Sustainable Use of Water and Natural Resources in the Nile Basin. Overview of a Four Country Scoping Study

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EXECUTIVE SUMMARY

The Nile Basin is home to 160 million people and about 300 million reside in all the respective riparian countries. While the basin has a rich ecosystem with mountains, rivers, grasslands, forests and rapids the majority of the countries in the basin are some of the poorest in the world. Sustainable use means using the rich resources without endangering the environment that is required by future generation. Data show that with the exception of Egypt all riparian countries draw little amounts of water from the Nile.

Sustainable use of water and natural resources thus need an approach which is both broad and integrated. Broad approach does not focus on *blue* water which is the quantity in the water course. It also includes attention to *green* water in grasslands, forests and crops. Of the precipitation that replenishes rivers only 35 per cent goes directly to the water course. The rest 65 % is green and an additional 10% per cent of the blue water is run off. Sustainable use needs an integrated approach that will thus involve all stakeholders and which will involve the forces that shape the blue water in the river. Water shed management, anti land degradation afforestation, participatory processes fighting pollution need to find their way into the holistic search for use of resources without affecting the benefits that accrue to future generations. It is this integrated approach that necessitates the use of IWRM tools.

Data from case countries show an array of environmental problems. Burundi registers effects of climatic change and the poor link between growth and environment and policy. Land degradation is also cited as a major environmental problem. DRC cites problems of various nature ranging from pollution to water quality. The diverse ecosystem including lakes, rivers and aquifers need to be exploited for economic development. Fishing is given a special analysis as one activity that should be given priority in water and natural resource use. Studies and policy formulation need to assist the country in devising mechanism of promoting sustainable use of the resources. Ethiopia registers the problem of having land degradation, deforestation and as pointed in another brief a lot of water in lakes and rivers but little use for irrigation and hydroelectricity. Egypt has a problem of water quality. It notes the need for adopting IWRM and involving stakeholders upstream in the Nile in matters that affect the supply of water available for use in the country. Rwanda points out the need to know more about sustainable and sustainable use of Nile Hotspots that provide water to the Nile but which should be exploited without endangering the environment. Likewise Rwanda is water poor where as there are several lakes and rivers in the country.

It is recommended that more knowledge is generated on environment and its linkage with growth and benefit creation. Then it is important to develop mechanisms of mainstreaming it in national policies in each of the countries and finally how sustainable use approaches can be used to maximum benefit out of the Nile basin without compromising those for future generations but all along equitably.

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BACKGROUND

Nile, riparian countries and the environment

From time immemorial the River Nile and its waters has been a source of livelihoods to millions of people. There are about 160 million people in the basin and about 300 million in the riparian countries. A majority of the countries are some of the poorest in the world with per capita income of less than US$250. In these countries, there are problems of population pressure, environmental degradation and threatened ecosystem services (World Bank, 2006).[91]The Nile Basin is linked to high mountains, wetlands, rivers, deserts, forests, water rapids that offer hydro power potential, lakes and savannah.[92] Thus, there are different economic activities taking place within the basin area, e.g. agriculture, fishing, lumbering, hydro-power generation, and navigation, animal grazing, etc…These activities provide economic benefits to the respective countries while sometimes they also pose an environmental threat in the basin area.

Ten countries share the Nile Basin. These countries are Rwanda, DRC, Burundi, Tanzania, Uganda, Kenya, Ethiopia, Sudan, Eritrea, and Egypt. Not excluding the riparian countries, "it has been estimated that environmental wealth accounts for 26 percent of the total wealth of low income countries, versus13 percent of wealth in middle income countries and only 2 percent of wealth in OECD countries."[93] Poor households rely disproportionately on natural resources as a source of wealth from which to generate income and improve their livelihoods and also depend on ecosystems for their basic needs, such as food, water and shelter, because they lack the financial resources to meet these needs through the markets.[94] It is indicated that soil degradation due essentially to deforestation, erosion and mine exploitation is the main threat to environment.[95]

Sustainable use in the Nile is about managing the environment, poverty reduction and equity in benefit sharing.

Nile is the longest river in the world. For Millennia it has supported human life and diverse ecosystems of diverse societies and countries. Thus water and natural resources are at the core of the importance of the Nile to societies in the basin. The thrust of the scoping study and this brief has been that the Nile River constitutes one transboundary system but there has been a tendency to make a distinction between the countries and societies upstream and those down stream. Although the latter do have issues different from those of the former sustainable use of water and natural resources is a set of concepts that are universal to the whole basin. The universality is a good basis for using sustainable use and management principles in policies for cooperation and integration among Nile countries.

Firstly all the country reports indicate massive land degradation, diminishing water volumes and levels in basins, climatic variability and pollution. Sustainable use of water and natural resource means using the resources without compromising the usefulness of the resources for future generations.

The second observation is that there are decline in livelihoods and massive poverty levels in a majority on Nile countries. In several countries agricultural productivity has stagnated or

[91] Cited in Cluster Scoping Study Report on Water, Related Resources and Livelihood Research in the Nile Basin, (2007).
[92] Cluster Scoping Study Report on Water, Related Resources and Livelihood Research in the Nile Basin (2007).
[93] World Bank Report "where is the wealth of nations"? 2005.
[94] Poverty and Environment: East African News Letter, Vol.1, March, 2007.
[95] Cluster Scoping Study Report on Water, Related Resources and Livelihood Research in the Nile Basin, (2007:39)

declined and food. In this regard sustainable use of water and natural resources in the Nile Basin is about use and management that will reduce poverty and elevate levels of livelihoods. Sustainable use is thus about pro-poor policies that can be cooperatively undertaken in the basin.

Table 1. Countries of the basin are poor and have sub optimal use of the waters

Country	Land area in 000 s km	Population in million 2002	GNP per capita 2002	Access to electricity as %
Burundi	28	6.6	102	2
DRC	2350	51.2	111	1.6
Egypt	1000	70.5	1354	98
Ethiopia	1222	69.0	90	10
Kenya	583	31.5	393	9
Rwanda	26	8.3	212	2
Sudan	2506	32.9	412	15
Tanzania	945	36.3	267	10
Uganda	241	25.0	236	5

Thirdly the vision and mission of the Nile Basin Initiative is about benefit sharing, equity and cooperation. Designing use and management systems that enhance these principles will make the practices durable and sustainable.

Since the late 1920s focus has been on the Nile Basin as a water course or water quantity and how it is used by countries along its path. The dangers of conflict were high but today the tendency is to use the existence of the Nile as a basis of integration and cooperation. Sustainable use is about fostering cooperation.

Sustainable use requires an integrated policy approach

It is important that countries wherever they are up or down stream adopt an 'integrated' approach to water resources management. By doing so, both 'blue' and 'green' water aspects will be addressed. That is; water supply is not about quantity in the water course only –blue water, but also water in forests and watersheds. Management of the watershed and environment in the watersheds is closely linked to quantities of water in the Nile and to livelihoods in the area. Since the resources in Nile Basin are good for the blue water and good for livelihoods, they have to be used and managed sustainably. It is to the interest of the whole Nile to make sure that volume of water in the Nile and livelihoods in the basin. Ecosystems management in the basin has to be mainstreamed in major policy statements in riparian countries.

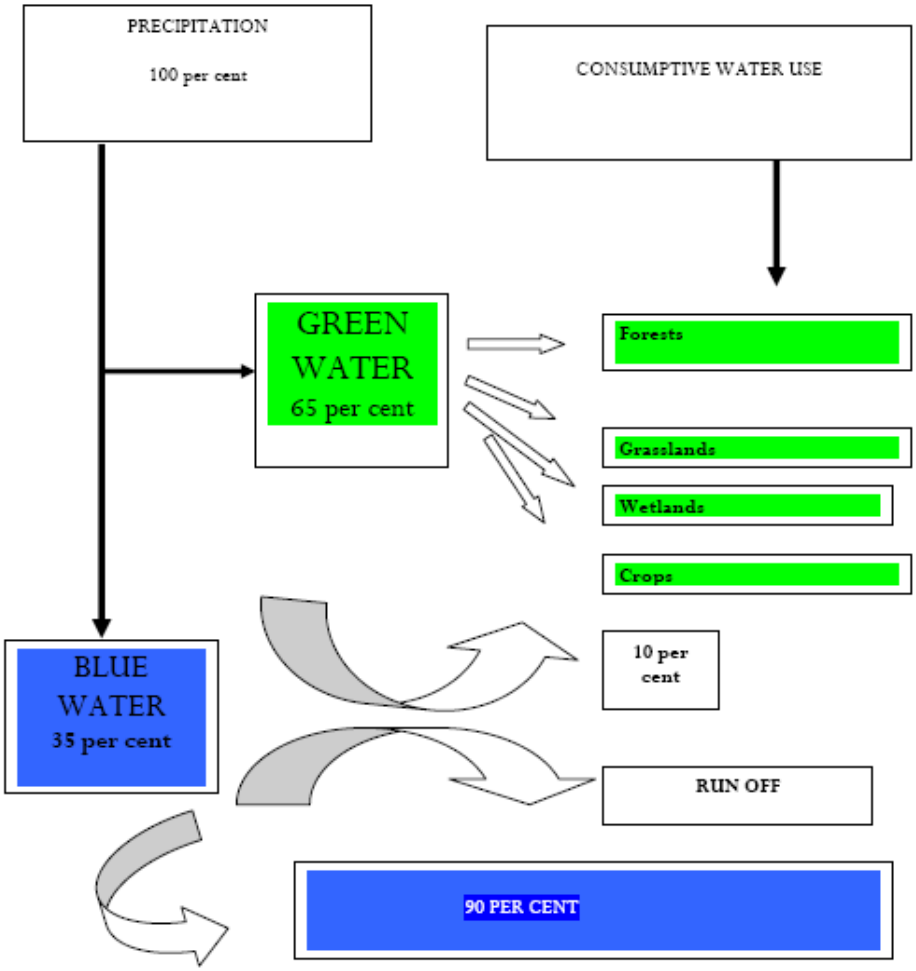

Figure 1. Blue and green water concepts

An integrated approach should diminish the distinction between up and downstream riparians. The upstream countries of Rwanda, Burundi and DRC have tributaries that feed or are related to the Nile Basin. Degradation of watershed and the environment in the area has a considerable transboundary impact at least in the long run. It is about how water is managed in a sustainable manner in reducing poverty in those riparian countries so that it cannot affect the Nile water users in the rest of the basin. An integrated approach regards the issue of environment as common in the basin instead of focusing on water quantity in the water course alone.

Across the major arguments is the relevance of major stakeholders in livelihood matters in the basin. Besides government, how is the private sector and civil society involved in the policy formulation and implementation of water and natural resources management? What about gender issues in decisions of water and natural resources use? How do communities in the basin countries participate in the policies on water and natural resources management? Would this foster better benefit sharing? An integrated water and related resources management policy in these countries addresses these questions.

As a conclusion the findings from scoping studies point out to unsustainable use of Nile Basin resources. There is a need to reverse the trend and promote sustainable use through integrating the environment and livelihoods in the Nile Basin discourse.

METHODOLOGY

The methodology used in data collection for this policy brief is document analysis. The environmental challenges and policy recommendations of some of the riparian countries presented were summarised from the Cluster Scoping Study Report on Water, Related Resources and Livelihood Research in the Nile Basin. Other data were summarised from the Millennium Development Goals (MDG) Progress Report (2006).

FINDINGS

Burundi: Burundi presents a number of major environmental problems: degradation of lands, degradation of biodiversity, and degradation of the human environment. Accordingly, degradation of lands is mainly attributed to the population pressure on the arable land and other natural resources, topography, changing climate resulting from excessive green house emissions which leads to prolonged droughts and floods, poor farming practices which leads to soil erosion, over-grazing which results into erosion, deforestation and desertification, etc...

The increasing deterioration of environmental situation in Burundi is exacerbated by the fact that: "1. the law is not clear and strong enough to oblige private and public sectors to invest in protecting the environment and natural resources; 2. The law is not clear with regard to environmental conservation.

Policy issues identified in the Burundi study are

- Integrating environmental aspects in the national development policy
- Accelerating tree planting campaigns
- Halting soil erosion by tree planting and building terraces on the
- Promoting agro-forestry which could not only increase forestry products but also the integration of trees in farms
- The forecasts made for Burundi in the sectors of energy, agriculture, regional planning and forestry show that if no actions are taken, green house emissions will regularly increase to reach, in 2050, five times their quantity of 1998 (CCNUCC,

2001)[96]. Emission of these gases should be reduced by putting up measures against bush fires, progressive introduction of less polluting energy sources, improvement of waste management technologies, etc…

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Egypt: In Egypt, deterioration of fresh water resources quality poses an environmental challenge. According to the Cluster Scoping Study Report (2007:136). Main sources of freshwater pollution are as follows: drainage water from irrigation schemes; sewage and industrial wastewater which is a source of contamination of surface and ground water fresh sources; pesticides, insecticides and fertilisers whose intensive use cause serious contamination to fresh water resources. Thus, one of the major issues facing Egyptian Nile Basin is the accelerated decline of water quality which has an effect on the quantity for a specific use.

Policy issues identified are;

- Industrial liquid waste is hazardous and contaminates large quantities of freshwater with small volume produced from industrial plants. Thus, the industrial plants should be built far from water courses and ground water basins
- There has been very limited effect of the enacted laws in controlling pollution due to weak enforcement. An environmental law 4 has been enacted to delegate responsibility to Egyptian Environmental Affairs Agency (EEAA) to not only coordinate among different ministries but also to set priorities for strategic target for water quality management
- Main sources of pollution along the Nile River should be identified to implement at-the-source treatment facilities at these points to treat wastewater before being discharged to the river or other water bodies.
- Industrial wastewater treatment plants built in old factories should be completed and regularly upgraded.
- Sewage and industrial wastewater should be collected separately to facilitate treatment, as each kind of these waters requires different treatment facilities.
- Treatment facilities should be built in urban areas to collect the domestic sewage and make the basic treatment before the water is discharged back to the system
- Control and reduction of the amount of fertilisers. Pesticides, and other added chemicals that is being used in agriculture should be implemented, thus, avoiding any misuse of such chemicals. New fertilisers that contain fewer amounts of chemicals for both water and fisheries should be introduced and farmers encouraged to use it.

[96] Cluster Scoping Study Report on Water, Related Resources and Livelihood Research in the Nile Basin, (2007:41)

[97] Cluster Scoping Study Report on Water, Related Resources and Livelihood Research in the Nile Basin, (2007:41)

- Policy relating to compensation of water users who suffer pollution from others should be considered.

Ethiopia: The arrays of serious environmental challenges and problems in Ethiopia that also have wider effect on Ethiopian portion of the Nile Basin and other riparian states are the unsustainable exploitation and degradation of forests, soils, wildlife, fresh water, and other natural resources. For example, about 35 to 40 percent of the total area of the country was covered by forest in recent historical past while today, less than 2.5 percent of the total area of the country is believed to be covered by 'high forest' resources; up to 400 tons of fertile soils per hectare are lost annually from areas that have insufficient vegetation cover; land degradation is one of the principal causes for the loss of biodiversity. Ethiopia faces three major problems with regard to the atmosphere, namely, climate variability, climate change and air quality problem. The impacts of climate change include severe climatic variability, drought, increased erosion and sedimentation of dams leading, *inter alia*, to shifts in agro-climatic zones and changes in patterns of hydro-electric production. Since most of the energy consumed in Ethiopia comes from biomass, it has resulted into high rates of deforestation.

The major policy measures that have been taken which needs to be assessed in view of sustainable management include;

- Environmental policy of Ethiopia (issued in April, 1997;
- Federal and Regional Conservation strategies (issued in 1997);
- National action plan to combat desertification and mitigate the effects of drought (issued in 1997);
- Environmental Organic Establishment Proclamation (Proc. No.295/2002);
- Environmental impact assessment proclamation (Proc. No.299/2002);
- Environmental Pollution Control Proclamation (Proc. No. 300/2002).

Rwanda: In Rwanda, major environmental problems are manifested in soil degradation, degradation of biodiversity, and degradation of the human environment. According to Rwanda Development Indicators (2001), Rwanda is losing up to 12.251 million tons of soil per year due to soil erosion.[98] Deforestation is another big issue in Rwanda. Of primary forests which covered 80 percent of the country, only 5-8 percent is left.[99] Degradation with regard to water and natural resources is well demonstrated by unsustainable use of marshlands, for example, Rugezi Wetlands can be demonstrated as a case where mismanagement can lead to energy crisis in Rwanda and less water levels and flows into the Nile Basin. Currently none of the country's wetland has a protected status except a few swamps located in the Volcano National Park and the Nyungwe Forest Reserve.[100]

Policy action taken that need to be assessed in view of sustainable management include[101]

[98] Nile Basin Initiative Cluster Scoping Study Report on Water, Related Resources and Livelihood Research in the Nile Basin, ((2007:196)
[99] Ibid.
[100] Millennium Development Goals (MDG) Progress Report, MDG 7, August 16, 2007
[101] Summarised from the Millennium Development Goals (MDG) Progress Report, MDG 7, August 16, 2007

- So far, Rwanda has enacted environmental law and formulated a policy in 2005, followed by the creation of Rwanda Environmental Management Authority (REMA) in charge of policy implementation and environmental law enforcement.
- Performance contracts signed by District Mayors with the presidency of the Republic include environmental protection programme especially soil protection through building terraces and reforestation. The ORTPN has also initiated projects aimed at increasing income generating activities for the people living around the national parks, and this has stimulated participatory conservation approach in the country.
- Rural households are becoming increasingly involved in soil erosion control measures such as building radical terraces, particularly in the Northern and Western provinces of the country, improving watershed management, and engaging in reforestation work.
- Other initiatives to reduce environmental degradation include the widespread tree planting, anti-erosion measures, fighting those who burn forests, education on the environment and caring for grazing areas done within *UBUDEHE* initiatives.

RECOMMENDATIONS

Cutting across the countries and in view of the sustainable use and management the following are recommended;

- National policies need to recognize that environment is an integral part of sustainable development and thus need to be mainstreamed effectively;
- Cost of current unsustainable use and management need to be considered and their burden to the economy estimated and impact on the Nile Basin be determined. Viz land degradation, wetland depletion and deforestation.
- The actual and potential contribution of environment to economic growth and livelihoods need to be estimated;
- Inequity and poverty are important drivers in unsustainable environmental management and are at the core of the growing vulnerability of Africa's people; At national and basin level they need to be analysed and targeted
- There is a need to further package integrated approach to environmental management in countries as a basis for sustainable management;
- Building partnerships and promote collaborations at multiple levels are required to find solutions to the challenges of sustainable development in the basin;
- Strengthening national institutions and empowering people are key to effective and sustainable resource management, human development, eradicating poverty, and creating a more equitable society;
- Enhancing human capacity, including scientific and technological capability is a prerequisite to face the environmental and development challenges effectively;
- Building sustainable societies based on peace and cooperation is sine-qua- non for getting rid of conflict in the region and

Linking policy objectives to well established implementation plans and follow up is of paramount importance to ensure sustainable development