and finally the financial support from the government of Sweden is highly appreciated.

Acronyms & abbreviations

ADB	African Development Bank
AMCEN	African Ministerial Council on Environment
AMCOW	African Ministerial Council on Water
ALTERRA	Is part of the Wageningen University and Research Center concern
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ATP	Applied Training Project
AU	African Union
AWF	African Water Facility
AWM	Agricultural Water Management
BMZ	German Federal Ministry for Economic Cooperation and Development
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CCD	Convention to Combat Desertification
CBSI	Confidence Building and Stakeholder Involvement
CC DARE	Climate Change and Development – Adapting by Reducing Vulnerability
CCI	Country Coordinating Institution
CFA	Cooperation Framework Agreement
CGIAR	Consultative Group of International Agricultural Research
CIDA	Canadian International Development Assistance
COMESA	Common Market for Eastern and Southern Africa
CPWF	Challenge Program for Water and Food
DANIDA	Danish International Development Agency
DFID	Department for International Development
DGIS	Directorate General for International Cooperation of the Netherlands
DRC	Democratic Republic of Congo
EAC	East African Community
ECA	East Commission for Africa
EIA	Environmental Impact Assessment
ENCOM	Eastern Nile Council of Ministers
ENSAP	Eastern Nile Subsidiary Action Program
ENSAPT	Eastern Nile Subsidiary Action Program Team
ENTRO	Eastern Nile Technical Regional Office
FAO	Food and Agriculture Organization

FEWSNET	Flood Early Warning System Network
GEF	Global Environment Facility
GWP	Global Water Partnership
IAEA	International Atomic Energy Agency
ICCON	International Consortium for Cooperation on the Nile
ICP	International Cooperating Partners
ICPAC	IGAD Climate Prediction and Application Centre
ICRAF	World Agroforestry Center
IDEN	Integrated Development of Eastern Nile
IDRC	International Development Research Center
IGAD	Inter-governmental Authority on Development
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
ILRI-GIS	International Livestock Research Institute-Geographic Information System
IMAWESA	Improved Management of Agricultural Water in Eastern and Southern Africa
IPCC	Intergovernmental Panel on Climate Change
ITC	International Institute for Geo-Information Science and Earth Observation
IWMI	International Water Management Institute
IWMI-DSP	International Water Management Institute -
IWMI-NBEA	International Water Management Institute for Nile Basin and Eastern Africa
IWRM	Integrated Water Resources Management
KBO	Kagera Basin Organization
LDC	Least Developed Countries
LVBC	Lake Victoria Basin Commission
MEAs	Multilateral Environmental Agreements
NAPA	National Adaptation Programme of Action
NBI	Nile Basin Initiative
NBD	Nile Basin Discourse
NBDF	Nile Basin Discourse Forum
NBTF	Nile Basin Trust Fund
Nile-COM	Nile Council of Ministers of Water Affairs
NDF	National Discourse Forums

NELCOM	Nile Equatorial Lakes Subsidiary Action Program Council of Ministers
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
NELSAP-CU	Nile Equatorial Lakes Subsidiary Action Program – Coordination Unit
NELTAC	Nile Equatorial Lakes Technical Advisory Committee
NEPAD	New Partnership for Africa’s Development
NTEAP	Nile Transboundary Environmental Action Project
NGOs	Non-Governmental Organizations
NORAD	Norwegian Agency for Development Cooperation
Nile-TAC	Nile Technical Advisory Committee
NTEAP	Nile Transboundary Environmental Action Project
NBRP	Nile Basin Research Program
NBTF	Nile Basin Trust Fund
NELSAP-CU	Nile Equatorial Lakes Subsidiary Action Program-Coordination Unit
NRBAP	Nile River Basin Action Plan
OAU	Organization of African Unity
PJTC	Permanent Joint Technical Commission for Nile Waters
PRSP	Poverty Reduction Strategy Paper
RECs	Regional Economic Communities
SAPs	Subsidiary Action Programmes
SDBS	Social Economic Development and Benefit Sharing project
SVP	Shared Vision Program
TAC	Technical Advisory Committee
TECCONILE	Technical Cooperation for the Promotion of the Development and Environmental Protection of the Nile Basin
TWA	Transboundary Water Management
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nation’s Framework Convention on Climate Change
UN	United Nations
UP	Undugu Project



1.0 Introduction

Africa is one of the most vulnerable continents to climate change and climate variability, a situation aggravated by the interaction of 'multiple stresses', occurring at various levels, and low adaptive capacity. Climate change is also likely to aggravate water stress currently faced by some countries in the Nile River Basin, while others that do not currently experience water stress will become at a risk of water stress. According to empirical evidence, climate change in Africa is a fact that has a strong impact on Africa's water resources. Adaptation to this impact is of crucial importance for political and socio-economic stability and economic growth. There is a great need for adaptation strategies to be developed together with all partners on the basis of sub-regional future scenarios, including expected changes to the hydrological cycle and impact on agriculture and food security. Institutions at all levels must develop capacities to cope with climate change and extreme events. Transboundary cooperation on the impact of climate change (e.g., floods and droughts) through a better exchange of information and know-how, and early warning systems will have to increase significantly. Moreover, the effects of climate change will increase the importance of groundwater resources for future water and food security in the region.

As a shared river basin, the Nile is managed collaboratively by ten riparian states (Burundi, Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda). The impacts of climate change and other stresses on water resources and changes to flooding risks in the future will require adaptation on the part of governments, water resource management institutions, water users and a host of other stakeholders in the Nile Basin. Co-operative management of shared river systems among riparian states is an adaptation initiative that requires co-ordination at the regional level and co-operation between national governments. This collaboration provides a ready entry point for integrating climate change adaptation concerns

in the context of planning and management of water resources at the level of the entire river basin. Adaptation activities are clearly evident in all riparian states but with great diversity by the countries depending on their priorities and specific vulnerability. Currently, there are several adaptation-relevant initiatives, projects and programmes that have been completed, are ongoing or proposed in the Nile River Basin, which have contributed or are expected to contribute to building adaptation capacity in the region. However, due to inadequate information, coordination and collaboration between and among the various initiatives, there is a possibility of duplication of efforts or conflicts of interest that can lead to uneconomic use of scarce resources.

The United Nations Environment Programme (UNEP) is committed to assisting African countries adapt to the impacts of climate change by building resilience of vulnerable sectors and ecosystems in the region, hence its focus at a river basin level. In its climate change strategy, UNEP recognizes that African River Basins will be severely impacted by climate change and so the management of water resources needs to be taken into account. UNEP, in partnership with the Nile Basin Initiative (NBI), other relevant partners and the Nile Basin countries, is planning to undertake a project entitled “Adapting to Climate Change Induced Water Stress in the Nile River Basin.” The overall goal of this project is to build resilience of ecosystems and economies that are most vulnerable to climate change induced water stress in the Nile Basin countries by building key adaptive capacities and piloting adaptation in “hot spots” with technical, policy and financial interventions. To support UNEP to achieve this goal, UNEP commissioned a three month study to undertake a stock taking of adaptation activities in the Nile Basin, which includes an extensive scoping of institutions engaged in climate change adaptation activities. The desktop review was undertaken with the aim of identifying key stakeholders and partners at continental, sub-regional, basin, national and local levels, with a particular focus on a wide range of actors such as intergovernmental institutions, regional economic commissions, government agencies, development partners, non-states actors, and research institutions working in the pursuit for adaptation solutions in the Nile Basin.

Although there are numerous stakeholders, organizations and institutions working on and in the Nile Basin with the potential to accelerate the realization of UNEP’s project, they remain relatively unknown. It is hoped that this profiling will enable UNEP, policy makers, politicians, practitioners and other interested parties in the region to understand the institutional landscape dynamics of climate change adaptation in the Nile Basin and to appreciate and use existing opportunities for networking and collaboration. Similarly, the mapping has identified

In its climate change strategy, UNEP recognizes that African River Basins will be severely impacted by climate change and so the management of water resources needs to be taken into account

stakeholders working on transboundary water issues in general and climate change adaptation in particular. Based on the stock-taking and the information gathered, the profiling will provide an up to date and comprehensive understanding of regional, national and local initiatives, projects, and programmes on adaptation, which can be used to inform the project, policy makers, politicians and practitioners on gathering further examples of good practice as regards past ecosystem based adaptation activities in the basin and support them in effective decision-making.

For purposes of this desktop review, the term adaptation is used here in the sense used by the IPCC, where adaptation describes “changes in processes, practices and structures to moderate potential damages or to benefit from opportunities associated with climate change¹ and adaptive capacity refers to “the potential, or ability of a system to adapt to climate change stimuli or their effects or impacts”.² More specifically, however, ‘adaptation activities’ were categorized in three broad areas of work as adopted from the African Ministerial Council on Environment’s (AMCEN) Comprehensive Framework of African Climate Change Programmes³ as follows:

1. Disaster risk reduction and risk management: including early warning, preparedness, emergency response and post-disaster recovery;
2. Sectoral planning and implementation adaptation: adaptation in key sectors including water, agriculture, coastal zones, health, infrastructure, biodiversity and ecosystems,

¹Smit & Pilifosova, 2001, p.879

²Smit & Pilifosova, 2001, p.894

³This definition was obtained from AMCEN’s Comprehensive Framework of African Climate Change Programmes, pg 21

⁴A Preliminary Stocktaking: Organizations and Projects focused on Climate Change Adaptation in Africa: http://www.unep.org/roa/amcen/docs/AMCEN_Events/climate-change/UNEPAfricaStocktaking.pdf

⁵Institutional Mapping for Climate Change Adaptation in Eastern Africa, Industrial Ecology Institute: http://www.idrc.ca/uploads/user-S/12472192231Institutional_Mapping_for_Climate_Change_Adaptation_in_Eastern_Africa.pdf

⁶Mohamed, Y.A.; Loulseged, M. 2008. *The Nile Basin Water Resources: Overview of key research questions pertinent to the Nile Basin Initiative*. Colombo, Sri Lanka: International Water Management Institute. 34p. (IWMI Working Paper 127)

⁷Resources on Aid and Climate Change Adaptation in Africa: http://ccaps.robertstrausscenter.org/system/research_items/pdfs/26/original.pdf?128223970

forests, energy, urban management and tourism, while taking into account cross-sectoral implications;

3. Building economic and social resilience through the diversification of economies to reduce dependence on climate-sensitive sectors, including through the use of indigenous knowledge and practices and the strengthening of community organizations.

As per the Terms of Reference, the main research methodology employed included web searches and

literature reviews identified on the internet. This report builds on existing stock-taking exercises undertaken by UNEP⁴, IDRC-CCAA⁵, IWMI⁶, DFID⁷ and others. This mapping does not, however, constitute an exhaustive list of stakeholders and their attendant activities as it may lack organizations and institutions that work in the area of climate change adaptation but have been excluded because they do not have a webpage or they do not regularly update their web page. That said, this desktop review has endeavored to include as many partners and stakeholders as possible.

2.0 Literature Review of Stakeholders engaged in climate change adaptation in the Nile River Basin

Cooperation over internationally shared water resources, such as the Nile Basin, can occur through a number of different formal or informal mechanisms. For purposes of this desktop review, formal mechanisms include international conventions, bilateral or multilateral treaties or agreements involving some or all riparian states, a joint river management institution and joint projects. Informal mechanisms can include knowledge or data sharing initiatives. Formal institutions involved in cooperation in African river basins include the African Union (AU); New Partnership for Africa's Development (NEPAD), the African Ministerial Council on Water (AMCOW); the African Ministerial Council on the Environment, and also the UN Economic Commission for Africa (ECA). There are a number of important regional institutions such as the East African Community (EAC) that have a remit that includes transboundary resource management amongst other goals of political, economic and environmental cooperation and regional integration as well as the Common Market for Eastern and Southern Africa (COMESA) and Inter-governmental Authority on Development (IGAD).⁸ All these institutions are working on various aspects of climate change in the Nile Basin region.

2.1 Institutional profiles

This section presents profiles of institutions and organizations identified in the stakeholder mapping exercise. As mentioned previously, their listing here does not in any way exhaust other organizations working on relevant and related climate change adaptation activities in the Nile riparian countries. The organizations are presented in their respective categories namely: intergovernmental organisations,

regional economic commissions, the Nile Basin Initiatives, ministries/Parastatals, development partners, non-state actors, research institutes, regional research NGOs, national research institutes, research partnerships and networks, universities and academic institutions, and dual institutions.

2.2 Continental level

A brief summary of institutions at the continental level is provided below:

2.2.1 African Union (AU)

The AU Commission has been involved in federating river and Lake Basin authorities under the aegis of the African Network of Basin Organisations (ANBO). It has developed policy and institutional framework guidelines with regard to cooperation for sustainable management of transboundary water basins. The Guidelines for the Establishment of Cooperative Framework Agreement for the Integrated Management of Transboundary Basins have been developed and disseminated to member states of the AU.⁹ The 2007 AU Summit adopted a decision on climate change which resulted in the development of the Climate for Development in Africa Programme (ClimDevAfrica) as a mitigation strategy to minimize the impact of climate change.¹⁰ In July 2009, the AU established the Conference of African Heads of State and Government on Climate Change (CAHOSCC),

⁸Wirkus & Böge, 2006

⁹Konare, Statement by the chairperson of the Commission of the African Union on the Occasion of the 6th Anniversary of Africa Environment Day

¹⁰Ibid

which represented Africa in Copenhagen (CoP 15). CAHOSCC was empowered to negotiate AU's common position on climate change on behalf of all member states and was mandated to ensure that resource flows to Africa were not reduced.

2.2.2 New Partnership for Africa's Development (NEPAD)

NEPAD is a programme of the African Union created by Africans, for Africans and implemented by Africans. Its goals are: to promote accelerated growth and sustainable development, to eradicate widespread and severe poverty. The establishment of the New Partnership for Africa's Development (NEPAD) provided new impetus for the AU's water agenda. The AU Water Resources Planning and Management in the Nile River Basin project is funded by the EU and seeks to expand studies in transboundary water resources on African basins (including the Nile Basin), aquifers and national and regional water security.¹¹ NEPAD under the auspices of the AU has developed an African Action Plan (2010–2015) entitled "Advancing Regional and Continental Integration in Africa". A programme on climate change has been developed as part of the NEPAD Environment Initiative. This climate change programme aims at supporting African countries to meet their commitments and priorities associated with the implementation of the UNFCCC and its Kyoto Protocol (UNEP et al., 2003). African countries are being assisted to achieve the MDGs through the programme on Climate for Development in Africa (ClimDev). ClimDev is an integrated, multi-partner programme addressing climate observations, climate services, climate risk management, and climate policy needs in Africa. Among the principal partners are Global Climate Observing System (GCOS), AU Commission, ECA, AfDB and the World Meteorological Organization (WMO).¹²

2.2.3 The African Ministerial Council on Water (AMCOW)

The African Ministerial Council on Water (AMCOW) was formally launched in April 2002 in Abuja, Nigeria. It is a specialized technical committee of the

African Union that promotes cooperation on water and sanitation and is involved in strengthening relations within and between Regional Economic Commissions (RECs) and River and Lake Basin Organizations (RLBOs) in order to implement the AU Sirte Declaration on Agriculture and Water.¹³ AMCOW and the Africa Water Task Force were established to enhance cooperation and coordination and promote the development and implementation of coherent policies and strategies for water resources management. The African Water Vision 2025, written in 2000, provides the long term framework for water development in Africa. Among the relevant targets that the Vision sets for sustainable development and management of water resources in the Nile Basin is the one for "shared management of international water basins to stimulate efficient mutual regional economic development; and ensuring adequate water for life supporting ecosystems."¹⁴

The African Water Vision 2025, written in 2000, provides the long term framework for water development in Africa

The African Water Facility (AWF) is an initiative led by AMCOW to mobilize and apply resources for the financing of water infrastructure and water investment facilitating activities in Africa, approved three small capital investment pilot projects in 2006 to contribute to the MDGs, as well as eleven other projects related to programme/project preparation and improving the enabling of Integrated Water Resources Management environment.¹⁵ A Short-Term Action Plan (STAP) was prepared under the auspices of NEPAD. The objectives of STAP include strengthening the enabling environment for effective cooperative management and development of transboundary water resources, and initiating the implementation of prioritized programmes. The implementation of STAP was focused on seven river basins, including the Nile Basin in Eastern Africa.¹⁶

¹¹International participation to manage Africa's water, *Engineering News*, 8 June 2007, available at <http://www.engineeringnews.co.za>, accessed 28 August 2009.

¹²Source:http://www.uneca.org/eca_resources/Publications/books/sdra/SDRAfull.pdf, pg 87

¹³O Brown, and A Crawford 2008, Climate change: A new threat to stability in West Africa? *Evidence from Ghana and Burkina Faso*, *African Security Review* 17(3), 39–57.

¹⁴UN Water Africa, 2006

¹⁵AMCOW, 2007

¹⁶Source:http://www.afdb.org/portal/page?_pageid=473,969995&_dad=portal&_schema=PORTAL

2.2.4 The African Ministerial Conference on the Environment (AMCEN)

AMCEN was established in Cairo, Egypt in 1985 following the adoption of the Cairo Programme for African Cooperation. AMCEN is a specialized technical committee of the African Union, which has facilitated the broadening of the political and public policy debate regarding Africa's environmental priorities and concerns. As the permanent forum of Africa's environment ministers, AMCEN aims to strengthen cooperation between African governments on economic, technical and scientific activities in order to halt the degradation of Africa's environment. At their last annual meeting held in Addis Ababa from 31 March to 2 April 2008, AMCEM committed to "effectively integrate and implement climate change adaptation and mitigation strategies into ... national and regional development frameworks". During its twelfth session held in Johannesburg in June 2008, AMCEN focused its attention on climate change. AMCEN's work on climate change in Africa provides a platform to deliberate and agree on a shared vision and common position for Africa to combat climate change and achieve sustainable development in the continent.

2.2.5 The joint International Development Research Centre (IDRC)

IDRC and DFID programme on Climate Change Adaptation in Africa (CCAA) is assisting many African countries to build their capacity to adapt to climate change in ways that benefit the most vulnerable. Through both research and capacity building, CCAA aims to establish a self-sustained skilled body of expertise in Africa to enhance the ability of African countries to adapt to climate change. The Nairobi Framework has been launched and is assisting developing countries, particularly those in sub-Saharan Africa to improve their level of participation in the CDM. UNDP, UNEP, World Bank Group, AfDB, and the UNFCCC Secretariat initiated this Framework, which was announced by the UN Secretary General at the UNFCCC COP-12 and Kyoto COP/MOP-2, in Nairobi, Kenya, November 2006. Capacity building for monitoring, prediction and timely early warning in the region is being supported by the WMO-funded Drought Monitoring Centre (DMC) located in Nairobi, Kenya and sub-centers in Niamey, Niger and Harare, Zimbabwe (UNEP, 2005).¹⁷

2.2.6 Pan African Parliament

In February 2009, African Parliamentarians from the Republics of Chad, Egypt, Ghana, Kenya, Madagascar, Namibia, Senegal, Tanzania, Uganda, Zambia and

The Action Plan called on various stakeholders, including Regional Economic Blocs, Pan African Parliament & UNISDR to work together in developing an international legal framework to secure the synergy between Disaster Risk Reduction & Climate Change Adaptation

the East African Legislative Assembly, met at the UNISDR Consultative Meeting for Parliamentarians in Nairobi, Kenya.¹⁸ The meeting was a follow up to the Parliamentarian meetings in Paris and Manila to discuss Disaster Risk Reduction as a tool for Climate Change Adaptation. During that meeting, the Parliamentarians came up with the Nairobi Action Plan for African Parliamentarians on Disaster Risk Reduction and Climate Change Adaptation. The Parliamentarians committed to, among other things, use regional bodies to advance the agenda of climate change and Disaster Risk Reduction; develop relevant legislation in order to strengthen the capacity for African disaster management and to provide an enabling environment for Climate Change Adaptation; mainstream Disaster Risk Reduction and Climate Change Adaptation programmes in all policy, planning and development programmes with emphasis on public facilities (schools, bridges and hospitals); and promote an enabling environment to establish cooperative and mutually beneficial relationships between Disaster Risk Reduction and Climate Change Adaptation at national, regional and international levels. The Action Plan called on various stakeholders, including Regional Economic Blocs, Pan African Parliament and UNISDR to work together in developing an international legal framework to secure the synergy between Disaster Risk Reduction and Climate Change Adaptation; Governments, parliaments and civil society to use all structures and resources, to make Disaster Risk Reduction a tool for Climate Change Adaptation and to strengthen their advocacy; and Governments to create specific budget lines to bridging the link between the disaster risk reduction and climate change adaptation and facilitate the integration of Disaster Risk Reduction into poverty reduction and sustainable development.

¹⁷Source: http://www.uneca.org/eca_resources/Publications/books/sdra/SDRAfull.pdf

¹⁸Source: <http://www.capwip.org/NAIROBI%20ACTION%20%20PLAN%20DRR%20CCA.pdf>



2.3 Sub-regional level

This section presents profiles of institutions at the sub-regional level. In 2008, the AU Summit on Water and Sanitation requested Regional Economic Communities (RECs) and River and Lake Basin Organizations (RLBOs) to initiate regional dialogues on climate change and its impact on the water sector in order to design appropriate adaptation measures. RECs have been very active in addressing climate change issues. It is expected that improved regional cooperation and policy coordination will mitigate hydro-political conflicts, and lead to the internalization of shared norms and the creation of regional interests.

A brief summary of institutions at the sub-regional level is provided below:

2.3.1 Intergovernmental Authority on Development (IGAD)

The Intergovernmental Authority on Development (IGAD) is a seven-country regional development organization in East Africa (Djibouti, Ethiopia,

Eritrea, Kenya, Somalia, Sudan and Uganda). The Nile system is one of five water catchments areas found within the IGAD region. A significant portion of water and environment aspects are handled by the Directorate of Agriculture and Environment in the IGAD Secretariat¹⁹. In April 2007, IGAD developed an Environment and Natural Resources Strategy. The primary objective of the IGAD Environment and Natural Resources Strategy is to enhance the integration of environmental and natural resources concerns into development frameworks for environmentally sustainable economic development in the region.²⁰ Issues of climate change in the IGAD region are handled by the IGAD Climate Prediction and Application Centre (ICPAC).²¹ Related elements come under the Directorate of Agriculture and Environment of the IGAD Secretariat.²² ICPAC is an IGAD specialized organ on matters of climate change and prediction, not only in IGAD countries, but also in Burundi, Rwanda and Tanzania. It started as a drought monitoring centre, with its headquarters in Nairobi (DMCN) and had a sub-centre in Harare (Drought Monitoring Centre Harare, DMCH) in response to devastating weather-related disasters.

¹⁹Other broad programmatic areas are economic cooperation and social development; and peace and security.

²⁰Source: http://igad.int/attachments/159_IGAD_ENR_Strategy.pdf

²¹For more on the institution, visit IGAD Climate Prediction and Applications Centre, available at www.icpac.net

²²Other two broad programmatic areas are economic cooperation and social development; and peace and security.

In October 2003, the IGAD Heads of State and Government adopted DMCN as a specialized IGAD institution at their 10th summit in Kampala, Uganda. A protocol integrating the institution fully into IGAD was signed on 13 April 2007. IGAD remains a key institution in its region on issues of climate change and transboundary water resources. For instance, the IGAD draft Peace and Security Strategy (2009) fully acknowledges the current and potential conflicts on transboundary water resources. The establishment of ICPAC as a specialized institution on matters of climate change is a testimony to this. The IGAD OSS Programme could have great input in gathering data and information on the natural features, flow and physical characteristics of the rivers under study. Making such data and information readily available to member states would help them greatly in initiating dialogue and discussion, on pressing issues such as flood control and weather forecasting.

2.3.2 East African Community (EAC)

The treaty establishing the EAC obliges the three partner countries (Kenya, Tanzania and Uganda) to coordinate and harmonize their policies on sustainable use of the Lake Victoria Basin and to negotiate as a bloc on issues relating to the basin. The treaty also commits the states to increase investment in the field of energy, transport, communication, forestry, tourism, agriculture, fisheries, livestock, mining and other areas of social economic development to stimulate development and eradicate poverty in the basin. Achieving these objectives requires a massive use of the waters of the Lake and its rivers, which has direct implications for relations with Egypt. The policy position is further elaborated by the 'Protocol for Sustainable Development of the Lake Victoria Basin' of 29 November 2003, recognized Lake Victoria Basin as 'an economic growth zone' which is connected to the larger Nile River Basin. 'In view of the relationship between the Lake Victoria Basin and the Nile River Basin,' the Protocol stipulates, 'the partner (EAC) states shall cooperate with other interested parties, regional or international bodies and programmes and in so doing, partner states shall negotiate as a bloc'. Climate change has emerged as a major threat to sustainable development and has been recognized as a regional challenge in East Africa. The East Africa Community secretariat has therefore set up a regional advisory group comprised of representatives of partner-states to support

consolidation of a regional position on climate change and develop over-see the development of a Climate Change Master Plan for East Africa.

2.3.2 Common Market for Eastern & Southern Africa (COMESA)

The Secretariat for the Common Market for East and Southern Africa (COMESA) has developed a comprehensive approach and program initiative to address climate change issues. COMESA has put in place a comprehensive climate change initiative.²³ The goal of the Initiative is to "achieve economic prosperity and climate change protection," with an overall objective of addressing climate change and its impacts in a manner that builds economic and social resilience for present and future generations. The Initiative has several specific objectives: consolidate a shared vision for Africa on climate change and a common and informed voice for the continent in the Post Kyoto Climate Change negotiations and beyond; foster regional and national cooperation to address climate change and its impacts; promote integration of climate change considerations into regional, national policies, sectoral planning and development and budgeting; enhance human and institutional capacities of COMESA Secretariat, specialized institutions and Member States to effectively address the challenges of climate change; mobilize African and international scientific and technical communities to increase knowledge base and its management to support informed decision making processes; promote and enhance collaboration, synergy, partnerships and effective participation of Governments, business community, civil society and other stakeholders in climate change matters; and provide a framework for the establishment of an African BioCarbon Facility that combines market-based offsets, public and private funds.

2.3.3 United Nations Economic Commission for Africa (UNECA)

The Economic Commission for Africa (ECA) was established by the Economic and Social Council (ECOSOC) of the United Nations (UN) as one of the UN's five regional commissions. ECA's mandate is to promote the economic and social development of its member States, foster intra-regional integration, and promote international cooperation for Africa's development. In April 2006, ECA co-organized,

²³Source: http://www.unep.org/roa/amcen/Projects_Programme/climate_change/PreCop15/Proceedings/Regional%20frameworks/COMESA-POSITION-ON-CLIMATE-CHANGE.pdf

in partnership with the Global Climate Observing System (GCOS/WMO), a regional workshop on climate information for development in Africa. This Workshop resulted in a report that presented a strategy and implementation program for a ten-year major initiative, ClimDev-Africa, with a view to guiding the effective integration of climate information and services into development planning and ensure the mainstreaming of climate considerations in achieving the MDGs. ClimDev-Africa sets out to improve policies, climate risk management practices, climate services, and climate observations, data management and infrastructure across the continent in key development areas such as agriculture and food security, water resources, energy and health. The African Climate Policy Center (ACPC) established under the Climate Information for Development in Africa Programme (ClimDev-Africa), is a joint initiative of the African Union Commission (AUC), UN-ECA and the African Development Bank (AfDB). The programme was established in response to the urgent challenge that climate variability and change pose to Africa's sustainable development objectives, and has a mandate to develop region-wide systems for monitoring, predicting and responding to climate events.²⁴

The Commission is focusing on harmonization of policies & laws on the management of the environment in the Lake & its catchment area

2.3.4 Lake Victoria Basin Commission (LVBC)

The LVBC serves as an overall institution for the management of issues related to the Lake Victoria Basin. The East African Community (EAC) established the Lake Victoria Development Programme in 2001 (which was taken over by LVBC), 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. EAC had also designated Lake Victoria and its Basin as an "area of common economic interest" and a "regional economic growth zone" to be developed jointly by the Partner States (Kenya, Uganda and Tanzania). This programme was the driving force for turning the Lake Victoria Basin

into a real economic growth zone. The Commission is focusing on harmonization of policies and laws on the management of the environment in the Lake and its catchment area; continuation of the environmental management of the Lake, including control and eradication of the water hyacinth; management and conservation of aquatic resources, including fisheries; economic activities in the development of fishing, industry, agriculture and tourism; and development of infrastructure, including revamping the transport system on and around the Lake.

2.4 Framework for transboundary management of the Nile River Basin

This section presents a brief overview of the history of bilateral and regional cooperation in the Nile Basin, as well as the current legal framework, and institutional arrangements of the Nile Basin Initiative (NBI). A brief summary of the NBI is provided below while additional information on NBI projects is presented in Annex 1:

2.4.1 Evolution of cooperation in the Nile River Basin

Cooperation among some of the Nile Basin countries begun in the form of bilateral agreements at the beginning of the twentieth century, while regional cooperation commenced in 1967 by the formation of the Hydro-meteorological survey of the catchments of Lakes Victoria, Kyoga, and Albert (the Hydromet Project).

2.4.2 Bilateral cooperation

The following is a brief account of the Nile Water Agreements in chronological order governing the uses and the sharing of Nile waters:

1. Protocol between Britain and Italy in 1891;
2. Treaty between Britain and Ethiopia in 1902;
3. Agreement between Britain and Congo in 1906 (Modifying the Agreement of Brussels signed in 1894);
4. Agreement between Britain, Italy and Ethiopia in 1906;
5. Exchange of notes between Britain and Italy in 1925;
6. Nile water agreement in 1929;
7. Convention between Britain and Belgium in 1934;
8. Exchange of memoranda between Egypt and

²⁴Source: <http://climate-l.org/news/uneca%E2%80%99s-african-climate-policy-center-gets-support-from-sweden/>

- Great Britain (on behalf of Uganda) in 1949 – 1953;
9. Egypt and the Sudan Nile Agreement in 1959;
 10. Exchange of memoranda between Egypt and Uganda in 1991;
 11. Framework for General Cooperation between Egypt and Ethiopia in 1993; and
 12. Agreement between Egypt and Uganda for controlling water hyacinth in 1998.

In the framework of interest, Egypt & Uganda agreed to reinforce and enhance the ties of friendship & fraternity of the Nile Riparian & properly manage the Upper Nile water catchments

Some examples of bilateral cooperation in the Nile Basin are outlined below:

The Permanent Joint Technical Commission for Nile Waters (PJTC): In November 1959, Sudan and Egypt signed an Agreement for the utilization of the shared waters of the Nile River. The 1959 Agreement was meant to regulate the River waters and control its flow into the Mediterranean Sea. The Agreement took into consideration the rights of other riparian countries in the Nile waters. Technical cooperation in various fields is performed under the umbrella of the PJTC. One of the important issues is to increase the Nile yield through the utilization of lost waters. The PJTC also cooperates with various International and Regional Organizations like WWC, IWRA, WMO, and International Hydrological Program and participate in most regional and international conferences and workshops dealing with international waters.

Agreement between Egypt and Uganda for controlling the water hyacinth: In the framework of interest, Egypt and Uganda agreed to reinforce and enhance the ties of friendship and fraternity of the Nile Riparian and properly manage the Upper Nile water catchments. The two countries agreed in Cairo in March 1998 that Egypt makes

available an amount of 13.9 million USD to support Uganda on a grant basis. The grant was allocated towards combating and controlling aquatic weeds, especially the water hyacinth in the outlets and inlets of lakes Victoria, Kyoga, Albert and the Nile, through purchase and delivery of suitable equipment and machinery to sites of concern.

Egypt's grant to Kenya to excavate groundwater wells in arid and semi-arid zones: In the framework of bilateral cooperation between Egypt and Kenya, a grant of 4.2 million USD was made available to Kenya in 1996 for the purpose of excavating a hundred groundwater wells in different arid and semi-arid regions in Kenya. An Egyptian company, RIGWA, accomplished the work by 2001. Due to the great success of the first phase of the project, an extension to implement another phase of the project was proposed.

The international post-graduate diploma on shared water resources: The shared water resources diploma is held at the department of irrigation and hydraulics of the Faculty of Engineering in the Cairo University. The main objective of the Diploma is to train water resources professionals in the Nile Basin countries in the development and management of international rivers and their basins. The diploma covers the relevant engineering, political, geographical, socio-economic, and environmental aspects of the subject. Other Egyptian institutions also carry out training courses for trainees from the Nile Basin countries.

2.4.3 Regional cooperation in the Nile River Basin
The Nile River has been the subject of numerous treaties, many of which date back to the colonial era. Today, the distribution of Nile water is governed by the Nile Waters Treaty - a bilateral agreement between Egypt and Sudan that was signed in November 1959.²⁵ More recently, countries of the Nile Basin have been engaged in regional cooperative activities over the past thirty years as indicated below:

1. **The 1967 HYDROMET Project (HP)²⁶:** In 1967, five of the riparian countries – Egypt, Kenya, Sudan, Tanzania, and Uganda - signed a UNDP funded Hydro-meteorological Survey agreement to study the water balance of the catchments of Lakes Victoria, Kyoga and Albert,

²⁵The Nile Waters Treaty makes no explicit mention of climate change. Efforts to integrate climate change into long-term planning and management of the Nile Basin have been limited, although recent efforts suggest this may be slowly changing. Water allocations are fixed, which raises concerns about the ability to adapt to changing runoff patterns.

²⁶Source: http://pdfserve.informaworld.com/318363__782946061.pdf

which has a direct bearing on the economic development of all the riparian countries. Since the potential control and regulation of the Nile has a direct bearing on the economic development of all the riparian countries, it was evident to these countries that a high priority must be placed on the collection of hydrometeorological data and the investigation of the meteorology, hydrology and hydraulics of the Upper Nile Basin.²⁷ Participating countries and governments of Rwanda, Burundi and the Democratic Republic of Congo requested further UN Cooperation to extend the project area to include the portion of the Lake Victoria Catchment within Rwanda and Burundi, and Lake Albert in Congo. By the end of 1971 the government of Ethiopia had joined the project in an observer status.

75% of Rwanda & 52% of Burundi are within the Kagera River catchment

2) **The Kagera Basin Organization (KBO):**

Four countries that share the Kagera River Basin (KRB) – Burundi, Rwanda, Tanzania and Uganda – established the Kagera Basin Organization (KBO) in 1977 to manage resources in the Kagera Basin. It is the principal contributor of water to Lake Victoria and is regarded by many as the source of the White Nile. 75% of Rwanda and 52% of Burundi are within the Kagera River catchment. The establishment of the Kagera Basin Organization (KBO) in 1977 under an initiative by the UNDP aimed to manage resources in the Kagera basin. The Heads of State for Burundi, Rwanda and Tanzania that same year signed an agreement and Uganda joined in 1981. A number of projects were prepared by the KBO and presented at a Donor Conference held in Paris in 1979. Studies were carried out in 1980 and the results published in a UNDP report (1982), which highlighted agriculture, energy, transport, environment, industry and health sectors. However, the KBO is presently unable to initiate projects due to a lack of funding from member countries.

3) **The 1983 Undugu Project (UP):** The predecessor of the African Union, the Organization of African Unity (OAU), created Undugu (Swahili for brother) in 1983 to forge cooperation in areas of infrastructure, environmental cooperation, culture and trade. The Undugu project brought together Burundi, the Central African Republic, the Democratic Republic of Congo, Egypt, Rwanda, Sudan and Uganda, with Ethiopia, Kenya and Tanzania as observers.

4) **The 1992 TECCONILE Project:** Ministers responsible for water affairs in the Nile Basin (Democratic Republic of the Congo, Egypt, Rwanda, Sudan, Tanzania, and Uganda) met in Kampala, Uganda in December 1992 and agreed that future co-operation on water resource matters should be pursued for a transitional period under the name “Technical Co-operation for the Promotion of the Development and Environmental Protection of the Nile Basin” (TECCONILE). An Agreement was signed by Ministers from six countries (Egypt, Rwanda, Sudan, Tanzania, Uganda, and the now Democratic Republic of Congo). The other four countries (Burundi, Kenya, Eritrea and Ethiopia) participated as observers. A Council of Ministers of water affairs COM was formed with a technical committee acting as the steering committee for this framework. Within this framework, in 1995, the Nile River Basin Action Plan (NRBAP) was prepared, which included 22 technical assistance and capacity building projects.

5) **Lake Victoria Environmental Management Project, 1996:** Each of the three riparian Governments of Uganda, Tanzania, and Kenya prepared a National Environmental Action Plan (NEAP). All three NEAPS acknowledged that Lake Victoria demanded urgent attention through regional cooperation. The NEAPs focused on problems such as water pollution, biodiversity loss, land degradation, deforestation, and damage to wetlands, all central concerns for the lake and its catchments. Discussions to broaden regional environmental cooperation covering the Lake Victoria Basin started in late 1992. In May 1994 the three Governments decided to enter into an agreement jointly to prepare

²⁷Source: http://rosenberg.ucanr.org/documents/Lessons_Learnt_from_Cooperation_in_the_Nile_Basin.doc

²⁸Source: http://www.pacinst.org/reports/transboundary_waters/transboundary_water_and_climate_report.pdf

²⁹The NBI is a transitional institutional arrangement until a formal Agreement on the Nile River Basin Cooperative Framework with a permanent basin-wide institution is established.



and implement a Lake Victoria Environmental Management Program. The program objectives are to: (a) maximize the sustainable benefits to riparian communities from using resources within the basin to generate food, employment and income, supply safe water, and sustain a disease free environment; and (b) conserve biodiversity and genetic resources for the benefit of the global community. In order to address the tradeoffs among these objectives, which cut across national boundaries, a further project objective is to harmonize national management programs in order to achieve, to the maximum extent possible, the reversal of increasing environmental degradation.

2.4.4 Current legal framework for managing the Nile River Basin²⁸

In 1998, recognizing that cooperative development held the best prospects of bringing mutual benefits to the region, the Nile riparian countries - Burundi,

Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, the Sudan, Tanzania and Uganda, (except Eritrea) - joined in a dialogue to design a transitional institutional mechanism until a permanent Cooperative Framework is in place. They jointly created an inclusive regional partnership, to facilitate the common pursuit of the sustainable development and management of Nile waters. The transitional mechanism, launched in 1999, is comprised of the Nile-COM, a Technical Advisory Committee (Nile-TAC), and a Secretariat (Nile-SEC) based in Kampala, Uganda. The overall process is known as the Nile Basin Initiative (NBI).²⁹ Negotiations over a cooperative framework agreement (CFA) were concluded in April 2010. Seven of the nine countries (except Egypt, Sudan and xxx) that share the Nile Basin signed the CFA and agreed to form a permanent negotiating body to resolve questions of resource-sharing for the world's longest river. However, there are still disagreements among the states.



2.4.5 Institutional arrangements

The operational structure consists of the Nile Council of Ministers of Water Affairs (Nile-COM), a Technical Advisory Committee and a regional secretariat. The Council of Ministers serves as the decision making organ and provides policy guidance with respect to Nile management. Nile-COM is supported by a Technical Advisory Committee (Nile-TAC), which consists of two representatives from the Ministries responsible for water resources management from each country. The chairmanship of both the Nile-COM and Nile-TAC rotates annually; their ordinary meeting takes place once a year. Continuous and effective administration of the NBI program is carried out by the NBI Secretariat, which is located in Entebbe. The Secretariat is headed by an

Executive Director, who oversees an office of about 30 staff members who implement the coordination of the basin-wide programs³⁰, an NBI Resource Center, communication and public relations for the entire Nile Basin Initiative as well as the financial management and administration of the core programs. The Executive Director is appointed for a term of two years; the right to appointment rotates among the member countries in alphabetical order. A policy of regional balance is observed by the institution for the appointment of professional staff of the Secretariat and NBI projects in order to ensure equitable representation of all Basin States.³¹

2.4.6 Climate change & the Nile River Basin

Efforts to integrate climate change into long-term planning and management of the Nile River Basin have been limited, although recent efforts suggest this may be slowly changing. The Nile Waters Treaty which dates back to 1959 makes no explicit mention of climate change. Water allocations are fixed, which raises concerns about the ability to adapt to changing runoff patterns. In recent years, the Nile Basin Initiative has supported research and analysis to better understand the vulnerability of the Basin to climate change and evaluate adaptation actions to reduce climate-related risks.³² A Round Table convened by the German Federal Government, the African Ministers' Council on Water (AMCOW), the World Bank, the Global Environment Facility (GEF) and the UN Development Programme (UNDP) found out that Transboundary Water Management (TWM) in Africa is a key issue in

Efforts to integrate climate change into long-term planning and management of the Nile River Basin have been limited, although recent efforts suggest this may be slowly changing

³⁰Projects implemented under the NBI umbrella employ more than 100 staff in the Basin.

³¹For detailed information and project documents see resources at <http://www.nilebasin.org>

³²Source: http://www.pacinst.org/reports/transboundary_waters/transboundary_water_and_climate_report.pdf

the adaptation to climate change. This is one of the five findings of the round table held in September at the Petersburg in Germany in 2007. In that meeting, it was agreed that intensified political dialogue and joint actions in the AMCOW-framework are needed on the effects of climate change and their implications for water management in Africa.

It was also agreed that AMCOW and regional institutions in TWM will develop capacities to better integrate information about climate change and climate variability into water resources policy, planning and management. The Nile Basin Council of Ministers endorsed a concept note for the development of a project to address climate change impacts and adaptation in the Nile basin and gave the Nile Basin Initiative Secretariat (Nile-SEC) the go ahead for full proposal development and mobilization of funds for the project. The objective of the initiative is to jointly assess vulnerability and address climate change related impacts and risks through appropriate alternatives and adaptation actions. Expected outcomes of the initiative include: understanding of climate change impacts on the Nile's bio-physical system using best available tools and models, identification and mitigation of climate change risks within investment and development projects, enhancement of the scientific and adaptive capacity at the level of the basin and individual riparian countries, and integration of long term aspects of climate change in decision making on the Nile.³³

2.4.7 Policy development & knowledge management

The shared vision guiding the NBI is "to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources". The Shared Vision Programme (SVP) works at the regional and national levels. In many of the Nile Basin countries, policies on water and environmental management and agricultural and hydropower plans have been developed in respective ministries, although cross-sector cooperation at the shared basin level is still at a developing stage. Broad access to and sharing of data and participatory decision-making are among the aims of NBI, which has established networks between various national and local actors in the region, including NGOs and other stakeholders.

The shared vision guiding the NBI is "to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources"

2.4.8 Capacity-building & awareness-raising

Capacity-building and awareness-raising is supported by the Nile Basin Society within the framework of the Confidence Building and the Stakeholder Involvement Program of the Nile Dialogue, which involves all progress stakeholders, including NGOs and civil society, in consultative processes. The participating NGOs are selected by local NGOs based on their experience and their capabilities to represent a group of NGOs. The Nile Basin Discourse (NBD) project was implemented to establish the basic governance structure for civil society organizations. A series of consultative workshops convened by the steering committee initiated the National Discourse Forums in most basin countries and achieved some progress towards developing plans of action. A discourse desk was established in Entebbe with a facilitator and was financially supported by the World Bank, the International Union for Conservation of Nature, and the Worldwide Fund for Nature.³⁴ The operation of these civil society forums was facilitated by short-term donor-funded projects.

A new institutional strengthening Project is being carried out from 2008 to 2011 to strengthen and harmonize NBI corporation management capabilities on issues such as administrative and financial systems, monitoring and evaluation, reporting, planning and resources mobilization. This activity aims to design appropriate NBI institutional and legal settings to operationalize the national focal points, to set up working arrangements with local institutions and to mainstream IWRM functions in NBI. Enhanced stakeholder involvement and improved communication between NGOs and civil society organizations through media networks is also a main target to be reached.

³³Source: http://www.nilebasin.org/index.php?option=com_content&task=view&id=95&Itemid=70

³⁴More information about the Discourse Desk is available at: http://www.nilebasinidcourse.net/structure_EN.php.

The NBI also provides a process to facilitate substantial investment in the Nile Basin to realize regional socio-economic development

2.4.9 Transboundary level interventions in the Nile River Basin

The NBI provides an agreed basin-wide framework to fight poverty and promote economic development in the region. The NBI also provides a process to facilitate substantial investment in the Nile Basin to realize regional socio-economic development. The Initiative is guided by a Shared Vision “to achieve the sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources.” The NBI represents a deep commitment by the Nile riparian countries to foster cooperation and sustainable development of the Nile River for the benefit of all. In order to realize its objectives, the riparian countries devised a Strategic Action Program (SAP) that promotes a Shared Vision Program (SVP) and two investment Subsidiary Action Programs (SAPs).

Shared Vision Program (SVP): The SVP was designed to build the institutional capacity, relationships and technical skills needed to support NBI’s investment programs. The Shared Vision Programs form the core of the NBI and it has seven thematic projects. An eighth project, SVP Coordination, will strengthen the capacity of the NBI to execute basin wide programs and ensure the effective oversight and coordination of the Program. The seven thematic projects are discussed below:

i) **The Nile Transboundary Environmental Action Project:** This project came into existence after the Nile basin Countries carried out a participatory Nile Basin Transboundary Environmental Analysis that identified various environmental concerns related to water resources.³⁵ The environmental concerns identified included: deforestation that had led to losses of biologically important habitats, high rates of soil erosion leading to sedimentation of rivers, lakes, and reservoirs; localized water pollution arising from agriculture, industry, mining and domestic effluent; proliferation of aquatic weeds, particularly water hyacinth and wetland land

reclamation.³⁶ Poverty and population growth were also singled out as causes of additional pressures on natural resources, compounded by a lack of awareness of land-water interactions and the functioning of critical ecosystems. The Transboundary Environmental Action Project, located in Khartoum, Sudan was implemented in 2004. To date, various stakeholders continue to participate in the project’s interventions. The project also provides training to develop skills in government ministries, NGOs and local communities in each country in areas such as environmental management and monitoring, water quality monitoring, and conservation of wetlands.³⁷ The project raises awareness of critical environmental issues by strengthening networks of environmental education practitioners; developing curriculum for primary, secondary and university students; and supports environmental awareness campaigns through nature clubs, schools, youth groups, scout troops, universities, churches and mosques.³⁸ Moreover, the project promotes information sharing on issues that affect the environment among all stakeholders in the Nile countries, including developing a decision-support system that is based on reliable and consistent environmental data from each country to enable better region-wide environmental planning and management.³⁹ Local NGOs and communities are funded by the project to promote community-based approaches to land and water conservation to reduce soil erosion, desertification, and pollution and to control invasive waterweeds. Through these activities, Nile basin governments, NGOs, researchers, educators, and private sector representatives are able to acquire integrated knowledge that can help them to work together both within their own countries and across borders.

ii) **Water Resources Planning and Management Project:** This project addresses problems of water management fragmentation within each Nile basin state, including weak human and institutional capacity to manage the Nile waters in an integrated manner, the uneven distribution of water professionals within the basin, as well as the inadequate interaction

³⁵World Bank, 2003b

³⁶ibid: 15

³⁷World Bank, 2003b, 2008

³⁸ibid

³⁹World Bank, 2003b, 2008

among water professionals in the Nile basin countries.⁴⁰ Stakeholders involved in this project include government agencies in water-related sectors, civil society, NGOs, university networks, professionals in the field, and the private sector. In order to address these problems, the project supports basin-wide dialogue on good practice in water policy formulation and implementation. To achieve sectoral integration as regards resource management in the Nile Basin States, the project is building skills in each country for effective formulation and implementation of successive national policies and strategies for IWRM as well as planning and management of multi-country projects. The project has established the Nile Basin Decision Support System (DSS) where NBI countries will be able to share data on river hydrology to better understand river system behavior, evaluate alternative development and management schemes.⁴¹ This system will facilitate knowledge integration which is important for making more informed decisions for sustainable water resource planning and management in the basin. The project aims to build a common technical foundation to facilitate integrated water resource planning and management from a basin wide perspective.

iii) **The Socio-economic Development and Benefit Sharing Project:** To address the complexity and variability of the river basin's hydrology as well as the differences in the economies of Nile Basin countries' the Social Economic Development and Benefit Sharing project (SDBS) aims at an integrated approach to water resources management, environmental conservation and regional development.⁴² This project is a fundamental building block for integrated natural resource management given that the project focuses on knowledge integration and economic integration for sustainable management of the basin. In that regard, the project is building a multidisciplinary network of professionals (stakeholders) from economic planning, research institutions, technical experts from public and private sectors, academics, and representatives from civic groups and NGOs from across the basin.⁴³ Creating a multidisciplinary network is a vital tool of solving complex environmental problems as it provides a broader platform to exchange views and solutions. Under this project, the multidisciplinary network of professionals is required to carry out joint research, explore alternative Nile development

scenarios; identify benefit-sharing schemes; foster information sharing and exchange; and enhance public awareness of the importance of water as a shared and precious resource.

Creating a multidisciplinary network is a vital tool of solving complex environmental problems as it provides a broader platform to exchange views and solutions

iv) **The Confidence-Building and Stakeholder Involvement project (CBSI):** This project was created to address issues of disputes, conflicts, political tension and lack of cooperation in the management of the Nile basin resources.⁴⁴ The CBSI project aims at building confidence, trust, collaborative relationships among everyone who has a stake in how water resources in their country are developed, allocated, and managed.⁴⁵ The project provides an important mechanism for constructive dialogue, planning and development. This mechanism can be the benchmark for hierarchical integration from local, national, regional and international levels, which is vital for the sustainable management of the Nile waters. The project also promotes broad-based stakeholder participation including dialogue, collective analysis, action, and monitoring for feedback and learning⁴⁶. The public information component of the CBSI project is geared towards increasing public awareness by providing accurate, timely and understandable information about the NBI and its programs to people across the basin in languages and formats they understand through a variety of culturally appropriate channels.⁴⁷ Such information dissemination creates a clear picture of the benefits of regional cooperation and integration among the inhabitants of the Nile Basin. With regard to collaboration among countries, the project has various programs that

⁴⁰World Bank, 2004b:2

⁴¹World Bank, 2004b:5-6

⁴²World Bank, 2004a:2

^{43,45,46} Ibid

⁴⁷World Bank, 2003c



encourage exchanges among parliamentarians, journalists, university professors, local leaders, including women leaders, schoolchildren, and university students. The project also has activities that focus on forums and networks geared to discuss issues of poverty reduction and development among others.⁴⁸ This aspect is an important component of knowledge integration where various people are facilitated to share their views, experiences with others and this creates a sense of ownership of the projects being run by the NBI

- v) **The Nile Basin Regional Power Trade Project:** This project is the first basin-wide effort to develop a regional power trading architecture for

⁴⁸,⁵⁰ Ibid

⁴⁹World Bank, 2005a

the Nile through the active participation of all basin countries. The project is responding to unreliable electricity in the Nile basin which has hindered economic growth and caused environmental degradation. The project has established a Nile Basin Power Forum where national power experts can exchange ideas on how to develop power supply facilities and ways of how to expand power trade in the Nile basin.⁴⁹ The creation of a regional electricity market is intended to play a key role in furthering cooperation among the basin states by providing sustainable environmentally friendly energy and ensuring that hydropower resources of the Nile Basin are developed and managed in an integrated and sustainable manner.⁵⁰ In the long run, the regional power trade project seeks to create far reaching benefits as regards water conservation, land protection, and reduced emission of greenhouse gases.

vi) **The Applied Training Project (ATP):** This project is working to build the capacity needed to promote integrated water resource management in the Nile basin through various components.⁵¹ The first component deals with training decision-makers and professionals in water resources management in the basin countries in aspects of water management policy at national level.⁵² The second component deals with offering post-graduate scholarships to applicants from the Nile basin countries to undertake both masters and doctoral training in water resource management. The ATP is geared towards building a cadre of water resources management specialists within each country in order to reduce barriers for sectoral integration in natural resource management. As part of the effort to promote interaction and knowledge integration among water professionals in the NBI countries, the third component of the project deals with establishing the Nile-Net, a network of training institutions that engages in collaborative research, joint problem-solving and staff exchanges⁵³. In the long-run, this project will lead to the introduction of common basin-wide guidelines and standards for IWRM principles.

vii) **The Efficient Use of Water for Agriculture Project:** Due to the great importance of agriculture in the Nile basin, this project aims at providing a sound conceptual and practical basis to increase the availability and efficient use of water for agricultural production. The project has created a framework that will enable stakeholders from the Nile Countries to work together to promote basin-wide cooperation and awareness, enhance understanding and build capacity on the common irrigation and water harvesting issues.⁵⁴ Understanding will be achieved through basin-wide consultations, workshops, and seminars that will create networks of key actors who will collectively work together on water harvesting, community managed irrigation, and public and private-managed irrigation.⁵⁵ This approach reflects knowledge integration where every stakeholder views are recognized as important for efficient use of water for agriculture.

In parallel with the Shared Vision programs, two Subsidiary Action Programs (NELSAP and ENSAP) have been set up as discussed below:

The Subsidiary Action Program (SAP): In parallel to the SVP, groups of countries initiated

To date, the Nile riparian states have formed two Subsidiary Action Programs—one on the Eastern Nile region & the other in the Equatorial Lakes region based on wide consultation at the political & technical levels

Subsidiary Action Programs (SAPs) to cooperatively identify and implement investment projects that confer mutual benefits at the sub-basin level, each involving two or more countries. Identified areas of cooperation include irrigation and water use in agriculture, hydropower development and power trade, watershed management, flood and drought management and sustainable management of lakes and wetlands. To date, the Nile riparian states have formed two Subsidiary Action Programs—one on the Eastern Nile region and the other in the Equatorial Lakes region based on wide consultation at the political and technical levels:

The Eastern Nile Subsidiary Action Program (ENSAP):⁵⁶ is an investment program by the Governments of Egypt, Ethiopia, and the Sudan under the umbrella of the Nile Basin Initiative (NBI). The primary objectives of ENSAP are to: (a) ensure efficient water management and optimal use of resources through equitable utilization and cause no significant harm; (b) ensure cooperation and joint action between the Eastern Nile countries seeking win-win gains; (c) target poverty eradication and promote economic integration; and (d) ensure that ENSAP results move from planning to action. Consequently, consensus was reached that the objective of a first ENSAP project referred to as the Integrated Development of the Eastern Nile (IDEN) Project will be to initiate a regional, integrated, multipurpose development project through a first set of investments that confer tangible, win-win gains and demonstrate joint action between the Eastern Nile countries.

The Eastern Nile Subsidiary Action Program is led by the Eastern Nile Council of Ministers (ENCOM) comprised of Water Ministers in the three Eastern Nile

⁵¹World Bank, 2003d

^{52,53,55}Ibid

⁵⁴World Bank, 2005b

⁵⁶Further information on the ENSAP is available at://www.nilebasin.org

countries and an ENSAP Team (ENSAPT) that is made up of three technical country teams. The objective of ENSAP is to achieve joint action on the ground to promote poverty alleviation, economic growth and reversal of environmental degradation. The Eastern Nile Technical Regional Office (ENTRO) is the implementing institution of ENSAP. It was established by an ENCOM decision in 2001 and begun its operations in June 2002 in Addis Ababa, Ethiopia. The office was restructured in 2004/2005. ENTRO manages and coordinates the preparation of ENSAP projects, capacitates and strengthens institutions and provides secretariat support to ENCOM/ENSAPT. ENTRO has a Social development Office (SDO) that supports all ENSAP projects through: capacity building in social development, input to project design, formulation of guidelines, initiation of pilot and background studies and analysis; and networking with other relevant stakeholders⁵⁷.

The Nile Basin Discourse (NBD) has emerged as a counter-weight to the government-led Nile Basin Initiative & promotes participation & dialogue towards poverty reduction & sustainable development in the Nile River Basin at the civil society level

The Nile Equatorial Lakes Subsidiary Action Program (NELSAP):⁵⁸ The Nile Equatorial Lakes region includes the six countries in the southern portion of the Nile Basin (Burundi, Democratic Republic of Congo, Kenya, Rwanda, Tanzania and Uganda) as well as the downstream riparian states (Egypt and Sudan). The water resources of the Nile Equatorial Lakes region include one of the world's great complexes of lakes, wetlands, and rivers. The region's economies are characterized by rain-fed agriculture, subsistence farming, low industrialization,

⁵⁷Source: http://ensap.nilebasin.org/index.php?option=com_content&task=view&id=44&Itemid=80

⁵⁸More information on these projects is available at: <http://www.nilebasin.org>

⁵⁹Source: http://www.nilebasin.org/nelsap/index.php?option=com_content&view=article&id=62:nelcom-kinshasa&catid=48:press-release&Itemid=119

⁵⁰Source: <http://www.nilebasindiscourse.org> 3 Projects implemented under the NBI umbrella employ more than 100 staff in the Basin.

⁶¹Information on this section was obtained from http://www.sivi.org/documents/Resources/Reports/UNDP_NAPAs_water_adaptation_to_climate_change_20_Jan.pdf

and poor infrastructure development. The objectives of the NELSAP are to contribute to the eradication of poverty, promote economic growth, and reverse environmental degradation. Twelve NELSAP projects have been identified by the Nile Equatorial Lakes riparian in a consultative manner, targeting investments in water resources management of shared-sub-basins, hydropower development and transmission interconnection, fisheries development and lakes management, water resources management, agriculture development, and water hyacinth control.

NELSAP is led by the Nile Equatorial Lakes Subsidiary Action Program Council of Ministers (NELCOM) comprised of Water Ministers in Burundi, DR Congo, Egypt, Kenya, Rwanda, Tanzania, Sudan and Uganda with Ethiopia and Eritrea participating as observers. The Nile Equatorial Lakes Technical Advisory Committee (NELTAC) assists the NELCOM in directing and supervising the preparation and implementation of the NELSAP program and projects which include essence transboundary, cooperatively developed and run by member countries in line with the NBI policies and programs. The NELSAP Coordination Unit (NELSAP CU) facilitates the preparation process, manages financial resources and builds sub-regional capacity for continued preparation and implementation of projects. NELSAP CU is located in Kigali, Rwanda.⁵⁹

The Nile Basin Discourse (NBD)⁶⁰ has emerged as a counter-weight to the government-led Nile Basin Initiative and promotes participation and dialogue towards poverty reduction and sustainable development in the Nile River Basin at the civil society level. At the national level, activities focus on civil society engagement in and awareness of NBI projects through dissemination of information and discussion forums. The NBD acts as umbrella organization for national civil society organizations in all basin countries. In each country a Country Coordinating Institution (CCI) oversees the activities of the National Discourse Forums (NDFs). The Discourse Desk, located in Entebbe in close geographic proximity to the NBI Secretariat, acts as the secretariat for the NBD. The Nile Basin Discourse and the Nile Basin Initiative are engaged in a regular dialogue.

The Nile Basin Development Forum (NBDF): is a discussion forum that brings together researchers, academicians, politicians, managers, activists and interest groups from the Nile Basin and other regions. It is a continuation of the Nile 2002 conferences that came in to being as a result of a proposal

of an independent evaluation of the Nile 2002 conferences which was adopted by the Technical Advisory Committee (TAC) of the Nile Basin. The Nile 2002 conferences were successful informal forums that brought together experts, government officials and funding agencies and organizations from the Nile Basin and around the world to exchange information and views on the steps necessary to achieve sustainable development of the Nile Basin water resources. CIDA was supporting the Nile 2002 conferences from its start in 1993 to its completion in 2002. The conferences were rotational and were conducted in almost all Nile basin countries except for Eritrea, Burundi and DRC. The forum has contributed to enhanced dialogue, information sharing, confidence and trust building among Nile riparians. The objectives of NBDF based on the evaluation report are: to enhance and continue building confidence and trust among countries of the basin through participation of a broader range of stakeholders including governments, private sector civil society and NGOs, local water user and external funding agencies; raise awareness of the benefits sharing of cooperative development of the Nile Basin; provide forum for open discussion of NBI projects and initiatives; and introduce new ideas, share knowledge and best practices.

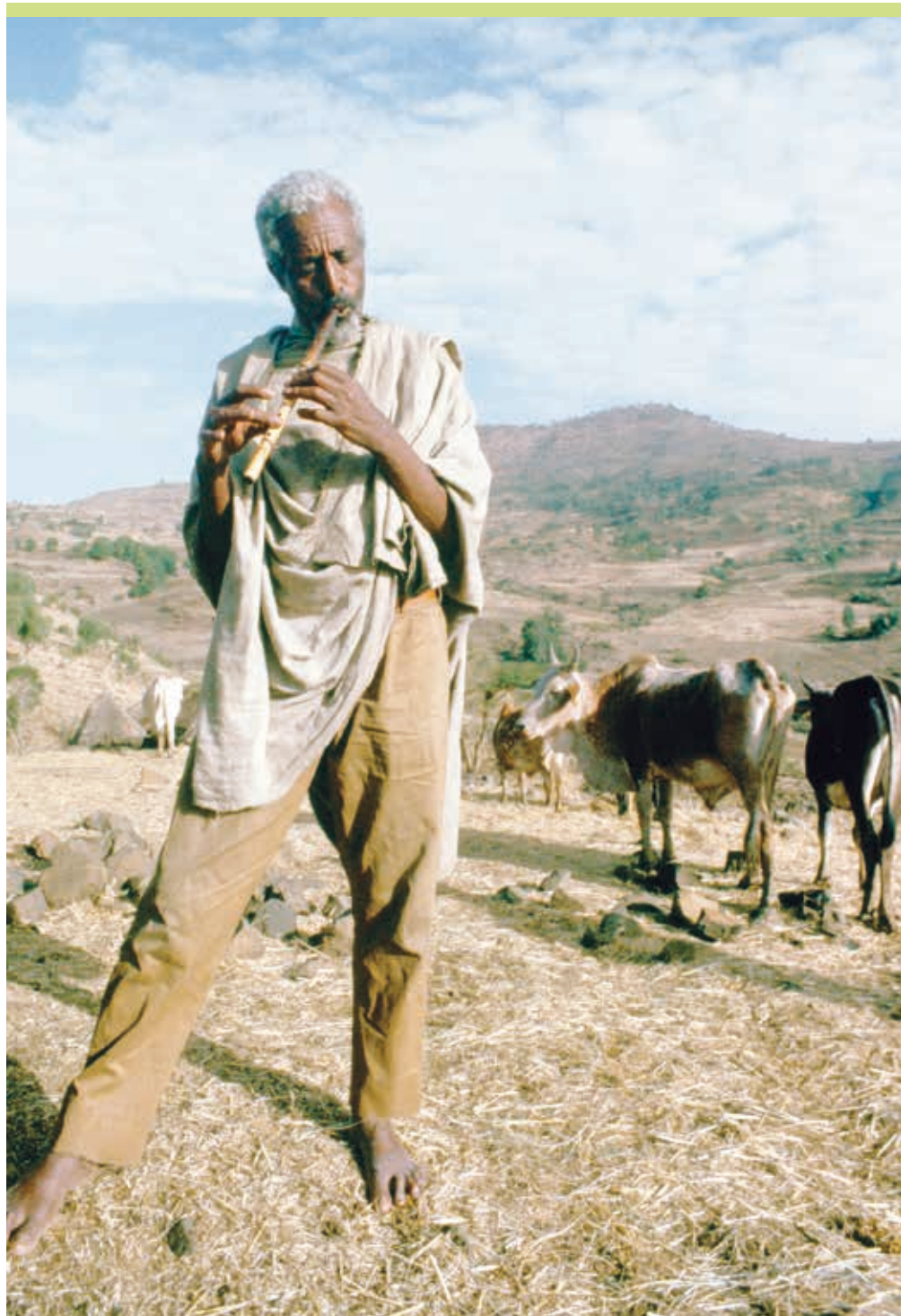
2.5 National level

This section presents a brief overview of the national legal framework and institutional arrangements of the ten riparian states with regard to transboundary water resource management issues that are relevant to climate change adaptation. It should be noted that riparian states of the Nile Basin differ in their capacity to adapt to changing water availability and demand and extreme climate events, as indicated by their differing economic resources, social vulnerability, policies, institutional arrangements and the degree of inequality within the basin.

2.5.1 Framework for climate change adaptation at the national level⁶¹

Climate change and climate variability by definition implies long-term changes

of mean temperatures and of precipitation/evaporation due to GHG emissions as well as extremes such as droughts and floods. The integration of climate information into government policies is therefore extremely important because climate is a major driving factor for most national economic activities. Unfortunately, climate information has not been easily understood and the same has not been adequately factored into most of the sectors of the national economy including government development policies, plans and budgets. The water sector and other sectors that depend on access to water are invariably impacted. An important aspect of adaptation to climate change is therefore



water related adaptation. Planning for adaptation should include water resources planning, as should water resources planning take into account the impacts of climate change on the water resources sector. Mainstreaming climate adaptation into national development planning includes integrating adaptation-related policy and activities including with water resources management planning. Adapting to climate change and increased variability will entail dynamic spatial and temporal adjustments at every level – from community-based to national and international. The range of practices that can be used to adapt to climate change is diverse, and includes changes in behavior, structural changes, policy based responses, technological responses and/or managerial responses, all of which could be related to the water sector as well as other sectors which water cuts across.

The National Adaptation Programmes of Action (NAPA) process is an internationally initiated process – under the United Nation’s Framework Convention on Climate Change, UNFCCC that targets national work for the least developed countries (LDCs). The main objective of the NAPAs is “to serve as a direct channel whereby the LDCs may communicate their urgent and immediate adaptation needs.” The NAPA document identifies linkages to more long-term strategy frameworks, such as Multilateral Environmental Agreements (MEAs), Poverty Reduction Strategy Papers (PRSPs) or applicable national agreements, such as Water Acts. Very few of the LDCs, however, have developed and adopted any formal plans for the water resource sector, let alone any IWRM plans, as agreed at the WSSD in Johannesburg 2002. Of the thirty-eight LDCs that had completed the process leading to the NAPA document and presented it to the UNFCCC by October 2008, nine included the Nile riparian countries.⁶²

The UNFCCC secretariat has created indices of NAPA Priority Projects by country and by sector, detailed in the NAPAs already received. As of 2008, thirty-eight countries had presented their NAPAs and the majority of the activities presented indicated that eighty-nine projects were identified within the food security sector; sixty-five projects were identified in terrestrial ecosystems and sixty-four projects in the water sector. Some food security projects and terrestrial ecosystem projects concerned water for

food production or for ecosystem production. Thirty-four of the thirty-eight countries that have submitted their NAPAs clearly identified water as a key issue. Five NAPAs suggested ‘water projects’ as broad, all-encompassing projects; twenty highlighted concern water management, eighteen focused on water supply, mainly drinking water supply, whereas nine were more of technical type projects such as dam-construction etc.; eight were projects on water for irrigation and only four addressed water quality and water pollution.⁶³

The UNFCCC secretariat has created indices of NAPA Priority Projects by country and by sector, detailed in the NAPAs already received

NAPAs are prepared only by the Least Developed Countries, but as recognized by the IPCC and under the UNFCCC, identification of adaptation strategies is required for all countries. As such, Kenya and Egypt have put in place robust measures needed to address most, if not all, of the challenges posed by climate variability and change. Egypt has developed a Climate Change Action Plan, National Communication on Climate Change, the National Energy Efficiency Strategy, and the National Strategy for Solid Waste Management, which is all part of the roadmap to manage its climate change activities. Kenya finalized its National Climate Change Strategy in April 2010. As part of its national climate change response strategy, Kenya has identified about ten sectoral adaptation interventions, which also includes water. Integrated river basin and large-water bodies-based natural resource management were also been identified as part of the adaptation intervention in the water sector.

2.5.2 Adaptation to climate change as part of national water strategies

The NAPAs and National Communications provide a broader view on the most appropriate ways of dealing with adaptation issues. LDCs within the Nile riparian have completed their NAPAs have they

⁶²The following NAPAs were submitted by riparian countries by April 2008: in 2006 DR Congo; in January – June 2007, Burundi, Eritrea, Rwanda; in July – December 2007, Sudan, Tanzania, Uganda; by July 2008, Ethiopia.

⁶³The <http://unfccc.int/adaptation/napas/items/4583.php> accessed December 4, 2008).

have identified sectoral vulnerability, sectoral climate change impacts, and adaptation needs per sector. As the agriculture sector in most of the LDCs is the most important sector, mainly from the perspective of food security but also to some degree for income generation, the impacts of floods and droughts on the agricultural sector (food security) are considered to be extremely important. This is also the case for most of the riparian countries that have completed their NAPAs and National Communications. Nevertheless other flood impacts, such as the direct loss of life during extreme events, also need to be managed effectively.

Even though climate change has a fundamental role for water management, reforms in the water sector often have very weak links to climate. The water sector together with agriculture and food security are generally considered the most vulnerable sectors, and identification of needs for adaptation to climate change always include satisfying access to water. Access to water is generally considered fundamental to development processes. However, the water sector itself very seldom recognizes consideration and adaptation to climate change in the water policies, plans or programmes. One important reason to that is of course that not all countries have a water policy, let-alone a comprehensive water policy. An analysis of the existing policy and legal framework in the ten riparian countries has revealed that most of them do not have any policies or laws that deal directly and explicitly with climate change issues. Although some national policies have attempted to address climate change related issues, currently most countries are addressing aspects of climate change through a number of sectoral policies (e.g., environment, agriculture, water, etc), even though climate change may not be the focus of such policies and plans.

A brief summary of Climate Change Related Programmes, initiatives and Projects at the National Level is presented in Annex 2:

Burundi: does not have a comprehensive legislative framework that ensures water governance. Its Constitution adopted in 1992 is silent on water management issues. The leading legislation on Burundi's water resource management is the Decree Law No. 1/41 of 1992 management 1992. It has provisions that have implications for water governance.

Even though climate change has a fundamental role for water management, reforms in the water sector often have very weak links to climate

With regard to climate change adaptation, Burundi submitted its NAPA on February 2007. As of 2009, it was in the process of developing (or has already developed) water resources policies and plans.⁶⁴ With regard to the institutional arrangements, the Ministry in charge of water resources and the provincial and local authorities are entrusted with the management of public domain water management.

Democratic Republic of Congo (DRC)⁶⁵ does not have a comprehensive legal and policy framework for water governance. It has a general legal and policy framework that has implications for water governance implications. Article 48 of its Constitution guarantees access to drinking water. Article 54 prohibits polluting inland waters or maritime spaces. It is a crime to discharge radioactive or other dangerous substances into inland waters or maritime spaces. With regard to climate change adaptation, DRC submitted its NAPA on September 2006. As of 2009, it was in the process of developing (or has already developed) water resources policies and plans. With regard to the institutional arrangements, the Ministry of Environment, Nature Conservation, Water & Forests, is responsible for water resource management. The war has affected development of legal frameworks in DRC.

Egypt: in October 1997, Egypt set up a climate change national institutional structure and formed an inter-ministerial National Climate Change Committee. This committee represents a wide range of governmental and non-governmental stakeholders under the leadership of the Chief Executive Officer of the EEAA. As a major beneficiary of the Nile waters, Egypt has specific policies and laws that deal with the Nile. The major policy that deals with water resources management is the

⁶⁴The United Nations World Water Assessment Programme, Water Adaptation in National Adaptation Programmes for Action Freshwater in Climate Adaptation Planning and Climate Adaptation in Freshwater Planning, p.16

⁶⁵Source: http://www.nilebasin.org/index.php?option=com_content&task=view&id=22&Itemid=114

Water Policy towards Year 2017. This policy provides an evaluation of existing water resources, future demands by year 2017 and guidelines for water resources management. The Policy mainly focuses on demand management, resource development, and environmental protection. Egypt's National Constitution has no major provisions dealing with water management. Law 48/ 1982 is its major law on the management of the Nile waters. This law prohibits throwing solid, liquid, or gaseous wastes in the water channels. It empowers the Ministry of Irrigation to issue licenses on water issues. Law No. 4 of 1994 has provisions that deal with the management of the water resources in Egypt and it establishes the Environmental Affairs Agency whose functions include preparing draft laws and decrees on water. With regard to the institutional arrangements, the Ministry of Public Works and Water Resources is responsible for national water resources and can authorize use of water from the Nile. Two ministries, Agriculture & Health, hold special responsibilities in the management of water.

Egypt's National Constitution has no major provisions dealing with water management

Eritrea: has policy and legislative framework for water resources management. The Eritrean Constitution (1997) has general provisions that deal with the Environment with implications for water governance. The Policy for water management (2003) provides for integrated management and fair allocation of the available water resource. The Water Law adopted in 2003 provides that water is public property controlled by the government. With regard to climate change adaptation, Eritrea submitted its NAPA on May 2007. According to the Eritrean NAPA, strong linkages were established with key national initiatives including with its interim PRSP presented in 2007 and in the 1st National Communication in 2001.⁶⁶ The emphasis is on agriculture and food

security. Although the National Communication was prepared under the Ministry of Land, Water and Environment, there is no reference to a need for a Water Policy. However, there is a strong possibility for synergy with the adaptation recommendations under NAPA and foci under the Convention on Biological Diversity (CBD) and the Convention to Combat Desertification (CCD) as there is an "overlap in participating institutions". The Eritrean NAPA also identified the National Capacity Self-Assessment, NCSA, as a process that "helps identify key deficits in institutional capacity and institutional linkages and aids the process of creating synergies"; the NCSA seems to be crucial in implementing the NAPA including its water-related needs. This would be a first step in identifying institutional capacity and structure needed for implementing an adaptation strategy. With regard to the institutional arrangements, the Ministry of Land Water & Environment and the Water Resources Department are responsible for the management of water.

Ethiopia: The Ethiopian government has adopted several measures that would support adaptation to climate change. To ensure sustainable development and management of the water resources of the country, its water sector has gone through various reform measures, which include the development and adoption of the Integrated Ethiopian Water Resource Management Policy;⁶⁷ the Water Sector Strategy⁶⁸ to translate the policy into action; and the Fifteen Year Water Sector Development Programme,⁶⁹ in which various investment programmes and projects are outlined. The government has also enacted the required legislation including the establishment of basin authorities to pursue sustainable development and management of the country's water resources. The overall policy objective is to enhance and promote national efforts towards the efficient, equitable and optimum utilization of the water resources of Ethiopia for significant socio-economic development on a sustainable basis. Further, the Water Policy, Sector Strategy and the Development Programme promote transboundary cooperation, including joint development and management of the shared resource.⁷⁰ Ethiopia submitted its NAPA on June

⁶⁶Source: http://www.siwi.org/documents/Resources/Reports/UNDP_NAPAs_water_adaptation_to_climate_change_20_Jan.pdf

⁶⁷The Ministry of Water Resources issued the Ethiopian Water Resources Management Policy in 1999.

⁶⁸Ethiopian Water Sector Strategy, Ministry of Water Resources, November 2001, available at http://www.wateraid.org/documents/plugin_documents/ethiopia_watersectorreview.pdf

⁶⁹Water Sector Development Programme 2002–2016, Ministry of Water Resources, November 2001, available at <http://www.fao.org/nr/water/aquastat/countries/ethiopia/index.stm>.

⁷⁰Ministry of Water Resources, Ethiopian Water Resources Management Policy Article 2.2.8, 1999, 15

⁷¹Ministry of Water Resources of Ethiopia, available at <http://www.mowr.gov.et/>

2008. With regard to the institutional arrangements, Ethiopia has a Boundary and Transboundary Rivers Affairs Department, in the Ministry of Water Resources, which is dedicated to promoting inter-riparian cooperation. The Ministry has the overall mandate over the development and management of water resources of the country, including determining the conditions for the optimum allocation and utilization of water resources within the country and signing international agreements relating to Transboundary Rivers⁷¹. The Ministry implements Ethiopia's Water Resources Management Policy, which incorporates fostering regional cooperation on transboundary waters, based on the principle of equitable and reasonable utilization. The Ethiopian Water Sector Strategy also gives particular attention to ascertaining Ethiopia's entitlement and use of transboundary waters and promoting fair regional cooperation.

Kenya: The Constitution of Kenya, 2010 includes environmental protection provisions. An analysis of existing environmental policy and legal framework revealed that Kenya currently has no policies or laws that deal directly and explicitly with climate change. The only policy that has attempted to address climate change to some extent is the draft National Environmental Policy of 2008. However, there are a number of sectoral laws in existence in Kenya – including the Environmental Management and Coordination Act (No 8 of 1999), the Agriculture Act (Cap 318 of Kenyan Laws), the Water Act (No. 8 of 2002), and the new Forests Act (2005), – which address various aspects of climate change, even though climate change is not the focus of the laws. The appropriate provisions of such laws should be carefully analyzed and reviewed to facilitate climate change mitigation and adaptation in related sectors. The Environmental Management and Coordination Act (No 8 of 1999) created institutions and provided the necessary legal backing for environmental protection. The major law dealing with water management in Kenya is the Water Act 2002, which shaped a new institutional framework for the management and protection of Kenya's water resources at national, catchment and sub-catchment levels. The Ministry of Water and Irrigation is finalizing the Transboundary Water Policy, which will help in the management of transboundary water resources.

With regard to the institutional arrangements governing climate change issues in Kenya, the Ministry of Environment and Mineral Resources (MEMR) established the Directorate of Environment (DOE) to address issues of in 2009. Within the DOE,

MEMR also established a National Climate Change Coordinating Office, which acts as the Secretariat for the National Climate Change Activities Coordinating Committee (NCCACC) established in 1992 as a requirement under the UNFCCC. Membership of the NCCACC is drawn from line ministries, academia and research institutions, Non-Governmental Organisations (NGOs) as well as the private sector. Under the oversight of MEMR, the National Environment Management Authority (NEMA) hosts the country's Designated National Authority (DNA), which is responsible for approving the CDM projects under the Kyoto Protocol. The Kenya Meteorological Department (KMD) is mandated to provide meteorological and climatological services to the country for the benefit of all sectors and the public in general. Climate research and monitoring are also some of KMD's responsibilities. In addition, there is a Climate Change Coordination Unit (CCCU) at the Office of the Prime Minister, whose aim is to provide high-level political support to climate change activities in Kenya. The institutional arrangements charged with the responsibility of water management include the Ministry of Water and irrigation, water resources management authority, catchments area advisory committees, and water resource users associations, and the Water Resources Management Authority (WRMA) is responsible among other things for the allocation of the water resources through a permit system.

Rwanda: has recently developed a legislative & policy framework which is relevant for water governance. Under the Constitution, every citizen has a right to safe, satisfying, and sustainable environment safe. It prohibits any agreements authorizing the storing on Rwandan territory of toxic waste and other substances that may dangerously damage the environment. The New Organic Law (2005) provides

Analysis of existing environmental policy & legal framework revealed that Kenya currently has no policies or laws that deal directly & explicitly with climate change. The only policy that has attempted to address climate change to some extent is the draft National Environmental Policy of 2008

for the Precautionary principle, the polluter-payer principle, and community participation. Under the law management of the water resources must not in any way use methods that could lead to natural disasters such as floods or drought. With regard to climate change adaptation, Rwanda submitted its NAPA on May 2007. The Rwandan NAPA recognized the policies dealing with development, poverty and vulnerability such as the PRSP, and the integration of climate aspects into the Economic Development and Poverty Reduction Strategy of 2006.⁷² It further recognized policies and plans for the implementation of MEAs but without identifying how climate adaptation was recognized in those plans. The Rwanda NAPA discusses Integrated Water Resources Management as a priority option to address climate adaptation. It also recognizes that an adaptation strategy needs to be integrated with the Rwanda Vision 2020, the PRS and the National Strategy to Combat Desertification, as it has multi-sectoral cross-cutting aspects. With regard to the institutional arrangements, the main institution responsible for environmental management in Rwanda is the Rwanda Environment Management Authority.

Sudan: has a policy & legal framework that is applicable to the management of the water resources of the Nile management. The Water Resources Management Policy (2000) has the overall objective of fulfilling water resources planning and

management. Under the Constitution water bodies are public property and are governed by the state. The Water Resources Act (1996) makes reference to stakeholders, research, pricing, licensing brick making, river transport vessels and water abstraction. The Act further provides for the control of the quality of drinking water. The Nile Pumps Control Act (1939) ensures equitable distribution of water among river users and environmental health. Fresh Water Fisheries Act (1954) regulates fishing in Rivers; River Transport in the Nile Rivers; Inland Waters Act (1950) deals with Navigation Regulations; Water Pollution Control Ordinance (1975) aims at preventing addition of wastes to rivers, canals, wells and water supply sources. The Water Hyacinth Act (1960) is designed to combat water hyacinth in Sudanese Rivers and water ways. River Control Regulation Rules are meant for dams in Sudan, to ensure downstream rights, minimum acceptable flow and to avoid environmental degradation.

With regard to climate change adaptation, Sudan submitted its NAPA on July 2007. Sudan has according to the NAPA been actively seeking to mainstream adaptation in sectoral and development policies including in the 25-year National Strategy Outlines. The PRSP focuses on water resources, agriculture and health⁷³. In particular, the NAPA recognizes national water-related projects that should result in increased water access and increased capacity to cope with the impacts of climate variations and hazards. In



the presentation of priority adaptation activities the NAPA recognizes the needs to strengthen policies and strategies to guarantee food security for humans and animals. Adaptation strategies are further needed for utilization of natural resources and for targeting the increase of production. There is further a need to address the gaps in laws and legislations that regulate this work. The NAPA recognizes the need for institutional strengthening to provide frameworks for integration of NAPA recommendations in the water resources and agriculture sectors. In particular it mentions the lack of sector-specific coordination between the affected sectors. In terms of the existing institutional arrangements, the Ministry of Irrigation and Water Resources (MIWR) is the federal body in Sudan legally responsible for all water affairs. The National Water Council of Sudan ensures planning for optimum water resources.

Tanzania: Under Article 27 of the Constitution, the public is called upon to ensure that the natural resources of the country are managed properly: has a policy and legal framework for the management of water resources management. The Water Resources Management Policy (2002) which ensures the development of a comprehensive framework for water management framework. In terms of River Nile, the policy has an aspect of trans-boundary waters which covers cooperation in the management of shared water resources. Its Constitution (1997) does not contain a direct provision on environment and water provision. The principal legislation on water management is the Water Utilization (Control and Regulation) Act, Water Act. With regard to the institutional arrangements, Environmental management in Tanzania falls under the Vice-President's Office.⁷⁴ The Division of Environment (DoE) is tasked with formulation of policy on environment, co-ordination and monitoring of environmental issues, environmental planning, and policy-oriented environmental research. The DoE has been responsible for the formulation of a number of national plans and strategies (National Environmental Action Plan, 1994, National Plan for Agenda 21, 1993, the National Action Programme to Combat Desertification, 1999, the National Biodiversity Strategy and Action Plan, 2000, the Coastal Biodiversity Conservation Strategy, 1995, the Country Programme to phase out ozone depleting substances, 1996, and the National Action Plan on

Climate Change, 1997). The National Environment Management Council is one of the agencies under the DoE. The National Environment Management Council (NEMC) was initially established in 1983 in terms of the National Environment Management Council Act, No 19 of 1983. Its composition, powers and functions have been re-articulated in Part III (d) of the Environmental Management Act of 2004. The NEMC falls under the Vice-President's Office and its role is to provide the Vice-President's Office with advice on all matters pertaining to environmental conservation and management.

The Constitution (1995) provided for environmental protection & conservation. It imposed a duty on the government to protect important natural resources including water on behalf of the people of Uganda

Uganda: the main policy dealing with water management is the National Water Policy of 1999 – It promotes an integrated approach to water resources management. The National Environment Management Policy (1994) provides for sustainable mgmt & development of water resources in a coordinated and integrated manner. The Constitution (1995) provided for environmental protection and conservation. It imposed a duty on the government to protect important natural resources including water on behalf of the people of Uganda. The Act makes provisions for management measures of the environment including EIA. The Water Act is the main Act dealing with Water resources management in Uganda. Its main objective is to promote the rational management and use of waters in Uganda. The National (Wetlands, Riverbanks and Lakeshores Management) Regulations (2000) are specific regulations made for the management of Lakes and Rivers. With regard to climate change adaptation, Uganda submitted its NAPA on December 2007. With regard to the institutional arrangements, the National Environment Act established NEMA as the principal agency responsible for the management of the environment of environment.

⁷²Source: http://www.siwi.org/documents/Resources/Reports/UNDP_NAPAs_water_adaptation_to_climate_change_20_Jan.pdf

⁷³Source: http://www.siwi.org/documents/Resources/Reports/UNDP_NAPAs_water_adaptation_to_climate_change_20_Jan.pdf

⁷⁴Source: http://www.saiea.com/dbsa_handbook_update09/pdf/14Tanzania09.pdf

2. 5.3 Additional stakeholders in climate change adaptation at national level

Parliamentarians: At national level, parliamentarians play a significant role in debating and approving the national development strategy and annual budgets. In some countries, parliaments are engaged in policy and providing policy relevant information to influence decision making about national priorities and allocation of resources.

Ministry of Finance/Planning/Office of the President/Prime Minister: Decision makers and experts in the Ministry of Finance guide national planning processes. However, in most riparian states there is limited capacity to promote an integrated climate change adaptation approach to meet economic growth and poverty reduction objectives. Ministry of Environment/Natural Based Resources Ministries (e.g., forestry, wildlife, etc): these ministries are responsible for climate change related issues but tend to be under-funded and unable to communicate policy messages that make a clear link between the impact of climate change, adaptation and economic costs and benefits to the economy.

Sector Ministries (Water, Agriculture, Health, Education, Energy, and Transport): these ministries have significant responsibilities related to climate change adaptation, yet their integration at sectoral level is often inadequately addressed in sector plans and budgets. Most riparian countries have limited data and information on the economic costs and benefits of adaptation as well as the impact of climate change on specific sectors, even though economic evaluations and assessments can influence sector plans and budgets.

Districts/Local Authorities: local authorities are responsible for devolved responsibilities, including service delivery, revenue collection and support to community based natural resource management initiatives. Research indicated that local authorities are poorly equipped to monitor and advocate for climate change adaptations by communities and external actors. In some countries in the Nile Basin, local authorities have developed local capacities to understand and advocate for increased support to adaptation actions at the local level. However, in this study, it was difficult to specify the adaptation activities within local government structures because of the diverse forms of local governments in the Nile riparian countries as well as their varied relationships to higher levels of government.

Media: information provided through the media influences policy makers and the community. The level of reporting on Climate Change Adaptation issues is quite low in most countries due to the limited ability to link CCA matters to development objectives. On 23 – 26 August 2010, the AMCEN Secretariat organized a Consultative meeting on its Communication Strategy on Climate Change and Comprehensive Framework of African Climate Change Programmes.⁷⁵ The meeting held in Nairobi Kenya brought together experts, climate change negotiators, journalists and the civil society to finalize and validate the AMCEN Climate Change Communication Strategy that will guide communication in the current and next biennium. The strategy has two major objectives: to equip African Ministers of Environment and other African climate change actors and decision makers engaged at the technical and policy level with timely and relevant information they can use in making decisions and choices; and to promote effective communication and outreach on the implementation of the comprehensive framework for climate change programmes at national, sub-regional regional level to the relevant stakeholders. The communication strategy will therefore serve as an essential tool for AMCEN in focusing countries and regional attention and efforts and in mobilizing policy, political, and financial support as well as enhancing public and civil engagement for the comprehensive response to climate change in Africa.

Private Sector: businesses in climate-sensitive sectors have a direct interest in adaptation activities in the Nile Basin for a number of reasons. Climate risks can undermine the infrastructure, energy supply and transport networks needed for business operations. Buildings located in hazard-prone areas may have to be moved or reinforced in light of climate change. Day-to-day operations that rely on steady water supplies may need to be redesigned as climate change constrains water availability. Supply chains reliant on climate-sensitive geographic areas may have to be diversified. Climate risks may translate into less disposable incomes and reduced market shares, while associated health risks may affect the productivity of the workforce. Reducing or managing these risks can translate into competitive advantage, cost savings (but perhaps not in the short-term), reduced liabilities, and investor confidence. The private sector has a significant role in addressing climate change risks to investment and business opportunities in mitigation

⁷⁵Source: http://www.unep.org/roa/amcen/Amcen_Events/Consultation_Aug2010/Docs/Press_Release.pdf

and adaptation. Key public and private organizations and institutions should play a strategic role in sharing knowledge, experiences and expertise in this field.

2.6 Development partners

This section presents a brief overview of development partners engaged in climate change adaptation activities in the Nile Basin:

2.6.1 International cooperating partners

The Nile Basin Trust Fund (NBTF): Developments partners working in the Nile Basin have a key role to play in facilitating the implementation of stand-alone adaptation measures, as well as the integration of adaptation with core development priorities and projects. They support capacity building efforts to better monitor climate, as well as to assess future climate change impacts and adaptation priorities at the regional, national and local levels. Several development partners have established partnerships with the NBI to support its capacity-building and development activities and projects. The Nile Basin Initiative is supported by contributions from the NBI countries themselves and through the support of several multilateral and bilateral donors. Development partners make their contributions to the NBI through the Nile Basin Trust Fund (NBTF) was established in 2003 at the request of the Nile Basin Council of Ministers. It is a funding mechanism that helps administer and harmonize donor partner support pledged to the Nile Basin Initiative (NBI). Donors that contribute through the NBTF include: Canada, Denmark, Netherlands, Norway, Sweden, and the United Kingdom.⁷⁶

The majority of funds supporting NBI programs and projects are administered through the NBTF. The Fund has proven to be a very effective mechanism for

harmonizing donor support to the NBI and ensuring a unified and coherent approach to managing funds. The NBTF is currently administered by the Worldbank on behalf of all donors who contribute to the fund for the benefit of the Nile Basin countries. As progress is achieved in program implementation and a permanent institutional framework is established, the NBTF will be transferred to an NBI institution. Currently, the NBTF supports the preparation and/or implementation of the NBI programs, including the basin-wide Shared Vision Program (SVP) and the sub-basin investment programs in the Eastern Nile (ENSAP) and the Nile Equatorial Lakes Region (NELSAP). At the basin-wide level, NBTF funds support the implementation of the projects within the Shared Vision Program and strengthen NBI institutional capacity. It is also used to facilitate the process of NBI dialogue and engagement. At the sub-basin level, NBTF funds support the preparation and implementation of investment projects, build capacity for regional coordination and preparation of joint projects, and provide advisory services and support to sub-regional institutions. This Committee is comprised of representatives from contributing agencies, the NBI, and the World Bank. Formal NBTF Committee meetings are held once a year in one of the Nile Basin countries.

World Bank: The World Bank, United Nations Development Programme (UNDP), and other donor partners with global experience in facilitating dialogue and knowledge sharing on international river basins and transboundary waters are supporting the Nile Basin Initiative Water Resources Management and Planning Project. The external support provided to the NBI is critical to the success of the SVP as well as the subsidiary action programs. This project contributes to the Shared Vision Program. The development objective of this project is to enhance analytical capacity for a basin-wide perspective to support the development, management, and protection of Nile Basin water resources in an equitable, optimal, integrated, and sustainable manner. Important building blocks in establishing such capacity include (1) the process of developing effective national water policies and implementation strategies, (2) project planning and management skills, and (3) communication and decision making tools.⁷⁷ Without the combined resources of the World Bank, UNDP, and other donor

Developments partners working in the Nile Basin have a key role to play in facilitating the implementation of stand-alone adaptation measures, as well as the integration of adaptation with core development priorities & projects

⁷⁶Source: http://www.nilebasin.org/index.php?Itemid=97&id=43&option=com_content&task=view

⁷⁷Source: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/03/17/000013944_20090318175828/Original/09030170WRPM0Phase01IOPID0P116318.doc

partners, implementation of the SVP would proceed at a slower pace and would not fully benefit from the experience of other regional programs worldwide. The success of river basin development programs in which the Bank and its partners have been involved lends additional credibility to projects that are endorsed by this group of donors. Therefore, the Bank, together with its partners, can mobilize broad multilateral and bilateral donor support for regional programs of this kind.

African Development Bank (AfDB):⁷⁸ The African Development Bank Group is taking a lead in addressing climate change issues which are adversely impacting on the African continent. The AfDB has made great effort to ensure a clear understanding of its investment approaches and responses to climate change issues in Africa, which was necessary to strengthen overall confidence in the Bank's ability to deliver results on climate change, particularly among relevant stakeholders, including donor agencies, development partners, civil society organizations, as well as public and private sector operators. The Bank, together with the Commission of the African Union and the United Nations Economic Commission for Africa has designed the Climate for Africa's Development (Clim-Dev Africa) Program to enhance capacities within Africa to generate, disseminate and use appropriate climate information for development planning. In addition, Clim-Dev Africa will implement adaptation programs and projects that incorporate climate-related information in order to learn the lessons and define good climate change adaptation practices. The Bank has also endorsed the creation of the multi-donor ClimDev-Africa Special Fund, estimated at \$135 million between 2010 and 2012, to finance ClimDev Africa activities. The project will benefit the many rural communities whose livelihoods are climate-sensitive: agricultural communities that rely on rain-fed agriculture, food insecure communities and those vulnerable to malaria and other climate-sensitive diseases, communities dependent on uncertain water and other natural resources, communities at risk of disasters, and communities with poor access to energy.

Global Environment Facility (GEF): was established in 1991. The primary objective of the

GEF is to help secure global environment benefits in the areas of biodiversity, climate change, ozone depletion, land degradation, international waters, and persistent organic pollutants (POPs). The GEF is also associated with many global and regional MEAs that deal with international waters or transboundary water systems. As such, the GEF helps fund initiatives to assist developing countries in meeting the objectives of the Conventions. Since its inception in 1992, the Small Grants Programme (SGP) has occupied a strategic niche within the national environmental management capacity by supporting community-based initiatives that respond to the Global Environment Facility (GEF) criteria and fulfill local community needs. The SGP has supported more than 150 nongovernmental organizations that have implemented 183 projects. The SGP is currently partnering with the GEF Nile Basin Initiative project, which is jointly implemented by UNDP and the World Bank.⁷⁹ The SGP has influenced the design of the Nile Transboundary Environmental Action Project small grants program, which has adopted the SGP model for a small grants program as opposed to designing a new or similar delivery mechanism. Program grants are geographically focused south of Luxor to the border with Sudan grants made north of Luxor are made through the SGP. Both grants-making programs focus on wastewater control and treatment to reduce pollution in the Nile Basin.

Canadian International Development Agency (CIDA): is guided by the 1992 Environmental Sustainability Policy, which urgently requires updating to include the incorporation of climate change considerations. CIDA recognized long ago the need for cooperation among countries to resolve conflicts that could arise as a result of transboundary water basins. The Technical Cooperation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin (TECCONILE) was supported financially by CIDA in 1993. This initiative and subsequent support by CIDA resulted in a series of conferences that provided the forum for dialogue among the Nile Basin countries. After these series of dialogues and understandings, the Nile Basin Initiative (NBI) was launched in which CIDA played a significant role, along with other international donors.

⁷⁸Source: <http://www.afdb.org/en/topics-sectors/sectors/climate-change/partnerships-and-financing-options/>

⁷⁹Source: <http://www.undp.org/evaluation/documents/thematic/sgp/Country%20Case%20Studies/Egypt%20SGP%20Case%20Study.pdf>

⁸⁰Source: http://ccdare.org/Rwanda/CCDARE_Synthesis_Jul10.pdf



2.6.2 United Nations agencies

The United Nations supports climate change initiatives in the Nile Riparian States through the United Nations Development Assistance Framework (UNDAF), which is the joint UN response to support the achievement of national development objectives. The UNDAF is implemented by UN Country Teams through country based UN and donor coordination mechanisms such as the Environment Thematic Groups. These partners share information and build existing knowledge and information networks for dissemination of results from assessments, application of climate change adaptation, tools and methodologies.

Climate Change and Development – Adapting by REDucing vulnerability (CC DARE) Programme jointly implemented by UNEP and

UNDP is supporting countries in Sub Saharan Africa with their priority needs for adaptation and Rwanda is among them.⁸⁰ The programme is providing targeted and flexible support that helps integrate climate change issues into their development planning and decision-making frameworks. The overarching aim of CC DARE is to improve the ability of countries to remove barriers and create opportunities for integrating adaptation into their national development agendas with emphasis on meeting the identified country specific needs using quick and tailored support that reinforces ongoing initiatives on climate change adaptation, and strengthening existing national institutions so that they can be useful in mainstreaming adaptation into development planning processes beyond the project. As part of the Rwanda’s development efforts, the integration of long-term climate change adaptation

activities into their national planning process was facilitated and achieved through the implementation of two projects titled:

1. Enhancing Capacity Building and Raising Awareness on Climate Change for a Sensitive Community in Rwanda;
2. Adapting to Climate Change through Land and Biodiversity Conservation.

These projects laid the groundwork for adopting adaptation consideration into regular policy development activities in the country.

Being at the forefront of science-based environmental policy-setting & implementation, UNEP has taken the step of selecting EBA as one of its key Programmes on climate change

United Nations Environment Programme (UNEP): Being at the forefront of science-based environmental policy-setting and implementation, UNEP has taken the step of selecting EBA as one of its key Programmes on climate change. UNEP's long term involvement in addressing climate change and its experience in managing ecosystems provide UNEP with a deep knowledge and management expertise to foster EBA as an integral part of the global and regional adaptation strategy and national adaptation plans. UNEP will support national and local governments and institutions in implementing EBA. The EBA Programme will be implemented in diverse ecosystem settings, including mountains, river basins, dry-lands and low-lying coasts.⁸¹ With regard to the Nile Basin, UNEP is implementing an Ecosystem based adaptation support project, which seeks to build the resilience of ecosystems that are most vulnerable to climate change, and maximize ecosystem services for adaptation in developing countries, through technical, policy and financial interventions.⁸² Objective 1 of this project aims to build climate resilience of the water sector in Africa through assessment, piloting, demonstration and technology transfer to support governments and communities for policy-setting, planning and practices on water resources management to respond

to climate change impacts of too little or too much water. Activities under this objective will build climate resilience of the water sector in Africa with a focus on The Nile River Basin countries: Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda.

United Nations Development Programme (UNDP): with funding from the Government of Japan, recently launched a new programme, "Africa adaptation programme" that uses an innovative approach to climate change adaptation in Africa. Under this programme, UNDP will assist 21 African countries in implementing integrated and comprehensive adaptation actions and resilience plans. Of the 21 countries, the project will focus on five of the ten riparian states (Congo, Ethiopia, Kenya, Rwanda and Tanzania). The overall programme objectives are: enhance the adaptive capacity of vulnerable countries to climate change risks; promote early adaptation through evidence-based solutions and initiatives for action; and lay the foundation for long-term investment to increase resilience to climate change across the African continent. The project will ensure that national development processes incorporate climate change risks and opportunities to secure development gains under a changing climate. UNDP will help countries establish an enabling environment and develop the capacity required to design, finance, implement, and monitor long-term and cost-effective adaptation policies and plans.

United Nations Educational, Scientific and Cultural Organization (UNESCO): The UNESCO-IHE Institute for Water Education was established in 2003.⁸³ It carries out research, education and capacity building activities in the fields of water, environment and infrastructure. UNESCO-IHE continues work that began in 1957 when IHE first offered a postgraduate diploma course in hydraulic engineering to practicing professionals from developing countries. The Institute is based in Delft, the Netherlands, and is owned by all UNESCO member states. It is the largest water education facility in the world, and the only institution in the UN system authorized to confer accredited MSc degrees. UNESCO-IHE is instrumental in strengthening the efforts of other universities and research centers to increase the knowledge and skills of professionals working in the water sector. The mandate given

⁸¹UNEP Ecosystem Based Adaptation Programme Document, Version 1.2, July 2010, pg 2

⁸²Source: <http://dewa03.unep.org/pow2010/112>

⁸³Source: <http://www.unesco-ihe.org/About/Introduction-to-UNESCO-IHE>

by UNESCO to IHE is to strengthen and mobilize the global educational and knowledge base for integrated water resources management; and contribute to meeting the water-related capacity building needs of developing countries and countries in transition. UNESCO-IHE Partnership Research Fund (UPaRF) is supporting a research project from 2009 – 2011 known as ACCION.⁸⁴ Project partners include UNESCO-IHE Institute for Water Education (The Netherlands), Nile Basin Capacity Building Network for River Engineering (Egypt), Addis Ababa University (Ethiopia), Makerere University (Uganda), University of Dar es Salaam (Tanzania), and the University of Nairobi (Kenya). The ACCION project aims to develop a probabilistic framework that encompasses best practice, uncertainty analysis tools and supportive modeling facilities, which will be used to: i) evaluate the sustainability of current water management practices and ecosystem services in the Nile basin, in the view of global changes; ii) proof river basin plans in the Nile basin (Lake Victoria, Blue Nile, Nile Delta) and iii) suggest adaptation strategies and measures for water resources management in the region.

2.7 Non-state actors⁸⁵

This section presents a brief overview of non-state actors engaged in the climate change adaptation activities in the Nile Basin. Non-governmental actors have an important role to play with regard to the joint management of shared water resources. The civil society sector (i.e., NGOs and CBOs) supports the adoption of adaptation measures at all levels in water and climate-related activities, in sectors such as health, agriculture, and poverty alleviation. They create awareness of environmental protection tools and instruments, disseminate information and mobilize local resources. Outcomes of consultations organized by non state actors or with their involvement normally filter into or contribute to public policies.

A brief summary of some non-state actors is provided below:

2.7.1 International NGOs

Famine Early Warning Systems Network (FEWSNET): is a USAID-funded activity that collaborates with international, regional and national partners to provide timely and rigorous early

The civil society sector (i.e., NGOs & CBOs) supports the adoption of adaptation measures at all levels in water & climate-related activities, in sectors such as health, agriculture, & poverty alleviation

warning and vulnerability information on emerging and evolving food security issues. Its professionals monitor and analyze relevant data and information in terms of its impacts on livelihoods and markets to identify potential threats to food security. Once these issues are identified, FEWSNET uses a suite of communications and decision support products to help decision-makers act to mitigate food insecurity. FEWSNET also focuses its efforts on strengthening early warning and food security networks. Activities in this area include developing capacity, building and strengthening networks, developing policy-useful information, and building consensus around food security problems and solutions. Its approach is guided by several main pillars that support its core objectives. These include: continued production of high quality targeted early warning information, emphasis on developing sustainable networks, emphasis on policy-useful information and continued innovation in analytical tools and methods. The FEWSNET implementing partners are: Chemonics International, Inc., United States Geological Survey (USGS), National Aeronautics and Space Administration (NASA), National Oceanographic and Atmospheric Administration (NOAA) and United States Department of Agriculture (USDA).

Global Water Partnership (GWP): with its regional headquarters in Uganda, GWP is a working partnership among all actors involved in water management: government agencies, public institutions, private companies, professional organizations, multilateral development agencies and others committed to the Dublin-Rio principles. “Support countries in the sustainable management of their water resources” is its mission. Within East Africa, it helps in getting solutions for the specific water related challenges in the particular countries. Among its linkages is: Eritrea Water Partnership,

⁸⁴<http://www.unesco-ihe.org/About/Academic-departments/Hydroinformatics-and-Knowledge-Management/Projects>

⁸⁵Information for this section was obtained from the Institutional Mapping for Climate Change Adaptation in Eastern Africa report: http://www.idrc.ca/uploads/user-S/12472192231Institutional_Mapping_for_Climate_Change_Adaptation_in_Eastern_Africa.pdf



International Union for Conservation of Nature (IUCN): helps the world find pragmatic solutions to our most pressing environment and development challenges. Their vision is “a just world that values and conserves nature”. Their mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. In knowledge, IUCN develops and supports cutting edge conservation science, particularly in species, ecosystems, biodiversity, and the impact these have on human livelihoods. IUCN runs thousands of field projects around the world to better manage natural environments. It also helps implement laws, policy and best-practice by mobilizing organizations, providing resources, training people and monitoring results. It offers scientific research, brings governments, non-government organizations, United Nations agencies, companies and local communities together to develop and implement policy, laws and best practice.

2.7.2 National NGOs (development)
Rural Environment and Development Organisation (REDO): based in Rwanda. Since it’s inception has been implementing environmental conservation activities in the form of improved fuel stove dissemination of energy conservation, tree planting soil conservation, social integration of indigenous (BATWA pygmies) in

Ethiopia Water Partnership, Kenya Water Partnership, Sudan Water Partnership, Uganda Water Partnership and Burundi Water Partnership.

HEIFER International, Uganda: was established with gifts from generous donors, including David and Marianne Hogg of Raleigh, North Carolina and Ursula Bartel of La Verne, California. In Uganda, Heifer is providing livestock including dairy cattle, goats, poultry, pigs and bees. The focus of the projects is improving nutrition and income status for small-scale farmers, particularly women, as the male population has been so significantly diminished due to AIDS.

community mobilization, sensitization, skills development for youth and women among others. Its vision is a world where there is a corresponding realistic utilization of the available resources balances both ecological and development needs for any sustainable development. Its missions are: (a) to champion environmental education and public awareness for sustainability in Rwanda and in the great lakes region, (b) to instill environmental concerns from grass root to national level and (c) to work towards poverty eradication through a participatory sustainable approach. It obtains its project funds from various donor agencies and has collaborated with some ministries to implement some of its project activities.

Sustainable Land Use Forum (SLUF): formerly called NOVIB Partners Forum on Sustainable Land Use in Ethiopia and Eritrea is an outgrowth of the December 1994 workshop which was organized by NOVIB in Addis Ababa. Its vision is that "It envisages seeing a secured livelihood in a sustainable natural environment in Ethiopia". Its mission is that "It would like to promote Sustainable Land Use and improve Natural Resource Base and People's Livelihood". This would be achieved by enabling stakeholders: Member organizations, Government organizations; Communities related to SLUF in rural and urban areas, Community Based Organizations and Civil Society Organizations; the private sector and individuals build their capacities through: Training, Information Exchange, Studies and Research, Advisory Services, Advocacy and Lobbying and Networking. Its objective is to support and strengthen local organizations that work to improve natural resource management and sustainable land use practices. It is a network association of organizations that are engaged in public policy advocacy, research and environmental protection work. SLUF has sub grantees with different intervention areas, including promotion of participatory natural resources conservation, forest and land use management, environmental improvement and combating water pollution and other environmental problems through different environmental friendly processes.

AGENDA for Environment and Responsible Development: is a Tanzanian non-governmental, non profit sharing organization. It was established by the Danish Development Agency (DANIDA) as a project to contribute to the development of the business sector in Tanzania by promoting environmentally responsible, transparent and accountable business practices in the country. On concluding the project AGENDA was reconstituted as an autonomous NGO and was officially registered in July 1997. Its vision is "Socio-economic development is attained equitably to all members of the society without causing adverse effects to human health and the environment". Its mission is to promote a culture of responsibility to the environment and sustainable development among the general public in Tanzania. In Chemicals and Chemical Waste Management, it conducts studies on health and environmental impacts of chemicals. The studies focus on the entire life cycle of the chemicals. AGENDA has also been involved in the training of the Community Based Organizations (CBOs) involved

Its mission is to promote a culture of responsibility to the environment and sustainable development among the general public in Tanzania

in Solid Waste Management (SWM) in Tanzania. In collaboration with government and other interest groups it has contributed to initiatives for the conservation of biological resources by promoting the production of biodiversity education materials to support the Biodiversity convention in Tanzania. In 1998, AGENDA established a Desktop Publishing Unit for biodiversity conservation in collaboration with the International Centre for Conservation Education (ICCE) under the Darwin Initiative. AGENDA has been involved in capacity building for environmental conservation and economic uplifting of coastal communities. In addition, AGENDA facilitated the integration of environmental responsibility into decision- making. AGENDA works with the National Environment Management Council (NEMC). One of its strategies is to influence tertiary institutions to incorporate Environmental Education in their syllabi.

The GTZ Project "Nile Initiative Water – Planning and Management of Water Resources in the Nile Basin": is a 10 years project, starting January 2002 and ending in December 2011. It is implemented in three phases, i.e. by Phase 1 (2002-2006), Phase 2 (2007-2008) and Phase 3 (2009-2011). The overall project costs are estimated at 9.0 million EUR. The overall objective is: "The Water Policies of the Nile Basin countries have converged closer towards a joint cross-border management of the Nile." The Objective of Phase 2 "A shared vision amongst the Nile Basin states is taking shape on how the principles of integrated water resource management and regional cooperation on the Nile can be better incorporated into national Water Policies" is in line with the overall objective. The project has combined mainly three service areas: trust and confidence building, human capacity development of staff of Ministries of Water Affairs, support in revision of existing Water Policies and legal framework of the member states.⁸⁶ For more information on this project, go to: <http://www.gtz.de/en/weltweit/afrika/burundi/18914.htm>

⁸⁶Interim evaluation 2008, Nile Initiative Water - Planning and Management of Water Resources in the Nile Basin, Africa (reg.): <http://www2.gtz.de/dokumente/gut/gtz2009-14128en-nile-initiative-brief.pdf>

2.8 Academic & research institutions⁸⁷

This section presents a brief overview of academic and research institutions working on climate and climate change related activities in the Nile Basin. Constructive discussions among non-state actors such as academic institutions and think-tanks across the riparian states can help to narrow the gap at policy level negotiations.

A brief summary is provided below while an inventory of research and academic institutions in the Nile Countries is presented in Annex 3:

Climate Change Research Group, Addis Ababa University, Ethiopia: is a new initiative within the Environmental Science Department at Addis Ababa University. It was established to monitor long term patterns of extreme events. Currently, the research group has researchers from Environmental Science, Earth Science, Physics and Statistics Departments. They will be integrating graduate students in their research. They will be open to establish collaboration with other research institutions. Their aim is to achieve regional integration by aligning their research to international research agenda as well as national research. They are currently funded by SIDA/CIDR on a project that will entail observing termite behavior in response to extreme events. They are currently developing a governance structure to enable it become an independent climate change research centre.

Great Lakes University of Kisumu (GLUK): in Kenya is an off-shoot of Tropical Institute of Community Health and Development (TICH) in Africa - a non-profit community based training, research and development trust. Its vision is to be a centre of excellence bridging academics with community and institutional based development. The mission is the development of effective, concerned managers/leaders with a vision for the transformation in the African context. The main aim of GLUK is to develop effective managers of health and development initiatives in the Africa Region. This is done by bridging training with service delivery programs, focusing on the needs of the most vulnerable communities in the society. It develops hands-on-tests and disseminates innovative and effective

models through action research. GLUK brings together regional and international academics, professionals and practitioners in Community health and development of diverse backgrounds to pool their skills, expertise and experience in addressing issues of livelihood through capacity building and for policy development.

Masinde Muliro University of Science and Technology's (MMUST), Kenya: the vision of the University is to become a centre of excellence in science and technology responding to development needs of society through engagement in dynamic knowledge creation and application. The university is already responding to socio-economic needs of the locals and the country at large. It is fulfilling this through the various capital development projects. The university has two faculties: Faculty of Science and Engineering (FSE) and Faculty of Education and Social Sciences (FESS). They also have a Centre for Disaster Management and Humanitarian Assistance (CDMHA), Institute of Graduate Studies, Research and Extension (IGSRE) and Science and Technology Park and Industrial Linkages (STPIL).

Department of Meteorology, University of Nairobi, Kenya: provides an educational and research environment to examine the dynamic, physical, and chemical processes that occur in the atmosphere. A major theme is the establishment of a physical basis for understanding, observing, and modeling climate and global change. Graduate students, research staff, and faculty work together on a wide range of research topics. It has ongoing consultancies from UNESCO/IHP Nile FRIEND Project, Government of Kenya - Nile Basin Initiative, UNDP/GEF and Government of Kenya-Ministry of Energy/KMD. Some of its ongoing projects are Formulating Disaster risk reduction strategy for Kenya., The onset and cessation of the long rains in eastern Africa and their inter-annual variability, Improvement of our understanding of rainfall mechanisms, prediction and verification methods in Kenya, Calibration and Validation of Satellite-Derived Data and Products for Improved Environmental Monitoring for Sustainable Development over Kenya and Using Rainfall to Predict Droughts and Floods in Kenya. These projects are being managed by individual departmental lecturers and/or in collaboration with other institutions.

⁸⁷Information for this section was obtained from the Institutional Mapping for Climate Change Adaptation in Eastern Africa report: http://www.idrc.ca/uploads/user-S/12472192231Institutional_Mapping_for_Climate_Change_Adaptation_in_Eastern_Africa.pdf

⁸⁸Information for this section was obtained from: http://www.iwmi.cgiar.org/publications/Working_Papers/working/WOR127.pdf

2.9 Institutions working in the Nile River Basin⁸⁸

This section presents a brief overview of the research projects pertinent to the Nile Basin Initiative. A brief overview of national research institutions and institutes, regional research NGOs, other search and dual institutions is provided below while additional information on the respective projects is presented in separate Tables as Annex 4:

2.9.1 National research institutions

Applied Training Project (ATP): Except for Egypt, and to a limited extent Sudan, there are few national centers specialized in water related research. Usually such research is carried out by universities and academic institutions. In general, the capacity of water professionals and institutions in the Nile region is weak, let alone national research centers and their cadre. These have been clearly revealed by the need assessment reports of the Applied Training Project ATP, namely, (a) lack of capacity on integrated water resources management; (b) uneven distribution of capacity between basin countries; and (c) little interaction among water professionals within the basin.

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA-SWMnet): is an organization of the National Agricultural Research Institutes (NARIs) in Madagascar and the Nile Basin Countries except Egypt. The Soil and Water Management Research Network (SWMnet) for East and Central Africa was started in 1998 to respond to the Millennium Development Goals (MDGs) on poverty eradication, hunger; and environmental sustainability. Refer to Table 1 for more information on these research projects. <http://www.asareca.org/>

The Consultative Group on International Agricultural Research (CGIAR): all main partners of the project except ASARECA are members of the Consultative Group on International Agricultural Research (CGIAR). The CGIAR is a strategic alliance of countries, international and regional organizations, and private foundations supporting 15 international agricultural centers that work with national agricultural research systems and civil society organizations including the private sector. The alliance mobilizes agricultural science to reduce poverty, foster human well-being, promote agricultural growth and protect the environment. The CGIAR generates global public goods that

are available to all. The CGIAR's Regional Plan for Collective Action in Eastern and Southern Africa is a very recent institutional innovation of the CG Centers and is aimed at fostering greater cohesiveness, economies of scale and scope and regional impact.

The Challenge Program on Water and Food (CPWF): is a CGIAR program. The Nile is one of the CPWF's benchmark basins for basin focal studies. <http://www.waterandfood.org/basins/nile-river-basin.html>

The World Agroforestry Centre (ICRAF): is headquartered in Nairobi-Kenya. Its research is organized around the four themes: (1) Trees and Markets; (2) Strengthening Institutions; (3) Land and People; and (4) Environmental Services. <http://www.worldagroforestry.org/>

The International Food Policy Research Institute: IFPRI has several ongoing research projects in some Nile countries that focus on the following main research themes: food system functioning, food system governance, and food system innovations. Refer to Table 2 for more information on these research programs. <http://www.ifpri.org/>

The International Livestock Research Centre (ILRI): is headquartered in Nairobi, Kenya. It is actively engaged in most of the Nile Basin countries. ILRI works on livestock-related projects. Refer to Table 3 for more information on ILRI research programs. <http://www.ilri.org/>

Nile Basin and East Africa Office of IWMI: is located in Addis Ababa and is the lead partner of the IWMI NBEA project. IWMI implements numerous research projects on water resources, hydrology, and irrigation management. Refer to Table 4 for ongoing projects. <http://www.iwmi.cgiar.org/Africa/East/>

WorldFish Center: has a regional office in Cairo Egypt, which specializes in research of living aquatic resources. Refer to Table 5 for more information on these research programs. <http://www.worldfishcenter.org/>

2.9.2 National research institutes

An inventory of national water related research institutions is presented in Annex 5:

Ethiopian Institute of Agricultural Research (EIAR): is a government research institution. Its parent ministry is the Ministry of Agriculture

and Rural Development. EIAR' s vision is to see that all Ethiopians engaged in agriculture, agro-pastoralism, pastoralism and all agriculture-related business become beneficiaries of improved and appropriate agricultural technologies. Its mission is to conduct research that will provide improved and appropriate agricultural technologies that will contribute to increased agricultural productivity, food security and environmental sustainability. Its major research thematic areas are: Crops, Livestock, Soil and Water, Forestry and Pastoral and AgroPastoral.

The Agricultural Research System is comprised of Federal Research Institutes and Centers, Regional Agricultural Research Institutes and Higher Learning institutes.

Kenya Marine and Fisheries Research Institute (KMFRI): is a state corporation in the Ministry of Livestock and Fisheries Development of the Government of Kenya. It is mandated to conduct aquatic research covering all the Kenyan waters and the corresponding riparian areas including the Kenya's Exclusive Economic Zones in the Indian Ocean waters. Its vision is to be a centre of excellence in aquatic research and promotion of sustainable utilization of marine and freshwater resources. Its mission is to contribute to the management and sustainable exploitation of aquatic resources and thus alleviate poverty, enhance employment creation and food security through multidisciplinary and collaborative research in both marine and fresh-water aquatic systems. The research programmes it is involved in are: Aquaculture, Environment & ecology, Fisheries, Information and data management, Natural products and Socio-economics.

Kenya Medical Research Institute (KEMRI): was established under the Science and Technology (Amendment) Act to represent the national body responsible for carrying out health science research in Kenya. "To be a leading centre of excellence in the promotion of quality health" is its vision and "To improve on the quality of health and human life through research" is its mission. KEMRI has centers which are intended to focus on certain specific areas of national and/or strategic importance and each of these Centers of Excellence are expected to emphasize and articulate the respective areas in which it has been given mandate by the Board to do research. In its research programmes it collaborates with local research institutions which include local universities and some of the government ministries. Its international collaborators vary from research organisations, development agencies as well as universities. It also has linkages with regional universities and medical related research centers.

Mikocheni Agricultural Research Institute (MARI): is one of the research



institutes under the Division of Research and Training (DRT) of the Ministry of Agriculture and Food Security in Tanzania. Its mandate is to conduct and promote research for the development of the coconut sub-sector and tree crops-based farming systems along the coastal belt of Tanzania. The Institute is also responsible for the promotion and coordination of agricultural biotechnology activities in the country.

National Crops Resources Research Institute (NACRRI): is one of the Public Agricultural Research Institutes under the Policy guidance of the National Agricultural Research Organisation (NARO), headquartered in Namulonge, Uganda. NACRRI has a national mandate to generate and disseminate improved technologies of crops which include beans, cassava, cereals (maize and rice), sweet potato and animal production. It carries out research in biological control of crop pests and weeds; and on agrometeorology. Research activities in the Institute are carried out under commodity programs and units. Presently, there are five programs according to the mandate: beans, cassava, cereals, potato Bananas and Horticultural crops. All programmes have multidisciplinary teams. The institute emphasizes participatory research which involves farmers (and other clients) at all levels of technology generation and development as well as bodies at national, regional and international levels in various research activities. So far the improved varieties released are Beans (11), Cassava (9), Maize (3), Rice (3), Solanum potato (8) and Sweet potato. All the varieties released are higher yielding and more disease and pest resistant than the traditional varieties.

National Agricultural Research Laboratories (NARLI), Uganda: (also a NARO constituent) hosts agricultural research for development and a new biotechnology facility which has a capacity for tissue culture, molecular biology and plant transformation in Uganda. Presently, the facility referred to as the National Agricultural Biotechnology Centre (NABC) is using biotechnology to address various agronomic problems in bananas, beans and coffee. Its goal is to ensure that people of the Uganda benefit from the revolution in biotechnology that is transforming agricultural research and development around the world. Areas of agricultural biotechnology currently being employed at NABC include: plant tissue culture used for mass generation of pest and disease and free planting material of improved crop varieties for banana and coffee. NABC has achieved very significant scientific and technological progress in

banana (matooke) transformation. It is sourcing and using genes to improve banana crop to resist pests and diseases that are currently affecting productivity. The other productivity factors in matooke that are being targeted for improvement through biotechnology are: maturity period, shorter plants and delayed ripening. NABC performs research and development in biotechnologies not only for sustainable agriculture but nutrition improvement.

Agricultural Research Corporation (ARC): is the official national research body of the Ministry of Agriculture and is entrusted with applied research in Agriculture including field and horticultural crops, and forestry. The ARC has many research programs and it includes the Soil and Water Research Center in Wad-Medni. The soil and water research Center has research programs and projects focus on agricultural water management under irrigated as well as rain fed conditions (e.g. Crop water requirements, water harvesting research, soil-water conservation research...etc...). The ARC mission is "to provide attractive and realistic technologies to improve and sustain productivity in Agriculture". Research activities are implemented in a network of research centers, stations, sub-stations, and testing sites. It aims to develop and implement research designed to produce technologies and systems that are required to ensure high and sustainable crop productivity, food security and export capacity.

Hydraulic Research Station (HRS): is a research body belongs to the Ministry of Irrigation and Water Resources. The objectives of the HRS are to conduct research and studies which could help in the more efficient use of Sudan's available water resources. It is aiming at the increasing agricultural productivity, developing inland waterways for navigation, maximizing hydro-power generation and solving associated applied hydraulics problems.

2.9.3 Regional research NGOs

African Centre for Technology Studies (ACTS): based in Kenya, is a Nairobi-based international intergovernmental science, technology and environmental policy think-tank that generates and disseminates new knowledge through policy analysis, capacity building and outreach. Its vision is to better living standards for all in Africa through harnessing science and technology for sustainable development. Its mission is to strengthen the capacity of African countries and institutions to harness science and technology for sustainable development. Previously, it managed the Regional Approach to Biotechnology

and Biosafety Policy in Eastern and Southern Africa (the RABESA initiative) which was to generate and analyze technical information needed to inform COMESA and ASARECA on regional biotechnology and biosafety policy choices. In the Transboundary Natural Resources Management project, ACTS worked with the East Africa Community (EAC) to develop Regional Guidelines for Environmental Assessment of Shared Ecosystems of East Africa. The Cross-Border Biodiversity project was launched in 1999 by the governments of the three East African countries (Tanzania, Kenya and Uganda). The policy component implemented sought to promote and contribute to the creation of appropriate policy and institutional conditions for the conservation and sustainable use of cross-border biodiversity in East Africa. Currently, it is running Biodiversity and Environmental Governance, Energy and Water Security, Agriculture and Food Security programmes. ACT's collaborators cut across local and international universities, intergovernmental organisations, some of the United Nations Agencies and development organisations.

Africa Harvest Biotech Foundation International (AHBFI): is a non-profit foundation in Kenya. It has contributed biotech expertise to the New Economic Partnership for African Development (NEPAD) and to the Forum for Agricultural Research in Africa (FARA). Its vision is "An Africa free of hunger, poverty and malnutrition" while its mission is to use science and technology – especially biotechnology – to help the poor in Africa achieve food security, economic well-being and sustainable rural development. One of its projects is the Africa Biofortified Sorghum (ABS) which seeks to modify the sorghum protein constituents and enhance its palatability. Its linkages: are: Biotechnology, Breeding and Seed Systems for African Crops, The African Agricultural Technology Foundation, West and Central African Council for Agricultural and Research Foundation (CORAF), The Association for Strengthening Agricultural Research in Eastern and Central Africa, US Agency for International Development, African Centre for Technology Studies (ACTS), Forum for Agricultural Research in Africa (FARA), Biotechnology Trust Africa (BTA), AfricaBio, Bio-Earn, ISAAA, African Biotechnology Stakeholders Forum (ABSF), World Business Council For Sustainable Development and GMO Blog.

IGAD Climate Prediction and Applications Centre (ICPAC): is a specialized institution of the Intergovernmental Authority on Development (IGAD)

working with the National Meteorological Services, World Meteorological Organisation (WMO) and other partners to address regional challenges of climate risks including climate change. It has its headquarters in Kenya. The mission of ICPAC is to foster sub-regional and national capacity for climate information, prediction products and services, early warning, and related applications for sustainable development in the IGAD SubRegion. Within its core programmes, it has computer services and data management, climate diagnostics, prediction and climatology, climate applications, documentation, research and development and end-user liaison. It has managed to create a climate data bank that is constantly updated. It has been capacity building in data processing, climate monitoring & modeling, and prediction. Upgrading of ICPAC computing facilities has improved regional climate modeling and prediction capacity.

2.9.4 Other research institutions

The following are other research organizations involved in research work within the Nile Basin. Although these are not initial partners of the project, their inclusion aims at further expanding synergies and partnerships in the future:

ALTERRA: is the research institute of the Wageningen University. Their ongoing project in the Nile Basin entitled 'New Water Adaptive Water Management Research in the Nile Basin' focuses on integrated water management, and effects of climate. The project aims at developing adaptive water management systems, both for infrastructure (storage and buffering capacity), and management (regime and institutions). <http://www.alterra.wur.nl/UK/>

The Global Water Partnership (GWP-EnA): is a working partnership among all those involved in water resources management. The Eastern Africa Global Water Partnership was launched in November 2002 and is now hosted by the NBI Secretariat at Entebbe in Uganda. <http://www.gwpena.org/>

FAONile: The Information Products for Nile Basin Water Resources Management Project is intended to strengthen the abilities of the Nile Basin states to take informed decisions with regard to water resources policy and management. Supported by the Government of Italy, the FAONile project is carried out under the umbrella of the NBI. It is implemented by the ten Nile riparian states with technical and operational assistance of the Food and

Agriculture Organization FAO. Refer to Table 6 for more information on ongoing projects. <http://www.faanile.org>

The FRIEND-Flow Regimes from International Experimental and Network Data (FRIEND NILE): The FRIEND/Nile Project aims at improving the river basin management of the Nile through promoting cooperation in the field of water resources management and regional-scale analysis of hydrological regimes. <http://62.193.88.134/fn/>

The International Atomic Energy Agency (IAEA): is a United Nations Agency that works on the peaceful uses of nuclear technology. The objective relevant to NBI is to improve the management of water resources through use of isotope technologies. Please refer Table 7 for more information on the ongoing projects in the region. <http://www.iaea.org/>

The International Institute for Geoinformation Science and Earth Observation (ITC): in Enschede, The Netherlands is similar to IHE. Many water professionals from the Nile region who specialize in remote sensing and GIS applications have graduated or are currently studying at the ITC. The institute carries out multidisciplinary and problem-oriented research in support of its education and project services. <http://www.itc.nl/research/default.asp>

Nile Basin Discourse (NBD): is a network of civil society organizations from the ten countries of the Nile Basin which seeks positive influence over the development of projects and programs under the NBI and other Nile-related programs. http://www.nilebasindiscourse.org/index_EN.php

UNESCO-IHE: Is the International Institute for Water Education, Delft; the Netherlands. Large numbers of the Nile water professionals have completed their post graduate or are currently studying at UNESCO-IHE. <http://www.unesco-ihe.org/about/intro.htm> The knowledge networks project for the Nile Basin (Cairo, Egypt) is run by the UNESCO-IHE to create networks and Communities of Practice on the basis of the ongoing project (NBCBN-River Engineering), <http://nbcbn.com/Home.asp>

University of Bergen: The UiB hosts the Nile Basin Research Program NBRP. The program is associated with the Applied Training Program (ATP) of the NBI. The NBRP focuses thematically on contested resources, climate dynamics, health and socioeconomic aspects. <https://nile.uib.no/>

2.9.5 Dual institutions

Advocates Coalition for Development and Environment (ACODE): is an independent public policy research and advocacy think tank. ACODE is one of the regional leaders in cutting-age public policy





research and analysis in a range of areas including governance, trade, environment, and science and technology. Its research team is a unique blend of multi-disciplinary professionals with specialized expertise in cutting age policy research, advocacy and monitoring of public policy. Its aim is to influence development and governance policies for the promotion of social justice in Eastern Africa through independent policy research and advocacy. Through research, it helps governments and international development organizations expand the range of policy options available to confront challenging and controversial public policy problems. Through advocacy, ACODE contributes to formulation of policies that support sustainable development thereby expanding livelihood and income options for poor people. Through representation, it empowers communities to demand for justice and promote public participation in decisions making processes that affect rural livelihoods and the environment.

Arid Lands Information Network (ALIN): based in Kenya is a network of community development workers established in the year 2000 to continue the work of the parent organisation, Reseau d'Information des Terres Arides or the Arid Lands Information Network (RITA-ALIN). RITA-ALIN was established by OXFAM (UK) in 1988 as a platform to exchange experiences among Community Development Workers (CDWs). ALIN's vision is "a Knowledge-Driven Society" and its mission is "To enhance the livelihoods of communities through info exchange". Its core business is to facilitate the exchange of ideas, experiences and knowledge among communities to enhance learning in order for communities to manage their socio-economic issues using multi-media tools. Its countries of operation are Kenya, Uganda, Tanzania and Ethiopia. Due to successful involvement in using ICTs at community level, ALIN-EA was chosen to pioneer in Africa on pilot basis the Open Knowledge Network (OKN). The OKN is a global initiative linking thousands of marginalized and poor people through information sharing. ALIN has a one year youth volunteer program whose purpose is to equip the youth with skills in community development, impart them with social responsibility and prepares them for the job market. ALIN membership consist CDWs drawn from NGOs, community- based organisations as well as government departments, all offering a form of extension service in their fields of expertise. They act as a source of information and knowledge for the rest of the community. ALIN has also partnered with other development agencies to develop a wider content for dissemination.

Centre for Energy, Environment Science and Technology: is a Non-Governmental Organization in Tanzania. It was formed because of the need for an institution, which would research on issues of energy development, environmental protection, natural resource use and management, and the development and use of science and technology in a holistic and balanced manner. Its aim is to explore and exploit synergies and possible multiplier effects in order to complement efforts of other institutions and individuals as countries strive to overcome backwardness and poverty. It has been able to accomplish a number of research assignments, consultancies and studies. It has massive experience in technology and policy related research and studies in energy and environment, Environmental Impact Assessment (EIA) in energy, mining, etc, policy and technical/technological studies and advice in energy, mining, water resources and environment, Climate change studies and research.

Department of Meteorology, Kenya: is a government institution, under the Ministry of Water and Environment. It plays its specialized role of providing climate and weather services to the Government and other stakeholders engaged in national development activities in the country. The Department of Meteorology has four Divisions which include: Station Networks, Forecasting, Applied Meteorology & Data Processing, and Training & Research. It establishes and maintains a weather station network across the country. At each of the weather station, weather observations are made daily and the weather records are kept at the Department Headquarters which are available to the public. In addition to provision of weather data, the Department processes the data to provide tailor made climate information products to the end user as needed. It also provides a range of weather forecasts to different users which include aviation, agriculture construction among others. Furthermore, the Department provides training to different stakeholders in various issues which include use of climate information products, weather observation and others as required by the user.

Lake Basin Development Authority (LBDA): was established under a Kenyan act of parliament. The Act gives it the mandate to undertake overall planning, co-ordination, implementation, monitoring and evaluation of development projects and programmes in its area of jurisdiction. The vision of the LBDA is to be a leading institution in the socio-economic development of the Lake Basin

Region. LBDA's mission is to spearhead development in the region by undertaking integrated planning and sustainable management of the resources through the participation of local people as key stakeholders. It accomplishes this mandate by utilizing the abundant resources in the region for socio-economic development. The LBDA's area of jurisdiction covers the entire catchments areas of the major rivers which drain into Lake Victoria on the Kenyan side.

Practical Action (formerly known as Intermediate Technology Development Group- ITDG): aims to demonstrate and advocate the sustainable use of technology to reduce poverty in developing countries. Practical Action has a unique approach to development "we don't start with technology, but with people". It works with poor communities to help them choose and use technology to improve their lives for today and generations to come. The organisation works towards fulfilling its mission in Eastern Africa – Kenya, Uganda and Tanzania, and will later cover Ethiopia, Eritrea, Somalia, Rwanda and Burundi – by increasing the choices of technologies and approaches accessible to the marginalized groups through establishing a broad range of highly regarded project work. The Rural Agriculture and Pastoralism Programme (RAPP) is a food production unit of ITDG (Practical Action) in Eastern Africa. The programme undertakes its projects in partnership with both dry land farmers and pastoralists in Turkana, Marsabit, Samburu, Tharaka and Makueni districts in Kenya.

Plant Resources of Tropical Africa (PROTA): is an international programme concerned with making scientific information about utility plants accessible in Africa and supporting their sustainable use to reduce poverty. PROTA's stated mission is to synthesize all the information available for approximately 7,000 plants used in tropical Africa and make it widely accessible in various media. It also intends to promote opportunities for the sustainable use of plants to the public and private sectors, making a difference to the people whose livelihoods depend on plants. The programme operates through an international network of institutional partners and collaborators of the PROTA Foundation and has representatives in 20 African countries.

Uganda Wildlife Authority (UWA): was established by the Uganda Wildlife Statute, which merged the Uganda National Parks and the Game Department. UWA's mission is to conserve and sustainably manage the wildlife and Protected

Areas of Uganda in partnership with neighboring communities and stakeholders for the benefit of the people of Uganda and the global community. UWA is mandated to manage wildlife and wildlife protected areas of Uganda in partnership with neighboring communities and other stakeholders. Since UWA also manages some of the forested protected areas, UWA adheres to the forest management practices consistent with the Forest Stewardship Council (FSC) Principles and Criteria in managing these forests to ensure that benefits accruing from the conservation of these areas are generously shared with neighboring local communities. It has strategic programmes which are Protected Area, Community Conservation and Benefits and Wildlife Management outside Protected Areas. The Wildlife Management outside Protected Areas programme helps in creating awareness amongst local communities and engages community partners in understanding the value of wildlife outside Protected Areas.

OSIENALA (Friends of Lake Victoria): is a Non-Governmental Organization which operates within the Lake Victoria basin, focusing on the issues affecting the fisher folk around the lake. OSIENALA aims to provide interventions on environmental management. However, emerging social, cultural, economic and ecological issues mandated it to become a regional NGO. OSIENALA was established in 1992. Given that Lake Victoria is shared among the three East African Community States, its geographical location has international legal implications, especially with Sudan and Egypt, within the Nile River Basin and with Rwanda and Burundi, due to their connection with the Kagera River Basin. Utilization of the lake water and living aquatic resources shared by the states raises many concerns, partly because of the value of the resources for national policy and partly because these states often invoke legislative or diplomatic interests. OSIENALA has a radio programme as part of its environmental education activities. Other activities include a schools programme that covers topics such as lake ecology, wetland ecosystem, water and sanitation, aqua culture, dairy farming, waste management and Agro-forestry among other environmental issues within the lake basin. OSIENALA offers eco tourism to both local and international tourists as well as a resource center for Lake Victoria ecology and the culture of the people of the lake. The organization is currently working on how to promote fish farming in the lake region using demonstration ponds and various groups and individuals are invited to visit and learn more about aqua culture.



3.0 Network organizations & associations⁸⁹

This section presents a brief overview of network organizations and associations engaged in climate change adaptation activities in the Nile Basin. A brief summary of networks and associations is provided below:

3.1 Partnerships/networks

The African Network of Basin Organizations (ANBO) - is a platform for sharing experiences and challenges in managing water resources. It is an established sub-committee of AMCOW and is a useful information resource for the African Union of international water management in Africa.

Cap-Net is an international network for capacity building in water resources management. It consists of partner networks across Africa that bring together capacity builders and capacity building institutions into networks assembling local knowledge and experience and delivery capacity building support on water supply and sanitation as well as other areas.

The Afri2can networks are:

- Nile IWRM-net: a capacity building network covering the Nile basin countries and based in Sudan. A focus on water resources, water supply

and sanitation.

- NBCBN: a Nile basin capacity building network based in Egypt and covering the Nile countries. A focus on research and river engineering.
- AGW-net: the Africa Groundwater network with membership across Africa addressing groundwater management.
- All of these networks are involved in capacity development in water supply and sanitation and have access to local expertise through their network.

Nile basin capacity building network for river engineering in the ten Nile riparian countries⁹⁰

- is a regional programme to strengthen the capacities and to build trust between water professionals from the region for a sound development of Water Resources in the Nile River Basin through joint research, education and training. The Network was established with nodes at knowledge institutions in all 10 Nile riparian countries, through which mobility of staff is increased, joint applied research on water

⁸⁹Source: http://www.iwmi.cgiar.org/publications/Working_Papers/working/WOR127.pdf

⁹⁰Source: <http://www.unwater.unu.edu/file/get/128>

resources in the Nile River Basin is executed, and a Knowledge & Information Centre is established to share available knowledge and data in the Basin. By increasing the interaction between professionals and institutes active in the field of water resources management, the project contributes to the process of building confidence between riparian states and thus facilitates future integration of regional efforts to soundly manage the water resources in the Nile Basin. The project falls under the Nile Basin Initiative and project activities are in line with the priorities listed in the Shared Vision for the Nile Basin.

By increasing the interaction between professionals & institutes active in the field of water resources management, the project contributes to the process of building confidence between riparian states & thus facilitates future integration of regional efforts to soundly manage the water resources in the Nile Basin

The Lead Partners Interagency Network Forum (LPIANF): was established in July 2007 and is currently constituted by six lead agencies namely; The Nile Basin Initiative (NBI), Lake Victoria Basin Commission (LVBC), UNHABITAT, Lake Victoria Region Local Authorities Cooperation (LVRLAC), Nile Basin Discourse (NBD), and East Africa SusWatch Network.

WaterWiki: managing information is one of the challenges in capacity development and the World Wide Web provides new opportunities to make information freely available anywhere in the world. It is recognized that many parts of Africa still lack good internet access but with increasing coverage the WaterWiki, developed by UNDP and other partners provides a good base for sharing water information with Water professionals worldwide. Through the WaterWiki one can find - and share - projects, publications, practical experience and other knowledge about development work in the international water sector. A partnership project among UN agencies, WaterWiki is one of the most innovative responses to effective and efficient knowledge management within the UN.

UNESCO Water Portal: the objective of the portal is to improve access to information on freshwater on the web. The site serves as a thematic entry point to the current UNESCO and UNESCO-led programmes on freshwater. It also provides a platform for sharing and browsing websites of other water-related organizations, government bodies and NGOs through the water links and events databases.⁹¹

3.2 Research partnerships/networks

Association for Strengthening Agricultural Research in Eastern and Southern Africa (ASARECA): is a nonpolitical organization of the National Agricultural Research Institutes (NARIs) of ten (10) countries in Eastern and Central Africa: Burundi, D. R. Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda. It aims at increasing the efficiency of agricultural research in the region so as to facilitate economic growth, food security and export competitiveness through productive and sustainable agriculture. Its mission is to enhance regional collective action in agricultural research for development, extension and agricultural training and education to promote economic growth, fight poverty, eradicate hunger and enhance sustainable use of resources.

Horn of Africa Regional Environment Centre and Network (HOARECN): is an initiative of the Science Faculty of the Addis Ababa University. HOAREC's mission statement is to improve environmental governance and management in the Horn of Africa Region by focusing on several critical environmental management areas as well as enhancing the development of environmental support sectors to relieve pressure on natural resources by stimulating new value chains for sustainable products and services and promoting renewable/sustainable energy.

Horn of Africa Regional Centre: acts as a major resource centre for the region. It promotes environmental awareness and deploying educational activities and pilot projects to test and disseminate innovations. The centre has focused on management of lakes and wetlands, management of parks and buffer zones, management of erosion prone highlands and dry lowlands. Demand Driven Action Research is one of the center's programmes designed to bring academic research capacity closer

⁹¹Source: <http://www.unesco.org/water/about.shtml>

to the reality “on the ground”. The Partnership programme is aimed at stimulating and facilitating partnerships between academia and the private sector and/or civil society organizations in order to implement environment related projects. The centre also has a capacity building programme for environmental management in the region whether through experience exchange within the Horn countries or through training and education from other areas and distance learning programmes on environment management modules using practical case studies from the field. Horn of Africa Regional Environment Network (HoA-REN) is a network of member and partners consisting of environmental community based organisations, nongovernmental and higher learning institutes from six countries in the Horn of Africa.

3.3 International research institutions

International Maize and Wheat Improvement Centre (CIMMYT): is a non-profit research and training center with direct links to about 100 developing countries through offices in Asia, Africa and Latin America. It is committed to improving livelihoods in developing countries. Through strong science and effective partnerships, it creates, shares, and uses knowledge and technology to increase food security, improve the productivity and profitability of farming systems and sustain natural resources. It participates in an extensive global network of people and organizations who share similar development goals, including the public and private sector, non-governmental and civil society organizations, relief and health agencies, farmers and the development assistance community. The expected applications of research of Global Wheat Program is that it will provide farm households with new options to diversify crop and livestock production systems, improve their productivity, and conserve scarce water and soil resources in large areas of Asia, Northern, Southern and Eastern Africa and Latin America. The Global Maize Program uses maize genetic resources to provide diverse, high-yielding varieties that withstand infertile soils, drought, insect, pests, and diseases. Conducts crop and natural resource management research to help farmers exploit the full potential of improved seed and to preserve and enhance soil and water resources. Among its partners and donors it has: International Maize Improvement Network, International Wheat Improvement Network (IWIN), Borlaug Global Rust Initiative, The Drought Tolerant Maize for Africa Initiative, Insect Resistant Maize for Africa (IRMA),

Water Efficient Maize for Africa (WEMA), national agricultural research institutions, non-government and community-based organizations, seed sector organizations, regional research networks, other CGIAR centers, private companies, and advanced research institutions world-wide.

International Livestock Research Institute (ILRI): ILRI’s vision is “A world made better for poor people in developing countries by improving agricultural systems in which livestock are important”. Its mission is to work at the crossroads of livestock and poverty, bringing high-quality science and capacity-building to bear on poverty reduction and sustainable development for poor livestock keepers and their communities. Its research themes are: Targeting and innovation, improving marketing opportunities, using biotechnology to secure livestock assets and people, livestock and the environment. ILRI’s strategy is to place poverty at the centre of an output-oriented agenda. ILRI’s strategy focuses on three livestock-mediated pathways out of poverty: (1) securing the assets of the poor, (2) improving the productivity of their livestock systems and (3) improving their market opportunities. ILRI also coordinates the System wide Livestock Programme of the Consultative Group on International Agricultural Research (CGIAR). Its other linkages are drawn from Donor Agencies, National Agricultural Research Institutes, Non-Governmental Organisations, Farmer Organizations and Private sector.

International Water Management Institute (IWMI): is one of 15 international research centers supported by CGIAR. It is a non-profit organization. Its vision is to be a world-class knowledge center on water, food and environment and its mission is to improve the management of land and water resources for food, livelihoods and nature. Research is the core activity of IWMI. The research agenda is organized around four priority themes including Basin Water Management; Land, Water and Livelihoods; Agriculture, Water and Cities; and Water Management and Environment. Cross cutting activities in all themes include, assessment of land and water productivity and their relationship to poverty, identification of interventions that improve productivity as well as access to and sustainability of natural resources, assessment of the impacts of interventions on productivity, livelihoods, health and environmental sustainability. IWMI works through collaborative research with many partners and targets policy makers, development agencies, individual farmers and private sector organizations.

4.0 Available databases & bibliography pertinent to the Nile River Basin⁹²

Discussions on research needs to support Nile Basin Initiative projects emphasize the need for good quality data by almost all the NBI projects. Availability of the data in the basin has been a challenge for planning, development, management and research projects. In addition to national databases built by riparian states, a number of organizations have also been active in building databases of different types within the Nile Basin. A list of temporal and spatial databases currently being built by several partners/ organizations is provided below:

FAO Land and Water: The Land and Water Development Division of FAO operates a number of databases, e.g.,: AQUASTAT – Global Information System of Water and Agriculture; CLIMWAT – Climatic Database to be used with CROPWAT; Digital Soil Map of the World; Land Degradation Assessment for Dry lands (LADA); Land-water Linkages in Rural Watersheds; among others. <http://www.fao.org/ag/agl/lwris.stm>

CGIAR-CSI: The Consortium for Spatial Information links all of the CGIAR's GIS/RS laboratories, and many geospatial scientists and researchers. It includes databases on population, poverty, climate, soil, crops, livestock, transportation, biodiversity and other geospatial Global Public Goods. <http://www.csi.cgiar.org/index.asp>

FAONile Databases: is a part of the FAONile projects. It includes scattered databases from a host of different institutions organized at national level in a comprehensive geo-referenced Nile Basin database. A large set of hydrologic and meteorological data has been quality controlled and transferred into an electronic format. <http://www.faonile.org/whatwedo/database.htm>

The Famine Early Warning System Network (FEWS NET): produces information for disaster and crisis prediction. The program monitors numerous data and information—including remotely sensed as well as ground-based data on meteorological, crop, and rangeland conditions. <http://earlywarning.usgs.gov/adds/>

FishBase: WorldFish Center has a FishBase database, which provides detailed information on most of the known world fish species. There are many other databases that include valuable data on the Nile that have not been covered as above, e.g., University of East Anglia, Global Runoff Data Centre, Tropical Rainfall Measuring Mission, Earth Observing System Data Gateway of NASA, among others. http://www.worldfishcenter.org/cms/list_article.aspx?catID=42&ddlID=65

International Food Policy Research Institute (IFPRI): includes databases on Geospatial Datasets of Agro-MAPS; Global Rural-Urban Mapping (GRUMP); Agroecosystems Dataset, among others. http://www.ifpri.org/data/data_menu.asp

International Livestock Research Institute (ILRI-GIS): is a database related to livestock distribution, health and



production. Other layers, however, cover more general topics such as human population density, climate and infrastructure. Some of the datasets cover only a specific project, while others are county-wide, regional, continental or even global. <http://www.ilri.cgiar.org/gis/igis.asp>

International Water Management Institute - Integrated Database Information System (IWMI-IDIS): is an on-line data sharing platform that provides access to water, agriculture and environment data on several basins, including the Nile. <http://dw.iwmi.org/dataplatform/home.aspx>

International Water Management Institute - Data Storehouse Pathways (IWMI-DSP): of IWMI contains large volumes of multi-temporal data from multiple satellite sensors, which were used in several IWMI research projects, including: Global Irrigated Area Mapping GIAM. <http://www.iwmidsp.org/iwmi/info/main.asp>

TIGER Initiative: established by the European Space Agency to assist African countries on collection, analysis and dissemination of water related geo-information data. The project offers numerous spatial data on different sources. <http://www.tiger.esa.int/EOdata.asp>

4.1 Bibliography on the Nile research⁹³

This section provides a list of some literature citations on Nile Basin research. It aims to review popular bibliography on the Nile. However, the list cannot be claimed to be complete or comprehensive. A list on the main bibliography information and famous books on the Nile is provided in Annex 6:

Cornell Blue Nile: Is a website recently developed by the Cornell University to organize information about hydrological modeling in the Nile River Basin. It includes a reference list of journal articles on the Nile hydrology, sediment, and other aspects. The site is protected by a user name and password. <http://nile.cornell.drfuka.net/>

HYDROMET: The HYDROMET project was initiated by WMO in 1968 to collect information related to hydro-meteorological data linked to the White Nile.

Reports and other outputs of the project are available in the NBI Nile-Sec library, Entebbe, Uganda. <http://www.nilebasin.org//library.htm>

Nile Hydrology by J.V. Sutcliffe and Y.P Parks: IAHS Special Publication No. 5, 1999: This book describes the Nile Basin in its historical setting and the hydrology. The book also includes mean hydrological data on key variables at key locations in the basin. <http://cerf-jcr.org/Books/Nile.htm>

The River Nile and Its Economic, Political, Social and Cultural Role: An Annotated Bibliography by Terje Tvedt: The book includes an extensive, multidisciplinary bibliography on the Nile of 3,490 entries. It is organized in eight categories: (1) Political and Cultural History; (2) Fisheries; (3) Flora and Fauna; (4) Health; (5) Physical Characteristics; (6) Projects and Reports; (7) Travel and Exploration; and (8) Water Use and Water Management. http://www.global.uib.no/home/index.php?module=article&view=36&page_num=4

The Nile: Sharing a Scarce Resource by P.P. Howell, Published by Cambridge University Press in 1994: This is a historical and technical review of water management and of economical and legal issues. <http://www.cambridge.org/us/catalogue/catalogue.asp?isbn=0521450403>

The Nile Basin Volumes: These are the first series of literature on the Nile. It includes volumes from I to XI containing data series and description of the hydrological characteristics of the Nile basin and sub-basins including general information on meteorology, topography, conservation projects etc.

TECCONILE Atlas: The Technical Cooperation Committee for the Promotion of the Development and Environmental has participated in the preparation of an atlas of the Nile Basin, which includes different types of data. <http://www.nilebasin.org//library.htm>

Nile 2002 Conference Series: A series of conferences that was started in 1993 and concluded in 2002. The proceedings encompassed a wealth of information on Nile technical issues. <http://www.nilebasin.org//library.htm>

⁹²Source: http://www.iwmi.cgiar.org/publications/Working_Papers/working/WOR127.pdf

⁹³Source: http://www.iwmi.cgiar.org/publications/Working_Papers/working/WOR127.pdf

Annex 1 – Overview of project in the Nile River Basin initiative

1. Summary of the SVP project portfolio

Project	Objective	Description	Status
Nile Transboundary Environmental Action	Provide a strategic framework for environmentally sustainable development of the Nile River Basin	Identifying environmental & development synergies contributing to sustainable development opportunities will be an important task. Improve understanding of the relationships of water resources development & the environment in the basin	The project has made significant progress in implementing planned activities
Nile Basin Regional Power Trade	Establish the institutional means to coordinate the development of regional power markets among the Nile Basin countries	The present limited development of national power systems in the basin imposes a constraint on the exploitation of these resources at affordable costs at the national level. These constraints on supplying affordable power could be overcome by expanding the market for these resources by developing power trade among Nile Basin countries	Significant progress has been made in each of the components
Efficient Water Use for Agricultural Production	Provide a sound conceptual & practical basis to increase availability and efficient use of water for agricultural production	Irrigation is the dominant human use of water in the basin and that agriculture is an important element of the economies of all riparian countries in terms of employment, exports, & contribution to GDP. Hence, the judicious use of this resource in the sector is critical	Project personnel are in place and project activities are picking up
Water Resources Planning and Management	Enhance the analytical capacity for basin wide perspectives to support the development, management, & protection of Nile Basin waters	Components of water resources management that help in furthering cooperation include effective policies & implementation strategies, project planning and management skills, & communication and decision making tools	All the staff are in place and project activities are picking up
Confidence Building and Stakeholder Involvement	Develop confidence in regional cooperation under the NBI, both at basin & local levels, and ensure full stakeholder involvement in the NBI and its projects	Confidence in regional cooperation & full stakeholder involvement are prerequisites to sustainable socioeconomic development & poverty reduction	Various types of workshops and trainings are being conducted by the project
Applied Training	Strengthen capacity in selected subject areas of IWRM, strengthen centers with capacity to develop & deliver programs on a continuing basis	Most of the basin countries are burdened by weak human & institutional capacity to manage water resources in an integrated manner. This situation applies not only to the management of international waters but also to management of national waters	A number of training courses, seminars, long-term training, curriculum development are being conducted

Project	Objective	Description	Status
Socioeconomic Development & Benefit Sharing	Strengthen Nile River basin wide socio-economic cooperation & integration environmentally sustainable development of the Nile River Basin	Broader cooperation could enable enhanced intra-regional trade & promote investment in the region's infrastructure, such as roads, rail, & telecom links that could increase the productivity of all countries within the region & allow them to develop more rapidly and trade more effectively both within and beyond the region	Although the project started late, activities of the project are picking up

2. ENSAP projects portfolio

Project	Objective	Description	Status
Eastern Nile Planning Model Sub-Project	To identify, prepare, and implement cooperative development projects that provide mutual benefits in the Eastern Nile (EN)	Provides a common analytical basis for identifying and assessing options, quantifying benefits and impacts, evaluating tradeoffs, and analyzing and managing information	Ongoing
Flood Preparedness & Early Warning Sub-Project	To reduce damage from major floods, and to increase the benefits from excess flood waters, in the EN countries	The project includes: assessment of flood risk and vulnerability, develop a flood forecasting system, identify options for enhancing flood mitigation.	Project preparation is in progress, pre-appraisal report prepared
Baro-Akobo Multi-purpose Water Resources Development Sub-Project	The Baro-Akobo Basin project provides a potential opportunity to develop a multi-purpose water resource project which may provide win-win benefits to the Eastern Nile countries	The multi-purpose project intends to provide: hydropower generation, irrigation development, flood management, increased water yield, environmental protection and enhanced watershed management	Discussion with funding agency is on going, revised TORs prepared
Ethiopia-Sudan Transmission Interconnection Sub-Project*	To promote regional power trade through coordinated planning and development of power projects and transmission interconnection	Construction of a transmission interconnection between Ethiopia and Sudan, taking into consideration future power trade with Egypt and possibly other countries	Updating of feasibility study
Eastern Nile Power Trade Investment Program	To initiate the development of a regional power trade generation and investment program	To initiate an investment program that prioritizes hydropower development and transmission interconnection investments in the Eastern Nile region	Consultant hiring is in progress for project preparation
Irrigation & Drainage Sub-Project	To increase agricultural productivity through irrigation development	To support the development and expansion of irrigated agriculture, as well as to improve the productivity of large-scale Sub-Project agriculture through improved agricultural water use	Consultant hiring is in progress for project preparation

Project	Objective	Description	Status
Watershed Management Sub-Project	To establish a framework for the management of selected watersheds on the Eastern Nile	The project is expected to lead to: increased land productivity, reduced sediment load, poverty alleviation	Draft report prepared
Joint Multi-purpose Project	Launch the first phase of identification of a major program of multipurpose joint development of the Eastern Nile	A 'scoping study' has been initiated to support the process by providing information on key multi-purpose opportunities in the Eastern Nile that could form part of a Joint Multi-purpose Project	Improvement of the knowledge-base and refinement of the models
Ethiopia-Sudan Transmission Interconnection Sub-Project*	To promote regional power trade through coordinated planning and development of power projects and transmission interconnection	Construction of a transmission interconnection between Ethiopia and Sudan, taking into consideration future power trade with Egypt and possibly other countries	Updating of feasibility study

3. ELSAP project portfolio

NEL-COM Priority Area	Project	Countries	Description
Water Use in Agriculture	Enhanced Agriculture productivity project	Burundi DR Congo Kenya Rwanda Tanzania Uganda	The regional agriculture program, which is under preparation, will promote opportunities for cooperation in the Nile Basin through private investment, public-private partnerships and enhanced trade through increased investment, income generation and pro-poor growth. Financing for this project is not yet secured
Sustainable Management & Conservation of Lakes & Wetlands	Fisheries project for Lake Albert and Lake Edward	DR Congo Uganda Egypt Sudan	The objective of the project is to establish a sustainable framework for the joint management of the fisheries in Lake Albert and Lake Edward to improve the living Lakes and Wetlands condition of the people and to protect the environment
Watershed Management	Development of a Framework for Co-operative management of the Mara River Basin water resources	Kenya Tanzania	The objective of the project is to establish a sustainable framework for the joint management of the water resources of the Mara River Basin, in order to prepare for sustainable development oriented investments
	Kagera river basin integrated water resources management	Burundi Rwanda Tanzania Uganda	The objective of the project is to develop tools and a permanent institution for the joint, sustainable management of the water resources in the Kagera River Basin.
	Development of a Framework for Co-operative management of the Malakisi-Malaba-Sio River Basin water resources	Kenya Uganda	The objective of the project is to reverse the environmental degradation trends in the catchments by supporting the rural communities in adopting appropriate technologies in catchment management

NEL-COM Priority Area	Project	Countries	Description
Water Hyacinth & Water Weed Control	Water Hyacinth abatement in the Kagera river basin	Burundi Rwanda Tanzania Uganda Sudan Egypt	The objective of the project is to eliminate adverse effects on environment, health and socioeconomic activities that are caused by water hyacinth infestation, by reducing to manageable levels the infestation of water hyacinth in the Kagera River basin
Hydropower Sub-program 1: Hydropower Development	A Rusumo Falls hydro-electric power development (HEP)	Burundi Rwanda Tanzania Uganda Sudan Egypt	The objective of the project is to supply new energy and capacity to the existing power grid based on renewable hydropower energy, to foster international cooperation in hydropower project development, and to electrify new areas and improve regional power supply reliability by interconnecting the power networks of DRC-East/ Burundi/ Rwanda and the national network of Tanzania
Sub-program 2: Transmission Interconnection	Regional transmission feasibility interconnection study	Burundi Rwanda Tanzania Uganda Sudan Egypt	The objective is to prepare an indicative NELSAP Power Master Plan to assist the NELSAP riparian countries in selecting best power supply options and regional transmission inter connection
	Strategic Sectoral Social and Environmental Assessment of Power Development options Coordination	Burundi Rwanda Tanzania Uganda Sudan Egypt	The objective is to prepare an indicative NELSAP Power Master Plan to assist the NELSAP riparian countries in selecting best power supply options and regional transmission inter connection
NEL-Coordination Unit Coordination (NEL-CU)		Burundi Rwanda Tanzania Uganda Sudan Egypt	The project provides institution and capacity building funds to NELSAP-CU. The member countries are currently seeking funds for a follow-up on refinement NELSAP-CU institutional support project for the next 4 years to support the NELSAP Scaling Up Strategy



Annex 2: Climate change related programmes, initiatives & projects at the national level⁹⁴

Executing Agency	Action/Type	Relevant Focus	Activities	Prog./ Init./Proj	Org. Website
Burundi Geographical Institute (IGEBU) in the Ministry for L& Management, Tourism & Environment	Sectoral Planning & Implementation - Ministries of L& Management, Tourism & Environment	Enhancing Climate Risk Management & Adaptation in Burundi (ECRAMB)	To integrate relevant information on climate change, including variability, into national & sub-national decision-making processes for better awareness, preparedness & adaptation, through enhanced capacity of the population to adapt to climate change & reduce vulnerability.	Project	http://www.thegef.org/gef/sites/thegef.org/files/Mar1-5-2010.pdf
Régie de distribution d'eau (REGIDESO)	Preparedness	SPWA-CC Energy Efficiency Project	To scale-up the usage of energy efficient & modern lighting products to household electricity users in Burundi. The project will result in GHG emissions reduction from the energy saved by efficient equipment.	Initiative	http://www.regidesordc.com/
Government of Congo	Sectoral Planning & Implementation – Through the Government	This project will assist the national Government to comply with the provisions of the UNFCCC.	To develop a NAPA to boost efforts to combat Climate Change through adaptive strategies	Project	http://www.adaptationlearning.net/democratic-republic-congo-napa
Government of Congo	Capacity Building	Climate Change Enabling Activity (Additional Financing for Capacity Building in Priority Areas)	Climate Change Enabling Activity (additional financing for capacity building in priority areas)	Project	
Ministry of Water Resources & Irrigation, Coastal Research Institute, The Egyptian Shore Protection Authority	Preparedness	Adaptation to Climate Change in the Nile Delta Through Integrated Coastal Zone Management	Integration of the management of Sea Level Rise risks into the development of Egypt's Low Elevation Coastal Zone (LECZ) in the Nile Delta	Initiative	http://gefonline.org/projectDetailsSQL.cfm?projID=3242

⁹⁴Information in this Annex was obtained from. The Nile Basin Water Resources: Overview of key research questions pertinent to the Nile Basin Initiative. Mohamed, Y.A.; Loulseged, M. 2008 (IWMI Working Paper 127), pg 17

Executing Agency	Action/Type	Relevant Focus	Activities	Prog./ Init./Proj	Org. Website
UNDP, UNEP, IFAD, UNESCO, FAO, UNIDO, Nile Basin Initiative & Egyptian Ministries of Environment & Water Resources & Irrigation	Sectoral Planning & Implementation - Water & Agriculture	To align Egypt's climate risk management & human development efforts in pursuing the achievement of MDGs in the face of climate change & the predicted serious threats to the country.	Combining mitigation & adaptation under one integrated Climate Risk Management (CRM) banner with a special attention given to the vulnerable poorest populations of Egypt through two complementary approaches: Mainstreaming GHG mitigation into national policy & investment frameworks, including increased CDM financing opportunities; enhancing the country's capacity to adapt to climate change	Program	http://www.mdgfund.org/content/climatechangeriskmanagementegypt
EEAA, Egypt	Early Warning & Preparedness	Alexandria Coastal Zone Management Project (ACZM)	Improve the institutional mechanisms for sustainable coastal zone management in Alexandria in particular to reduce land-based pollution to the Mediterranean Sea	Project	http://www.uneca.org/adfvii/documents/FINAL-PAPER-FINANCING-CC130509.pdf
New Renewable Energy Agency (NREA)	Preparedness	Solar Thermal Hybrid Project	The global environment objective is to contribute to improving the economic attractiveness of solar thermal technology globally. The project will create global learning effects that will lead to a reduction in costs for the technology over the long term	Project	http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000011823_20070122112357
Ministry of Water Resources & Irrigation, Coastal Research Institute, The Egyptian Shore Protection Authority	Preparedness	Adaptation to Climate Change in the Nile Delta Through Integrated Coastal Zone Management	To integrate the management of SLR risks into the development of Egypt's Low Elevation Coastal Zone (LECZ) in the Nile Delta	Initiative	http://gefonline.org/projectDetailsSQL.cfm?projID=3242
Government of Egypt	Preparedness	Climate Change Enabling Activity (Additional Financing for Capacity Building in Priority Areas)	The activities proposed for will allow for improvement on what has been done in phase I, hence the continuity & complementarity of climate change enabling activities in Egypt	Project	http://gefonline.org/projectDetailsSQL.cfm?projID=827

Executing Agency	Action/Type	Relevant Focus	Activities	Prog./ Init./Proj	Org. Website
Egyptian Environmental Affairs Agency, Operational Unit for Development Assistance	Capacity Building	Bioenergy for Sustainable Rural Development	The primary objective of the proposed project is to advance the use of renewable biomass as an energy resource, for the purpose of promoting sustainable rural development in Egypt & reducing greenhouse gas (GHG) emissions resulting from conventional energy resources. The biomass options that will be advanced under this project include: Anaerobic biomass digestors for dung, household sewage, & related high-moisture feedstock's; anaerobic biomass digestors for leafy feedstock's including agricultural residues, biomass densification (briquetting, pelletization) for rural enterprise & household applications; efficient biomass stoves, furnaces & dryers for rural enterprise, & household applications; & biomass gasification for production of fuel gas for process heat, shaft power, pumping & electricity	Initiative	http://www.undp.org.eg/Default.aspx?grm2id=294&tabid=148
Department of Environment	Preparedness	Development of a National Adaptation Program of Action (NAPA)	The primary goal of the NAPA process is to broadly communicate to the international community priority activities that address Eritrea's urgent needs for adapting to the adverse impacts of climate change	Initiative	http://en.openei.org/wiki/Eritrea-National_Adaptation_Programme_of_Action
Ministry of Agriculture	Sectoral Planning & Implementation - Ministry of Agriculture	Integrating Climate Change Risk into Community-Level Livestock & Water Management in the Northwestern Lowlands	Enhance climate change adaptive capacity of livestock production systems in the Kerkebet area	Project	http://www.undp.org.eg/Default.aspx?grm2id=293&tabid=148
Department of Energy	Preparedness	Wind Energy Applications	The project aims at reducing Eritrea's energy related CO2 emissions by promoting both on-grid & off-grid wind energy systems as a substitute for fossil fuel based energy generation. At the same time the project aims at promoting socio-economic development & improving people's livelihood by facilitating access to clean energy services	Project	http://www.er.undp.org/energy&environment/WndEn.html

Executing Agency	Action/Type	Relevant Focus	Activities	Prog./ Init./Proj	Org. Website
International Water Management Institute, with Arba Minch University (AMU), Ethiopia; Ethiopian Economic Association (EEA); Water Research Institute (WRI)	Preparedness	Rethinking water storage for climate change adaptation in sub-Saharan Africa	Through multi-disciplinary research conducted at different scales in the Nile to develop methods for evaluating the effectiveness & suitability of all water storage types under existing conditions & a number of future climate scenarios	Project	http://africastorage-cc.iwmi.org/
National Meteorological Service Agency	Preparedness	Prepare its First National Communication in Response to its Commitments to UNFCCC	The project will enable Ethiopia to meet its reporting obligations under the UN Framework Convention on Climate Change	Program	http://gefonline.org/projectDetailsSQL.cfm?projID=318
National Meteorological Service Agency	Sectoral Planning & Implementation Meteorological Services	National Adaptation Programme of Action (NAPA)	To develop a NAPA to boost efforts to combat Climate Change through adaptive strategies	Initiative	http://www.adaptationlearning.net/ethiopia-napa
Ministry of Agriculture (MOARD)	Preparedness	Coping with drought & Climate Change	To develop & pilot a range of coping mechanisms for reducing the vulnerability of farmers & pastoralists to future climate shocks	Program	http://www.undp.org/gef/adaptation/docs/CwDProDoc_Sept14version.pdf
Ministry of Agriculture (MOARD)	Early Warning & Preparedness	Promoting Autonomous Adaptation at the community level	Supporting local communities & administrations at the lowest level of government to design & implement adaptation actions aimed at reducing vulnerability & building resilience, especially in those communities that are particularly vulnerable in Ethiopia	Program	http://72.26.206.151/gef/node/3337
Government of Ethiopia	Capacity Building	Climate Change Enabling Activity (additional financing for capacity building in priority areas)	Climate Change Enabling Activity (additional financing for capacity building in priority areas)	Project	http://gefonline.org/projectDetailsSQL.cfm?projID=318
The Eastern Nile Subsidiary Action Program (ENSAP) through the Eastern Nile Technical Regional Office (ENTRO)	Early Warning & Preparedness	Institutional reform & creation.	To set up & refurbish institutions such as the Regional Flood Coordination Unit & National Flood Forecasting Centers as well as conducting multi-level training all the way down to the community level	Project	http://ensap.nilebasin.org/

Executing Agency	Action/Type	Relevant Focus	Activities	Prog./ Init./Proj	Org. Website
Government of Kenya Through Kenya Marine & Fisheries Research Institute (KMFRI)	Capacity Building	Kenya Coastal Development Project	To strengthen conservation & sustainable use of marine & coastal biodiversity & to support climate change mitigation initiatives	Initiative	http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P094692
Office of the President, Special Programs Department	Preparedness	Adaptation to Climate Change in Arid L&s (KACCAL)	The Kenya Adaptation to Climate Change in Arid & Semi-Arid L&s Project's development objective is to improve the ability of selected districts & communities of the ASALs to plan & manage climate change adaptation measures	Project	http://www.aridland.go.ke/NRM_Strategy/Addendum_EMF.pdf
Kenya Electricity Generating Company (KenGen) as Executing Agent for Geothermal Exploration & Development for the Ministry of Energy	Sectoral Planning & Implementation - Ministry of Energy	Joint Geophysical Imaging (JGI) Methodology for Geothermal Reservoir Assessment	The project will transfer & adapt Joint Geophysical Imaging (JGI) methods for assessing geothermal reservoirs to Kenya with potential impacts for the African Rift Valley. The resulting higher resolution & more accurate assessments will increase the probability of finding large, productive steam reservoirs in highly permeable formations	Project	http://gridnairobi.unep.org/chm/roa/project_profiles/KenyaUNEPPProjects.pdf
International Finance Corporation (IFC)	Sectoral Planning & Implementation - Ministry of Energy	Ormat Olkaria III Geothermal Power Development	The project will use GEF funds to provide a partial risk guarantee facility to address incremental risks & costs of exploration & development of the Olkaria III geothermal field in Kenya	Project	http://www.energy.go.ke/index.php?option=com_content&task=view&id=6&Itemid=5
Nile Transboundary Environmental Action Project (NTEAP)	Preparedness	Policy framework development	To create an institutional mechanism, shared vision, & a set of agreed policy guidelines to provide a basin wide framework for joint action	Initiative	http://nteap.nilebasin.org/
Nile Basin Secretariat & United Nations Office for Project Services (UNOPS)	Preparedness	Development of the Nile Trans boundary Environmental Action Project (NTEAP)	The Nile Trans boundary Environmental Action Project (NTEAP) is one of the eight Projects under the Nile Basin Initiative Shared Vision Program (SVP), whose main objective is to provide a strategic environmental framework for the management of the transboundary waters & environmental challenges in the Nile River Basin	Initiative	http://www.nilebasin.org/

Executing Agency	Action/Type	Relevant Focus	Activities	Prog./ Init./Proj	Org. Website
NBDF Rw&a through Economic Development & Poverty Reduction Strategy (EDPRS)	Capacity Building	Creation of the NBDF Rw&a on Climate Change Adaptation	The project aims to build capacity of Civil society Organizations on climate change adaptation & To provide adequate information by producing & disseminating awareness materials on climate change adaptation & finally Document & disseminate best practices of climate change adaptation & vulnerability reduction	Project	http://www.nbdfwanda.org/spip.php?article26
Vice President's Office, Environment Division	Capacity Building	Developing Core Capacity to Address Adaptation to Climate Change in Productive Coastal Zones	To develop institutional capacities to manage climate change impacts through improved climate information, technical capacity, the establishment of demonstration projects to reduce vulnerability in key vulnerable areas, & learning. This project seeks to implement priorities of the National Adaptation Programme of Action (NAPA) in addition to barriers to implementation as identified in the NAPA report & terminal evaluation of the preparation phase of this project	Project	http://unfccc.int/cooperation_support/least_developed_countries_portal/_ldcf_napa_projects/items/5632txt.php
Ministry of Water, & Pangani Basin Water Board, Tanzania	Sectoral Planning & Implementation - Ministry of Water, Pangani Basin Water Board	Mainstreaming Climate Change in Integrated Water Resources Management in Pangani River Basin	This project will initiate IWRM frameworks in the Pangani River Basin of Northern Tanzania. These frameworks will address climate change & pilot adaptation measures. It is one of the first field-based climate change preparation projects in Eastern Africa with strong links to basin & national planning & policy, & as such will build national & regional capacity, provide lessons & serve as a national & regional demonstration site	Project	http://www.icp-confluence-sadc.org/projects/mainstreaming-climate-change-integrated-water-resources-management-pangani-river-basin-tanz
Ministry of Energy & Minerals, Rural Energy Agency	Sectoral Planning & Implementation - Ministry of Energy & Minerals, Rural Energy Agency	Mini-Grids Based on Small Hydropower Sources to Augment Rural Electrification	To promote market-based approaches to small hydropower based mini grids in Tanzania to augment rural electrification	Project	http://www.evd.nl/zoeken/showbouwsteen.asp?bstnum=267005&location=&highlight=

Executing Agency	Action/Type	Relevant Focus	Activities	Prog./ Init./Proj	Org. Website
Division of Environment, Vice President's Office	Sectoral Planning & Implementation - Division of Environment	National Adaptation Plan (NAPA) for United Republic of Tanzania	The objective of the proposed NAPA project for Tanzania is to develop a country-wide programme of immediate & urgent project-based adaptation activities that address the current & anticipated adverse effects of climate change, including extreme events	Initiative	http://unfccc.int/resource/docs/napa/tza01.pdf
Ministry of Natural Resources; National Environment Management Authority	Capacity Building	This project will assist the national Government to comply with the provisions of the UNFCCC.	Enabling Uganda to Prepare its First National Communication in Response to its Commitments to UNFCCC	Project	http://unfccc.int/resource/docs/natc/uganc1.pdf
Ministry of Energy & Mineral Development	Preparedness	Energy for Rural Transformation Project (APL)	The project (which GEF would help co-finance) is being prepared as an WB/GEFR Strategic Partnership Adaptable Program Loan (APL) to be implemented over a ten year period through an anticipated 3 tranches. It will consist of the investment components described below & will also include significant capacity building & technical assistance	Project	http://roo.undp.org/gef/SolarPV/docs/workshop/projdocs/Uganda%20WB.pdf
Ministries of Energy & Mineral Development, Water, Health & Education; & Rural Electricity Agency.	Capacity Building	Energy for Rural Transformation Project II	To increase energy efficiency & use of renewable energy technologies in order to reduce GHG emissions	Project Project Initiative	http://roo.undp.org/gef/SolarPV/docs/workshop/projdocs/Uganda%20WB.pdf
Ministry of Finance, Planning & Economic development	Preparedness	Climate Change Enabling Activity (Additional Financing for Capacity Building in Priority Areas)	The activities proposed for will allow for improvement on what has been done in phase I, hence the continuity & complementarity of climate change enabling activities in Uganda		http://www.undp.org/energy/projects/africa.htm
Department of Meteorology, Ministry of Water, L&s & Environment	Sectoral Planning & Implementation - Department of Meteorology, Ministry of Water, L&s & Environment	Development of a National Adaptation Programme of Action (NAPA)	The objectives of NAPA are: -To serve as simplified & direct channels of communication for information relating to the urgent & immediate needs for adaptation; -To facilitate capacity building for the preparation of the initial national communication, & addressing urgent & immediate adaptation needs		http://www.adaptationlearning.net/node/522

Annex 3: Inventory of academic & research institutions working in the Nile River Basin

Organization	Type	Country
Faculte des Sciences Appliquees(FSA)	Academic	Burundi
Geographic Institute of Burundi	Research	Burundi
Institut Des Sciences Agronomiques Du Burundi, ISABU	Research	Burundi
Institut Superieur d Agriculture	Research	Burundi
Institute National de Environment la Consevation de la Nature	Research	Burundi
University of Burundi	Academic	Burundi
Centre de Recherches Geologiques et Minieres,CRGM	Research	D.R.Congo
Faculty of Agronomy	Academic	D.R.Congo
Faculty of Sciences	Academic	D.R.Congo
Institut des Jardins Botanique et Zoologique de Co	Academic	D.R.Congo
Institut du Batiment et travaux public (IBTP)	Academic	D.R.Congo
Institute of Build and Civil Engineering	Academic	D.R.Congo
Institute superior technique appliqués (ISTA)	Academic	D.R.Congo
Mbujimayi University	Academic	D.R.Congo
Polythnical Faculty	Academic	D.R.Congo
Regie des voies fluviales	Research	D.R.Congo
University of Kinshasa	Academic	D.R.Congo
Ain Shams University	Academic	Egypt
Cairo University	Academic	Egypt
Channel Maintenance Research Institute	Research	Egypt
Construction Research Institute	Research	Egypt
Costal Research Institute	Research	Egypt
Drainage Research Institute	Research	Egypt
El-Minia University	Academic	Egypt
Environment and Climate Research Institute	Research	Egypt
Faculty of Engineering-	Academic	Egypt
Faculty of Engineering,	Academic	Egypt
Faculty of Engineering.	Academic	Egypt
Fayoum University	Academic	Egypt
GIS UNIT	Research	Egypt
Ground Water Research Institute	Research	Egypt
Ground water sector	Research	Egypt
Hydraulics Research Institute (HRI)	Research	Egypt
Mechanical and Electric Research Institute	Research	Egypt
Regional Center for Training and Water Studies of Arid and Semi-Arid Zones (RCTWS)	Academic	Egypt
Soil Water & Environmental Research Institute SWERI	Research	Egypt
Strategic Research Institute	Research	Egypt
Survey Research Institute	Research	Egypt
Systems Research Institute	Research	Egypt
Wadi Environmental Science Center	Research	Egypt
Water Management and Irrigation Systems Research Institute.	Research	Egypt

Addis Ababa University	Academic	Ethiopia
Afar Region - Logya	Research	Ethiopia
Arba Minch University	Academic	Ethiopia
Bahier Dar Polytechnic Institute	Academic	Ethiopia
Bahir Dar University	Academic	Ethiopia
Defense Engineering College	Academic	Ethiopia
Desta Horecha WSES	Research	Ethiopia
Engineering Faculty	Academic	Ethiopia
Ethiopian Association for Civil Engineering	Academic	Ethiopia
Faculty of Science and Technology	Academic	Ethiopia
Faculty of Technology	Academic	Ethiopia
Hawassa University	Academic	Ethiopia
Mekelle University	Academic	Ethiopia
African Institute for Capacity Development in Cooperation With JICA	Research	Kenya
African Technology Policy Studies	Research	Kenya
Egerton University	Academic	Kenya
Jomo Kenyatta university of Agriculture and Technology (JKUAT)	Academic	Kenya
Masinde Muliro University of Science and Technology MMUST	Academic	Kenya
MOI University	Academic	Kenya
University of Nairobi	Academic	Kenya
Western University of Science & Technology	Academic	Kenya
Higher Institute of Agriculture and animal husbandry of Busogo (ISAE)	Research	Rwanda
Huye Institute	Academic	Rwanda
Institut des Sciences Agronomiques du Rwanda ISAR	Academic	Rwanda
Kigali Institute of Science and Technology KIST	Academic	Rwanda
Scientific and Technological Research Institute (IRST)	Academic	Rwanda
Society of Project studies, Constructions and Environmental Sanitation	Research	Rwanda
University of Agriculture, Technology and Education, UNATEK	Academic	Rwanda
Administration of Wadies and Ground Water Research	Research	Sudan
Alneelain University	Academic	Sudan
Faculty of Agriculture	Academic	Sudan
Faculty of Engineering	Academic	Sudan
Faculty of Engineering and Architecture	Academic	Sudan
Faculty of Science and Technology	Academic	Sudan
Geizera University	Academic	Sudan
Hydraulic Research Station	Research	Sudan
Khartoum Collage of Technology	Academic	Sudan
Nyala Technical College	Academic	Sudan
Omdurman Islamic University	Academic	Sudan
School of Applied Earth Science	Academic	Sudan
School of Rural Extension, Education and Development, AUW	Academic	Sudan
Sudan Academy of Science	Academic	Sudan

Sudan University of Science and Technology	Academic	Sudan
University Of Khartoum	Academic	Sudan
Rwegarulila Water Resources Training Institute	Academic	Tanzania
Sokoine University of Agriculture	Academic	Tanzania
University of Dar es Salaam	Academic	Tanzania
Faculty of Technology.	Academic	Uganda
Institute of Environment and Natural Resources (MUIENR)	Academic	Uganda
Kyambogo University	Academic	Uganda

Annex 4: Programs & projects of institutions working in the Nile River Basin

Table 1: ASARECA-SWMnet ongoing projects

No.	Research Project	Brief Description
1.	Managing nutrients and water together in response to markets	Issues addressed: Commercialization and enterprise orientation of smallholder agriculture; soil-fertility recapitalization.
2.	Promoting natural resources management through effective governance and farmer-market linkages	. Issues include: Product-chains, investment and partnership arrangements that effectively link integrated natural resource management interventions to markets
3.	Efficient use of crop residues: animal feed versus conservation agriculture	Issues addressed include: Nutrient recycling from crop residues; Direct incorporation into the soil; Crop residues fed to animals
4.	Improved management of agricultural Water in eastern and southern Africa (IMAWESA)	Issues addressed: Improved policy and strategic framework for AWM in the ESA Region
5.	Spatial mapping, forecasting and predicting climate variability trends and associated risks to agricultural productivity	- Making the best of climate: adapting agriculture to climate variability - Managing uncertainty: innovation systems for coping and profitability with climate variability and change
6.	Investments necessary for successful integrated management of watersheds	- SWMnet Project 8: Proof-of-Concept that the IAR4D approach improves delivery and impact of agricultural research - task force: Integrated Watershed Management (IWM)

Table 2: IFPRI ongoing programs

No.	Research Project	Brief Description
1.	Food System Functioning	- Global food scenarios - Managing natural resources - Food systems: disaster prevention, relief, and rebuilding after crises
2.	Food System Governance	- Food and water safety - Enhanced food and diet quality - Sustainable poverty reduction and nutrition improvement - Country and regional food, nutrition, and agricultural strategies
3.	Food System Innovations	- Pro-poor science and technology policies - The future of smallholder farming - Capacity strengthening for policy and research

Table 3: ILRI ongoing projects

No.	Research Project	Brief Description
1.	Nile Basin Livestock Water Productivity	The project aims to improve food security and reduce poverty through policies that promote equitable, productive and sustainable use of water, land and livestock (funded by the CPWF)
2.	Livestock Systems Evolution	The objective is to improve understanding of how livestock systems evolve in order to anticipate where, when, and how to make livestock-related policy and technological interventions to alleviate poverty, sustain rural livelihoods and protect the environment http://www.ilri.org/research/Content.asp?CCID=44&SID=7
3.	Targeting Pro-poor Interventions	The objective is to improve understanding of trends and alternative features of livestock sector development used to set priorities and influence resource allocation decisions. http://www.ilri.org/research/Content.asp?CCID=44&SID=7
4.	Poverty, Sustainable Livelihoods, and Livestock	To enhance the livelihoods of livestock-keepers through improved understanding of the poverty process and livelihood strategies and role of livestock, strengthened research-policy linkages, information sharing, and dissemination of knowledge http://www.ilri.org/research/Content.asp?CCID=44&SID=7

Table 4: IWMI-NBEA projects

No.	Research Project	Brief Description
1.	NBI Synergy project	Creating 'Synergies' and 'Partnerships' among the CGIAR, Nile Basin Initiative and ASARECA: Consultations to identify opportunities to support NBI through research and capacity building
2.	Dam Decision Support System	The project aims to investigate which DSS are most appropriate for the complexity of large dam operation to ensure successful stakeholder participation
3.	Improving Performance of Irrigated Agriculture in sub-Saharan Africa (APPIA)	To improve the capacities of farmers and field level staff in enhancing performance of small- and medium-scale irrigation schemes (French-supported)
4.	Multiple Use Systems (MUS)	The focus of Multiple Use Systems (MUS) is on developing tested tools and guidelines for multiple-use water services delivery as an effective way to use water for poverty alleviation and gender equity http://www.musproject.net
5.	Blue Nile: Downstream Upstream project	To identify major water, land and livestock management constraints, opportunities, impacts of interventions within the Blue Nile catchment and downstream
6.	Impact of Irrigation on Poverty and Environment (IPE)	Research and capacity building project applying new methodologies for assessing the impacts of irrigation on poverty and environment and finding ways to enhance the positive impacts (Austria-supported)

No.	Research Project	Brief Description
7.	Improving Productivity and Market System for Smallholder Farmers in Ethiopia (IPMS)	ILRI led project, IWMI contribution is in relation to small-scale irrigation, water harvesting and development of training module (CIDA-funded)
8.	Raising Irrigation Productivity and Releasing Water for Inter-sectoral Needs (RIPARWIN)	The project studies competition for water in the upper part of the Great Ruaha River (Tanzania)
9.	POADIUM	Application of the POADIUM decision tool for assessing water and food tradeoffs in Ethiopia and at the river basin level
10.	Agricultural Water Management Technologies	Small-scale irrigation technologies inventory, impact assessment and dissemination of best practices
11.	Improving Water Productivity of Crop-Livestock Systems of sub-Saharan Africa	The project aims to optimize productive use of water to increase incomes and improve the environment, within crop-livestock systems in the semi-arid areas of southern Africa (Zimbabwe) and the Blue Nile Basin (Ethiopia). http://www.vslp.org

Table 5: WorldFish Center ongoing programs

No.	Research Project	Brief Description
1.	Manage implications of expanding markets and trade	The project activities will be centered on the fisheries of Lake Tana (Ethiopia), Lake Nasser (Egypt) and Lake Volta (Ghana) where research will assess current markets and marketing systems as well as the potential for increased market integration www.worldfishcenter.org/cms/list_article.aspx?catID=38&ddlID=63
2.	International Network on Genetics in Aquaculture	The prospects for genetic improvement of tropical finfish, as demonstrated by the Genetic Improvement of Farmed Tilapia (GIFT) Project. www.worldfishcenter.org/inga/index.htm

Table 6: FAO Nile ongoing projects

No.	Research Project	Brief Description
1.	Agricultural Water Productivity Case Study	The project intends to produce: Agricultural production database for a baseline year (2000); Analysis of the current agricultural water productivity under rain-fed and irrigated conditions
2.	Basin Wide Survey of Agricultural Water Use	The project intends to produce: A baseline survey (for the year 2000) of agricultural water use, includes maps of population, land use, cropping patterns in irrigation, water use in rain-fed and irrigated agriculture, and an assessment of current water development facilities, together with estimates of water use in other sectors
3.	Consolidation of the Nile Decision Support Tool Nile-DST	The project intends to produce: Consolidated Nile-DST; updating and documenting some components of the Nile-DST

No.	Research Project	Brief Description
4.	Development of Geo-referenced Nile Basin Database	The project intends to produce: Development of a metadata catalogue listing web-based data sources for water resources in the Nile Basin
5.	Development of GIS Information Products	The project intends to produce: Set of specific GIS products integrating physical and socioeconomic data. Expanded database, in particular of basin-wide data layers
6.	Development of Scenarios of Demand for Agricultural Produce in the Nile Basin	The project intends to produce: Identification & analysis of the major drivers of future demand of agricultural produce in the Nile Basin
7.	Legal and Institutional Component	The project intends to produce: Strengthened skills of decision makers in interest-based negotiations; Enhanced understanding of how customary law could support formal law in local dispute resolution
8.	Transboundary Hydro-meteorological Monitoring Network	The project intends to produce: Limited extension of hydrometric monitoring network of a transboundary nature. Establishment & operation of an Internet forum supporting hydro- meteorological network

Table 7: IAEA ongoing projects

No.	Research Project	Brief Description
1.	Improving water balances for: Lake Victoria, Blue Nile Basin, High Aswan Dam	This project aimed at addressing the importance and interaction of groundwater and surface water in Nile Basin
2.	Mainstreaming groundwater Considerations into the Integrated Management of the Nile River Basin	The objective is to enhance national and regional capacity to add a 'groundwater dimension' to joint management of the Nile Basin. The use of isotope hydrology is central to the generation of the necessary data required to understand the role of groundwater in the shared Nile water resources

Annex 5: National water-related research institutions in Nile riparian countries

Country	Training/Research Institutions	Potential Areas of Specialization
Burundi	University of Burundi Institute Des Sciences Agronomiques du Burundi (ISABU)	Water Resources Management and Engineering (could collaborate with Burundi (ISABU) Rwanda), Agriculture
DRC	University of Kinshasa Centre Regional d'Etudes Nucleares de Kinshasa (CREN-K) University of Kisangani	Water Quality Management, Environmental Management, Sanitary Engineering; Surface and Groundwater Hydrology, Soil Conservation; Hydrobiology
Egypt	Regional Training Center, Ministry of Water Resources and Irrigation (Host center for ATP) Cairo University Hydraulic Research Institute	Water Resources Management and Engineering ; Hydraulics Engineering; River Engineering

Country	Training/Research Institutions	Potential Areas of Specialization
Ethiopia	Arbaminch Water Technology Institute Addis Ababa University Alemya University	Water Resources Management and Engineering; Hydraulics, Hydrology, Water Supply and Sanitation; Irrigation and Drainage
Kenya	University of Nairobi Institute for Meteorological Training and Research Kenya Water Institute	Water Resources Management; Meteorology, Hydrology
Rwanda	National University of Rwanda: Faculty of Science Kigali Institute of Science, Technology and Management (KIST) Institute of Agronomic Science	Water Resources Management and Engineering; (Could collaborate with Burundi); Science and Technology programs; Agricultural Sector, Water and Soil Conservation
Sudan	Institute for Water and Irrigation University of Khartoum The Hydraulic Research Station, Wad Medani	Water Resources Management and Engineering; Water Sector Assessment; Hydrology and Hydrogeology, Irrigation and Drainage
Tanzania	University of Dar-es-Salaam Department of Research and Development Institute of Resources Assessment	Water Resources Management; Soil and Water Management; Hydrology; Natural Resources Management.
Uganda	Makerere University: Department of Civil Engineering Agriculture Engineering and Appropriate Technology Research	Water Resources Management and Engineering; Livestock and Fisheries

Annex 6: Research topic pertinent to NBI projects

No.	Research Problem	Research Area & Objectives	Possible Research Question & Objectives	Relevance to NBI
1.	Scarcity of data in the Nile Basin: 1. Data on bio-physical resources (lands, water, hydrometeorology, etc.) 2. Data on socio-economic activities (population, livelihood, land use, water use, etc.)	Data Provision of data on the natural resources system and uses to fill in (noticeable) data gaps within the basin, in particular in the upper parts, including data on actual use and performance	1. What tools and methods are available for filling in data gaps and how can they be effectively utilized to alleviate data constraints in implementing NBI projects? - Tools and methods for cost-effective data collection of water quality and quantity, for example, simple methods of sampling the main water quality parameters using bio-indicators - Utilization of modern techniques such as satellite, radar, models, and data assimilation techniques to fill in gaps - Use of isotope hydrology to generate and verify hydrometeorological information 2. How can the data generated using the above tools be made part of an integrated data and information system and used to validate hydrological and water quality processes? 3. How can we ensure that the information users have confidence in the data used, the analysis, and that the analytical tools aid in producing credible information?	The data on natural resources system (e.g., hydro-meteorological data) are basic input for all catchment and river models used by different NBI projects: Watershed, DSS, agriculture, flood forecasting, etc Data on socio-economic (population, land, water uses, productivity, performance, etc) are needed by planning models SDBS, CBSI, etc

No.	Research Problem	Research Area & Objectives	Possible Research Question & Objectives	Relevance to NBI
2.	Climate change, climate variability, vulnerability, impacts, and adaptation requirements	Hydroclimatology: Improve assessment of climate change and climate variability. Improve assessment of vulnerability of resource and use systems (land and water) Improve assessment of impacts on those systems Recommendation to enhance adaptation and coping strategies	<p>1. How are different parts of the river basin affected by climate variability and change?</p> <p>And what institutional set up (policy, legal and organizations), programs and projects would be required to reduce vulnerability, negative impacts and build local and basins capacities to adapt?</p> <ul style="list-style-type: none"> - Assessment of climate change and climate variability to reduce uncertainty (e.g., cc computations, frequency analysis of floods and droughts, etc.) - Assessment of impacts of climate change and climate variability on natural resources (e.g., water resources supply and demand, ecosystems, agricultural productivity, etc.). - Understand vulnerability of the different production systems - Provide guidelines and recommendations for enhanced adaptive capacity and resilience of socioeconomics and management practices to climate change and climate variability <p>2. What is the social, economic and environmental impact of floods and droughts and how can short-, medium- and long-term forecasting contribute to reducing their negative impacts?</p> <p>3. What is the impact of land use change on the Nile regional climate? How does climate change affect land use? How does climate change and land use affect the availability and quality of surface and groundwater resources?</p> <p>4. What is hydroclimatological linkage of the different sub-basins, e.g., the White and Blue Nile rivers?</p>	The output of these researches is essential information that is required by almost all NBI projects, in particular, by the water resources projects: agriculture, SDDBS, and many ENSAP and NELSAP projects
3.	Limited understanding of best possible watershed management and the inter-linked implications	Watershed Management Improve understanding of available watershed resources Improve understanding of existing practices and needs for better utilization Identify best possible watershed management interventions and their impacts	<p>1. What watershed management interventions would reduce the negative hydrologic and environmental impacts on downstream parts of the catchments/basin? What are the trade-offs and how can they be addressed?</p> <ul style="list-style-type: none"> - Understanding of the root causes of land degradation and how to address them appropriately - How to integrate multi-sector, multi-disciplinary issues in land degradation analysis, e.g., livelihood vs. land degradation, interaction domestic-agricultural water sectors, etc. - Improve assessment of land degradation and its impacts, e.g., computation of soil erosion, and the downstream implications of reservoir and canal sedimentation - Improve understanding of how to reduce/stop land degradation, and its negative impacts - Research on water harvesting 	The knowledge on improved watershed management is required by a number of NBI projects. Specifically relevant to watershed management projects of ENSAP and NELSAP; to EWUA on agriculture systems; and on the ecosystem part it is relevant to NTEAP. On water resources and downstream implication it is related to the WRPM project

No.	Research Problem	Research Area & Objectives	Possible Research Question & Objectives	Relevance to NBI
3.			<p>2. What livelihood options exist? How are they affected due to land and water degradation?</p> <p>3. What are values and reasons for low water productivity of different systems: farming, livestock, etc? How can water productivity be increased? What are the trade-offs?</p> <p>4. What is the enabling environment (policies, institutions, etc) for a successful watershed project?</p> <p>5. What are the improved IWRM technologies, analytical methods and tools to foster integrated watershed management for productivity and conservation of agro-ecosystems?</p> <p>6. How to up-scale results derived from watershed pilot sites?</p> <p>7. What are the best technical, policy, institutional, management interventions that could be used in various production systems?</p> <p>8. What is the impact of upstream development on aquatic ecosystems and the goods and services that they provide?</p>	
4.	Low water productivity from agriculture systems	Assessment of agricultural water potential, use, and productivity: and how to improve the use	<p>How can we better manage water and land resources in the basin to enhance economic development, reduce inequities and environmental degradation?</p> <ul style="list-style-type: none"> - Mapping of existing/potential agricultural production systems (irrigated, rain-fed, livestock, fisheries, etc.) - Assessment of water productivity of the different systems (irrigation, rain-fed, livestock, fisheries, etc), and analysis of the determining factors (technical, livestock, fisheries, etc), and analysis of the determining factors (technical, policies, support conditions, externalities, etc.) - Impact assessment of improved water productivity on livelihood and environment <p>4. (including health)</p> <ul style="list-style-type: none"> - Guidelines and frameworks for improved productivity, efficiency, adequacy, etc. - Identifying factors (environmental and socioeconomic) influence farmer's adoption of improved technologies and management practices - Recommend synergies between different water uses to enhance productivity, whilst maintaining or improving environmental security <p>2. Are there any better options or management arrangements in terms of saving and efficiently using water and land resources?</p> <p>3. How do we reverse adverse effects such as salinity, pollution, environmental and health impacts (planning, design, policies, etc.)?</p>	Pertinent to EWUA project, and to watershed management projects, and indirectly to NTEAP and WRPM projects

No.	Research Problem	Research Area & Objectives	Possible Research Question & Objectives	Relevance to NBI
5.	Environmental degradation of different ecosystems, including wetlands, rivers, etc.	Environment, Environmental resource assessment, status of use, and how to reverse degradation	<p>1. How do changes in the status of: forest, woodlands, grasslands, croplands and wetlands affect goods and services available to local and downstream communities</p> <p>2. What technical and institutional interventions would be required to attain acceptable levels of environmental status?</p> <p>3. What is the status of our wetland resources and how can they be optimally and sustainably utilized:</p> <ul style="list-style-type: none"> - Rapid assessment of the river ecosystem health - Threats and opportunities of alien aquatic species (fish and weeds) - Valuation of lakes and wetlands ecosystem resources - Assessments of lakes and wetlands for multiple uses: poverty reduction, and ecosystem services; How to consider environment conservation in accordance with sustainable livelihood - Assessment of environmental flows at key locations in the basin - Assessment of impacts of interventions (hard and soft) on socio-economies (including health impacts), and on ecosystem services <p>4. Micro-grant projects:</p> <ul style="list-style-type: none"> - What are the most appropriate funding mechanisms for community-based projects (micro-grant projects) and how can they be effectively implemented? <p>5. - How to link micro-grant projects to national plans of riparian countries, and how to upscale research output to national or basin scales?</p> <ul style="list-style-type: none"> - How deeply rooted are the NGOs to help local communities? Are they representative in the given locality, area, catchment? <p>5. What is the environmental policy and regulatory framework in different countries? How can sectoral policies in a given country be better integrated and how can they be harmonized basin wide to support implementation of interventions that achieve NBI objectives?</p> <ul style="list-style-type: none"> - To what extent is lack of information affecting policymaking in environmental issues? - How to coordinate environmental policies among riparian countries and how it will be at the basin level. What is the impact of macro-policies on the environment? - How to implement research output in real life situations <p>6. What is the status of our fish and other aquatic resources and how can they be sustained and enhanced to support livelihoods?</p>	Relevant to SV Environment, and water resources projects; NELSAP Lakes and wetlands projects; ENSAP multi-purpose projects, etc.

No.	Research Problem	Research Area & Objectives	Possible Research Question & Objectives	Relevance to NBI
			<p>7. What are the impacts of point and non-point pollutants on water bodies, ecosystem and human welfare and livelihoods and how can negative impacts be minimized?</p> <p>8. Comparative research on nutritional, social and economic values of aquatic, crop and livestock for smallholders</p> <p>9. EIA process, gaps, recommendations and harmonization of process</p> <p>10. How to link human and environmental health</p>	
6.	Socioeconomic development and benefit sharing	Socioeconomics Improve understanding of available Nile resources, potential development and their impact on socioeconomics of the Nile people	<p>1. What socioeconomic factors affect cooperation and benefit sharing?</p> <ul style="list-style-type: none"> - What are the potentials and opportunities - Improve poverty mapping in the basin, in particular water-related poverty mapping - What levels of socioeconomic development could be achieved - Improve understanding of the basin's opportunities and risks, at different scales (basin and sub-basin levels) - Research on policy-related issues to support transboundary cooperation, e.g., valuing and monitoring transboundary benefits/risks <p>6. - Identify principles and mechanisms for benefit/risk sharing, review of successful transboundary management and agreements in other river basins</p> <ul style="list-style-type: none"> - How to effectively involve stakeholders at different levels in the basin to support optimal cooperation? <p>2. What are the benefits obtained through different uses of water in the basin and what is their value? What is the scope (health, nutrition, economic development, environmental management)?</p> <p>3. Who are the beneficiaries?</p> <p>4. How can those benefits be shared more equitably and more efficiently?</p>	Relevant to SDBS, CBSI projects, and to some of ENSAP, and NELSAP projects



For further information:

Ms. Musonda Mumba

Programme Officer

Email: Musonda.Mumba@unep.org

<http://www.unep.org/climatechange/adaptation>

www.unep.org

United Nations Environment Programme
P.O. Box 30552 Nairobi, 00100 Kenya

Tel: (254 20) 7621234

Fax: (254 20) 7623927

E-mail: uneppub@unep.org

web: www.unep.org

