16. Uganda

Situated southeast of Uganda is Lake Victoria, the principal source of the White Nile and the second largest freshwater lake in the world. Uganda's rivers and lakes, including wetlands, cover about 18 percent of the total surface area of the country.

Lake Victoria is very significant for the Ugandan economy, since it is the source of almost all of the country's hydropower and provides the domestic and industrial water supply for the three biggest towns in Uganda: Kampala, Jinja and Entebbe. It is also an important location for the fishery and horticulture industries. Additionally, the lake serves as a key transport link between Uganda, Kenya and Tanzania.

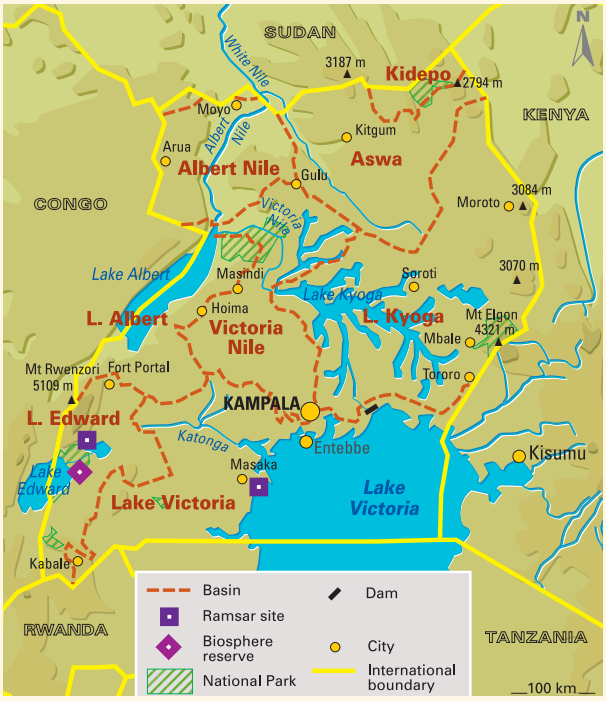
Uganda's total annual renewable water resources are estimated to be 66 km^3. With an annual average of 2,800 m^3 of water available per capita, Uganda is better off than many other African countries. However, rapid population growth, increased urbanization and industrialization, uncontrolled environmental degradation and pollution are placing increasing pressure on the utilization of freshwater resources.

Water and Ecosystems

With 13 percent of its total surface area covered by wetlands, Uganda is very rich in biodiversity. In spite of the existence of national policies and laws for the conservation of ecosystems, there has recently been an observed decline in aquatic biodiversity in most of Uganda's water bodies. This has mainly been attributed to destructive fishing habits, increasing eutrophication as a result of pollution, degradation of riparian watersheds and deforestation (see **Chapter 5** for a discussion of the alarming loss of biodiversity in Lake Victoria).

Rural areas

The percentage of rural inhabitants with access to improved sanitation increased from 68 percent in 1991 to 85 percent in 2002. However, access to clean and safe water is still far from universal (see **Chapter 6**). In 2003, only 59 percent of rural inhabitants had such access. Frequently, people have to collect water from distant locations. This burden falls mainly on women and children, who are the most vulnerable members of society. The long distances they travel significantly reduce their productive time and subsequent contribution to the economic development of the country. Furthermore, the amount of water that can generally be collected is insufficient to meet drinking, cooking and hygiene needs. According to National Surveys conducted in 1996 and 1999, average rural per capita water consumption was found to be about 13 litres per day. Though the sanitation coverage has increased significantly, in some rural areas, basic sanitation still remains elusive, due to poverty and low hygiene and sanitation awareness.



Map 14.17: Overview of the river basins in Uganda

Source: Prepared for the World Water Assessment Programme by AFDEC, 2006.

Urban settlements

In Uganda, urban areas are defined as settlements with over 5,000 inhabitants. Towns of 5,000 to 15,000 inhabitants are classified as small, and those with more than 15,000 inhabitants as large. Based on these criteria, there were 106 small towns and 43 large towns in Uganda in 2004. The current urban population is estimated to be 3.7 million out of a total population of 25 million. The urban population has been growing faster than that in rural areas – the overall population growth rate is 3.4 percent, while that in urban areas is 4.1 percent. The percentage of the population residing in urban areas increased from 12 percent in 1993 to 14 percent in 2003. National urban water coverage is an estimated 65 percent, up from 54 percent in 2000. The sanitation coverage is equally low, 65 percent.

Cost recovery

The current tariff structure of Ugandan water resource systems is aimed towards covering only operation and maintenance costs. Full cost recovery (operation and maintenance, depreciation and investment) would require a significant increase in tariffs. Therefore, major investments in system improvement and extension are financed separately through grants from the Government and international donors. The collection efficiency of revenues, although variable, is about 79 percent on average. Although funding levels are increasing, significant investment is still required to raise the safe water and sanitation coverage to meet the national targets and MDGs.

Water and health

Low access to clean water has had many health implications in Uganda. According to a study carried out in 2002, diarrhoea alone accounted for approximately 19 percent of infant mortalities in the country. Furthermore, statistics from the Ministry of Health indicate that malaria is the leading cause of child morbidity. Approximately 70,000 to 100,000 children in Uganda die every year from malaria. This represents 30 percent of the country's child mortality rates (between the ages of 2 and 4), and accounts for 23 percent of total disability-adjusted life years (DALYs) lost and 25 percent of all instances of illness in Uganda. Estimates from the Ministry of Health indicate that the average expenditure on malaria-related treatments are as high as US $300 million annually. AIDS is the leading cause of death for people between the ages of 15 and 49 and is responsible for 12 percent of all annual deaths (see **Chapter 6**).

Food security

The total potential irrigable area in Uganda is approximately 202,000 ha (FAO, 1995). However, a recent study by JICA (2004) revealed that about 14,000 ha of the potential irrigable area is under official irrigation and 6,000 ha under unofficial irrigation, particularly for rice production. The total amount of water used for irrigation is 12 km^3 per year, whereas the annual total renewable water resources are 66 km^3. These figures reveal the high potential for irrigated agriculture in Uganda. Currently, most of Uganda's agriculture is rainfed and thus more vulnerable during climatic variations. Food shortages and nutritional deficiencies are common in many parts of the country: 40 percent of deaths among children in Uganda are due to malnutrition. According to the 2002 Uganda Population and Housing Census, the country's annual population growth rate was 3.4 percent, while the annual growth rate of food production was only about 1.5 percent. If food production levels do not increase, food shortages will become more acute in the near future.

Livestock production is concentrated along 'the cattle corridor' which runs southwest to northeast across Uganda, encompassing twenty-nine districts. Animal husbandry is a considerable source of income. It represents 7.5 percent of the GDP and 17 percent of the agricultural GDP. However, water scarcity in the cattle corridor reduces productivity and triggers conflict among herders.

Fisheries also contribute to food security in Uganda and are crucial to populations living along rivers, lakes and islands as well as the disadvantaged rural poor. Current annual fish consumption is estimated to be 10 kg per capita. In the past, Uganda's fishing industry boasted over 300 endemic fish species, but unsustainable fishing practices and a deterioration in the quality of local water bodies have greatly reduced the number of commercial fish species. Today, only twenty-three remain. The Ugandan Government is also promoting aquaculture to boost fisheries production to better meet the increasing fish demand in both the domestic and international markets (see **Chapter 5**).

Poverty

As of 2002, close to 40 percent of Uganda's population lives below the poverty line, giving Uganda a rank of 142 out of 162 countries in terms of poverty. Poverty reduction has been a leading objective of Uganda's development strategy since the early 1990s. The Government, in its combat against poverty, prepared a Poverty Eradication Action Plan (PEAP) in 1997. The plan, which has been revised twice, employs a multi-sectoral approach that takes into consideration the multi-dimensional nature of poverty and the inter-linkages between influencing factors. In this regard, the government is making continuous efforts for development in the areas of agricultural modernization, land management, rural credit and microfinance, rural electrification, primary health care, primary education and water supply and sanitation. Of all these, perhaps the PEAP's most critical intervention is the modernization of agriculture. Considering that the agricultural sector employs 82 percent of Uganda's labour force and is the mainstay of the economy, these efforts have the potential of improving the living standards of most Ugandans. Furthermore, through the Plan for the Modernisation of

BOX 14.12: THE IMPACT OF RISING TEMPERATURES

The continent of Africa's temperature has risen by 0.5°C in the past century. The five warmest years in Africa's recorded history all occurred after 1988. Recent studies have shown that the glaciers and ice fields on Rwenzoris, one of a few of permanently ice-capped mountains in Africa, have decreased markedly both in number and size and that the greatest rate of shrinkage has been after 1990.

Malaria has for long been the leading cause of illness in Uganda and accounted for almost 39 percent of all mortality cases in 2002. Today, malaria incidences in the highlands (1,500 to 1,800 m a.s.l.) are thirty times higher than at the beginning of the twentieth century. Rising temperatures in addition to heavy El Niño rains, local climate changes arising from wetland drainage, population growth and human migrations are thought to be some of the most important factors contributing to this increase.

Rising temperatures will have a detrimental effect on the agriculture sector of Uganda. For example, if the current trend continues, a further 2°C rise in temperature would lead to an 85 percent shrinkage in the area suitable for growing rubusta coffee, which constitutes a significant portion of Uganda's export (see **Chapters 4 and 10** for discussions on climate change).

Agriculture (PMA), the Government has initiated programmes to boost agricultural production and the marketing and processing of agricultural goods.

In recent decades, Uganda's elaborate plans and investments to combat poverty have started to pay off. Income poverty levels declined from 50 percent in 1992 to 35 percent in 2000. However, the economic recession that hit many parts of the world after 2000 slowed down the steady progress and returned poverty levels to around 40 percent in 2002.

In recognition of the progress made by Uganda in implementing economic reforms and poverty reduction, the international community, through the International Monetary Fund's (IMF) Heavily Indebted Poor Countries (HIPC) Initiative, has cancelled a large part of Uganda's external debt – between 1998 and 2000, approximately US $2 billion or 60 percent of Uganda's external debt. These measures have enabled the country to rechannel its financial resources to the fight against poverty.

Water and industry

The major industries in Uganda are agro-processing oriented, mainly fish processing, sugar, tea, cooking oil, diary processing, breweries and soft drinks. Factories for textile, paper products and tobacco processing are also fairly common.

The current low level of economic development in Uganda is partly attributable to an inadequate power supply, which cannot support large-scale manufacturing industries and agro-processing factories. Industry employs only 5 percent of the total labour force, whereas agriculture employs 82 percent and the service sector about 13 percent. The Ugandan Government is working to steer the country away from an over-dependence on agriculture by increasing the importance of the industrial and service sectors.

The industrial sector is a source of pollution due to the discharge of untreated or partially treated industrial effluent into nearby water bodies. Pollution stemming from mining activities, on the other hand, is still low and does not yet threaten the general quality of surface and groundwater. Localized pollution, however, exists in the areas where mining activities take place.

Water and energy

Biomass, principally firewood and charcoal, is the most important energy source in Uganda, constituting about 93 percent of the country's consumed energy. Petroleum products contribute only about 6 percent and electricity about 1 percent of annual energy demand.

Hydropower is the major source of electrical power in Uganda. Most of Uganda's hydropower potential is concentrated along the White Nile, with a total estimated potential of 2,000 MW. In addition, there are also several small rivers in different parts of the country, with a potential for mini- and micro-hydropower development (see **Chapter 9**). Currently, only about 15 percent of of existing hydropower potential (300 MW) is utilized, and power demand, which is growing at a rate of 8 percent per year, exceeds available supply. The shortage in generation capacity limits growth in many sectors of the Ugandan economy. The Government formulated a Hydropower Development Master Plan to guide the hydropower planning and development process in Uganda. The Master Plan includes a comprehensive study of all the potential large- and small-scale hydropower schemes in the country and outlines the energy development strategy based on criteria such as power demand forecast, project generation potential, environmental effects and cost criteria.

Overall, only 9 percent of Uganda's population is supplied with grid electricity (20 percent in urban areas compared to only 3 percent in rural areas), and 70 percent of these customers reside in the three major towns of Kampala, Entebbe and Jinja. Official records show that there are about 230,000 grid electricity users. The national average annual per capita electricity consumption is about 44 kilowatts per hour (kWh), compared with an average of 170 kWh for the major urban areas and 10 kWh for rural areas.

Rural electrification forms an integral part of the Government's wider rural transformation and poverty eradication agenda. In this context, the most noticeable programme is the Uganda Photovoltaic Pilot Project for Rural Electrification, which aims to expand the access to electricity using solar technology in isolated and dispersed rural areas that will not have access to electricity grid in the near future and have both the ability and the will to pay the unsubsidized cost of the systems. As a result, more people in rural areas are switching from kerosene to solar lighting.

Legal framework and reform of the water sector

In order to meet the emerging challenges of the water sector, a Water Action Plan (WAP) was prepared in 1993–94, which recognized that water is an economic good with an economic value. The WAP principles were followed by a set of policies and laws throughout the 1990s.

In order to ensure efficiency and cost effectiveness in water resources management, government-initiated reforms in the water sector were established in 1997. As part of the reform process, a comprehensive Water Sector Strategy, detailed sub-sectoral investment plans and a clear definition of national targets for the sector were prepared. One of the key strategic outcomes of the reforms is the adoption of a Sector Wide Approach to Planning (SWAP). The SWAP framework, which has been embraced by both the Government and water sector development partners, promotes the participation of all stakeholders in the planning and implementation of water sector activities. This transparency has resulted in increased confidence from development partners who have agreed to finance water sector programmes through the regular government budget, contrary to the project-specific funding of the past. This is an important step, as 75 percent of the sector's funding comes from donors.

In addition, the water sector is also implementing a comprehensive sector-wide capacity-building and sensitization programme. The sector-wide approach to capacity-building mainly focuses on equipping sector personnel with relevant skills and knowledge in the management of water and sanitation programmes through specific tailor-made training courses and formal graduate training.

Water-related disasters

Water-related disasters, such as droughts, floods, landslides, windstorms and hailstorms contribute to well over 70 percent of natural disasters in the country and destroy an average of 800,000 ha of crops annually, causing economic losses in excess of approximately US $65 million. Large-scale atmospheric events, such as El Ninõ and La Ninã, are identified as the principal causes of the most severe water-related disasters in Uganda.

Disaster Preparedness and Management Strategy is designed to establish and improve national and local capabilities to minimize the damages caused by natural hazards and ensure that they do not result in disasters. The fundamental principle underlying the strategy is that the costs of responding to disasters once they strike far exceed those of disaster prevention and risk reduction activities. Further efforts are also being made to strengthen legal and institutional frameworks and ensure involvement of all relevant sectors. Raising public awareness has proven to be a pivotal point for effective hazard mitigation.

Conclusion

Uganda is on track for meeting the MDG targets for safe water and sanitation. However, the funds required for achieving those targets are in the vicinity of US $1.5 billion, an amount too high for the Ugandan national budget. Therefore, raising funds remains a critical issue. The country would also greatly benefit from an improved technical capacity within governmental institutions and a greater exchange of information among water-related agencies.

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